

Insights from Global Environmental Governance

EDITED BY JEAN-FRÉDÉRIC MORIN
Université libre de Bruxelles

AND

AMANDINE ORSINI
Université Saint-Louis

The field of international relations (IR) is fragmented along several lines, some stirring more debate than others: theoretical divides have been discussed *ad nauseam* in the so-called “great debates”; the split between qualitative and quantitative methods remains a recurring theme of discussion; disciplinary walls continue to structure academia; and the differences between European and North American traditions have flowed into recent fashionable exchanges. Countless conferences and publications have documented these divides, often calling for new bridges across those lines (Hellmann 2003). Answering these calls, an increasing number of books and articles in IR develop middle-range theories, rely on mixed methods, borrow from several disciplines, and are coauthored by researchers from different countries. Yet, fewer studies have addressed the mutual ignorance of the different thematic areas of IR—supposedly united by a joint interest in international affairs—and explored potential avenues for bridging them.

Global environmental governance (GEG) is one of these thematic islands of the IR archipelago. It has its own key journals (such as *Global Environmental Politics*), its inescapable classical references (such as Garrett Hardin’s *Tragedy of the Common*), and its own research program (such as a persistent interest in regime theory). GEG scholars read, cite, criticize, and build on each other. However, they remain relatively insulated from the rest of the archipelago, and reciprocally, other subfields in IR pay relatively little attention to GEG (Dyer 2010).

This thematic isolation is regrettable. When ideas have the opportunity to navigate across various thematic areas, their cross-fertilization often leads to scientific innovations. As Adam Smith noted, “when the mind is employed about a variety of objects it is somehow expanded and enlarged” (1766:539). Individuals with various interests, participating in heterogeneous social networks, and acquainted with diverse viewpoints are more likely to be creative. This positive relation between diversity of interests and greater innovation holds true for artists (Uzzi and Spiro 2005), for start-up entrepreneurs (Ruef 2002), and presumably for IR scholars as well.

To be sure, there are incidences of cross-fertilizations between GEG and other subfields of IR. Generalist journals in IR occasionally publish GEG articles. *International Organization* published a special issue on environmental politics as early as 1972, when the subfield of GEG was not yet well structured. Since then, some ideas have occupied both GEG scholars and experts from other subfields to their mutual benefit, such as the concept of epistemic community, the link between environmental scarcity and military conflicts, or the expansion of security to the

environmental realm. But arguably, these incidences of cross-fertilizations are too few and far between. Climate change negotiations occasionally attract attention from outside the GEG subfield, but other environmental regimes—dealing with biodiversity, whaling, desertification, migratory species, dangerous wastes, fisheries, freshwater, deforestation, acid rain, ozone layer, biosafety, Antarctic and outer space pollution, to name a few—remain largely ignored.

We are not the first to signal lost opportunities for cross-fertilization between GEG and IR. Writing 20 years ago, Steve Smith predicted that GEG would always stay at the periphery of IR. For him, the dominant Westphalian paradigm was simply too much at odds with the global nature of several environmental problems: “Because the discipline of international relations is so obsessed with the state, then just as the state can treat environmental issues as of a relatively minor importance, in deeds if not in words, so must the mainstream of the subject keep to where the action is” (Smith 1993:43).

However, since Smith wrote these lines in the early 1990s, both world politics and its study have changed drastically. There are currently more opportunities than ever for mutual enrichment between GEG and other subfields of IR. Globalization, in particular, has lifted several empirical justifications for keeping GEG separated from IR mainstream studies. For one, the traditional distinction between high and low politics that had kept environmental issues at a subordinate level has disappeared. IR experts in all its subfields are now struggling to make sense of global interdependence, and GEG scholars might actually be a step ahead of other subfields. As noted by Oran Young, “innovative approaches to governance have had the greatest impact on issues pertaining to natural resources and the environment” (1997:2). Under this perspective, the “international environmental politics literature anticipates many of the descriptive features of globalization” (Haas 2010).

Two broad themes associated with globalization have especially retained the attention of GEG scholars and offer significant prospects for cross-fertilization with other IR subfields. The first is the study of international institutions. The concept of international regime is by far the “most used entry point for environmental topics in IR” (Boardman 1997:35; see also Young, King, and Schroeder 2008). While other subfields in IR have perhaps too quickly discarded regime theory following some initial enthusiasm in the 1980s, GEG kept this concept at the center of its theoretical endeavors. It has, however, deviated from the initial question of regime formation to explore other issues such as regime evolution, regime complexes, regime effectiveness, non-regimes, or private regimes. Recently, regimes were the units of analysis of an interesting GEG project aimed at quantitatively comparing cooperation across various environmental issue areas (Breitmeier, Underdal, and Young 2011).

Figure 1 illustrates this strong interest for international regimes. It presents the results of a keyword search in titles and abstracts of articles published from 2001 to 2012 in one GEG journal, *Global Environmental Politics* (316 articles), two generalist IR journals, *International Organization* (386 articles), and *International Studies Quarterly* (617 articles). The search for the keyword “regime,” excluding keywords starting with “democra” to distinguish international regimes from regime types, generated 75 results in *Global Environmental Politics*. In comparison, it generated only 30 results in *International Organization*, despite the fact that this journal had launched the research program on international regimes with a widely celebrated special issue in 1982. The interest of the GEG literature for international institutions is such that the World Trade Organization, despite being a non-environmental organization, is mentioned more frequently in titles and abstracts of articles published in *Global Environmental Politics* than of those of *International Organization* and *International Studies Quarterly*, two leading journals in international political economy.

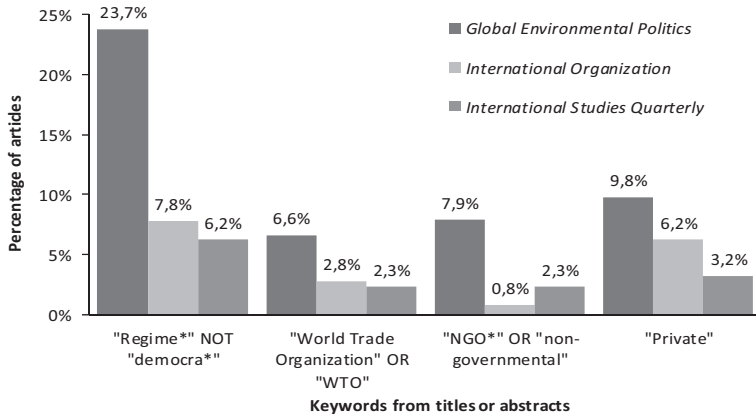


Fig. 1. Keywords in Articles Published from 2001 to 2012

A second distinctive feature of the GEG literature is the study of nonstate actors in world politics.¹ In GEG, as noted recently by Frank Biermann and Philipp Pattberg, “actors beyond central governments have taken center stage in many policy processes” (2012:2). To study these actors, GEG scholars have developed interesting analytical tools related to transnational networks, private partnerships, norm entrepreneurs, transparency and inclusiveness, private regulations, and public debates.

As presented in Figure 1, the keywords “NGO” and “non-governmental organization” appear in the title or the abstract of 7.9% of the articles published in *Global Environmental Politics* from 2001 to 2012, a rate significantly higher than in *International Organization* (0.8%) or *International Studies Quarterly* (2.3%). If one expands the search to articles studying business organizations, indigenous groups, scientists, terrorist organizations, and social movements, it appears that 90 articles published in *Global Environmental Politics*, or 28.5% of the total, study nonstate actors.

Interestingly, recurring research questions in the study of both international institutions and nonstate actors in the GEG literature concern interactions. Several studies investigate how different institutions or different nonstate actors interact with one another, or how nonstate actors interact with international institutions. Some recent studies even explore how interactions among nonstate actors impact interactions among institutions (Visseren-Hamakers, Arts, and Glasbergen 2011; Morin and Orsini 2013). This concern for interactions between different units might well be inspired by an ecosystemic view, according to which the evolution of a system is contingent upon the diversity of units and their complex interactions.

The purpose of this forum is not to argue that GEG offers an ecosystemic perspective that can replace traditional approaches to IR (Boardman 1997; Dyer 2010). GEG scholars do not share such a parallel grand theory. GEG has cultivated its diversity by working on several, less ambitious, middle-level analytical concepts.

Rather, this forum presents several of these recent innovative concepts and discusses their potential value for the development of other IR subfields. To be

¹Additional themes in the GEG literature that could be of interest for other IR scholars include comparative foreign policy, negotiations dynamics, North-South relations, hegemonic discourses, or the role of ethics in world politics. They do not appear, however, as prominent and distinctive as the two identified themes of international institutions and nonstate actors.

sure, distinctive features of environmental politics limit the external validity of certain GEG conceptual insights. Nevertheless, the environmental subfield is livelier today than ever before, and at least some of its innovative concepts and insights can be enlightening for IR in general.

This collection of essays brings together scholars from various disciplines, based on three continents, with different theoretical and methodological interests, but all active in the subfield of GEG. Each of them reviews the emerging literature around one specific conceptual innovation of GEG, related to one of the two core themes of GEG: international regimes or nonstate actors. Beyond a review of the literature, each contribution hypothesizes on the reasons why GEG played a pioneer role in this concept and discusses its transferability to other subfields of IR.

The first contribution by H el ene Trudeau, Isabelle Duplessis, and Suzanne Lalonde recalls the way global environmental regimes have been legally codified, by reviewing law-making techniques in GEG. These regimes are increasingly in interaction with one another, through horizontal interactions detailed in the second contribution by Thijs Van de Graaf and Ferdi De Ville on regime complexes or through vertical interactions detailed in the third contribution by Kate O'Neill. The forum then presents the current state of research on nonstate actors with a fourth contribution by Charles Roger and Peter Dauvergne on private authority, a fifth contribution by Jean-Fr ed eric Morin and Sebastian Oberth ur on expertise, and a sixth contribution by Amandine Orsini and Frank Biermann on transparency. The seventh and last contribution, by Hiroshi Ohta and Atsushi Ishii, presents, as a synthesis, the state of current GEG research regarding the question of the effectiveness of both governmental and non-governmental regimes.

Law-Making Techniques in GEG

H EL ENE TRUDEAU, ISABELLE DUPLESSIS, AND SUZANNE LALONDE

University of Montreal

Environmental problems present a distinct challenge for legal processes because of the scientific uncertainty which often surrounds them and the unknown parameters of time and space in which they manifest themselves (see Morin and Oberth ur below). Disputes arising from transboundary air or water pollution led to the recognition of the now generally accepted obligation that states are not to use their territory, or allow others to use it, in a way that can harm the interests of other states. However, in response to the challenges posed by the interconnectedness of the various components of the environment, international environmental law had to evolve and shift away from the traditional inter-state paradigm to embrace a more global approach.

This shift in focus at the international level can also be observed in domestic environmental law, if one compares the rules governing properties and private relations between individuals with the complex set of rules which define administrative law regimes (Hey 2007:750–751). Analysts have in fact suggested that recent GEG instruments present many of the features which characterize domestic public law regimes. Those domestic “law-making techniques,” which to date have been infrequently used at the international level, include for instance delegations of powers and the creation of subsidiary and plenary bodies responsible for consultative, legislative, executive, and even adjudicative functions within the scope of specific multilateral environmental agreements (MEAs) (Fitzmaurice 2009).

The present contribution is based on legal doctrine about law-making techniques, but the authors acknowledge the need to also address those techniques from different disciplines and perspectives. In particular, the role played by law-making techniques in international environmental law is to be linked with the more general issue of effectiveness in GEG studies. In recent years, effectiveness has been an important theme on the research agendas of both legal and political scholars (Chambers 2008:100; Winter 2006; see Ohta and Ishii below). In legal terms, effectiveness must be measured by the environmental performance of a specific regime and is, in that sense, at least partly the result of specific legal mechanisms designed to correctly elaborate norms and ensure their application. MEAs have played a pioneer role in that respect in international law (Brunnée 2006).

One of the reasons explaining why these law-making techniques have been integrated into strategies to deal with GEG may have to do with the sense of urgency felt by the international community, which is struggling to devise normative responses to potentially very destructive situations. For instance, the two legal instruments that were adopted to protect the ozone layer—the Vienna Convention and the Montreal Protocol, as subsequently amended—offer a whole range of flexible and effective legal mechanisms designed to respond to the urgent need of eliminating CFCs and other ozone-depleting substances.

First, the establishment of a plenary body composed of the member states, the Conference of the Parties (Meeting of the Parties for a Protocol), creates a continuous political channel through which necessary technical improvements and more substantive legal changes can be debated and decided in a timely manner. Second, the plenary body has indirect law-making powers to adopt amendments and protocols which must, however, ultimately be ratified by the member states, and some direct powers to amend the treaty annexes. Amendments to the annexes typically do not require ratification by the member states, making their implementation much faster. States, however, usually have the option of objecting to any proposed modifications within a certain time frame and as a result are not bound by them (except in the case of the “adjustment” procedure of the Montreal Protocol, where this option is not available to reluctant states). Third, the instruments establish advisory entities or subsidiary bodies composed of experts to provide regular scientific assessments of the situation and suggest necessary actions to the plenary body. Fourth, the compliance mechanisms created to facilitate implementation of the obligations are based on cooperative instead of adversarial models. Finally, the individual capacity of developing countries is taken into account through the operation of financial mechanisms such as the Global Environmental Facility.

To face global threats, the application of very strict measures to control pollution is necessary. Compliance with the adopted norms has to be an important part of the established regimes if they are to be efficient, even though as such compliance is not to be confused with effectiveness (Mitchell 2007:893). One of the most innovative legal techniques that are being used in international environmental law to facilitate the respect of norms by states is the institution of compliance mechanisms. Traditional mechanisms have not always proved efficient in resolving conflicts arising out of GEG issues. Although much work has been done by the International Law Commission to further develop rules regarding state responsibility, states generally appear very reluctant to submit their dispute to agreed-upon jurisdictional instances, such as arbitral tribunals or the International Court of Justice (Romano 2007:1036; Pineschi 2009:483). Instead, other ways have emerged to help states conform to their obligations in a more flexible and adapted manner (Beylerlin, Stoll, and Wolfrum 2006; Treves, Pineschi, Tanzi, Pitea, Ragni, and Jacur 2009).

A number of MEAs adopted since the early 1970s contain many of the same techniques and mechanisms. The common institutional arrangements usually

comprise a conference or meeting of the parties, a secretariat, and one or more technical subsidiary bodies. The main objectives pursued by the treaties themselves may be difficult to attain—tackling global threats like climate change or the loss of species is no small task—but overall the normative model they offer has been considered quite innovative in international law. In summary, what is so innovative about these legal regimes is their autonomy in terms of institutional arrangements, that is, by the creation of treaty-based organs outside the realm of traditional intergovernmental organizations (IGOs). The international regimes have been devised with an organizational structure which allows them to respond effectively to a myriad of challenges,² to develop their normative content over time as new scientific findings become available, and to ensure compliance by member states (Beyerlin et al. 2006; Brunnée 2006).

Law-making techniques and regulatory regimes developed within MEAs have recently been integrated into the global governance research agenda. Some analysts have suggested that these features hold promise for other spheres of IR. Although in 2000 autonomous institutional arrangements were still considered “a little-noticed phenomenon” in international law (Churchill and Ulfstein 2000), the potentiality these arrangements offer for reforms, particularly in the realm of human rights law, has attracted increasing doctrinal attention (Bowman 2007; Stein and Lord 2010; Morijn 2011).

The need to adopt stricter rules over time in order to correctly manage situations of pollution and eventually achieve an environmental objective is a common parameter of almost all MEAs. Adequate responses to such daunting challenges were made possible with the creation of what has been termed “the tacit amendment procedure,” by which an amendment enters into force for all parties unless objected to within a certain period of time. This procedure proved successful not only within the context of MEAs but also within certain traditional IGOs and commissions, particularly those dealing with situations of pollution or with resource management measures, such as the International Whaling Commission and various international fisheries commissions. The International Maritime Organization has recently adopted this technique for amendments of a technical character in maritime pollution conventions. It is used to limit the inertia of states to “contract in,” thus “allowing inertia to operate in favor of progress rather than against it” (Bowman 2007). This technique has also been exported to the International Labor Organization through the adoption of the 2006 Maritime Labor Convention. It has also been suggested that this so-called tacit amendment procedure should also be introduced within the context of UN Human Rights Conventions reform (Bowman 2007).

Another feature of MEAs which has been considered of interest for potential reforms within the UN conventional realm is the ability to supervise and monitor the respect of treaty obligations through the creation of technical committees with advisory functions. This could be especially helpful in ensuring follow-up to recommendations by human rights treaty bodies, which “should be seen as an essential and integral part of monitoring as a human rights protection methodology” (Morijn 2011). Technical committees in MEAs are composed of individuals with specialized expertise. They usually have data-gathering responsibilities and thematic advisory roles that a treaty-monitoring body alone would be unable to perform. They are very well suited to assist treaty bodies in supporting the implementation of conventional obligations by assessing information (Stein and Lord 2010). In addition, it has been suggested that the Conference of States Parties established through the recently adopted Convention on the Rights of Persons

²Churchill and Ulfstein (2000) have argued that this phenomenon “marks a distinct and different approach to institutionalized collaboration between states, being both more informal and more flexible, and often innovative in relation to norm creation and compliance.”

with Disabilities (2006) should seek inspiration from MEAs in defining the role it can play (Stein and Lord 2010).

Plenary bodies created in other subfields of global governance will need to rely on some of the same strategies that have proven necessary for environmental protection, such as achieving consensus on substantive issues, facilitating implementation of conventional obligations by drawing together a wide range of actors and providing resources, and setting benchmarks and quantitative goals and targets based on regular information and data gathering.

International environmental regimes, though efficient on some levels, are still not sufficient to adequately protect the global environment. In recent years, there have been ample calls for the creation of a world environmental organization that could exert a stronger influence over other international institutions. This has not proved successful so far. Future research directions should therefore aim at filling this gap with other solutions. The possibility of more horizontal synergies between existing public and private institutions and organizations in GEG as well as in other IR fields could be an interesting avenue to explore.

Regime Complexes and Interplay Management

THIJS VAN DE GRAAF AND FERDI DE VILLE

Ghent University

As outlined in the introduction, one of the key characteristics of GEG is its focus on international institutions. Since the turn of the millennium, GEG studies have increasingly shifted away from studying the design and effectiveness of discrete institutions to focus on the “interaction,” “linkages,” “interplay,” and “overlap” between different sets of institutions, as well as the broader “regime complexes” or “governance architectures” within which they are embedded (for example, Rosendal 2001; Young 2002; Raustiala and Victor 2004; Biermann, Pattberg, Van Asselt, and Zelli 2009; Oberthür and Gehring 2011). To be sure, various IR scholars from non-environmental subfields have, in parallel, also turned their attention to situations where multiple international institutions co-govern the same issue (for example, Alter and Meunier 2009). Nevertheless, it is fair to say that researchers from the subfield of GEG have pioneered this line of inquiry and have so far produced the largest volume of writings on the subject. According to Raustiala (2012:9), it is no coincidence that concern with “treaty congestion” was first raised in the GEG literature in the 1990s: “environmental cooperation was a major growth area in this period, and the focus was largely on negotiating new agreements rather than implementing existing ones.”

This contribution highlights three ways in which this large literature can inform researchers in other subfields of global governance: (i) by stimulating the emergence of a theory on the determinants of regime complexes and their development, (ii) by thinking about the normative implications of regime complexes, and (iii) by introducing the novel concept of interplay management.

Before we move on to discuss these three points, some conceptual clarification is in order. First, we emphasize the subtle but crucial difference between “fragmentation” and “regime complexes.” In a regime complex, the different components are loosely coupled, whereas in a totally fragmented architecture such connections are not present. We follow Keohane and Victor (2011), who situate regime complexes somewhere in between the two extremes of integration and

complete fragmentation. Second, we prefer the term “regime complex” over the term “regime complexity.” Every empirical phenomenon in international relations is complex to a certain degree; yet not every constellation of institutions is a complex, defined by the Oxford Dictionary as “a group or system of different things that are linked in a close or complicated way.” Third, we recognize that fragmentation is ubiquitous and depends on how the issue area at hand is framed; the larger one defines the governance domain (for example, “trade and environment” instead of just “climate change”), the more fragmented it inevitably becomes.

This brings us to a first set of questions: Why do some issues give way to integrated regimes and others to fragmented governance architectures? How do regime complexes behave and evolve over time? Are they a temporary aberration or a stable equilibrium? Few studies outside of the environmental sphere have examined the origins of institutional overlap and regime complexes. Here, it could be instructive to look at the literature on institutional linkages as developed by Oran Young in relation to GEG. Contrary to regime theory’s long-standing emphasis on the stickiness of institutions, Young suggests that the choice of arenas for regime formation is not self-evident but a product of organizational imperatives and interest calculations (Young 2002). Just as international institutions are erected and designed to further actors’ goals (Koremenos, Lipson, and Snidal 2001), institutional overlap can emerge intentionally because actors actually benefit from a fragmented governance architecture. This foundational work can help to shed light on the question of when actors decide to stay within or diverge from a certain institutional path.

Relatedly, GEG scholars have started to examine whether certain common trajectories, patterns, or life-cycles can be observed in the long-term historical development of regimes and institutional complexes (Young 2010). Morin and Orsini (2013) propose that complexes evolve in several different stages, driven by internal conflicts and reaching internal stability and regime integration in the final stage. They further suggest that this gradual regime integration process goes hand in hand with greater policy coherence at the national level. The rapid emergence of environmental ministries in the wake of the 1972 UN Conference on the Human Environment, for example, created new administrative units that in turn supported greater coherence and integration at the national and international policy levels. In a similar vein, and inspired by ideas from biological ecology, Gehring and Faude (2010) contend that institutional complexes eventually lead to an internal division of labor, driven by competition over regulatory authority and resources.

Keohane and Victor (2011), by contrast, argue that the fragmented climate change architecture is likely to persist since it is the product of three interactive and relatively stable forces: strong interest divergence among major actors, high uncertainty about the distribution of gains and risks from international cooperation, and the fact that governments have not found productive linkages between all the cooperation problems in climate change. Yet, according to Johnson and Urpelainen (2012), it is not such productive linkages or positive spillovers that will lead states to integrate international regimes, but rather their desire to mitigate *negative* spillovers.³ The climate change and ozone regimes, on the one hand, are relatively integrated because to heal the ozone layer, countries banned certain ozone-depleting substances but subsequently adopted substitutes that are potent greenhouse gases (that is, negative spillover), hence the need for integration. The climate change and forest regimes, on the other hand, appear suitable for integration since forests are natural carbon sinks (that is, positive spillover);

³“Negative spill-overs” are defined as situations where cooperation in one issue area undermines the pursuit of objectives in another issue area.

yet these regimes have remained separate because the group of potential cooperating states as a whole benefits from allowing subgroups to invest in respective projects rather than forcing them all to invest in projects that some subgroups view coolly.

In other words, there is disagreement among GEG scholars about the conditions under which regime integration or separation will carry the day. It is worth testing those contrasting hypotheses into other empirical areas beyond the environment. For example, why is there a relatively centralized international trade regime structured around the World Trade Organization (WTO) but no World Energy Organization? As they continue to grow economically, will China and India keep up with the Bretton Woods institutions in which their voting power is restrained, or will they create or strengthen countervailing institutions, leading to fragmentation? Why did the United States and partner countries choose to develop the Anti-Counterfeiting Trade Agreement as a standalone agreement, outside of existing organizations such as the WTO or WIPO? Similarly, what exactly triggered the decision in 2001 to create the Global Fund to Fight Aids, Tuberculosis, and Malaria as a separate organization outside of the World Bank and existing UN agencies?

Another question where greater interaction between scholars of global governance and the GEG community could be fruitful relates to the normative judgment of regime complexes. Should we think of such complexes in positive or negative terms? A few studies of non-GEG scholars have focused on the strategic responses of states and other actors to institutional complexes. Scholars have argued that such complexes enable powerful states to engage in forum-shopping, regime-shifting, and other cross-institutional strategies which could lead to a broader shift in global governance from rules-based to power-based outcomes (Alter and Meunier 2009). In other words, these scholars tend to see regime complexes in quite negative terms.

Global Environmental Governance scholars, on the other hand, have been debating the pros and cons of greater centralization for years, notably in the form of creating a World Environment Organization, an idea that is as fiercely advocated by some as it is opposed by others (for example, Whalley and Zissimos 2001; Charnovitz 2002; Najam 2003). Some recent studies from the subfield of GEG are remarkably optimistic about regime complexes. Keohane and Victor (2011), for example, argue that regime complexes might actually offer some advantages over single, legally integrated regimes, such as greater flexibility (across issues) and adaptability (across time). Johnson and Urpelainen similarly think of regime complexes in quite benign terms, arguing that “regime separation is not necessarily a failure in institutional design or a failure to facilitate cooperation. On the contrary, it can serve as a design strategy that promotes cooperation” (2012: 673).

Finally, we draw attention to the concept of “interplay management” which has hitherto only been applied in an environmental context. The term refers to conscious efforts by actors to “address and improve institutional interaction and its effects” (Oberthür and Stokke 2011:6). In a global governance galaxy that is growing denser and more complex across the board, these kinds of management efforts could become more important. The “clustering” of agreements, for example, is a specific mode of institutional management that has been observed in the environmental sphere, notably with regard to the international chemicals and waste treaties (von Moltke 2001). The parties to the three major conventions of the regime (Basel, Rotterdam, and Stockholm Conventions) have gradually synchronized their institutional structures—even up to the point of having a joint executive secretary. Especially issue areas with a relatively high density of international arrangements (for example, health, clean energy, and “WTO+” agreements in international trade) could provide fertile ground for testing some

of the assertions from the existing research on the types, standards, and conditions of interplay management.

In conclusion, the literature on GEG has opened up important new ways of thinking about international institutional interaction in the past 10–15 years. The concepts of regime complexes and interplay management are particularly promising research avenues that hold important lessons for global governance in general. The application of these concepts to new, non-environmental domains promises large theoretical payoffs as it would increase the external validity of the propositions. Investigating both positive cases of regime complexes and negative ones (that is, issue areas where there are no overlapping regimes) in areas beyond GEG might in turn help to understand environmental politics better.

Vertical Linkages and Scale

KATE O'NEILL

University of California at Berkeley

A recent wave of GEG research examines how governance institutions and actors are connecting and working across multiple jurisdictional levels, from local to global, and vice versa. As with research on horizontal linkages in GEG (see Van de Graaf and De Ville, above), this work demonstrates the complexity and interconnectedness of global governance institutions, albeit in these cases the linkages are best described as vertical—between levels of analysis. As cited in the introduction to this forum, it is a good example of scholarship that is inspired by and relates to broader IR literature on domestic–international linkages, levels of analysis, and multilevel governance. Even so, it draws on concepts that come from different disciplinary traditions and examines actors and processes that have previously been accorded only marginal roles in mainstream IR. Not only does it bring a particular multilevel dimension to GEG theory, this work also emphasizes recognizing fluidity, complexity, and nestedness (Young 1996) as key characteristics of global governance institutions—and that influential actors, ideas, and initiatives may emerge from unexpected realms.

In very simple terms, the concept of “vertical linkage” applies to instances of governance across jurisdictional levels, and/or the movement of ideas, knowledge, or policy up *and* down between these levels. The development and functioning of regional centers under the global chemicals treaties are a good example of such multilevel governance initiatives (Selin 2010). The growing role of cities, local governments, and other sub-state entities in encouraging greenhouse gas mitigation and building transnational networks for sustainable development illustrates the emergence of local political actors in global political spaces, especially when national governments are absent or weak (Betsill and Bulkeley 2006; Koehn 2008; Selin and VanDeveer 2009; Bouteligier 2012). Cases of the incorporation of local or indigenous knowledge in, for example, biodiversity negotiations have highlighted how ideas, knowledge, and expertise may flow not only downwards, from the global level, but also upwards, informing how global policies are created and strengthened (Martello 2001; Jasanoff and Martello 2004). The “new regionalism” in GEG (Balsiger and VanDeveer 2012) and new political architectures, such as the Reducing Emissions through Deforestation and Degradation (REDD+) program being designed and enacted under the UN Framework Convention on Climate Change (UNFCCC) (Doherty and Schroeder 2011), have drawn attention to linkages across multiple sites at local, regional,

and global levels in GEG. These instances may be nested (such as regional centers nested within a broader chemicals regime), or separate institutions focusing on the same problem on different scales (Cities for Climate Protection and the UNFCCC), or indeed a single institution operating simultaneously across levels (REDD+).

These studies—and their findings—are significant for several reasons. First, in common with literature on regime complexes (see Van de Graaf and De Ville above), they demonstrate that GEG consists of a dense set of interlocking institutions that go beyond negotiating and implementing individual regimes from the international level. Second, they provide insight into questions that have long concerned international organizations themselves: the actual or perceived disconnect between decisions taken by policy elites at the global level and their reception by local and regional communities. Third, with the emergence of new sorts of institutional formations reaching across governance scales, such as REDD+, carbon markets, or regional emissions trading schemes, scholars face a challenging imperative to visualize and understand new phenomena that do not conform to traditional theoretical framings. Attention to vertical linkages helps make sense of the emergence and influence of new actors who come primarily from “local” levels of governance. Similarly, such work helps us see how to address issues such as fresh water provision that rarely make it onto the international policy agenda (Conca 2006), or global, multilevel phenomena such as natural resource commodity chains (Havice and Campling 2010).

This newer work on vertical linkages in GEG departs from earlier levels of analysis and domestic–international linkages literature in IR theory in important ways. First, it incorporates more levels of governance—local, national, regional, global, and their associated actors—that interact and have agency at all stages of governance and negotiation processes. They are more than political constraints during negotiations or passive sites of regime implementation. Second, although domestic–international linkages work is alive and well, as is work on multilateral governance in the European Union, it remains state-centric and connected to the study of formal, hierarchical institutions. This work does not privilege one level over another, addressing instead their interactions, and the movement of ideas, actors, knowledge, and policies up and down between them.

A primary reason for this departure is that GEG research has integrated insights from other (inter)disciplinary social science perspectives. Geographers, political ecologists, anthropologists, and others have done extensive work on concepts of scale and local-global connections that provide insight into how to study and analyze these phenomena (for example, Marston 2000; Bulkeley 2005; McCarthy 2005; Reed and Bruyneel 2010). Scale remains a somewhat difficult concept to pin down, but the works cited here work primarily with a jurisdictional concept of scale, along which are placed the different levels (global, local, regional, etc.). Other sorts of scales might be ecological or temporal (Gibson, Ostrom, and Ahn 2000). They point out the importance of understanding how scales are constructed, not given (Marston 2000), and the perils of trying to situate a problem or a governance institution as purely local or purely global without understanding the interconnections (Görg and Rauschmayer 2009).

The applications of such work to other arenas of global governance are manifold. Notwithstanding, a review of major IR journals over the past three years—*International Organization*, *International Studies Quarterly*, *Review of International Political Economy*, and *Global Governance*—reveals a dearth of articles that address these themes directly (for exceptions, see Aggarwal and Chow 2010; Su 2012). However, the orderly hierarchies and well-defined actor roles of traditional IR theory are being disrupted. Most international agreements and global governance arrangements operate at multiple levels, and institutional complexity and feedbacks, as well as fluidity and the capacity to adapt are hallmarks of many global governance

initiatives. Security studies, in paying greater attention to terrorist/insurgent groups and civil wars, have to understand how dynamics play out at very local levels in Iraq, Afghanistan, or the Congo to influence national and international decisions. Migration studies, the global political economy of trade and distribution of economic power, and the growing literature on policy and norm diffusion could also utilize insights from GEG work on vertical linkages and scale.

Of course, incorporating insights from literature on vertical linkages and scale into the IR canon will pose challenges, particularly methodological ones. Researchers will often need to adapt methods from other disciplines, including multi-site methods (ethnographic or otherwise), network analysis, and more collaborative data-gathering and analysis techniques (O'Neill, Weinthal, Suiseeya, Bernstein, Cohn, Stone, and Cashore 2013, in press). Nonetheless, IR scholars have an important role to play in understanding and analyzing these new arenas of multi-scale governance. There are many exciting new directions for this sort of research, especially that enables collaboration between GEG and other IR researchers on cross-cutting problems, such as climate change, that are no longer the sole purview of the “environmental” part of the field.

Private Authority

CHARLES ROGER AND PETER DAUVERGNE

University of British Columbia

In the 1990s, IR scholars began to develop the notion of “private authority” and the related idea of “private regimes” to analyze the growth of cross-border governance by nonstate actors. Across a range of issue areas, it seemed new forms of private regulation involving varying constellations of businesses and non-governmental organizations were playing an increasingly prominent role in global affairs. For some IR scholars, the steady increase in the power and legitimacy of private actors and institutions signaled a fundamental shift in the nature of global governance. Susan Strange (1996) saw the rise of private authority as a sign that the state was “defective” or in “retreat”; others, such as David Held (2000), believed we were witnessing a “transformation” of politics and state power. Since then, scholars across the field of IR have been debating the nature and impact of the changes taking place.

By far the most ambitious studies of private authority—and the most energetic debates over the relative importance of nonstate actors and institutions—have been occurring inside the subfield of GEG. Part of the reason for this has been the extent to which private regimes have proliferated since the early 1990s across nearly all environmental issue areas (Falkner 2003). This has, effectively, turned the study of environmental politics into a valuable laboratory for testing hypotheses about the larger changes in the global system that so concerned Strange and Held. And, with so much going on, GEG theories of private authority are among the best developed, offering many insights for IR theory more broadly.

In general, scholars of GEG accept some version of the following definition, which would be familiar enough to those studying other issue areas: private authority is said to exist when nonstate actors (such as firms or NGOs) create rules or standards that other actors in world politics accept or comply with. Those accepting or complying with private regulations can be either states or other nonstate actors, or both. Importantly, as scholarship in the subfield of GEG has made clear, when private authority is present it can take a number of forms. Each is distinguished, largely, by the way in which private authority comes about. We discuss three ways.

The first variety of private authority is what Green (2010b) calls “entrepreneurial authority.” Entrepreneurial authority arises when private actors create rules or standards, usually to fill a “governance gap” (see Ohta and Ishii below), which others then adopt. The rules themselves can take a variety of forms, but all are created without an explicit mandate or support from public actors. Among the most common examples within the subfield of GEG are ISO 14001 and Forest Stewardship Council certification (Cashore, Auld, and Newsom 2004; Prakash and Potoski 2006). These and related standards have also been shown to operate in a distinctive “market-driven” fashion wherein schemes compete with one another for dominance in a given issue area (Bernstein and Cashore 2007; Smith and Fischlein 2010).

However, states have also occasionally sought to establish private authority by explicitly delegating rule-making authority to private actors. An example of this second kind of “delegated authority” arises when states task private agents with the job of auditing or monitoring compliance with international agreements. Private actors are also sometimes delegated the task of creating rules for themselves and others. This is the case, for instance, with the Clean Development Mechanism, where a few firms validate and verify carbon offsets on behalf of states, but are also able to propose new offsetting methodologies (Green 2008). Above all, what is distinctive here is the hierarchical principal–agent relationship between the actors involved and, usually, the lack of competition between rules.

The third variant is “hybrid authority,” which emerges when public and private actors join forces to form transnational rules. This resembles delegated authority in that both public and private actors are involved, but it is conceptually distinct because the relations between them are not hierarchical. Rather, public and private actors cooperate horizontally and bring complementary capabilities to the task of rule making. In this respect, it is more akin to entrepreneurial authority. Perhaps the most common form of hybrid authority involves the creation of public–private partnerships, generally between international organizations and businesses (see Andonova 2010). But another interesting form emerges when states or international organizations seek to shape (or “orchestrate”) existing “markets” of entrepreneurial authority (see Hale and Roger 2012).

Theoretically, the emphasis of GEG research on private authority has been on explaining how and why different kinds of private authority come about. At least two major strands of explanations have dominated the literature. The first is largely functionalist, focusing on the benefits which transnational rules offer different actors. Perhaps the most well-developed arguments of this type have been those advanced by scholars like Prakash and Potoski (2006) and Baron (2009), who argue that many transnational rules are akin to “clubs” and serve as signaling devices that convey information to consumers. This information helps consumers to more easily identify and reward “virtuous” goods and firms, therefore making it possible for firms to internalize the costs involved. The presence of market failures and the potential for such benefits explain why private authority emerges in some areas but not others.

By contrast, the second group of theories puts more emphasis on the structures within which transnational rules arise. One notable example of this kind of argument is that advanced by Dingwerth and Pattberg (2009), who argue that an “organizational field” of transnational rules developed in the early 1990s and structured incentives and mindsets such that other groups in a variety of environmental issue areas then tended to adopt similar solutions. Others, such as Bartley (2007), have suggested that the driving force behind private authority has been the changing character of the conflicts among states, NGOs, and businesses. These conflicts have, in turn, determined the nature of institution building in the global economy.

We argue that the cutting edge of research on private authority is now focused on developing testable hypotheses that build upon both functional and structural theories. Green's (2010a,b) work has been especially promising. Private authority, she argues, tends to emerge when both "demand" for it exists and when actors are willing and able to "supply" private regimes. Her account of "demand" builds upon functionalist theories of the role of private authority that emphasize first-mover advantages, the lowering of transaction costs, the credibility of commitments, and so on. But demand is only met, in her theory, when a public agent cannot supply the same benefits as a private one. A private actor, she argues, must have certain relative governance advantages, usually derived from their autonomy, or from moral or expert authority.

Given demand, private authority can, however, be supplied in several ways. In her theory, authority can be delegated (giving rise to delegated authority) or it can emerge more spontaneously (giving rise to entrepreneurial authority). For Green, two structural variables explain which form of private authority will tend to arise: the preferences of powerful states and the existence (or non-existence) of a focal actor. If the preferences of powerful states converge on a course of action (meaning they reach consensus on an appropriate agent and can give them clear instructions), they are more likely to delegate authority to a private "global governor." Conversely, if they disagree and no focal actor exists, Green's theory predicts that entrepreneurial governance is more likely to emerge.

Hale and Roger (2012) build on this framework to explain the emergence of hybrid authority, particularly orchestration. For them, entrepreneurial authority is not necessarily the only outcome when state preferences diverge. Moreover, entrepreneurial authority may fail to arise due to high transaction costs, inadequate legal arrangements, and imperfect information. However, under certain conditions, international organizations or states may step in to resolve such problems in order to "unlock" the agency of transnational actors. States and international organizations may also try to shape established forms of entrepreneurial authority. All of this is most likely to occur when international organizations have the autonomy to take action despite opposing state preferences, perhaps because states have delegated autonomy or because of agency slack (Abbott and Snidal 1998; Hawkins, Lake, Nielson, and Tierney 2006). Whether an international organization attempts to create a partnership or shape existing forms of private authority depends, in turn, on whether or not a focal entrepreneurial initiative already exists.

Green's theory of private authority and Hale and Roger's extension are two examples of how the literature on private authority in GEG is starting to place greater emphasis on developing testable hypotheses with the potential to predict both when transnational governance will emerge and the form it is likely to take when it does. Such efforts are also important because they promise to (re)integrate theories of private authority within the broader corpus of IR theories, demonstrating how private authority arises in response to or as a result of state behavior. To assess its wider value, however, will require testing these theories across other issues areas, such as finance, law, health, or security.

Extending these theories to analyze transgovernmental networks could also perhaps lay the basis for a more general theory of transnational governance, that is, a theory that accounts for the rise of a wide variety of innovative institutional forms. Transgovernmental networks, as Slaughter (2001) notes, arise under seemingly similar conditions: sometimes in an "entrepreneurial" manner, in response to inadequate multilateral cooperation, and sometimes under the auspices of an intergovernmental agreement—that is, via delegation. Hence, connecting theories of private authority with theories of transgovernmental networks would seem to harbor considerable potential for researchers looking for insights into future directions in IR theory.

The Interface between Expert Knowledge and Politics in a Coproduction Model

JEAN-FRÉDÉRIC MORIN
Université libre de Bruxelles

AND

SEBASTIAN OBERTHÜR
Vrije Universiteit Brussel

The study of GEG can contribute toward debunking a persistent—but rarely explicit—myth, sometimes called the “linear model” (Koetz, Farrell, and Bridgewater 2012) or the “rational instrumental approach” (Gulbrandsen 2010). According to this myth, expert knowledge—that encompasses but is not limited to scientific knowledge—should precede politics. As such, GEG has significant theoretical and policy contributions to offer to other subfields of IR, such as international political economy. Constructivist scholarship so rarely claims policy-relevance that it would be unfortunate not to pay attention.

The myth that expert knowledge should precede politics can be broken down into three related and equally flawed assumptions. The first is ontological and opposes knowledge and politics as two antithetical spheres. According to this dichotomy, expert knowledge is perceived as being ideally consensual, neutral, and universal, while politics is deemed essentially conflictual, partial, and contextual. The second assumption is normative and argues for a strict division of labor, according to which experts should supply and policymakers consume knowledge. The third assumption is analytic and results from the tension between the previous two. It explains governance failures by the tendency of policymakers to follow their political interests rather than knowledge-based solutions.

On the face of it, GEG provides an easy case for the linear model since relevant environmental knowledge is often scientific knowledge, which is supposed to be the quintessential of consensual, neutral, and universal knowledge. Yet, a close look at GEG reveals that scientific evidence is not a pre-condition for political action. The 1987 Montreal Protocol, for example, was negotiated when the magnitude of the ozone layer degradation was still in dispute (Litfin 1995). Conversely, international cooperation on deforestation remains particularly weak although its causes and remedies are well known (Dimitrov 2006).

In some cases, knowledge can even impede cooperation. The profusion of scientific indicators and measurement techniques has complicated rather than facilitated negotiations over Baltic Sea pollution (Auer 2010). Likewise, recent studies suggest that scientific literacy does not necessarily increase consensus on environmental policies but may rather feed polarization (Kahan, Peters, Witlin, Slovic, Ouellette, Braman, and Mandel 2012). Thus, cooperation is not always driven by science, and obstacles to cooperation are not always the results of dirty political games.

One of the first challenges to the linear model came from the epistemic community literature in the early 1990s (Haas 1992). By portraying experts as political actors, driven by principled beliefs and pursuing a common policy enterprise, the introduction of the concept of epistemic community disputed the clear demarcation between expertise and politics. To be sure, the influence of

expertise on politics is not limited to cold, value-neutral technicalities. Scientists and other experts are political when they frame ozone depletion above the Antarctic as a “hole,” present a 2-degree temperature rise as a “reasonable target,” or name a geological period “anthropocene.” They are also political when they define what should be considered as credible, authoritative, and legitimate knowledge, be it a United Nations report, an Inuit pharmacopeia, or the controversial book *The Skeptical Environmentalist*.

The epistemic community literature, however, has been criticized for neglecting the political dynamics underlying the scientific process (Litfin 1995). While it successfully highlighted the direct involvement of expertise in politics, it has failed to theorize the politicization of knowledge and the continually contested boundaries between the two fields. Not only does political action mobilize expert knowledge, but the production of such knowledge is itself, as a social practice, contingent on the political context, and it inescapably possesses a political dimension. Several studies have found a bias in environmental knowledge toward the interests of the most powerful actors. Climate change research has initially focused on mitigation rather than adaptation (Parikh 1992); water science remains fascinated by the water war hypothesis but under-documents low sanitation coverage (Gupta and van der Zaag 2009); and desertification research emphasizes local as opposed to transnational causes (Martello 2004). As a result, most contemporary GEG scholars recognize that scientific knowledge and political order shape one another through a coproduction process (Lemos and Morehouse 2005). Research and international negotiations interact continuously, one orienting the agenda of the other. Best documented cases of such an interactive process are transboundary air pollution (Lidskog and Sundqvist 2002; Tuinstra, Hordijk, and Kroeze 2006), the ozone layer (for example, Parson 2004), and climate change regimes (for example, Miller and Edwards 2001). All conclude that science/expertise does not precede politics, but co-evolves with it.

The coproduction theory does not imply that all scientific claims have the same value, that we should abandon the distinction between expert knowledge and politics or that policy should not be grounded on scientific and other knowledge. Far from being cynical or relativist, it is rather a useful reminder that science and expert knowledge alone cannot solve political problems.

Several GEG scholars have argued that the values that inescapably underlie expert knowledge should be fully articulated and adjudicated through political means. The scientific method and the peer-review process cannot arbitrate ethical issues, such as the level of risk tolerance, the primacy of long-term objectives, the balance between individual and collective interests, or the distribution of effort and costs. Only politics can directly address these issues and guide research accordingly. If done properly, politics can ultimately enhance science’s saliency and legitimacy, without necessarily undermining its credibility. At the same time, science and research need to communicate their own culture of doubt and uncertainty to decision makers (for example, Andresen, Skodvin, Underdahl, and Wettstad 2000; Guston 2001; Cash, Clark, Alcock, Dickson, Eckley, Guston, Jaeger, and Mitchell 2003).

Consistent with the GEG institutionalist inclination mentioned in the introduction of this forum, GEG scholars have found that certain “boundary organizations,” that is, institutions at the interface between science and politics, can favor greater cooperation between the two fields, while keeping them separate. There are various types of boundary organizations, and their design affects their capacity to favor a fruitful science-policy dialogue and interaction. The highly interactive Intergovernmental Platform on Biodiversity and Ecosystem Services may be a promising—though unproven—model (Koetz et al. 2012), while the expert advisory processes of the Convention to Combat Desertification

are based on the linear model's premises and do not appear to design the science-politics relationship as a socially meaningful two-way street (Martello 2004).

Some boundary work can also be done outside of formal boundary organizations. More specific instruments favoring a science-policy dialogue include the joint identification of international environmental indicators (for example, Auer 2010), multi-stakeholder certification schemes (for example, Gulbrandsen 2010), mutual capacity building among researchers from developed and developing countries (for example, Sagar and VanDeveer 2006), deliberative forms of environmental democracy (for example, Hobson 2009), open discussion of the assumptions underlying scenarios and computer models (for example, Pulver and VanDeveer 2009), and collaborative panels for scientific assessment reports (for example, Weichselgartner and Kaspersen 2010). Social interaction between political and scientific actors can lead to mutual learning, shared understanding, and collective action.

Admittedly, there is no simple solution, and the design of the interface between expert knowledge and politics cannot be expected to be a panacea. During the transition from the Soviet Union to the Russian Federation, for example, increased involvement of scientists has not led to more environmental protection (Ostergren and Jacques 2002). But recent work in GEG studies suggests that expert knowledge which is socially and politically embedded tends to support innovative policy, stringent regulation, and international cooperation.

This idea of a coproduction of expert knowledge and politics, prevalent in GEG studies, could be transplanted to other subfields of IR in which authoritative knowledge claims are made. Hard science and scientific uncertainty are not scope conditions, notably because the boundary of the former and the assessment of the latter are socially constructed. For example, economics and economic policymaking could be analyzed under the coproduction framework. The influence of economic paradigms on policymaking is already well documented, especially Keynesian liberalism in the postwar period and neo-liberalism in the 1980s. Too often, however, paradigm shifts are presented as the result of exogenous shocks, such as the Great Depression in the 1930s or stagflation in the 1970s (Morin and Carta 2013). The prevalence of certain methods, assumptions, and paradigms in economics is rarely understood as a political process. International political economy is still largely caught in the linear model in which knowledge precedes politics.

From a policy angle, several issue areas may benefit from a proper boundary institution to appropriately arrange the knowledge-politics interface as a two-way street by facilitating the integration of expertise into politics and *vice versa*. The World Intellectual Property Organization (WIPO), for example, currently faces a legitimacy crisis. Several NGOs and developing countries have come to see WIPO as being biased toward the interests of intellectual property (IP) holders (Morin 2013). In this context, open debates on assumptions underlying IP law and economics, the establishment of an intergovernmental panel on IP's social and economic impacts, and more transparent capacity-building programs could increase WIPO's salience, legitimacy, and credibility.

It is unlikely that strengthening the interface between expert knowledge and politics in global governance would reduce uncertainty. It would rather make uncertainty apparent and inescapable and help allocate political responsibility where it belongs, as politically uncomfortable as that may be. The experience of GEG suggests that acknowledging and embracing the complex relations between expert knowledge and politics is necessary to make their relation mutually supportive.

Transparency as a Governance Mechanism

AMANDINE ORSINI
Université Saint-Louis

AND

FRANK BIERMANN
VU University Amsterdam

Transparency is a widely used concept in debates on international politics, from transnational anti-corruption campaigns to renewed requests for greater disclosure on health, finance, or even security issues. Calls for transparency date back at least to the League of Nations, when internationalists demanded open diplomacy. Yet, it is in the subfield of GEG, and its developments on nonstate actors as a key research topic (see introduction), where the practice and theory of transparency has made the most profound inroads (Gupta 2010a). GEG has been a particularly fertile ground for the development of informational governance (Mol 2008) and the rise of numerous transparency initiatives which have been analyzed in a rapidly developing literature. Importantly, current GEG research is also highly relevant for other IR subfields. For one, recent GEG research can help IR scholars to further refine the concept of transparency and to increase conceptual clarity and sophistication. Second, research on GEG has improved our understanding of the factors that determine the effectiveness of transparency as a governance tool in international politics.

Transparency can be defined as any attempt to reduce secrecy by bringing information to a wider audience. To be qualified as a transparency initiative, the circulating information must be accompanied by two other important features. First, the information to be made available must have been *previously inaccessible*. Second, the provision of this information must occur voluntarily, that is, *by mutual consent* (otherwise it is considered as denunciation, as for instance in the Wikileaks controversy).

Current GEG research further differentiates between two additional dimensions of transparency. First, the transparency of *processes*, an area that has been widely studied in international politics, especially regarding the openness of negotiations (Stasavage 2004). Second, *substantive transparency*, that is, the information that is actually reported or disclosed. Among mechanisms that seek to address substantive transparency, one can further distinguish between information that is provided to public authorities and information that targets consumers and the market. GEG has been particularly prolific in creating mechanisms in both categories.

To cite a few examples in the first category, the Protocol on Pollutant Release and Transfer Registers to the Aarhus Convention, in force since October 2009, is the first legally binding international instrument that grants access to pollution inventory information. Likewise, the Cartagena Protocol on Biosafety, finalized in 2000, adopted the key “prior informed consent” procedure (borrowed from the 1989 Basel Convention on hazardous wastes and the 1998 Rotterdam Convention on hazardous chemicals). By this procedure, countries exporting genetically modified organisms (GMOs) that can be introduced into the environment must inform importing states that their shipments contain such GMOs. A third example is the Nagoya Protocol on Access to Genetic Resources and Benefit

Sharing, which establishes an international certificate to be used as evidence that the genetic resources it covers have been accessed in accordance with domestic regulations. A final example is the REDD+ measures requiring states to disclose the terms and conditions of their agreements with forest-dependent communities (Lawlor, Weinthal, and Olander 2010).

In addition to these initiatives that involve public authorities, GEG is also full of private transparency initiatives adopted by and for the market (see Roger and Dauvergne above). Highly innovative and influential examples are the Forest Stewardship Council and the Marine Stewardship Council, two partnerships between environmental NGOs and business associations to develop informative labels that may help consumers identify products that have been produced with lower environmental and social impacts. Other private initiatives include the Equator principles adopted by a group of banks in 2003 and asking major borrowers to disclose the environmental risks of their project and consult with local stakeholders. The underlying assumption behind all these mechanisms is that transparency can improve environmental performance. Researchers in GEG have shown that what citizens ignore can often have a great impact on their lives (Tienhaara 2006). But for substantive transparency to hold its promise, scholars realized that at least three parameters had to be controlled closely.

First, recent research has shown that the quality of the disclosed information matters. Studies in the subfield of security had already established that too much information can have counterproductive effects (Finel and Lord 1999). Studies in GEG further indicate that the disclosed information should be as precise as possible. In the case of GMOs, for instance, exporting states only have to indicate that their shipments “may contain” GMOs, leaving the burden on importing states to develop complex infrastructures of sampling, testing, and verification to determine which GMO in which precise quantity is actually contained in the shipment (Gupta 2010b). In this case, substantial transparency serves the already powerful actors. A similar conclusion can be drawn from the Aarhus Convention. Here, a fair amount of decisions regarding the disclosed information is left to the discretion of the parties concerned, undermining the effectiveness of the agreement (Mason 2010). In the same line, transparency aimed at the broader public does not always work. One reason is that the citizens who are expected to use the disclosed information may not understand the figures or may not have the resources to hold governments and elites accountable (Haufler 2010).

Second, looking at who discloses the information is also relevant for making transparency work as a governance tool. In the Aarhus Convention, most provisions target public authorities as opposed to private firms, which leaves key information protected by corporate secrecy rules (Mason 2010). Often, the actions taken are more effective when they come from the players themselves, rather than when they are imposed by third parties. This has been the case for large institutional investors such as pension funds and mutual funds with regard to the adoption of environmental reporting (Helleiner 2011). Moreover, national and local contexts matter because they impact on the choice of the actors and the channels through which information will be transmitted and interpreted (Florini 2010).

Third, research shows that reputation is an important mechanism triggered by transparency. This explains why transparency directed at the market often works better than transparency aimed at public authorities. For instance, the reporting and disclosure of environmental information in the financial sector works mostly because reputational costs are involved (Helleiner 2011; Sievänen, Sumelius, Islam, and Sell 2013). However, this led some authors to suggest that disclosure of information to the market might not be appropriate for every policy domain.

For instance, carbon disclosure might not significantly contribute to emission reduction because of low reputational risk in several sectors (Harmes 2011). And yet, the reputational effects of transparency are increasingly visible in other domains of international politics such as energy politics with oil companies (Gillies 2010).

To conclude, over the past years, GEG has developed a very rich and diverse literature on the role of transparency in increasing the effectiveness and legitimacy of international governance. This research has also shown, however, that “governance by disclosure” (Gupta 2010a) is highly complex and that the effectiveness of transparency mechanisms heavily depends on information types, design attributes, and problem characteristics. Importantly, the use of transparency as a tool does not fundamentally change power relations. Often, transparency empowers the players who already had the capacities to master information and to interpret it (see Morin and Oberthür above). As a result, transparency cannot replace classical governmental regulations, and its use can only partially improve compliance and effectiveness (see Ohta and Ishii below).

Most GEG research on transparency builds on qualitative analysis of particular transparency initiatives. In the future, therefore, more systematic large-*n* analyses could help refine the state of knowledge. In addition, transparency tools could be compared to other governance solutions (environmental targets, environmental clauses in private contracts, etc.). By no means is transparency unique to the subfield of GEG. Accordingly, we see ample opportunities for mutual interchange between scholars of GEG and students of other subfields of IR. This exchange will hardly be a one-way street.

Disaggregating Effectiveness

HIROSHI OHTA

Waseda University

AND

ATSUSHI ISHII

Tohoku University

Existing institutions seem unable to bring about sustainable development (Biermann, Abbott, Andresen, Bäckstrand, Bernstein, Betsill, Bulkeley, Cashore, Clapp, Folke, Gupta, Gupta, Haas, Jordan, Kanie, Klavánková-Oravská, Lebel, Liverman, Meadowcroft, Mitchell, Newell, Oberthür, Olsson, Pattberg, Sánchez-Rodríguez, Schroeder, Underdal, Vieira, Vogel, Young, Brock, and Zondervan 2012). There is a clear consensus on the current state of institutional deficiencies, but there are many ongoing heated debates on how to improve them. For example, some argue that a World Environment Organization is necessary to improve GEG’s effectiveness, while others argue that it is better to cluster institutions according to different issue areas to generate synergistic effects among them (see Van de Graaf and De Ville above). This has led to the development of a fruitful literature within GEG on the effectiveness and determinants of international institutions.

Effectiveness is a complex and multidimensional concept (Young 1999). Initially, the level of compliance with and implementation of agreements was used

as a proxy to measure the level of effectiveness (Chayes and Chayes 1998; Weiss and Jacobson 2000). It is interesting to note that while Weiss and Jacobson emphasize the importance of both intention to comply and ability to comply, Chayes and Chayes underscore the lack of ability to comply with international regulation. They propose a “managerial” model of compliance with international regulations as an alternative to an “enforcement” model through examination of a wide range of cases across issue areas from arms control, human rights, labor, the environment, monetary policy, to international trade. In this way, they set a precedent for the application of regime effectiveness studies beyond environmental concerns.

Several dimensions of regime effectiveness have to be taken into consideration for its definition: behavioral change, efficiency and equity, problem solving, goal attainment, as well as procedural, constitutive, and evaluative effectiveness. Although the most obvious effect of international environmental regimes is to solve the problem in question, there are only few cases that clearly show any improvement of the environment except for the ozone regime and the international regulation of oil pollution of the sea. The latter regime became very effective after changing the regulatory approach from the well-defined rules regarding the discharge of ballast from tankers to a system of equipment standards and port facilities (Mitchell 1994).

Another way of looking at effectiveness is to observe the behavioral changes of states or private institutions that are concerned with certain international environmental regulations. However, we should be careful before claiming a causal relationship between an environmental regime and the observed behavioral change. For example, a careful assessment is called for regarding whether or not international efforts to regulate the production and consumption of ozone depletion substances such as chlorofluorocarbons (CFCs) spurred by the discovery of the ozone hole drove manufacturers to invest in research on CFC substitutes. An alternative explanation might hold that the producers reduced CFC production because of the incentive to gain profits from the sale of CFC substitutes, regardless of the presence or absence of international regulation (Bernauer 1995:373).

A classic mixed method analysis of regime effectiveness is the Miles Project (Miles, Underdal, Andresen, Wettestad, Birger, Birger Skjaereth, and Carlin 2002). Based on Underdal (2002), which proposes a framework setting dependent variables such as output, outcome and impact, and independent variables such as the character of problems—benign and malign—and problem-solving capacity, Miles and his colleagues came up with ordinal scales to measure regime effectiveness (Miles et al. 2002). On the other hand, the so-called Oslo-Potsdam solution proposes to evaluate regime effectiveness in terms of how close a regime is to the collective optimum, or in other words, how far the regime is from the non-regime counterfactual (Helm and Sprinz 2000). Mitchell emphasizes the importance of the per-unit-effort dimension in evaluating regime effectiveness in order to distinguish between easy and difficult (low-cost and high-cost) effectiveness improvement (Mitchell 2002).

The existing literature shows that the regime effectiveness concept can be transferred to non-environment literature, although the main study field is still environmental issues. Stokke even proposes an innovative approach in his analysis of Barents Sea fisheries management (Stokke 2012). His innovative approach disaggregates regimes into three components—cognitional, regulatory, and behavioral aspects—and argues that this can enhance the policy-relevance, comparability, and accuracy of effectiveness research in general. In particular, this approach facilitates generating counterfactual situations by narrowing the analytical focus to those disaggregated components. By applying this approach, he convincingly argues that the effectiveness of the Barents Sea fisheries governance

had gradually improved, with explanations of how the three regime components' effectiveness contributed to or constrained the aggregated effectiveness.

Other regime effectiveness studies in the non-environment field include Kelle's study on the Chemical Weapon Control (CWC) regime (Kelle 2004) and Galbreath and McEvoy's study on the European Minority Rights (EMR) regime (Galbreath and McEvoy 2012). The former evaluates the regime effectiveness of the CWC regime in terms of goal attainment and compliance and concludes that while the CWC regime seems to be effective as an infant regime, there is much potential for improvement in future implementation. The EMR regime was evaluated as having contributed to problem solving but with some limitations. Galbreath and McEvoy explain that the limitations are due to high malignancy of the minority rights problem, the weakness of normative persuasion by relevant international organizations (for example, Council of Europe), and the incongruence between policy implementation and state preferences.

Recent quantitative studies in search of correlations among multiple independent variables (for example, uncertainty and malignancy), some intervening variables (for example, improvement of knowledge), and regime effectiveness (behavioral change, problem solving, and compliance) are promising in terms of their application to different issue areas (Miles et al. 2002; Breitmeier, Young, and Zürn 2006). However, further sophistication is needed, for instance, by incorporating domestic politics, power relations, or other drivers of regime effectiveness into quantitative studies (Breitmeier, Underdal, and Young 2011). Similarly, regarding the utilization of the no-regime counterfactual for sorting out institutional effects, it is very important not to neglect "a number of driving forces—including a range of demographic, economic, political, and technological forces" (Young 2001:111) that affect the outcome. Additionally, a promising research direction regarding mixed method research would be to systematically combine quantitative and qualitative analysis by tracing the path from the independent to the dependent variable via a process-tracing technique so that the cause-and-effect relationship between those variables can be established together with statistical validity. Another promising research area would be to study the effectiveness of private regimes or authorities (see Roger and Dauvergne above). Gulbrandsen already indicates that the conceptualization of such effectiveness should be multidimensional and different from the problem-solving approach focusing exclusively on intergovernmental institutions and state behavior (Gulbrandsen 2005, 2010).

We are now able to produce some policy-relevant advice based on the existing literature (Young 2011), including that mentioned above. However, it is clear that in order to advance regime effectiveness research, we must have more quantitative and qualitative analysis which takes the suggestions above into account. We must not forget that by conducting effectiveness research, we are actually participating in the policy-making processes (see Morin and Oberthür above). At the same time, we believe that the aforementioned group of analyses helps us to remind ourselves of our responsibility for and the political implications of effectiveness research, and enables us to provide the policymaker communities with scientifically credible and policy-relevant knowledge of regime effectiveness.

References

- ABBOTT, KENNETH, AND DUCAN SNIDAL. (1998) Why States Act Through Formal International Organizations. *Journal of Conflict Resolution* 42: 3–32.
- AGGARWAL, VINOD, AND JONATHAN CHOW. (2010) The Perils of Consensus: How ASEAN's Meta-Regime Undermines Economic and Environmental Cooperation. *Review of International Political Economy* 17: 262–290.

- ALTER, KAREN J., AND SOPHIE MEUNIER. (2009) The Politics of International Regime Complexity. *Perspectives on Politics* 7: 13–24.
- ANDONOVA, LILIANA B. (2010) Public-Private Partnerships for the Earth: Politics and Patterns of Hybrid Authority in the Multilateral System. *Global Environmental Politics* 10: 25–53.
- ANDRESEN, STEINAR, TORA SKODVIN, ARILD UNDERDAL, AND JORGEN WETTSTAD. (2000) *Science and Politics in International Environmental Regimes: Between Integrity and Involvement*. New York: Manchester University Press.
- AUER, MATTHEW. (2010) Better Science and Worse Diplomacy: Negotiating the Cleanup of the Swedish and Finnish Pulp and Paper Industry. *International Environmental Agreements* 10: 65–84.
- BALSIGER, JÖRG, AND STACY VANDEVEER. (2012) Navigating Regional Environmental Governance. *Global Environmental Politics* 12: 1–17.
- BARON, DAVID P. (2009) Clubs, Credence Standards, and Social Pressure. In *Voluntary Programs: A Club Theory Perspective*, edited by Matthew Potoski and Aseem Prakash. Cambridge, MA: MIT Press.
- BARTLEY, TIM. (2007) Institutional Emergence in an Era of Globalization: The Rise of Transnational Private Regulation of Labor and Environmental Conditions. *American Journal of Sociology* 113: 297–351.
- BERNAUER, THOMAS. (1995) The Effect of International Environmental Institutions: How We Might Learn More. *International Organization* 49: 351–377.
- BERNSTEIN, STEVEN, AND BENJAMIN CASHORE. (2007) Can Non-State Global Governance Be Legitimate? An Analytical Framework. *Regulation & Governance* 1: 347–371.
- BETSILL, MICHELE, AND HARRIET BULKELEY. (2006) Cities and the Multilevel Governance of Global Climate Change. *Global Governance* 12: 141–159.
- BEYERLIN, ULRICH, PETER-TOBIAS STOLL, AND RÜDIGER WOLFRUM, Eds. (2006) *Ensuring Compliance with Multilateral Environmental Agreements—A Dialogue Between Practitioners and Academia*. Leiden/Boston: Martinus Nijhoff Publishers.
- BIERMANN, FRANK, AND PHILIPP PATTEBERG, Eds. (2012) *Global Environmental Governance Reconsidered*. Cambridge, MA: MIT Press.
- BIERMANN, FRANK, PHILIPP PATTEBERG, HARRO VAN ASSELT, AND FARIBORZ ZELLI. (2009) The Fragmentation of Global Governance Architectures: A Framework for Analysis. *Global Environmental Politics* 9: 14–40.
- BIERMANN, FRANK, KENNETH ABBOTT, STEINAR ANDRESEN, KARIN BÄCKSTRAND, STEVEN BERNSTEIN, MICHELE M. BETSILL, HARRIET BULKELEY, BENJAMIN CASHORE, JENNIFER CLAPP, CARL FOLKE, AARTI GUPTA, JOYEETA GUPTA, PETER M. HAAS, ANDREW JORDAN, NORICHIKA KANIE, TATIANA KLUVÁNKOVÁ-ORAVSKÁ, LOUIS LABEL, DIANA LIVERMAN, JAMES MEADOWCROFT, RONALD B. MITCHELL, PETER NEWELL, SEBASTIAN OBERTHÜR, LENNART OLSSON, PHILIPP PATTEBERG, ROBERTO SÁNCHEZ-RODRÍGUEZ, HEIKE SCHROEDER, ARILD UNDERDAL, SUSANA CAMARGO VIEIRA, COLEEN VOGEL, ORAN R. YOUNG, ANDREA BROCK, AND RUBEN ZONDERVAN. (2012) Navigating the Anthropocene. *Science* 335(6074): 1306–1307.
- BOARDMAN, ROBERT. (1997) Environmental Discourse and International Relations Theory: Towards a Proto-Theory of Ecosation. *Global Society* 11: 31–44.
- BOUTELIGIER, SOFIE. (2012) *Cities, Networks, and Global Environmental Governance: Spaces of Innovation, Places of Leadership*. London: Routledge.
- BOWMAN, MICHAEL. (2007) Towards a Unified Treaty Body for Monitoring Compliance with UN Human Rights Conventions? Legal Mechanisms for Treaty Reform. *Human Rights Law Review* 7: 225–249.
- BREITMEIER, HELMUT, ORAN R. YOUNG, AND MICHAEL ZÜRN. (2006) *Analyzing International Environmental Regimes: From Case Study to Database*. Cambridge, MA: The MIT Press.
- BREITMEIER, HELMUT, ARILD UNDERDAL, AND ORAN R. YOUNG. (2011) The Effectiveness of International Environmental Regimes: Comparing and Contrasting Findings from Quantitative Research. *International Studies Review* 13: 579–605.
- BRUNNÉE, JUTTA. (2006) Multilateral Environmental Agreements and the Compliance Continuum. In *Multilevel Governance of Global Environmental Change, Perspectives from Science, Sociology and the Law*, edited by Gerd Winter. Cambridge: Cambridge University Press.
- BULKELEY, HARRIET. (2005) Reconfiguring Environmental Governance: Towards a Politics of Scales and Networks. *Political Geography* 24: 875–902.
- CASH, DAVID, WILLIAM C. CLARK, FRANK ALCOCK, NANCY DICKSON, NOEL ECKLEY, DAVID GUSTON, JILL JAEGER, AND RON MITCHELL. (2003) Knowledge Systems for Sustainable Development. *Proceedings of the National Academy of Sciences* 100: 86–91.

- CASHORE, BENJAMIN, GRAEME AULD, AND DEANNA NEWSOM. (2004) *Governing Through Markets: Forest Certification and the Emergence of Non-State Authority*. New Haven: Yale University Press.
- CHAMBERS, BRADNEE. (2008) *Interlinkages and the Effectiveness of Multilateral Environmental Agreements*. Tokyo: United Nations University Press.
- CHARNOVITZ, STEVE. (2002) A World Environmental Organization. *Columbia Journal of Environmental Law* 23: 323–362.
- CHAYES, ABRAM, AND ANONIA HANDLER CHAYES. (1998) *The New Sovereignty: Compliance with International Regulatory Agreements*. Cambridge, MA: Harvard University Press.
- CHURCHILL, ROBIN, AND GEIL ULFSTEIN. (2000) Autonomous Institutional Arrangements in Multilateral Environmental Agreements: A Little-Noticed Phenomenon in International Law. *American Journal of International Law* 94: 623–659.
- CONCA, KEN. (2006) *Governing Water: Contentious Transnational Politics and Global Institution Building*. Cambridge, MA: MIT Press.
- DIMITROV, RADOSLAV. (2006) *Science and International Environmental Policy: Regimes and Nonregimes in Global Governance*. Lanham: Rowman & Littlefield.
- DINGWERTH, KLAUS, AND PHILIPP PATTERBERG. (2009) World Politics and Organizational Fields: The Case of Sustainability Governance. *European Journal of International Relations* 15: 707–743.
- DOHERTY, EMMA, AND HEIKE SCHROEDER. (2011) Forest Tenure and Multi-Level Governance in Avoiding Deforestation Under REDD+. *Global Environmental Politics* 11: 66–88.
- DYER, HUGH. (2010) International Relations Theory and the Environment. In *The International Studies Encyclopedia*, edited by Robert A. Denemark. Hoboken: Wiley.
- FALKNER, ROBERT. (2003) Private Environmental Governance and International Relations: Exploring the Links. *Global Environmental Politics* 3: 72–87.
- FINEL, BERNARD, AND KRISTIN M. LORD. (1999) The Surprising Logic of Transparency. *International Studies Quarterly* 43: 315–339.
- FITZMAURICE, MALGOSIA. (2009) Non-Compliance Procedures and the Law of Treaties. In *Non-Compliance Procedures and Mechanisms and the Effectiveness of International Environmental Agreements*, edited by Tullio Treves, Laura Pineschi, Attila Tanzi, Cesare Pitea, Chiara Ragni, and Francesca Romanin Jacur. The Hague: Asser Press.
- FLORINI, ANN. (2010) The National Context for Transparency-Based Global Environmental Governance. *Global Environmental Politics* 10: 120–131.
- GALBREATH, DAVID, AND JOANNE MCEVOY. (2012) *The European Minority Rights Regime: Towards a Theory of Regime Effectiveness*. Basingstoke: Palgrave Macmillan.
- GEHRING, THOMAS, AND BENJAMIN FAUDE. (2010) *Division of Labor Within Institutional Complexes and the Evolution of Interlocking Structures of International Governance: The Complex of Trade and the Environment*. Stockholm: Paper presented at the SGIR Conference.
- GIBSON, CLARK C., ELINOR OSTROM, AND T. K. AHN. (2000) The Concept of Scale and the Human Dimensions of Global Change: A Survey. *Ecological Economics* 32: 217–239.
- GILLIES, ALEXANDRA. (2010) Reputational Concerns and the Emergence of Oil Sector Transparency as an International Norm. *International Studies Quarterly* 54: 103–126.
- GÖRG, CHRISTOPH, AND FELIX RAUSCHMAYER. (2009) Multilevel Governance and the Politics of Scale: The Challenge of the Millennium Ecosystem Assessment. In *Environmental Governance: Power and Knowledge in a Local-Global World*, edited by Gabriela Kütting and Ronnie D. Lipschutz. London: Routledge.
- GREEN, JESSICA. (2008) Delegation and Accountability in the Clean Development Mechanism: The New Authority of Non-State Actors. *Journal of International Law and International Relations* 4: 21–55.
- GREEN, JESSICA. (2010a) Private Standards in the Climate Regime: The Greenhouse Gas Protocol. *Business and Politics* 12: 1–39.
- GREEN, JESSICA. (2010b) Private Authority on the Rise: A Century of Delegation in Multilateral Environmental Agreements. In *Transnational Actors in Global Governance*, edited by Christer Jönsson and Jonas Tallberg. Basingstoke: Palgrave Macmillan.
- GULBRANDSEN, LARS. (2005) The Effectiveness of Non-State Governance Schemes: A Comparative Study of Forest Certification in Norway and Sweden. *International Environmental Agreements: Politics, Law and Economics* 5: 125–149.
- GULBRANDSEN, LARS. (2010) *Transnational Environmental Governance: The Origins and Effects of the Certification of Forests and Fisheries*. Cheltenham: Edward Elgar.
- GUPTA, AARTI. (2010a) Transparency in Global Environmental Governance: A Coming of Age? *Global Environmental Politics* 10: 1–9.

- GUPTA, AARTI. (2010b) Transparency as Contested Political Terrain: Who Knows What About the Global GMO Trade and Why Does It Matter? *Global Environmental Politics* 10: 32–52.
- GUPTA, JOYEETA, AND PIETER VAN DER ZAAG. (2009) The Politics of Water Science: On Unresolved Water Problems and Biased Research Agendas. *Global Environmental Politics* 9: 14–23.
- GUSTON, DAVID. (2001) Boundary Organizations in Environmental Policy and Science: An Introduction. *Science, Technology, & Human Values* 24: 399–408.
- HAAS, PETER M. (1992) Epistemic Communities and International Policy Coordination. *International Organization* 46: 1–35.
- HAAS, PETER M. (2010) Environment in the Global Political Economy. In *The International Studies Encyclopedia*, edited by Robert A. Denemark. Hoboken: Wiley.
- HALE, THOMAS, AND CHARLES ROGER. (2012) *Orchestration and Transnational Climate Governance*. Paper presented at the Robert Schuman Centre for Advanced Study, Florence: European University Institute.
- HARMES, ADAM. (2011) The Limits of Carbon Disclosure: Theorizing the Business Case for Investor Environmentalism. *Global Environmental Politics* 11: 98–119.
- HAUFLER, VIRGINIA. (2010) Disclosure as Governance: The Extractive Industries Transparency Initiative and Resource Management in the Developing World. *Global Environmental Politics* 10: 53–73.
- HAVICE, ELIZABETH, AND LIAM CAMPLING. (2010) Shifting Tides in the Western and Central Pacific Ocean Tuna Fishery: The Political Economy of Regulation and Industry Responses. *Global Environmental Politics* 10: 89–114.
- HAWKINS, DARREN, DAVID LAKE, DANIEL NIELSON, AND MICHAEL TIERNEY. (2006) *Delegation and Agency in International Organizations*. Cambridge: Cambridge University Press.
- HELD, DAVID. (2000) Regulating Globalization? The Reinvention of World Politics. *International Sociology* 15: 394–408.
- HELLEINER, ERIC. (2011) Introduction: The Greening of Global Financial Markets? *Global Environmental Politics* 11: 51–53.
- HELLMANN, GUNTHER, Ed. (2003) Are Dialogue and Synthesis Possible in International Relations? *International Studies Review* 5: 123–153.
- HELM, CARSTEN, AND DETLEF F. SPRINZ. (2000) Measuring Effectiveness of International Environmental Regimes. *Journal of Conflict Resolution* 45: 630–652.
- HEY, ELLEN. (2007) International Institutions. In *The Oxford Handbook of International Environmental Law*, edited by Daniel Bodansky, Jutta Brunnée, and Ellen Hey. Oxford: Oxford University Press.
- HOBSON, KERSTY. (2009) On the Modern and the Nonmodern in Deliberative Environmental Democracy. *Global Environmental Politics* 9: 64–80.
- JASANOFF, SHEILA, AND MARYBETH LONG MARTELLO, Eds. (2004) *Earthly Politics: Local and Global in Environmental Governance*. Cambridge, MA: MIT Press.
- JOHNSON, TANA, AND JOHANNES URPELAINEN. (2012) A Strategic Theory of Regime Integration and Separation. *International Organization* 66: 645–677.
- KAHAN, DAN M., ELLEN PETERS, MAGGIE WITTLIN, PAUL SLOVIC, LISA LARRIMORE OUELLETTE, DONALD BRAMAN, AND GREGORY MANDEL. (2012) The Polarization Impact of Science Literacy and Numeracy on Perceived Climate Change Risks. *Nature Climate Change* 2: 732–735.
- KELLE, ALEXANDER. (2004) Assessing the Effectiveness of Security Regimes—The Chemical Weapons Control Regime’s First Six Years of Operation. *International Politics* 41: 221–242.
- KEOHANE, ROBERT, AND DAVID VICTOR. (2011) The Regime Complex for Climate Change. *Perspectives on Politics* 9: 7–23.
- KOEHN, PETER. (2008) Underneath Kyoto: Emerging Subnational Government Initiatives and Incipient Issue-Bundling Opportunities in China and the United States. *Global Environmental Politics* 8: 53–77.
- KOETZ, THOMAS, KATHARINE FARRELL, AND PETER BRIDGEWATER. (2012) Building Better Science-Policy Interfaces for International Environmental Governance: Assessing Potential within the Intergovernmental Platform for Biodiversity and Ecosystem Services. *International Environmental Agreements* 12: 1–21.
- KOREMENOS, BARBARA, CHARLES LIPSON, AND DUNCAN SNIDAL. (2001) The Rational Design of International Institutions. *International Organization* 55: 761–799.
- LAWLOR, KATHLEEN, ERIKA WEINTHAL, AND LYDIA OLANDER. (2010) Institutions and Policies to Protect Rural Livelihoods in REDD Regimes. *Global Environmental Politics* 10: 1–11.
- LEMONS, MARIA CARMEN, AND B. J. MOREHOUSE. (2005) The Co-Production of Science and Policy in Integrated Climate Assessments. *Global Environmental Change* 15: 57–68.

- LIDSKOG, ROLF, AND GÖRAN SUNDQVIST. (2002) The Role of Science in Environmental Regimes: The Case of LRTAP. *European Journal of International Relations* 8: 77–101.
- LITFIN, KAREN. (1995) Framing Science: Precautionary Discourse and the Ozone Treaties. *Millennium* 24: 251–277.
- MARSTON, SALLIE. (2000) The Social Construction of Scale. *Progress in Human Geography* 24: 219–242.
- MARTELLO, MARYBETH LONG. (2001) A Paradox of Virtue? “Other” Knowledge and Environment-Development Politics. *Global Environmental Politics* 1: 114–141.
- MARTELLO, MARYBERTH LONG. (2004) Expert Advice and Desertification Policy: Past Experience and Current Challenges. *Global Environmental Politics* 4: 85–106.
- MASON, MICHAEL. (2010) Information Disclosure and Environmental Rights: The Aarhus Convention. *Global Environmental Politics* 10: 10–31.
- MCCARTHY, JAMES. (2005) Scale, Sovereignty, and Strategy in Environmental Governance. *Antipode* 37: 731–753.
- MILES, EDWARD, ARILD UNDERDAL, STEINAR ANDRESEN, JORGEN WETTESTAD, JON BIRGER, JON BIRGER SKJÆRSETH, AND ELAINE CARLIN. (2002) *Environmental Regime Effectiveness: Confronting Theory with Evidence*. Cambridge, MA: MIT Press.
- MILLER, CLARK, AND PAUL EDWARDS. (2001) *Changing the Atmosphere. Expert Knowledge and Environmental Governance*. Cambridge, MA: MIT Press.
- MITCHELL, RONALD. (1994) *International Oil Pollution at Sea: Environmental Policy and Treaty Compliance*. Cambridge, MA: MIT Press.
- MITCHELL, RONALD. (2002) A Quantitative Approach to Evaluating International Environmental Regimes. *Global Environmental Politics* 2: 58–83.
- MITCHELL, RONALD. (2007) Compliance Theory, Compliance, Effectiveness, and Behaviour Change in International Environmental Law. In *The Oxford Handbook of International Environmental Law*, edited by Daniel Bodansky, Jutta Brunnée, and Ellen Hey. Oxford: Oxford University Press.
- MOL, ARTHUR. (2008) *Environmental Reform in the Information Age: The Contours of Informational Governance*. New York: Cambridge University Press.
- MORIEN, JOHN. (2011) Reforming United Nations Human Rights Treaty Monitoring Reform. *Netherlands International Law Review* 58: 295–333.
- MORIN, JEAN-FRÉDÉRIC. (2013) *Mapping Prevailing Ideas on Intellectual Property*. Geneva: ICTSD.
- MORIN, JEAN-FRÉDÉRIC, AND CATERINA CARTA. (2013) Overlapping and Evolving European Discourses on Market Liberalization. *British Journal of Politics & International Relations*.
- MORIN, JEAN FRÉDÉRIC, AND AMANDINE ORSINI. (2013) Regime Complexity and Policy Coherence: Introducing a Co-Adjustments Model. *Global Governance* 19: 41–51.
- MORIN, JEAN FRÉDÉRIC, AND AMANDINE ORSINI. (2013) Policy Coherency and Regime Complexes: The Case of Genetic Resources. *Review of International Studies* (forthcoming).
- NAJAM, ADIL. (2003) The Case Against a New International Environmental Organization. *Global Governance* 9: 367–384.
- OBERTHÜR, SEBASTIAN, AND THOMAS GEHRING. (2011) Institutional Interaction: Ten Years of Scholarly Development. In *Managing Institutional Complexity: Regime Interplay and Global Environmental Change*, edited by Sebastian Oberthür and Olav Schram Stokke. Cambridge, MA: MIT Press.
- OBERTHÜR, SEBASTIAN, AND OLAV SCHRAM STOKKE. (2011) *Managing Institutional Complexity: Regime Interplay and Global Environmental Change*. Cambridge, MA: MIT Press.
- O’NEILL, KATE, ERIKA WEINTHAL, KIMBERLY MARION SUISEEYA, STEVEN BERNSTEIN, AVERY COHN, MICHAEL STONE, AND BENJAMIN CASHORE. (2013) Methods and Global Environmental Governance. *Annual Review of Environment and Natural Resources* (forthcoming).
- OSTERGREN, DAVID, AND PETER JACQUES. (2002) A Political Economy of Russian Nature Conservation Policy: Why Scientists Have Taken a Back Seat. *Global Environmental Politics* 2: 102–124.
- PARIKH, JYOTI K. (1992) IPCC Strategies Unfair to the South. *Nature* 360: 507–508.
- PARSON, EDWARD. (2004) *Protecting the Ozone Layer: Science and Strategy*. Oxford: Oxford University Press.
- PINESCHI, LAURA. (2009) Non-Compliance Procedures and the Law of State Responsibility. In *Non-Compliance Procedures and Mechanisms and the Effectiveness of International Environmental Agreements*, edited by Tullio Treves, Laura Pineschi, Attila Tanzi, Cesare Pitea, Chiara Ragni, and Francesca Romanin Jacur. The Hague: Asser Press.
- PRAKASH, ASEEM, AND MATTHEW POTOSKI. (2006) *The Voluntary Environmentalists: Green Clubs, ISO 14001, and Voluntary Environmental Regulations*. Cambridge: Cambridge University Press.
- PULVER, SIMONE, AND STACY VANDEVEER. (2009) Thinking About Tomorrows: Scenarios, Global Environmental Politics, and Social Science Scholarship. *Global Environmental Politics* 9: 1–13.

- RAUSTIALA, KAL. (2012) Institutional Proliferation and the International Legal Order. In *Interdisciplinary Perspectives on International Law and International Relations: The State of the Art*, edited by Jeffrey L. Dunoff and Mark A. Pollack. Cambridge: Cambridge University Press.
- RAUSTIALA, KAL, AND DAVID VICTOR. (2004) The Regime Complex for Plant Genetic Resources. *International Organization* 58: 277–309.
- REED, MAUREEN, AND SHANNON BRUYNEEL. (2010) Rescaling Environmental Governance, Rethinking the State: A Three-Dimensional Review. *Progress in Human Geography* 34: 646–653.
- ROMANO, CESARE. (2007) International Dispute Settlement. In *The Oxford Handbook of International Environmental Law*, edited by Daniel Bodansky, Jutta Brunnée, and Ellen Hey. Oxford: Oxford University Press.
- ROSENDAL, KRISTIN. (2001) Overlapping International Regimes: The Case of the Intergovernmental Forum on Forests Between Climate Change and Biodiversity. *International Environmental Agreements* 1: 447–468.
- RUEF, MARTIN. (2002) Strong Ties, Weak Ties and Islands: Structural and Cultural Predictors of Organizational Innovation. *Industrial and Corporate Change* 11: 427–449.
- SAGAR, AMUH, AND STACY VANDEVEER. (2006) Capacity Development for the Environment, Broadening the Scope. *Global Environmental Politics* 5: 14–22.
- SELIN, HENRIK. (2010) *Global Governance of Hazardous Chemicals: Challenges of Multilevel Management*. Cambridge, MA: MIT Press.
- SELIN, HENRIK, AND STACY VANDEVEER, Eds. (2009) *Changing Climates in North American Politics: Institutions, Policymaking and Multilevel Governance*. Cambridge, MA: MIT Press.
- SIEVÄNEN, RIIKKA, JOHN SUMELIUS, K. M. ZAHIDUL ISLAM, AND MILA SELL. (2013) From Struggle in Responsible Investment to Potential to Improve Global Environmental Governance Through UN PRI. *International Environmental Agreements. Politics, Law and Economics* 13: 197–217.
- SLAUGHTER, ANNE-MARIE. (2001) The Accountability of Government Networks. *Indiana Journal of Global Legal Studies* 8: 347–367.
- SMITH, ADAM. (1766) *Lectures on Jurisprudence*. Full text available at <http://oll.libertyfund.org/>. (Accessed September 2, 2013.)
- SMITH, STEVE. (1993) The Environment on the Periphery of International Relations: An Explanation. *Environmental Politics* 2: 28–45.
- SMITH, TIMOTHY M., AND MIRIAM FISCHLEIN. (2010) Rival Private Governance Networks: Competing to Define the Rules of Sustainability Performance. *Global Environmental Change* 20: 511–522.
- STASAVAGE, DAVID. (2004) Open-Door or Closed-Door? Transparency in Domestic and International Bargaining. *International Organization* 58: 667–703.
- STEIN, MICHAEL ASHLEY, AND JANET LORD. (2010) Monitoring the Convention on the Rights of Persons with Disabilities: Innovations, Lost Opportunities, and Future Potential. *Human Rights Quarterly* 32: 689–728.
- STOKKE, OLAV. (2012) *Disaggregating International Regimes: A New Approach to Evaluation and Comparison*. Cambridge, MA: MIT Press.
- STRANGE, SUSAN. (1996) *The Retreat of the State: The Diffusion of Power in World Politics*. Cambridge: Cambridge University Press.
- SU, XIAOBO. (2012) Rescaling the Chinese State and Regionalization in the Great Mekong Subregion. *Review of International Political Economy* 19: 510–527.
- TIENHAARA, KYLA. (2006) What You Don't Know Can Hurt You: Investor-State Disputes and the Protection of the Environment in Developing Countries. *Global Environmental Politics* 6: 73–100.
- TREVES, TULLIO, LAURA PINESCHI, ATTILA TANZI, CESARE PITEA, CHIARA RAGNI, AND FRANCESCA ROMANIN JACUR, Eds. (2009) *Non-Compliance Procedures and Mechanisms and the Effectiveness of International Environmental Agreements*. The Hague: Asser Press.
- TUINSTRA, WILLEMJIN, LEEN HORDIJK, AND CAROLIEN KROEZE. (2006) Moving Boundaries in Transboundary Air Pollution: Co-Production of Science and Policy Under the Convention of Long-Range Transboundary Air Pollution. *Global Environmental Change* 16: 349–363.
- UNDERDAL, ARILD. (2002) One Question, Two Answers. In *Environmental Regime Effectiveness*, edited by Edward Miles, Steinar Andresen, Elaine M. Carlin, Jon Birger Skjærseth, Arild Underdal, and Jørgen Wettestad. Cambridge, MA: MIT Press.
- UZZI, BRIAN, AND JARRETT SPIRO. (2005) Collaboration and Creativity: The Small World Problem. *American Journal of Sociology* 111: 447–504.
- VISSEREN-HAMAKERS, INGIRD, BAS ARTS, AND PIETER GLASBERGEN. (2011) Interaction Management by Partnerships: The Case of Biodiversity and Climate Change. *Global Environmental Politics* 11: 89–107.

- VON MOLTKE, KONRAD. (2001) On Clustering International Environmental Agreements. Available at http://search.iisd.org/pdf/trade_clustering_meas.pdf. (Accessed January 21, 2013.)
- WEICHELGARTNER, JUERGEN, AND ROGER KASPERSON. (2010) Barriers in the Science-Policy-Practice Interface: Toward A Knowledge-Action-System in Global Environmental Change Research. *Global Environmental Change* 20: 266–277.
- WEISS, EDITH BROWN, AND HAROLD JACOBSON, Eds. (2000) *Engaging Countries: Strengthening Compliance with International Environmental Accords*. Cambridge, MA: MIT Press.
- WHALLEY, JOHN, AND BEN ZISSIMOS. (2001) What Could a World Environmental Organization Do? *Global Environmental Politics* 1: 29–34.
- WINTER, GERT, Ed. (2006) *Multilevel Governance of Global Environmental Change: Perspectives from Science, Sociology and Law*. Cambridge: Cambridge University Press.
- YOUNG, ORAN. (1996) Institutional Linkages in International Society: Polar Perspectives. *Global Governance* 2: 1–24.
- YOUNG, ORAN. (1997) *Global Governance: Drawing Insights from the Environmental Experience*. Cambridge, MA: MIT Press.
- YOUNG, ORAN, Ed. (1999) *The Effectiveness of International Environmental Regimes: Causal Connections and Behavioral Mechanisms*. Cambridge, MA: MIT Press.
- YOUNG, ORAN. (2001) Inferences and Indices: Evaluating Effectiveness of International Environmental Regimes. *Global Environmental Politics* 1: 99–121.
- YOUNG, ORAN. (2002) *The Institutional Dimensions of Environmental Change: Fit, Interplay, and Scale*. Cambridge, MA: MIT Press.
- YOUNG, ORAN. (2010) *Institutional Dynamics: Emergent Patterns in International Environmental Governance*. Cambridge, MA: MIT Press.
- YOUNG, ORAN. (2011) Effectiveness of International Environmental Regimes: Existing Knowledge, Cutting-Edge Themes, and Research Strategies. *Proceedings of the National Academy of Sciences* 108: 19853–19860.
- YOUNG, ORAN, LESLIE L. KING, AND HEIKE SCHROEDER. (2008) *Institutions and Environmental Change. Principal Findings, Applications, and Research Frontiers*. Cambridge, MA: MIT Press.