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Avoiding Institutional Failure: Risk Factors and Response Strategies

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Introduction

How to avoid institutional failure? Adapting resource management institutions to the challenges arising from climate-induced or other changes in the spatial distribution of marine stocks is one variant of this broader problem.[1] Efforts to create, adapt and operate governance systems to address transboundary environmental problems frequently produce results that are disappointing or even end in outright failure. On the other hand, some regimes are widely regarded as successes. The evidence supporting these propositions (Young 2011) includes qualitative accounts (Speth 2004; Park, Conca and Finger 2008; Hale, Held and Young 2013) as well as quantitative analyses (Miles et al. 2002; Breitmeier, Young and Zürn 2006; Breitmeier, Underdal and Young 2011).

How can we organize a search for factors to account for this diversity of outcomes, identifying causes of failure and conditions for solving, or at least alleviating, a range of environmental problems? This chapter explores the proposition that efforts to address environmental problems successfully over time must avoid two institutional pitfalls – reductionism and overload. We begin with a brief review of the nature of these perils, and then move on to a more extensive account of risk factors and response strategies. Thus, we focus on the third research question posed in Chapter 1, concerning ways in which actors engaged in international governance can create, adapt or implement institutional arrangements to retain high levels of problem solving. Our account should be of interest not only to analysts seeking to explain cases of success and failure but also to practitioners involved in governance systems for dealing with various environmental problems – including sustainable fisheries management under changing climatic or ecosystem conditions.

Twin perils: reductionism and overload

Institutional bargaining and the implementation of the resultant regimes feature dynamics that individual participants are unable to manage or control on their own (Young 1994). Those negotiating the terms of new or restructured regimes must walk

a fine line between the pursuit of divergent interests, centred on maximizing their individual gains, and respect for common interests in an outcome that all participants prefer to a no-agreement situation. They must learn the art of navigating in the realm of 'mixed-motive interactions (Schelling 1960), producing coherent results rather than contradictory provisions or vague formulas designed to paper over serious disagreements. Much the same is true of the efforts of those responsible for operating governance systems once these are put in place. Common pitfalls in such processes take the forms of reductionism and overload.

Institutional reductionism occurs when those responsible for creating and implementing environmental regimes strip away many of the complexities of real-world situations in their desire to achieve closure on the terms of an agreement. In dealing with marine fisheries, for example, this may involve focusing on efforts to achieve maximum sustainable yields from specific stocks of fish, while setting aside a host of other issues relating to such matters as multiple species interactions, ecosystem dynamics, distributive justice, interactions with other regimes and the impacts of climate change. Although the temptation to engage in reductionism is easy to understand, the result is likely to be the creation of regimes that fail to solve problems and may even become dead letters.

Institutional overload is the mirror image of reductionism. It occurs when those responsible for designing or adapting regimes strive to incorporate all relevant factors in an effort to respond to the complexities of real-world situations. Understandable as this motivation may be, it leads to unwieldy institutional arrangements when the regimes created become too complex (Birch 1984). To continue with the marine fisheries example, it may make sense to include a concern for interactions among species and the dynamics of ecosystems, but it is asking too much to expect a fisheries regime to incorporate provisions dealing with dead zones, marine pollutants such as plastic debris and the impacts of changes in water temperatures and ocean acidification. Beyond a certain level of complexity, the result will be overload leading to gridlock.

Of course, success in solving problems and in avoiding the impacts of reductionism and overload are both matters of degree. Regimes may help to alleviate problems, even when they do not produce clear-cut solutions. Both gridlock and overload may hamper the performance of regimes to a greater or lesser degree, without necessarily making them irrelevant. But the perils of institutional reductionism and institutional overload can wreak havoc with efforts to create regimes capable of solving environmental problems, even when negotiators and administrators are aware of and understand the dangers associated with these perils.

Risk factors and response strategies

We are not in a position to quantify the incidence of success and failure in efforts to solve environmental problems. But regimes that yield disappointing results or end in failure may be more common than successful outcomes as regards efforts to devise solutions to international or transboundary environmental problems. On the other hand, there are also some success stories: regimes that have proven highly effective in

addressing the problems that motivated their initial creation and that have remained viable over time (Breitmeier, Underdal and Young 2011). Examples include the Antarctic Treaty System, dating back to 1959 (Stokke and Vidas 1996), and the regime dealing with the threat to the Earth's stratospheric ozone layer articulated in the 1987 Montreal Protocol on Substances that Deplete the Ozone Layer, together with later amendments (Parson 2003).

This makes it important to identify the forces – risk factors – likely to propel governance systems toward reductionism or overload, and to consider response strategies that can help negotiators and administrators to avoid these pitfalls in specific cases. How can negotiations slide into over-simplification or fall prey to excessive complexity, without anyone sounding the alarm or taking effective steps to prevent movement along the slippery slopes of reductionism or overload? Are there forces endemic to institutional bargaining or to regime implementation that push participants in one direction or the other in ways difficult to anticipate, challenging to monitor, or hard to counter effectively in a world of actors motivated primarily by self-interest? Are there procedures that can help participants in such processes to find common ground in avoiding these perils, without compromising their bargaining strength or administrative capacity in ways that limit their ability to maximize individual gains?

The risk factors abound. For purposes of analysis here, we find it helpful to group risk factors into familiar categories dealing with the *character of the problem*, the *broader setting* and *institutional design*. In each case, we argue, charting a course that avoids the perils of reductionism and overload constitutes a necessary condition for successful problem solving.

In the following sections, we analyse risk factors that illustrate each of the three broad categories. Focusing on two factors in each category, we explore the nature of the risk and the mechanisms through which it may lead to results that run afoul of the perils of reductionism or overload. We also offer an assessment of response strategies that can prove helpful to those seeking to steer a course that minimizes the dangers of falling into the traps associated with the twin perils. Further research should focus on testing our hypothesis: that devising an appropriate response strategy constitutes a necessary condition for success in solving environmental problems.

Problem characteristics

Problems that give rise to a need for governance differ in important ways. Scholars have emphasized distinctions among collective-action problems, externalities and value conflicts, or used these distinctions to differentiate variation in the 'malignancy' of the problem (Underdal 2002). Another set of differences regarding the character of the problem has recently come into focus. While the earlier distinctions remain important, we focus in this section on risk factors relating to matters of problem dynamism and complexity, offering a preliminary account of response strategies relevant to alleviating the impact of these factors.

Dynamism

Dynamism is a matter of the extent to which the relevant systems are subject to change, and the types of change most commonly encountered. A critical concern here is the danger of institutional lock-in, which can make it difficult or impossible for those responsible for operating a regime to adapt to changing conditions, especially if the changes are nonlinear in character or evolve rapidly.

The peril of institutional reductionism is illustrated by the common practice of establishing fixed division keys in fisheries, usually based on some combination of historical fishing and zonal attachment (measured by the share of the stock biomass that occurs over time within the exclusive economic zone (EEZ) of any given coastal state) (see Chs. 8 and 14; also Henriksen and Hoel 2011). Like many reductionist practices, fixed division keys have significant merits in some circumstances. They are intended to facilitate annual quota negotiations by allowing the parties to concentrate on setting the total allowable catch in light of scientific advice, avoiding the unsustainable practice of resolving problems of allocation by raising allowable-harvest levels (Stokke 2000).

However, highly dynamic stock developments may undermine the legitimacy of such fixed division keys – for instance, when abundance or migratory patterns change in ways that make a stock available to newcomers that have no commitment to the existing regime. This is what happened around 2007 when Northeast Atlantic mackerel (*Scomber scombrus*) spread north- and westward and became available in large quantities within the EEZs of Iceland, the Faroe Islands and even Greenland (see Chs. 6, 7 and 14). None of these states and territories had a long history of exploiting this resource, whereas those that did – the EU, Norway and to some extent Russia – were not convinced that the new migratory pattern would prove lasting. That made them reluctant to recognize the newcomers as coastal states regarding this stock with legitimate claims to access to the bargaining table and shares of the quota.

Such rigidity with respect to newcomers is quite typical of regional fisheries management regimes, often embedded in procedural rules that grant every existing member a right to veto the acceptance of a new member (Serdy 2016; see Ch. 2). In the mackerel case, the combination of allocative rigidity among the traditional user-states and lack of commitment to the existing fixed-key arrangement among the newcomers rapidly led to a breakdown in negotiations, resulting in years of unilateral quotas and total harvesting pressure well in excess of scientific recommendations (see Ch. 7; also Spijkers and Boonstra 2017).

Important as it is to avoid the time-inconsistency problem that looms whenever benefit- or burden-sharing arrangements are simple and rigid, problems also arise if adaptation procedures are excessively complex or demanding. Consider the attempts by the EU and Norway to build adaptive capacity into their allocation system for North Sea herring (*Clupea herengus*), a major pelagic stock in the region, supporting annual catches that fluctuate widely. Because the spatial distribution of this stock expands into Norway's EEZ when the spawning stock grows, a sliding-scale division key was negotiated in 1986 that gave Norway an increased share of the quota whenever the spawning stock exceeded certain pre-defined thresholds. This dynamic allocation

system appeared to be a reasonable operationalization of the equally reasonable zonal attachment principle. Observers and practitioners saw it as part of a promising trend in which difficult allocation questions were tackled in an increasingly science-based manner – noting, however, that it might also encourage politicization of scientific work (Engesæter and Hamre 1993).

In practice, however, the sliding scale applied in the allocation of North Sea herring created massive problems during annual quota negotiations, not least by generating strong incentives for the parties to question the scientific evidence whenever the spawning stock was assessed as being close to one of the pre-defined thresholds. After years of intensive search for alternatives, the sliding scale was finally replaced with a fixed key, which is still in place. Science-based adaptation of the quota allocation to dynamic zonal-attachment developments was intended to make the regime more legitimate and robust, but instead it generated institutional overload that undermined sustainable management.

How can those operating international institutions in highly dynamic issue-areas acquire sufficient adaptive capacity to deal with changes that make the exit option attractive to one or more of the parties, without undermining other core management tasks like the generation and provision of scientific advice? Here it is useful to consider the characteristics of strategies pursued by regional fisheries management regimes that have succeeded in adopting regulatory measures that reflect the best scientific advice even in periods when bargaining power shifts among members due to changes in zonal attachment. At least three observations seem relevant in this regard.

First, longstanding allocative arrangements are likely to be less susceptible to requests for renegotiation when zonal attachment changes in favour of one of the parties. A clear example is the more than forty-year-old agreement between Norway and Russia on equal sharing of the world's largest cod stock, Northeast Arctic cod (*Gadus morhua*) (see Chs. 8 and 14; also Stokke 2012). During the 2010s, this stock shifted north- and eastward and is now considerably more abundant in the Russian zone than previously (see Ch. 6). However, there have been no signs of Russian industry organizations or experts pushing the Russian member of the Joint Norwegian–Russian Fisheries Commission (JNRFC) to request a greater share of the quota (see Ch. 8).

A second relatively successful response strategy has been applied in the arrangement for managing Icelandic capelin (*Mallotus villosus*) in the Nordic Seas, by making their allocation keys more flexible by fixing them for shorter periods (Kvamsdal et al. 2016).

Third, the fixed allocation of North Sea herring agreed between Norway and the EU in 1998 includes a flexibility mechanism whereby the parties may trade part of their herring quota for access to other species in the region, similar to the mechanism in place in the Norwegian–Russian arrangement (Stokke 2012).

Thus, alternative paths exist for avoiding reductionism as well as overload, even in highly dynamic systems. Resilience may derive from a long track record, from benefit- or burden-sharing arrangements that are explicitly defined as temporary, or from provisions for institutional flexibility that allow states to capitalize on differences in how they value those burdens or benefits.

Complexity

Complexity is a measure of the extent to which a problem is linked to an array of issues extending beyond the core concern itself (Underdal 2010). In the case of fisheries, for example, questions arise regarding whether the relevant fish stocks are affected by developments such as increases in the temperature of the water column or the runoff of nutrients or other land-based marine pollutants that cause the spread of dead zones. Fishing operations can themselves be a significant driver of certain environmental problems, such as the destruction of benthic communities or coral reefs. In biophysical terms, problems may be more or less self-contained with regard to their links to broader systems, and the complexity of those broader systems may vary in terms of factors like hyperconnectivity, nonlinearity, directional change, and the prevalence of unexpected developments arising as emergent properties (Young 2017a, 2017b). Highly complex biophysical systems are especially demanding with regard to governance arrangements when the activities relevant to problem solving fall under the authority of different sectors of government.

The reductionist inclination is to seek to encapsulate each of these problems in order to make negotiations tractable. We humans are accustomed to thinking in terms of systems that are relatively simple. Pressure toward reductionism is likely to be reinforced if the international level of governance situates regulatory authority over various ecosystem components in separate institutions involving different sectors of government. Such separation is common in oceans management, because many international fisheries regimes came into existence before regimes for marine environmental protection emerged.

For instance, the fact that the pre-existing North-East Atlantic Fisheries Commission (NEAFC) already possessed management authority over high-seas harvesting operations goes a long way toward explaining why the mandate of the OSPAR Commission for the Protection of the Marine Environment of the North-East Atlantic excludes 'questions relating to the management of fisheries' (OSPAR Convention, Preamble and Article 4). Savings clauses such as this, protecting commitments already entered into in previous agreements, are common in international environmental diplomacy (van Asselt 2011) and often serve to promote institutional reductionism.

Protection of sector authority by means of savings clauses is also showcased in UN General Assembly Resolution 72/249 on the mandate of the current negotiations on conservation of marine biodiversity beyond national jurisdiction (BBNJ): '[this] process and its results should not undermine existing relevant legal instruments and frameworks and relevant global, regional and sectoral bodies' (UNGA 2017). However, it is clear that any new arrangement capable of making a difference with respect to biodiversity beyond national jurisdiction will have significant implications for existing regimes that deal with marine fisheries, commercial shipping, deep seabed mining and (potentially) certain aspects of oil and gas development.

To illustrate the peril of reductionism: when alerted by the OSPAR Commission to the need to protect rare and threatened cold-water coral reefs from the effects of bottom trawling, the NEAFC responded by pointing out that international measures constraining fisheries operations were an exclusive NEAFC competence, and that

aggregation with environmental-protection interests should be dealt with at the national level (Kvalvik 2012). This turf-defensive approach increased the risk that measures taken under the two regimes, involving largely the same set of states, would prove incoherent with respect to area protection. It also implied that the regional institution with greatest expertise in defining and applying criteria for area protection would not be able to influence the economic activity that entailed the greatest risk of damaging the coral reefs.

That said, taking the opposite approach, seeking to endow an environmental institution with regulatory powers over fisheries could easily produce an important variant of institutional overload: unwillingness on the part of important member-states to cede authority to the international body due to uncertainty about its future priorities among the concerns involved. In the fisheries sector, states have typically granted regional management organizations access to their national fisheries research capabilities, wide regulatory authority regarding the conduct of harvesting operations, and (frequently) the capacity to operate reporting, monitoring and inspection procedures that enhance transparency on harvesting activities in national and high-seas areas (Stokke 2019; see Ch. 2). Thus, the potential advantages of expanding the functional scope of an international body must be weighed against the risk that states will be less prepared to cede regulatory and enforcement authority to an international body that is operated, or significantly influenced by, sectors of government that are inclined to prioritize preservation over resource use.

One response strategy aimed at steering a course between the reductionist peril (incoherent regulation) and the overload peril (an institution that is functionally broad but procedurally weak) involves setting up procedures in support of interplay management, allowing those who operate distinct institutions to improve the interaction among them (Stokke 2020). Such procedures may include coordinated decision-making; but more frequently they feature no more than adaptation, reciprocal or one-sided (Oberthür and Stokke 2011).

Interplay management by means of adaptation is evident in the NEAFC–OSPAR case: the fisheries body decided to adapt its regulations by closing certain high-seas areas to bottom trawling within the spatial boundaries defined in the environmental body's emerging network of marine protected areas (Kvalvik 2012). Thus, regulatory alignment was obtained without joint decision-making, which remained unacceptable to the resource management regime.

Accordingly, even when national-level authority regarding different parts of a complex biophysical system resides with institutions with competing priorities, interplay management, whether by coordination or adaptation, may help to achieve regulatory coherence.

Broader setting

Efforts to create or adapt environmental regimes do not unfold in a vacuum. The broader setting encompasses a range of contextual factors that influence both the negotiations of the terms of an agreement and the operation of the regime

in practice. Processes of regime formation or adaptation are time- and place-sensitive: efforts to address similar needs for governance may succeed in some settings but result in scant progress in other settings. Here we offer a preliminary account of risk factors relating to the broader setting, with particular attention to factors concerning the political context and the socioeconomic environment.[2] We also explore response strategies that can avoid or alleviate the negative effects these factors can have in propelling negotiations toward the perils of reductionism and overload.

Political context

Efforts to craft the provisions of regimes are themselves political processes, but they occur within broader political settings that may influence the course of negotiations considerably. Relevant factors concern the extent to which the issues at hand are linked to deep-seated disputes or conflicts of interest, and the extent to which the political setting includes well-developed practices for cooperatively addressing needs for governance. Intense disputes and the absence of cooperative practices are likely to lead to a reductionist approach. Conversely, in examining policy arenas that deal with contentious issues, analysts often ask: are there opportunities to make progress by broadening the agenda, adding issues and actors in efforts to craft mutually acceptable outcomes? In such cases, the challenge is to avoid overload arising from outcomes of the kind referred to in describing US domestic legislation as 'Christmas tree bills' due to the convoluted nature of the deals made to build coalitions needed to reach agreement. Often, the results are governance systems that are excessively complex and that ultimately prove ineffective.

The international regime for managing Northeast Arctic cod emerged in the midst of the Cold War, with the dominant regime members – Norway and the Soviet Union – squarely placed on opposite sides of the East–West divide (Stokke 2022; see Ch. 8). Observers agree that the effectiveness of this regime for fisheries management derives in considerable part from the ability of those who negotiated it to take steps to avoid the reductionist trap of ignoring the larger and often conflict-ridden geopolitical context (Stokke et al. 1999; Hønneland 2012). Key components of this regime served to insulate the practical management tasks of scientific research, adoption of regulations and compliance activities like enforcement at sea from contested sovereignty issues that would otherwise complicate the efficient deployment of fishing capacity and responsible management measures.

An example of such insulation of mutually beneficial cooperation involves the elaborate procedures of the Mutual Access Agreement, allowing fishers to operate in each other's waters to optimize harvesting practices, deliberately aimed at avoiding fisheries incidents that might escalate into diplomatic conflicts (Stokke et al. 1999). Similarly, the parties developed the Grey Zone Agreement in the 1970s, allowing parallel inspection in an area that included a disputed segment of the Barents Sea to reduce the negative effect that acceptance of fisheries enforcement by the other party would have had on each party's claim to sovereignty (Stokke and Hoel 1991).

A reductionist approach to these negotiations, one that attended to the needs of fisheries management but ignored the complications arising from the East–West rivalry and competing sovereignty claims, would have had little chance of succeeding.

The opposite peril, institutional overload, looms whenever those responsible for administering an issue-specific regime assume responsibility for broader and deeper political problems that the institution is incapable of addressing effectively. Consider, for instance, proposals to boycott Arctic Council meetings held in Russia in order to make a firm diplomatic statement on the inadmissibility of Russia's annexation of Crimea from Ukraine in 2014. A similar weighing of concerns was relevant when Norway considered whether its post-Crimea sanctions against Russia, which included a freeze on military cooperation, should also extend to the longstanding and deep coast guard cooperation on fisheries inspection (see Chs. 8 and 9) and on search-and-rescue operations in the Barents Sea. Had the more extensive sanctions been chosen in these cases, they would have generated institutional overload. Relatively low-key institutions well-equipped for encouraging coordination in specific issue-areas of common interest would have been burdened with a problem they were not equipped to solve. There is no basis for believing that Russia would have perceived reduced cooperation in Arctic Council activities, in the work of the JNRFC, or in collaborative search-and-rescue missions in remote Arctic locations as costly enough to induce reconsideration of its geopolitical decision regarding Crimea. Efforts to use those specialized institutions for pursuing broader security objectives would have produced overload, leading to a loss of problem-solving capacity in the issue-areas involved with no significant effect on Russian behaviour regarding Ukraine.

Common denominators among efforts to find a path between reductionism and overload include insulating issue-specific practical cooperation of mutual interest from oscillations in the intensity of contextual disputes or conflicts and willingness on the part of those implementing the arrangements to refrain from burdening them with broader political objectives they are ill-equipped to serve.

Socioeconomic environment

The socioeconomic environment encompasses a range of conditions, including the overall level of economic prosperity prevailing at the time of negotiations on any given regime. Here we focus on another important governance condition: the extent to which non-state actors or social movements take an interest in the issues and seek to influence the course of negotiations.

Increasingly, non-state actors have acquired leverage in dealing with large-scale environmental issues. Already in the 1960s, environmental organizations had become involved in the work of the International Whaling Commission (Skodvin and Andresen, 2003). However, the major surge in non-state actor involvement in international environmental governance followed the end of the Cold War (Tallberg et al. 2014). Figures are definition-sensitive, but, by one estimate, the number of active non-governmental organizations with international characteristics had mushroomed from some 6,000 in 1990 to more than 50,000 only fifteen years later (Clapp and Dauvergne 2011: 8). Among the 3,500 NGOs enjoying consultative status with the

UN Economic and Social Council in 2011, more than two-thirds were working on sustainable development (Park 2013). Recently, environmental groups have played important roles in pressing for negotiations relating to Central Arctic Ocean fisheries and conservation of biodiversity beyond national jurisdictions.

Compared to their counterparts in other areas of environmental governance, fisheries regimes were slow to create procedures for involving non-state actors. Norms concerning transparency of documents and meetings achieved prominence through the 1992 UN Conference on Environment and Development. Their inclusion in the 1995 FAO Code of Conduct for Responsible Fisheries and the 1995 UN Agreement Relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks triggered far-reaching changes in regional fisheries regimes (Stokke 2001). Today, the typical regional fisheries management organization allows any non-state actor that pledges to support its objectives to apply for observer status, which usually includes access to all plenary meetings (see, e.g. NEAFC 2021).

The earlier and predominantly statist approach to international fisheries management was reductionist: it failed to make use of the legitimacy and the resources for monitoring and compliance inducement that now motivate governments to involve non-state actors in almost all areas of international governance, except security and finance (Tallberg et al. 2014). As argued by Stokke in Chapter 9, for instance, the active participation in NEAFC activities by environmental organizations such as Seas at Risk, PEW Environment and WWF played a role in mobilizing a broader enforcement network that has proven vital for the adoption and implementation of region-wide port-state measures to combat pervasive illegal, unreported and unregulated (IUU) fishing in the Northeast Atlantic.

While participation by industry and civil society organizations can reinforce the legitimacy of international governance and improve the knowledge base for decision-making, the dramatic rise in the number of non-state actors seeking such involvement may also lead to institutional overload. A striking example concerns the European Court of Human Rights, which allows not only designated organizations but any national of its member-states to lodge a complaint. By 2011, the court had some 170,000 applications pending (of which 34,000 were repetitive cases), leading to an average waiting time of thirty-seven months for communication (not decision) regarding a case (Wildhaber 2013; also Shelton 2018).

In global environmental diplomacy, the sharp increase in industry and civil society interest has made it far more difficult for diplomats to engage with non-state actors as intensively as before. At the 2009 Conference of the Parties to the UN Framework Convention on Climate Change, the ~12,000 registered non-governmental organizations were more than twelve times as numerous as they had been during the first COP in 1995, a change that reduced rather than promoted their influence on negotiations (Park 2013: 281).

Institutions that steer a middle course in their management of non-state actor interests – avoiding the peril of overload without returning to statist reductionism – often establish procedures that place some responsibility for coordinating contributions on the non-state actors themselves. Consider, for instance, the 'umbrella requirement' that the Antarctic Treaty Consultative Parties have placed on non-state actors in

Antarctic affairs. The many environmental organizations taking an interest in Antarctic affairs, including all the transnational majors like Greenpeace, IUCN and WWF as well as numerous smaller groups, must coordinate their input to Consultative Meetings through the Antarctic and Southern Ocean Coalition (ASOC). Similarly, fishing companies engaged in krill fishing in the Southern Ocean, seeking some measure of influence over management decisions taken by the Commission for Conservation of Antarctic Marine Living Resources (CCAMLR), have obtained observer status by forming ARK – the Association of Responsible Krill Harvesting Companies (see Ch. 12).

The operational details of the middle course vary. NEAFC is less restrictive than the Antarctic institutions, granting observer status and physical access to plenary meetings to individual environmental organizations. However, participation in the operational deliberations of its Permanent Committee on Management and Science is limited to two persons selected by environmental organizations with observer status (NEAFC 2021: Art. 33). Similarly, the Arctic Council has granted Indigenous Peoples' Organizations an unusually prominent place, a notch above observers, by according them Permanent Participant status, with the right to 'full consultation' on all matters addressed by the Council. To combine this non-state actor prominence with tractability, however, only those Indigenous Peoples Organizations that have members in more than one Arctic state or many members within a single state are eligible for such status.

In short, provisions for regulating non-state actor involvement in international environmental governance are essential for avoiding institutional overload, while still taking into consideration the legitimacy and resources such actors can bring to bear on problem solving.

Institutional design

Many of the response strategies for avoiding the perils of reductionism and overload involve elements of institutional design. But certain attributes of the institutions established for dealing with specific problems can themselves constitute risk factors in this respect. There is typically a gap between the ideal and the actual with regard to the performance of regimes. They rarely operate exactly as envisioned by their designers or articulated in conventions, treaties or other constitutive documents. Negotiators seeking to minimize this gap often make the principal features of a regime as simple as possible. Or they make these features highly complex and insist that those responsible for implementation follow the letter of the agreement. Both responses can lead to institutional failure. Here we consider this challenge with particular reference to decision rules and the depth and strength of substantive regime provisions.

Decision rules

Environmental regimes, including arrangements dealing with marine resources, commonly establish decision rules or procedures for arriving at collective choices. The decisions may involve a wide range of matters, such as setting total allowable catch

harvest levels on a periodic basis, creating protected areas that are off-limits to fishing or establishing monitoring systems to track impacts on fish stocks. The challenge is always the same: regimes need to establish decision rules that are stringent enough to protect the interests of the members, but not so stringent as to lead to stalemate or the inability to produce decisions necessary for the operation of a regime or for adjusting it to changing circumstances.

Reductionism here typically takes the form of insisting on unanimity as the only acceptable decision rule. In its strongest form, unanimity requires explicit consent from all regime members in order to arrive at a decision, so that the unwillingness of even one member to agree to a proposed action results in failure to take any decision regarding the issue at hand. This requirement has the attraction of simplicity and may produce reasonable results concerning simple procedural issues or substantive matters that are uncontroversial. But a decision rule that requires unanimity in its strongest form can and often does lead to gridlock, where little or nothing can be accomplished.

Overload constitutes the opposite peril. Negotiators often devise decision rules that are ingenious but complex, in an attempt to avoid the peril of reductionism while still protecting the interests of key regime members. Such rules may involve subdividing the members of a regime into two or more categories (e.g. developed countries and developing countries) and requiring concurrent majorities among the members of each group in order to arrive at a formal decision. Many other forms of complexity are possible regarding the decision rules embedded in regimes. The peril is the same: highly complex decision rules entail the risk of producing paralysis, whereas reductionist rules can lead to stalemate.

How can those responsible for creating and administering regimes avoid the perils of reductionism and overload with regard to decision rules? Various practices have emerged, sometimes on an informal basis, to allow regimes to make progress in addressing problems in a manner acceptable to the parties. One strategy is to turn to the idea of consensus, on the assumption that consensus is compatible with ordinary conceptions of sovereignty (see Chs. 2, 12 and 14). Consensus occurs whenever no member of a regime feels so strongly about an issue that it is prepared to voice its opposition, explicitly and openly. The process of building a consensus often involves log-rolling or vote-trading. In effect, the parties make deals in which each party agrees to refrain from actively opposing a measure of interest to the other(s), in return for similar treatment regarding an issue of particular importance to itself. Effective regimes regularly come to rely on consensus procedures in practice, regardless of the exact language dealing with decision rules embedded in their constitutive documents (Breitmeier, Young and Zürn 2006).

Other solutions come into play with regard to the adjustment of regimes once they are up and running. The ozone regime, for example, allows amendments to phase-out schedules for ozone-depleting substances to take effect on the basis of majority voting without requiring ratification by member-states, so long as the relevant substances belong to families of chemicals already subject to regulatory action under the auspices of the regime. Amendments to conventions dealing with commercial shipping, such as SOLAS and MARPOL, take effect one year after their initial adoption, if no member of the International Maritime Organization lodges a formal objection during that period.

One way or another, regimes that make a difference in addressing environmental problems manage to develop procedures for avoiding reductionism and overload regarding decision rules, while continuing to acknowledge, at least in principle, the right of sovereign states not to be bound by decisions taken without their explicit consent.

Bindingness and level of ambition

Governance systems vary considerably in terms of bindingness and level of ambition or, in other words, in the extent to which substantive provisions constrain state behaviour. Regarding bindingness, the provisions of a regime may range from hard to soft, depending on whether they take the form of hard law set forth in a legally binding instrument, soft law under the terms of a ministerial declaration or similar document, or informal practices with no legal status in the ordinary sense of the term. Level of ambition refers to the breadth of the topics covered by a regime and the depth of commitments or the extent to which those commitments go beyond what the parties would do in the absence of an agreement.

We can envisage a spectrum of situations with regard to bindingness and level of ambition, ranging from highly ambitious arrangements articulated in the form of hard law at one extreme to much more limited arrangements with no legal status at the other. Many of those who think about international environmental agreements take it for granted that the goal in every case is to create ambitious arrangements that are as 'hard' as possible. But this assumption is questionable. If we start with the premise that form should follow function regarding the character of governance systems, the proper approach is to address these matters on a case-by-case basis, developing arrangements likely to contribute to solving the problem(s) at hand.

Reductionism here takes the form of insisting that all the provisions of a regime should be cast as hard law, especially if coupled with an assumption that there is no need for explicit compliance mechanisms to ensure that the parties fulfil their commitments. Two major problems can lead to institutional failure in such cases. One arises from a trade-off between hardness and level of ambition. When asked to make hard-law commitments, parties to environmental agreements generally limit both the breadth and the depth of the commitments they are willing to accept (Barrett 2007). Experience also indicates that ambitious commitments not accompanied by suitable compliance mechanisms tend to get watered down or fall by the wayside when it comes to implementation.

Overload, by contrast, occurs when the agreements that establish regimes include ambitious provisions covering a wide range of issues, without any central thread to lend focus or coherence to the parties' efforts to implement individual provisions. This is a source of considerable concern in the current negotiations regarding BBNJ. In such cases, institutional failure often results from desultory efforts to implement specific provisions of a regime with varying degrees of success, leading to outcomes that do not add up to a coherent strategy for addressing the concern that led to the creation of the regime in the first place.

What strategies are available to avoid the perils of reductionism and overload with regard to issues concerning the form and strength of substantive provisions? Experience in the realm of international environmental governance suggests several possibilities. One strategy involves differentiating among the provisions of a regime, making some legally binding and allowing others to take the form of softer commitments or even voluntary pledges. An example is the 2015 Paris Climate Agreement, structured generally as a legally binding arrangement in which the Nationally Determined Contributions of the individual parties are treated as voluntary pledges (Cherry, Hovi and McEvoy 2014).

Another strategy is to opt for modest breadth and depth of commitments at the outset, coupled with procedures for raising the regime's level of participation and ambition over time. Examples here include adding protocols to a framework convention to expand the range of issues covered, as with the 1979 Convention on Long-Range Transboundary Air Pollution, or expanding the list of controlled substances, as in the case of the 2001 Stockholm Convention on Persistent Organic Pollutants.

A third strategy involves providing assistance to parties that are willing to participate but lack the capacity needed to implement ambitious substantive provisions. Such assistance may involve technology transfer, training programmes or financial support. In every case, the challenge is to tailor the strategy so as to avoid the perils of reductionism and overload with regard to bindingness and level of ambition.

Conclusions

There are two ways to think about the analysis presented in this chapter, one *positive* and the other *normative*. The positive perspective emphasizes the goal of explaining observed patterns of success and failure in efforts to create new environmental regimes or to adapt or reconfigure less effective regimes or regimes facing changing circumstances. Many initiatives fail, but some succeed. This we explain in terms of the effects of risk factors that push negotiations toward the perils of reductionism and overload, even in cases involving experienced negotiators who are aware of the dangers of these traps. Sometimes it is possible to steer a course that allows for safe passage between the twin perils of reductionism and overload. But this can occur only when the negotiators are cognizant of the pitfalls and are prepared to work together to avoid these perils, even while making concerted efforts to pursue their individual interests. This, we believe, explains why success is exceptional rather than routine when it comes to creating and implementing environmental governance systems.

By contrast, the normative perspective involves offering advice to those responsible for negotiating and implementing the terms of environmental agreements. What can our analysis offer that may be of interest to those engaged in institutional bargaining or responsible for implementing the resultant regimes? We advise these actors to pay careful attention to risk factors and response strategies. Every case is unique in some respects. But it is always important to consider the relevance of risk factors regarding the character of the problem, institutional design and the broader setting, and, we argue, it is necessary to formulate response strategies that can help in steering clear of the associated traps of reductionism and overload.

Notes

1 This chapter includes material drawn from Young and Stokke (2020) as well as previously unpublished material.
2 Elsewhere we examine a third dimension: the *cognitive* setting (Young and Stokke 2020).

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