

Hierarchy and Differentiation in International Regime Complexes:

A Theoretical Framework for Comparative Research

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Abstract

The concept of international regime complexity offers a useful lens for examining the increasing density of international institutions in global governance. A growing literature identifies clusters of overlapping institutions in many important policy areas, yet some scholars argue that complexity undermines governance effectiveness, while others perceive distinct advantages over unified institutions. To bring coherence to these findings, we present a theoretical framework that characterizes regime complexes based on two patterns of interaction among institutions: authority relations and institutional differentiation. These dimensions jointly determine the opportunities and constraints that states and other actors confront as they navigate institutional rules. As a result, they condition the effect of regime complexity on important outcomes such as policy adjustment and the strategies adopted by dissatisfied actors. The article proposes testable hypotheses regarding the effects of authority and differentiation, and we assess their correspondence with the ten regime complexes examined by the seven companion articles in this special issue. We further identify a set of dynamic processes that shape the evolution of regime complexes over time. Our framework strengthens the foundation for comparative analysis of regime complexes and charts a new agenda for the research program.

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1. INTRODUCTION

The landscape of global governance is increasingly crowded. In nearly every major policy domain, multilateral cooperation occurs within clusters of nested and overlapping international institutions. A growing body of research examines these “international regime complexes,” establishing institutional density as a defining feature of contemporary global governance. Issue areas as diverse as trade, counterterrorism, election monitoring, and crisis finance have experienced a crowding of governance institutions over time. This increasing institutional density changes the strategic environment in which state, substate and nonstate actors interact, creating both challenges and opportunities for cooperation.

A central question for this research program is whether regime complexes improve or degrade substantive outcomes compared to a single multilateral institution. Many scholars argue that the fragmentation of governance across multiple institutions poses a threat to the effectiveness of international cooperation. These analysts fear that ambiguity over international standards, inconsistency of rules and obligations, and opportunities for forum shopping weaken the discipline of global governance on member states.¹ Others contend that regime complexes facilitate *more* effective cooperation: they increase flexibility, boost legitimacy, and engender greater expertise compared to unified regimes.² Despite this rich variation in regime-complex performance, few studies have explicitly questioned why some regime complexes produce more favorable outcomes than others.³

This article proposes a theoretical framework for explaining variation across regime complexes. To do so, we focus on the patterns of interaction that emerge among constituent institutions. While all regime complexes feature institutions with mandates that overlap to some degree, they exhibit striking differences in the structure of inter-institutional relations. These relations establish the set of opportunities and constraints for actors in the regime complex – determining, for example, whether states can exploit conflicting rules or opportunistically substitute one institutional forum for another.

The relevance of institutional relations has become clear as research on regime complexity has evolved. Early scholarship emphasized the lack of any coherent order among institutions in a regime complex. In this view, institutions are linked due to overlap in their jurisdictions, but otherwise operate independently with few mechanisms for coordination. In their original elaboration of the concept of regime complexity, for example, Raustiala and Victor (2004) stress both the disaggregated decision making of institutions and the lack of a formal hierarchy to resolve conflicts among them. Alter and Meunier (2009) describe the “cross-institutional strategies,” such as forum-shopping and strategic inconsistency, that states can exploit in an environment of independent and uncoordinated institutions. This initial emphasis on disorganization and incoherence was logical given the important task of theoretically distinguishing regime complexes from unified multilateral institutions.

¹ See, among others, Aggarwal (1998), Alter and Meunier (2009), Biermann et al. (2009), and Raustiala and Victor (2004).

² See Keohane and Victor (2011) on the flexibility of regime complexes; Kelley (2009) on their potential to enhance legitimacy; and Lesage and Van de Graaf (2013) on expertise.

³ For exceptions, see Johnson and Urpelainen (2012) and Orsini, Morin, and Young (2013).

In subsequent work, scholars challenged the view that inter-institutional relations in regime complexes are necessarily characterized by disorder. Overlapping institutions have developed a wide range of ties to coordinate rules, from simple communication to joint decision-making.⁴ Studies focusing on “inter-organizational networking,” “institutional deference,” and “orchestration” document these ties in several regime complexes.⁵ In addition to formal coordinating mechanisms, the mere presence of a prominent, central institution may allow rules to cohere in advantageous ways.⁶ In some cases, a sophisticated division of labor can emerge among governing bodies, reducing inconsistency and opportunities to forum shop.⁷ As in other complex adaptive systems, overlapping institutions may develop a degree of order without any centralized means of coordination.⁸

Our framework builds on these recent studies examining patterns of interaction among institutions in a regime complex. We argue that the initial characterization of fragmented regime complexes, featuring decentralized decision making, lack of hierarchy, and policy incoherence, is only one of several ways in which a regime complex might be organized. We instead dissect the concept along two dimensions – *relations of authority* and *institutional differentiation* – along which sets of overlapping institutions vary. A fragmented regime complex is an ideal type that sits at one end of both dimensions, where institutions are non-hierarchically arranged and undifferentiated. An integrated complex sits at the other end of the spectrum, where governance processes are hierarchical and differentiated. Empirically, regime complexes will take intermediate values on one or both dimensions.

We argue that these two dimensions condition the effect of regime complexity on substantive outcomes. The degree of hierarchy and differentiation influences international cooperation by establishing the basic “architecture” of the regime complex – i.e., the strategic environment in which states and other actors navigate the set of institutions. In the short term, these patterns of institutional interaction serve as relatively fixed constraints on state behavior. A government weighing a change in trade policy, for example, must maneuver within a trade regime that is hierarchically oriented around the World Trade Organization. In the long term, patterns of authority and differentiation in a regime complex are more malleable. They are shaped by the historical process of regime evolution and the strategic behavior of states, among other factors. Figure 1 depicts these causal relationships.

⁴ For example, Henning (2017) describes joint decision-making procedures between the IMF and regional financial arrangements in the form of an “IMF link.”

⁵ See Biermann (2009) on inter-organizational networking, Pratt (2018) on institutional deference, and Abbott, Genschel, Snidal and Zangl (2015) on orchestration.

⁶ Orsini, Morin, and Young (2013).

⁷ Gehring and Faude (2014).

⁸ Morin, Pauwelyn, and Hollway (2017).

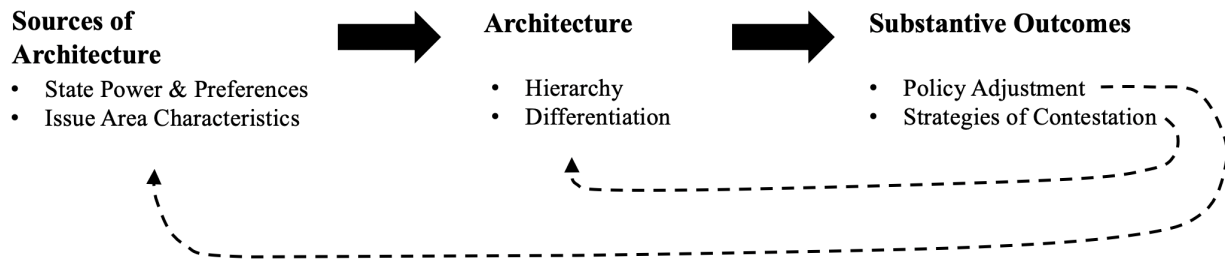


Figure 1: Sources and Effects of Regime Complex Architecture

The first arrow in Figure 1 describes the *emergence* of hierarchy and differentiation in regime complexes. While this “stage-one” process is not the primary focus of this paper, we highlight a number of propositions in the existing literature regarding the processes that determine regime complex architecture. Since international institutions are generally created and controlled by states, their preferences and capabilities fundamentally shape the degree of hierarchy and differentiation in a regime complex. Innate characteristics of the issue area may also influence the regime complex architecture that emerges.

The core of our framework is directed at the second arrow, depicting the *effects* of the two dimensions. We propose a set of “stage-two” hypotheses that link hierarchy and differentiation to two primary outcomes of interest: policy adjustment on the part of states and other actors and their strategic responses to sustained dissatisfaction with the regime. We specify expected outcomes for each combination of the two dimensions. Policy adjustment tends to increase as regime complexes become more hierarchical and differentiated, while strategies of contestation vary in ways that affect the resilience of the complex.

Finally, these substantive outcomes create feedback processes that drive further evolution of the regime complex. These are depicted by the dashed lines in Figure 1. When strategies of contestation include competitive regime creation, for example, patterns of authority become less hierarchical. Institutional rules and demands for policy adjustment can also shape the preferences of member states as they navigate and construct institutions. We elaborate on these dynamic processes in section 5.

Our goal in providing this framework is to better explain the rich diversity in regime complex performance and thereby improve our understanding of how regime complexes shape international politics. Previous studies have laid a foundation from which the research program on complexity may now proceed to specification and testing theoretical expectations. We believe that these goals are best served by integrating concepts in the extant literature to build well-specified, conditional theories of cooperation in dense institutional environments.

To test the framework, we invited a team of scholars to examine authority relations and differentiation in several empirical regime complexes. Contributors to this volume investigate a wide range of issue areas – including education (Kijima and Lipsy 2021), nuclear arms control (Eilstrup-Sangiovanni 2021), private security (Westerwinter 2021), cybersecurity (Hofmann and

Pawlak 2021), digital governance (Bonifai, Newman, and Zhang 2021), crisis finance (Henning 2021), election monitoring and forest-related carbon offsets (Pratt 2021). While their findings are largely consistent with our expectations, they also elaborate and extend the framework in productive ways. Collectively, they contribute new conceptual, theoretical, and methodological tools for scholars of international cooperation.

The rest of the article is organized as follows. In Section 2, we formally define a “regime complex” – proposing a broader conceptualization than those in the existing literature – and specify the assumptions of our analytical approach. Section 3 introduces our classification scheme in which regime complexes are characterized along the dimensions of hierarchy and differentiation. Section 4 presents our theoretical expectations regarding the effects of hierarchy and differentiation on substantive outcomes and summarizes the findings of the other articles in this special issue. Section 5 describes the feedback mechanisms that drive evolution of regime complexes and reviews related insights from companion articles, while Section 6 concludes.

2. REGIME COMPLEXITY: CONCEPTS AND ASSUMPTIONS

The study of international regime complexity has emerged as a discrete subfield within the International Organization research program. While the general IO program addresses the origins and development of international institutions, their relationship to states and other actors within the system, and their contribution to international cooperation, the subfield of regime complexity is distinctive in its focus on the proliferation and interaction of multiple institutions in the same issue area.⁹

2.1 Conceptual Definition

We define a regime complex as *a set of international institutions that operate in a common issue area and the (formal and informal) mechanisms that coordinate them*. The institutions can be legally constituted organizations at the bilateral, plurilateral, regional, or global levels, as well as less formal arrangements. Mechanisms of coordination include both deliberate inter-institutional collaboration and recurring patterns of behavior that emerge from repeated interaction in a dense institutional environment. Our framework emphasizes two such mechanisms, authority relations and institutional differentiation, though these do not exhaust the possible means by which institutions can be coordinated.¹⁰

This definition is both broader and narrower than some other formulations in the field. It is broader in that a regime complex is not non-hierarchical by definition.¹¹ By adopting a

⁹ For a recent review, see Alter and Raustiala (2018).

¹⁰ This paragraph adopts the definition provided in Henning (2017).

¹¹ Compare also to Keohane and Victor (2011) and Nye (2014). For discussion, see Ruggie (2014) and van de Graaf and de Ville (2013). Alter and Raustiala (2018) argue that a legal hierarchy among international institutions is unsustainable because authority claims are inherently contestable in the international environment. We acknowledge the point, but interpret contestability as one of several factors bearing on the degree of hierarchy in a regime complex. It does not require that relations of

definition that accommodates both hierarchical and egalitarian authority relations among institutions, we can better compare complexes and their ability to generate substantive cooperation. Such an inclusive definition is better suited to a cross-regional and cross-issue-area comparative research program. Moreover, scholars who want to study non-hierarchical complexes can easily do so within this comparative framework. Our definition is also broader than some others in that a regime complex may include formal and informal agreements, club groups, and regularized processes. Informal mechanisms, in fact, can be critical to sustaining coherence of non-hierarchical complexes.¹²

We adopt a broad concept of what constitutes an international institution, including formal intergovernmental organizations (IGOs); informal fora such as the Group of Twenty (G20) or Group of Seven (G7); organizations constituted by substate regulators (transgovernmental regulatory networks); civil society and nongovernmental organizations; private associations and private transnational regulatory organizations (PTROs); and multi-stakeholder institutions, which are constituted by governmental, private and NGO representatives. Each of these types of institutions seeks to govern international cooperation, and each may be part of a regime complex.

A complex by our definition includes clusters of both differentiated and undifferentiated institutions. As in the case of authority relations, complexes need not be composed primarily of similar, overlapping institutions; the degree of differentiation can also vary from one complex to the next. Both authority and differentiation, in other words, can be treated as continuous variables in studies of regime complexes.¹³ Treating them as an ideal type at the low end of these continua would constrain the research program unnecessarily.

It is worth specifying some of the things that fall outside this definition of a regime complex. By requiring that regime complexes be populated by “a set of international institutions,” we do not consider stakeholders such as member states, their ministries, and private firms to constitute a regime complex. This distinguishes a regime complex from a full political system for an issue area.¹⁴ We wish to examine the creation, evolution and consequences of the governing arrangements, however, which can only be done by separating them from their stakeholders definitionally. While regime complexes might be diverse and expansive, therefore, we delimit them by a *governance* function in the issue area concerned. Stakeholders that provide

authority between institutions are completely flat or equal. Green’s (forthcoming) position is similar to ours.

¹² Informal rules and processes are emphasized by Stone (2011), Kleine (2013), Christiansen and Neuhold (2012), and Westerwinter, Abbott and Biersteker (2021).

¹³ Similarly, Martin (2019) advocates shifting away from using ideal-types to continuous variables in analysis of informal governance.

¹⁴ Scholars using complex systems theory sometimes define a complex as comprehending governing institutions as well as their stakeholders. See, for example, Orsini et al. (2019) and Morin et al. (2016). Alter and Raustiala (2018, 5) also define a regime complex as a political system. Farrell and Newman (2016) and Kahler (2016) tend to take a systems orientation as well. Although we do not employ complex systems theory, we nonetheless use some of concepts of self-organization, emergence and adaptation that are central to it.

input and feedback to institutions are usually important to understanding the politics of regime complexes, but are not a defining feature.

Like others, we identify the boundaries of a regime complex by the scope of the issue area to which it is addressed. We define an issue area as a set of problems for international cooperation that are connected by significant substantive spillover. These boundaries are not always fixed, as issue areas may shift due to exogenous events or purposive state action. Its edges can be sharp or fuzzy, but in either case the issue area is defined by a density of connection among substantive problems. In this conception, global governance is cleaved into a series of regime complexes within which spillovers are denser than they are across separate issue areas. The institutions of balance-of-payments finance and development finance inhabit different complexes, for example. There is some spillover between the work of the World Bank and IMF, but the density of connection among the multilateral development banks is considerably greater than between them and the Fund.

Finally, an institution that provides governance functions in different issue areas can thus sit in two or more regime complexes simultaneously. We regard such dual membership to be unproblematic for the purpose of comparing the origins and consequences of complexes. For example, the development finance complex could feature hierarchical authority relations while the climate-change complex does not, notwithstanding the fact that the World Bank participates in both regime complexes.

2.2 Assumptions

The theory that we present below builds on these definitions plus three broad assumptions, which for clarity we wish to state explicitly at the outset.

Principal Actors. Diverse sets of actors contribute to the operation of regime complexes. States are often the most important of them; they are responsible for constructing intergovernmental institutions that frequently populate such complexes. In some cases, states delegate agency to international bureaucrats, who might subsequently become autonomous actors in their own right. In other cases, state indifference or disunity creates an opening for transnational and private actors – including firms, NGOs, and activists – to significantly impact the operation of regime complexes. We consider transnational, multi-stakeholder and non-state actors, but recognize that they tend to operate in the shadow of state power.

Rationality. We assume that states and other relevant actors are rational. They make choices to maximize their own welfare, given available information and the regulatory environment created by a regime complex. If actors have an opportunity to improve their well-being – for example, by engaging in forum shopping or by structuring inter-institutional relationships to increase their influence – we expect them to do so. But we also recognize that principals and institutions sometimes must act on incomplete information and cannot foresee the consequences of their decisions with precision. As the time horizon of the forecast becomes more distant, the accuracy of their forecasts declines.

Regime Complexes as Cause and Effect. The power and preferences of state and non-state actors shape the design of individual institutions and their relation to each other. But regime complexes are not epiphenomenal; once created, they can meaningfully shape patterns of state behavior. This conceptualization mirrors Krasner's (1982, 189) understanding of individual international regimes as "intervening variables" that stand between "basic causal variables (most prominently, power and interests) and outcomes and behavior" further down the causal chain. Thus, as with the rationality assumption, the causal force of regime complexes can depend on the time horizon of analysis. In the short term, complexes constrain behavior by setting the strategic environment in which actors operate. In the long term, regime complexes evolve in response to changes in the relative power and preferences of the actors that created them.

3. CLASSIFYING REGIME COMPLEX ARCHITECTURE

To construct a framework to explain variation in the architecture of regime complexes, we identify two dimensions that characterize the most important patterns of interaction among institutions: relations of authority and differentiation.¹⁵ Each represents a specific way in which sets of institutions may be organized.

We prioritize these particular dimensions over other characteristics for three reasons. First, they vary considerably across different regime complexes. Some complexes, for example, feature institutions that can be easily rank-ordered in terms of authority; others have a more evenly dispersed distribution of authority. There is similar variation in the degree of differentiation across regime complexes. Our framework provides a general classification scheme to *describe* patterns of interaction in different complexes. Second, these dimensions are consequential in generating cooperative outcomes. They determine the strategic environment in which states and other actors negotiate and navigate institutional rules. In doing so, they shape how the operation of distinct institutions aggregates into a broader governance system. The framework should therefore help to *explain* outcomes of interest to scholars of international cooperation. Third, the framework offers a useful tool for analyzing dynamic change in regime complexes. The variables we highlight, hierarchy and differentiation, provide a two-dimensional "map" for understanding regime complex evolution.

3.1 Relations of Authority

The first dimension is *relations of authority* among institutions. This dimension reflects the extent to which institutions implicitly or explicitly recognize the right of other institutions to craft definitive rules, organize common projects, or otherwise set the terms of interinstitutional cooperation. Relations of authority range along a continuum from a complete lack of hierarchy, where each institution claims an equal right to rule making, to a formal hierarchy where some institutions are bound by the superior authority of others. In between these poles lies a diverse set of arrangements in which institutions distribute authority by delegating, orchestrating, and

¹⁵ Our approach overlaps with, but differs from, the classification approach of Zürn and Faude (2013, 122) -- stratificatory, functional, and segmentary fragmentation -- particularly with respect to the latter.

deferring to each other. Inter-institutional patterns of authority have important implications for the degree of rule conflict and opportunities for forum shopping in a regime complex.

Hierarchical authority relations may be embedded in institutions at their creation. For example, Aggarwal (1998) describes how states designed the Asia Pacific Economic Cooperation (APEC) forum to be nested within the General Agreement on Tariffs and Trade (GATT). More often, authority relations emerge dynamically in the absence of *ex ante* legal hierarchy as institutions interact on specific issues. Green (2013) distinguishes between delegated and entrepreneurial authority, which arises when one actor creates rules and then persuades others to defer to them. Pratt (2018) highlights several cases in which international institutions defer authority to each other, including the UN Security Council's acceptance of counterterrorism rules set by the Financial Action Task Force. Institutions may also exercise softer mechanisms of influence, such as orchestration (Abbott, Genschel, Zangl and Snidal 2015), that establish asymmetric patterns of authority in a regime complex.¹⁶

Patterns of authority are important for resolving conflicts among institutions. Hierarchy establishes deference to the peak institution in decisions about which institution should prevail in such conflicts. Among non-hierarchical institutions, there is no presumption as to which would prevail. *Ex ante* conflict resolution is an essential feature of hierarchy; it establishes the institutional pecking order in the presence of inter-institutional disputes.

Patterns of institutional association that do not involve authority do not constitute hierarchy. Networks of institutions might have structure, but they are not hierarchical simply by virtue of connections among the elements of the network. Sharing information, work-flow integration and cross-representation on governing boards do not establish hierarchy in the absence of the recognized right of one to direct others or set the rules for the complex as a whole.

Importantly, the degree of hierarchy in a regime complex is conceptually distinct from asymmetrical influence or power among member states. States' power relations often shape the governance structure of individual institutions and the architecture of the complex as a whole. Thus, the power asymmetries that matter are captured in patterns of authority among the institutions (formal charters, deference and other means) in our conceptualization.

Once established, hierarchical authority relations may persist, strengthen, or unravel. As Morse and Keohane (2014) and Hofmann (2019) highlight, states often use multilateral institutions to contest existing patterns of governance authority. For example, in the 1990s developed countries successfully shifted negotiations over rules for intellectual property protection to the GATT/WTO, challenging the supremacy of the World Intellectual Property Organization. Such instances of "regime shifting" will tend to flatten the hierarchy of a regime complex. The construction, maintenance, and deconstruction of authority relations are usefully viewed as linked dynamic processes driven by the strategic interests of member states and other actors.

¹⁶ Separately, Lake (2009) distinguishes between formal, legal authority and relational authority, based on a contract between ruler and ruled and acknowledged by the latter. Mattern and Zarako (2016) review alternative conceptualizations of hierarchy in international politics.

3.2 Institutional Differentiation

Differentiation describes the extent to which institutions in a regime complex vary in the functions they perform. Like relations of authority, differentiation can be placed on a continuum. Sets of identical institutions that operate as like units are positioned at one end; these homogeneous institutions perform the same functions and are viewed as substitutes by states. At the other end are sets of institutions that are fully differentiated in the tasks they perform and the rules they adopt.

Regime complexes can be differentiated functionally and geographically. A functional division of labor is common among institutions. Gehring and Faude (2014), for example, identify a division of governance tasks among the WTO, Food and Agricultural Organization (FAO) and World Health Organization (WHO) with respect to governing trade in agricultural genetically-modified organisms and public health-related intellectual property rights. Green and Auld (2016) describe a division of labor among environmental institutions, with private (non-governmental) institutions serving as “idea incubators” for public (intergovernmental) authorities.

Geographic differentiation of institutions can be established by membership, scope of activity or expertise. The development finance regime complex, for example, features an array of regional institutions that specialize geographically in the provision of loans and grants. Geographic differentiation may be distinct from membership patterns. The Asian Infrastructure Investment Bank (AIIB) includes member states from Europe, Latin America and Africa, for example, and the Organization for Security and Co-operation in Europe (OSCE) monitors elections in Africa. Differentiation must thus be mapped with some care, but nonetheless affects the strategic environment in which states and other actors select policy.

Among other things, differentiation determines the freedom of choice actors have as they navigate a regime complex.¹⁷ Scholarship that emphasizes forum shopping and regulatory arbitrage in regime complexes typically assumes low levels of institutional differentiation.¹⁸ When differentiation is low, states can opportunistically select among overlapping institutions that may have different standards but are substitutable on other dimensions. In contrast, states have less freedom to forum shop if institutions are highly differentiated.

3.3 Summary

Table 1 summarizes the two dimensions of institutional interaction. Assessing regime complexes along these lines provides a more nuanced picture of the strategic environment created by institutional overlap.

¹⁷ In the “USE, SELECT, CHANGE, CREATE” framework provided by Jupille, Mattli, and Snidal (2013), differentiation shapes the environment in which states select among institutional options.

¹⁸ See, for example, Busch (2007), Alter and Meunier (2009), Hafner-Burton (2009), Abbott (2012) and Hofmann (2018).

	Relations of Authority	Differentiation
Definition	The extent to which institutions recognize the right of other institutions to make definitive rules or decisions	The extent to which institutions vary in the functions they perform
Ideal Type (Low)	Nonhierarchical authority	Undifferentiated institutions
Ideal Type (High)	Hierarchical authority	Differentiated institutions

Table 1: Dimensions of Regime Complex Architecture

Importantly, the values taken by regime complexes on the two dimensions do not necessarily move in lock step with one another. For example, the institutions of a complex can be non-hierarchical and differentiated. This would occur if institutions with similar levels of authority strategically adapt to find specific governance niches. Similarly, hierarchical complexes could contain undifferentiated institutions. This observation contravenes the concept of hierarchy among states advanced by Waltz (1979), who argued that hierarchy is necessary for differentiation.¹⁹ But this logic does not apply with similar force to positive-sum relations in the economic and social sphere. We maintain that the two dimensions exhibit variegated scores because hierarchy and differentiation may arise from different sources, as discussed in the next section.

Our conceptualization of architecture characterizes the aggregate patterns of authority and differentiation among all of the component institutions of a regime complex. When applied at this level, these dimensions describe the terrain of global governance in the relevant issue area: whether a collection of institutions, as a whole, possesses a high degree of differentiation or hierarchy. However, the framework can also be used to analyze variation in institutional relationships *within* regime complexes. For example, a subset of institutions in a regime complex may feature hierarchical authority relations with each other, while authority is contested within another subset of institutions in the same issue area. Our framework sheds light on the operation and performance of these “subcomplexes.”²⁰

We are not the first to disaggregate the concept of regime complexity and have benefitted from others’ work in doing so. But we believe that our particular breakdown has three distinct advantages. First, our framework is generalizable; it applies to all clusters of institutions that qualify as complexes under our definition. Second, it is mutually exclusive; we have endeavored

¹⁹ Waltz (1979, 81, 114-116, 196), drawing upon Durkheim (1893). Similarly, Lake (2009, 12) states that “hierarchy creates functional differentiation and mutual dependence between states.”

²⁰ See Henning (2021) in this special issue.

to specify the dimensions distinctly. Third, we harness our scheme to the task of identifying falsifiable expectations in advance – both with respect to institutional architecture and with respect to cooperation outcomes – and testing them in a positive framework.

4. HIERARCHY, DIFFERENTIATION, AND COOPERATION IN INTERNATIONAL REGIME COMPLEXES

Our goal in identifying this set of salient dimensions is to highlight important variation across regime complexes and understand their effects on outcomes of interest. This approach allows us to build *conditional* theories of regime complexity. It assumes there is no simple linear relationship between the emergence of a regime complex and outcomes such as compliance with international rules. Instead, we must identify the ways in which overlapping agreements and organizations are arrayed *vis-à-vis* each other to understand such effects.

4.1 Origins of Regime Complex Architecture

While our emphasis in this paper is on the *effects* of regime complex architecture, the *sources* of hierarchy and differentiation merit discussion. Existing work identifies a wide range of variables that shape patterns of authority and specialization among international institutions. We summarize the most prominent arguments here.

Functional arguments about regime complex architecture draw a link between patterns of institutional interaction and efficient governance of the issue area. In these accounts, states, institutional bureaucrats, or other actors build links among institutions in order to improve performance and maximize joint gains. Johnson and Urpelainen (2012), for example, argue that states choose to integrate regimes characterized by negative spillovers to prevent the degradation of cooperation. Gehring and Faude (2014) present another functional theory by which order is re-established within fractious regime complexes.²¹ They argue that institutions and their members adapt the scope of institutional operation and authority in order to reduce turf wars and provide global public goods. Member states must be complicit in this emergent division of labor and secretariats have substantial agency in modifying the institutional mission.

Other theories posit more parochial motives for states. In these arguments, hierarchy and differentiation (or lack thereof) in a regime complex stem from the uncoordinated behavior of states as they jockey for advantage. Morse and Keohane (2014) describe the situation in which state, nonstate, and institutional actors use some multilateral institutions to challenge others as “contested multilateralism.”²² Their framework distinguishes between regime shifting—deployment of existing but alternative institutions—and competitive regime creation—

²¹ See also Faude (2015).

²² See also the symposium on the concept in *Global Constitutionalism* (2016), including Morse and Keohane’s (2016) response to critics.

establishment of new institutions to challenge existing ones. Both responses tend to reduce hierarchy and differentiation in the regime complex.²³

Henning (2017) examines regime complexity in the euro crisis, describing how states shaped interinstitutional relations among the “troika” to maximize their control over institutions. Meanwhile, Pratt (2021) provides a “power misalignment theory” in which states proliferate overlapping institutions to strengthen their leverage over negotiations. Once multiple institutions are created in the same issue area, the organizations with weaker member states tend to defer authority to organizations with stronger members (Pratt 2018). These arguments predict that states will sometimes trade off substantive efficiency in pursuit of greater influence over multilateral outcomes.

Others point to exogenous constraints of the issue area as drivers of regime complex architecture. Lipsky (2017) argues that changes within international institutions—specifically in the voting shares and formal influence of members in institutional governance—depend on their exposure to competition. In issue areas that are characterized by strong network externalities, high barriers to entry, and exclusivity, states will have few “outside options,” in Stone’s (2011) phrase. In issue areas that are characterized by weak externalities, easy entry and non-exclusivity, states can create competing institutions at relatively low cost.

Recent work applies insights from historical institutionalism to the sources of regime complex architecture (Fioretos 2017). Barriers to institutional reform and path dependence establish a strong tendency toward institutional continuity in the face of changing economic and political conditions (Keohane 2017). Nonetheless, as actors become disaffected with institutions over time, owing to mismatches between power and outcomes or between authority and legitimacy (Hanreider and Zürn 2017), there is a tendency toward layering institutions on top of one another.²⁴ New institutions are easier to create than old institutions are to reform or abolish, in this conceptualization.²⁵

One clear example of path dependence is the presence or absence of an incumbent focal institution in the issue area. Focal institutions are the prominent “first movers” in a regime complex. Generally, they are the original recipients of grants of authority, have inclusive membership and predate other institutions in the issue area – characteristics by which they can be identified *ex ante*, without reference to their consequences, and distinguished from peripheral institutions. Regime complexes that emerge around these institutions – the World Bank for development finance and the IMF for crisis finance, for example – are likely to be more hierarchical as the incumbents defend their seniority relative to later entrants and appeal to member states in the process. Where a focal institution does not exist, as in the early climate change complex, authority relations may be less hierarchical.

²³ Other intriguing contributions to this literature include Johnson (2016). On organizational emanation and orchestration, see, Abbott, Genschel, Snidal and Zangl (2015) and Johnson (2014). Kahler (2016) emphasizes the increasing heterogeneity of actors and the complexities that it introduces to global governance.

²⁴ See also Rixen, Viola, and Zürn (2016).

²⁵ See also Eilstrup-Sangiovanni (2018).

Finally, additional scholarship draws on multiple perspectives to explain patterns of institutional interaction.²⁶ Abbott, Green, and Keohane (2016) draw on organizational ecology to analyze patterns of growth and change in global governance institutions. This framework pairs environmental features of the issue area, including organizational density and resource availability, with a self-interested view of organizations. They argue, *inter alia*, that private transnational organizations are more likely to divide labor by seeking regulatory niches than intergovernmental organizations. Morin (2020) builds on this framework to explain the evolution of technical assistance providers in the intellectual property regime complex.

The extant literature provides at least two important insights for our theory of regime complex performance. First, patterns of hierarchy and differentiation can emerge in multiple ways. While the architecture of a regime complex may emerge from a “rational” design choice, it could just as well reflect uncoordinated action, characteristics of the issue area, or historical contingencies. Understanding that hierarchy and differentiation are consequences of more than simply state preferences opens analysis to a broader examination of the causal effects of architecture on state behavior. Second, regime complex architecture is susceptible to long-term dynamic change, a point to which we return in section 5.

4.2 Consequences of Regime Complex Architecture

We now turn to our main task of explaining the effects of hierarchy and differentiation on substantive outcomes. We focus on two categories of outcomes which impact the overall quality of international cooperation as reflected in, for example, environmental protection or economic development. These are:

- *Policy Adjustment*: Do states adjust their behavior or national policies to satisfy international agreements or comply with institutional rules? Adjustment will coincide closely with the coherence of rules and standards of the institutions. Coherence supports adjustment by preventing forum shopping and reducing uncertainty over international obligations, while rule conflict tends to undermine it.
- *Strategies of Contestation*: How do actors contest institutional outcomes with which they are dissatisfied? When disaffected from their institutions, actors can push to reform existing institutions or adopt one or both of two cross-institutional strategies. They can recruit other institutions to produce more favorable outcomes (regime shifting) or create new institutions to support such cooperation (competitive regime creation).²⁷ The choices are not mutually exclusive, but we would expect to observe different strategies in different types of complexes.

²⁶ Jupille, Mattli, and Snidal (2013) study institutional choice under bounded rationality and in the presence of institutional alternatives, explaining the evolution of institutions and their transformation over time in global commerce. See, also, Jupille, Mattli, and Snidal (2017).

²⁷ Morse and Keohane (2014).

Hierarchical authority relations and institutional differentiation shape these outcomes by constraining the ability of actors to maneuver around and within institutions in the regime complex. In this section, we first describe the independent effects of each dimension on policy adjustment and strategies of contestation. We then consider interactive effects, presenting the four ideal-type combinations of hierarchy and differentiation. While we advocate in general treating these dimensions as continuous rather than dichotomous, we illustrate with cases that are near the limits in order to clearly distinguish expected outcomes.

Independent Effects

The principal effect of hierarchy is to discourage the adoption of conflicting rules and standards across the regime complex. As authority relations in a regime complex become more hierarchical, we expect the complex to produce less rule conflict and higher policy adjustment. Hierarchical patterns of authority encourage harmonization of rules, as peripheral institutions explicitly or implicitly recognize the authority of a more central governance body. More authoritative institutions have a greater ability to impose rule coherence on the regime complex, including via strategies of orchestration.²⁸ The reduction in rule conflict should increase policy adjustment in two ways. First, it will constrain opportunistic forum shopping by states seeking to escape compliance with intrusive rules. Second, it prevents competing rules from creating uncertainty over which obligations bind state behavior, thereby sustaining the reputational cost of rule violations.

While hierarchical regime complexes extract more policy adjustment from states, they may also be less adaptable to changes in the international environment compared to egalitarian structures.²⁹ If shifts in state power or preferences make bargaining intractable in a central institution, disputes will remain unresolved within the regime complex in the short run. The lack of rule conflict means that states that prefer alternative governance arrangements cannot simply shift venues to another institution. In the long run, states' inability to forum shop means that dissatisfied parties are more likely to engage in competitive regime creation, challenging the existing hierarchy.

Differentiation operates by reducing functional overlap and thereby limiting actors' outside options for any given institution. When the institutions of the complex are undifferentiated, that is, functionally substitutable, we expect greater potential for rule conflict, more states engaging in forum shopping, and fewer states adjusting their behavior to move into compliance. Institutions performing the same functions will be more likely to experience jurisdictional conflict, raising the likelihood that competing rules will emerge and persist. States may exploit these differences via forum shopping.³⁰ Since institutions are substitutable, states are free to engage in regulatory arbitrage, selecting into institutions with weaker compliance standards that demand less policy adjustment. The lack of differentiation encourages

²⁸ Abbott, Genschel, Snidal and Zangl (2015).

²⁹ Kahler (2016, 2018) expects complex governance, characterized by transnational networks, private regulatory organizations and informal rule making, to be more resilient than complexes composed of only intergovernmental organizations.

³⁰ See, for example, Hofmann (2018).

competition among institutions in the regime complex, potentially making them more responsive to changes in state interests and power.³¹ Dissatisfied coalitions can enact change with relative ease by simply shifting venues from one institution to another.

A high degree of functional differentiation reduces the potential for both rule conflict and forum shopping because separate institutions focus on distinct sub-issues. An emergent division of labor may capture efficiencies associated with comparative advantage, and differentiation reduces opportunities for regulatory arbitrage. The tradeoff, from the perspective of states, is the potential for greater agency drift by institutional actors. Differentiation reduces the “policy area discipline” (Lipsy 2017) that is imposed on institutions by competition. As functionally differentiated institutions develop unique capacities, expertise, and legitimacy, they may therefore become less responsive to their principals. In these regime complexes, dissatisfied states are more likely to engage in competitive regime creation since regime shifting is less viable.

Joint Effects

As we argued above, the two dimensions do not always covary. Empirically, regime complexes feature varying levels of hierarchy and differentiation – with important consequences for the performance of the regime. Figure 2 presents our expectations for the *joint* effects of authority and differentiation.³² The horizontal axis depicts relations of authority, with low values representing non-hierarchical arrangements and higher values representing greater hierarchy among institutions. The vertical axis reflects differentiation, distinguishing between specialized and undifferentiated institutions. The corners of this two-dimensional space represent four distinct types of architecture. In each corner, we summarize the expected interactive effects on our two principal outcomes.

Below, we describe the expected results for each corner and illustrate by applying the framework to several issue areas. Applying the theory naturally raises questions of measurement. To establish hierarchical authority relations, we ask two questions: Does one (or more) institution have the implicit or explicit authority to direct other institutions in the complex? Do common principals favor one institution over others? This dimension thus has (hard and soft) legal, institutional, and third-party aspects.³³ But in all aspects there should be evidence of the subordinate institutions’ explicit or implicit acknowledgement of the rightful rule of the more authoritative. To identify the degree of differentiation among institutions, we look for functional and geographic specialization. Functionally differentiated institutions are specialized substantively or in the type of governance activity they provide.³⁴ Geographically differentiated institutions have specialized expertise or jurisdiction that is spatially defined.

³¹ Lipsy (2015) and Hofmann (2013 and 2018).

³² We acknowledge Bob Keohane and Axel Marx for suggestions on developing this figure.

³³ See, for example, van Asselt 2017.

³⁴ Abbott’s (2012) transnational governance triangle classifies governance institutions into four functions: rule-making, monitoring, compliance, and information gathering and processing. See also Pattberg et al. 2017.

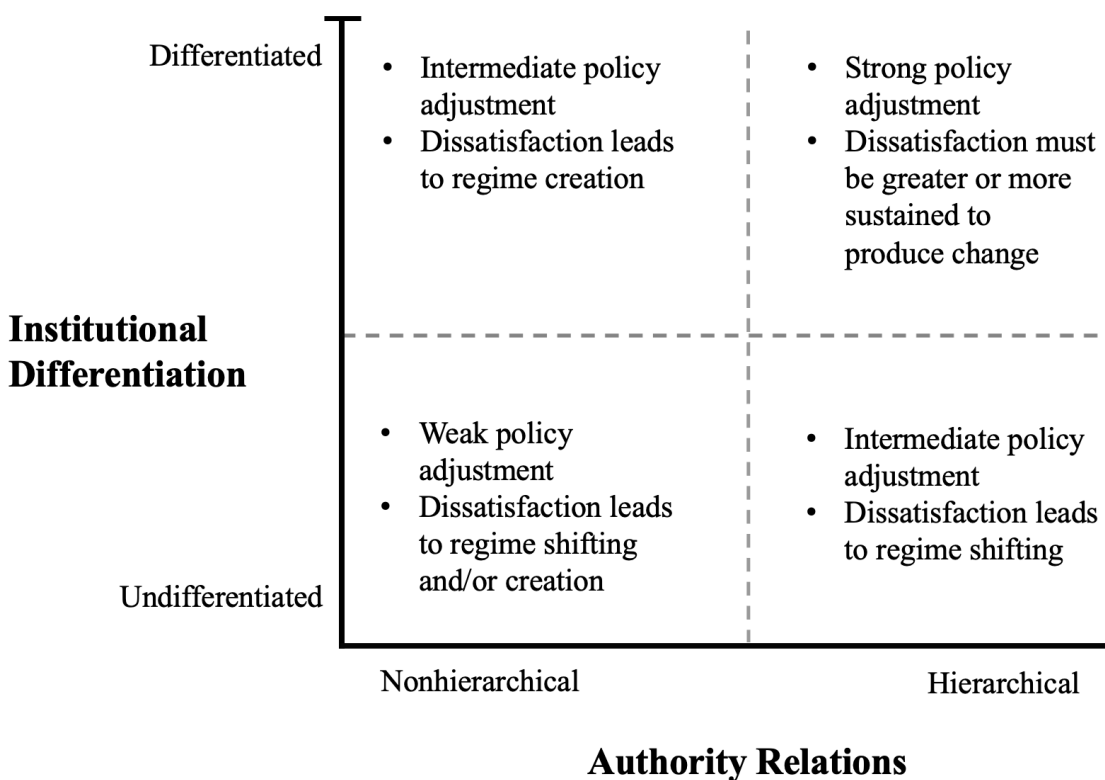


Figure 2: Expected Outcomes of Alternative Architectures

Hierarchical-differentiated. Regime complexes that are characterized by strong hierarchy among differentiated institutions (the Northeast corner) offer little room for forum shopping or otherwise playing institutions off against one another. Rules are likely to be clear and coherent, and we expect policy compliance and adjustment to be comparatively strong. The peak institution will encourage harmony of purpose, while high levels of differentiation mean that institutional programs and activities may be specialized rather than collaborative. Because institutional specialization makes it difficult for dissatisfied states to engage in regime shifting, while hierarchy creates obstacles to competitive regime creation, the bar for changing the architecture is high. Dissatisfaction tends to manifest as contests between status quo and disaffected coalitions within existing institutions rather than changes to complex architecture. Changes to the architecture are certainly possible, but dissatisfaction must be greater and more sustained than in other types of complexes to produce regime-shifting or creation.

The regime for international financial regulation provides a useful illustration of a hierarchical-differentiated complex. Global governance takes place in a cluster of more than twenty standard-setting bodies (SSBs) such as the Basel Committee on Banking Supervision, International Organization of Securities Commissions, and International Accounting Standards Board. These operate under the aegis of the Financial Stability Board, which Walter (2019)

describes as the “peak body.”³⁵ The SSBs exhibit significant functional differentiation, addressing securities regulation, accounting standards, and assessment of banking risk, for example. Consistent with our expectations for complexes in this space, we observe a low degree of competition among standard-setting bodies in finance, relatively little forum shopping, and pressure for compliance. Moreover, despite discontent with their influence in these bodies, emerging-market countries have not promoted alternative forums.³⁶ Regime shifting and regime creation are thus rare to nonexistent.

Hierarchical-undifferentiated. Where a regime complex is hierarchical but undifferentiated (Southeast corner), we expect more rule conflict (and associated forum shopping) than in the case of hierarchical-differentiated complexes, but we also expect the institution at the pinnacle of the hierarchy to constrain it. Because institutions are more substitutable than in the differentiated cases, principals will be tempted to explore regime shifting, particularly as their preferences and relative influence evolve over time. Compliance and policy adjustment on the part of principals are likely to be intermediate, greater than in the case of non-hierarchical-undifferentiated complexes but less than hierarchical-differentiated ones.

The regime complex for peacekeeping exemplifies the hierarchical-undifferentiated category. The United Nations (UN) sits atop a complex that includes thirteen regional organizations, plus a larger number of subregional organizations, that are involved in peacekeeping.³⁷ The UN provides peacekeeping operations more frequently and typically with greater manpower than the other organizations, although its reliance on regional contributions has been increasing. Regional peacekeepers increasingly seek Security Council authorization for operations, which signifies the importance of legitimacy that comes with the UN imprimatur, and conform to UN rules.³⁸ Conflicts sometimes arise among the institutions, but disputes are restrained by regional organizations’ reliance on UN resources and a widely shared preference for operating under its legal umbrella.³⁹ As a result, the presence of overlapping institutions tends to improve rather than degrade substantive outcomes, as a general matter. Missions are usually regarded as constructive by the parties, which is indicated by steady demand for interventions and a progressive broadening of their mandates.⁴⁰

Nonhierarchical-differentiated. Where complexes are non-hierarchical and differentiated (Northwest corner), it is the absence of functionally useful alternative institutions that discourages forum shopping. Differentiation reduces rule conflict, though no peak institution is

³⁵ These intergovernmental bodies receive input from numerous private-sector groups and interact with most of the global multilateral financial institutions, as well as several regional organizations such as the European Union. See, for example, Newman and Posner (2018).

³⁶ Walter (2019).

³⁷ Brosig (2015), Koops (2015) and Williams (2016).

³⁸ Article 52 of the UN Charter encourages regional arrangements to undertake peaceful resolution of local disputes, including peacekeeping missions, but Article 53 precludes the use of force without prior Security Council (UNSC) authorization.

³⁹ Williams and Boutellis (2014) and Williams (2016).

⁴⁰ See, also, Fortna (2008), Howard (2019), and Carnegie and Mikulaschek (2000). Howard notes that qualitative assessments of effectiveness tend to be less favorable than quantitative ones.

available to harmonize rules when conflicts do arise. We expect intermediate levels of compliance and policy adjustment on the part of principals. We also expect weaker discipline over institutions themselves and the greater agency drift that is associated with differentiation, and thus to observe more competitive regime creation as principals' preferences evolve over time (because differentiation places regime shifting out of reach).

The regime complex for climate change illustrates a nonhierarchical and differentiated architecture. Climate change governance began with the 1992 adoption of the United Nations Framework Convention on Climate Change (UNFCCC) and thereafter proliferated with the addition of numerous institutions.⁴¹ By 2015, eighty institutions stood near the center of a sprawling nebula that also consisted of 8500 sub-national organizations, 1500 corporations, 320 NGOs and 50 other international organizations (many of which fall outside our definition of a complex).⁴² While some institutions such as UNFCCC are broad, most of these initiatives are substantively narrow, making this regime complex highly differentiated, a consequence of the diversity of the cooperation games in the issue area.⁴³ The main carbon-emitting countries have not sought to elevate the UNFCCC as an umbrella organization; nearly all of the analysts who examine the climate-change regime complex conclude that it lacks hierarchical authority relations.⁴⁴ Reduction of carbon emissions is at best patchy, with success in some areas but a failure in many others, and falls short of what is needed to limit warming to 2 degrees Celsius. Overall, outcomes accord with our expectations for complexes in this corner of Fig. 2.

Nonhierarchical-undifferentiated. Where the regime complex is non-hierarchical and undifferentiated (Southwest corner), we predict relatively high institutional competition and rule conflict. As a consequence, we anticipate more forum shopping and lower policy adjustment relative to other architectures. Both regime shifting and creation can occur over time.

The regime complex for biodiversity is an example of this institutional architecture. The phrase “regime complex” was originally inspired by the emergence of the set of institutions for the protection and use of plant genetic resources (PGR). Raustiala and Victor (2004) described the PGR complex as composed of elemental regimes that were overlapping and non-hierarchical.⁴⁵ PGR governance lies in turn within a broader set of institutions for the use and protection of plant and animal species that include regimes for agriculture, trade, culture and development. The U.N. Convention on Biological Diversity (CBD) lies at the center of this expansive complex.⁴⁶ The various elements of the complex generate rules for protection, ownership and development of biological resources that have low coherence. The rapid loss of

⁴¹ Van Asselt (2014).

⁴² Pattberg, Sanderink and Widerberg (2017). See, also, van Asselt (2017) and Hadden (2015).

⁴³ Keohane and Victor (2011).

⁴⁴ Keohane and Victor (2011); Abbott (2012); Bulkeley (2014); Held and Hale et al. (2017, 184-204); Biermann et al. (2011); and Zelli (2011). Pattberg, Sanderink and Widerberg (2017) argue that fragmentation is alleviated by network connections and shared discourse, aspects of collaboration as developed in Henning (2021).

⁴⁵ Aubry (2019) provides an update on PGR governance.

⁴⁶ Morin et. al (2016, 7); Alter and Raustiala (2018, 7).

species globally indicates that the complex's disciplines have been very weak, corresponding to our expectations for this corner.

We wish to emphasize that this framework does not offer judgments about the normative merits of different architectures. Whether greater policy adjustment of hierarchical-differentiated complexes is normatively superior to outcomes in nonhierarchical-undifferentiated complexes, for example, depends in substantial measure on a separate assessment of the quality of policies in those issue areas. Legal scholars and political scientists tend to have different perspectives on the normative implications of rule conflict. While there are some exceptions, international lawyers tend to view court shopping that arises from conflicts in legal norms and rules to be corrosive.⁴⁷ By contrast, a number of political scientists view rule and norm contestation to be part of a process of experimentation that, while perhaps unruly, can break institutional rigidities and introduce innovation that can render outcomes more just. We tend to see normative value in cooperation *per se*, and in effective rules and policy adjustment over ineffective ones; but those judgments lie beyond the scope of our theoretical framework.

4.3 Summary of Findings from the Special Issue

The companion articles in this special issue test these expectations in ten regime complexes. These represent issue areas that are largely new to the research program, providing an ideal test of the hypotheses described in Figure 2. Some articles focus on single issue areas, leveraging change over time to estimate the effect of evolving regime complex architectures. Others compare regime complexes in different issue areas or examine “subcomplexes” within the same issue area. Collectively, they include a rich mix of empirical methods and provide important new insights into the operation and performance of regime complexes.

Figure 3 situates each regime complex examined in the companion articles within the authority-differentiation space defined in Figure 2. For studies that trace evolution over time, we include both the initial architecture in the regime complex as well as its end point. As the figure demonstrates, the regime complexes span much of the two-dimensional space highlighted by our framework. Below, we group these complexes by their architecture and assess their correspondence with the expected substantive outcomes.

⁴⁷ See, for example, discussion in Raustiala (2012).

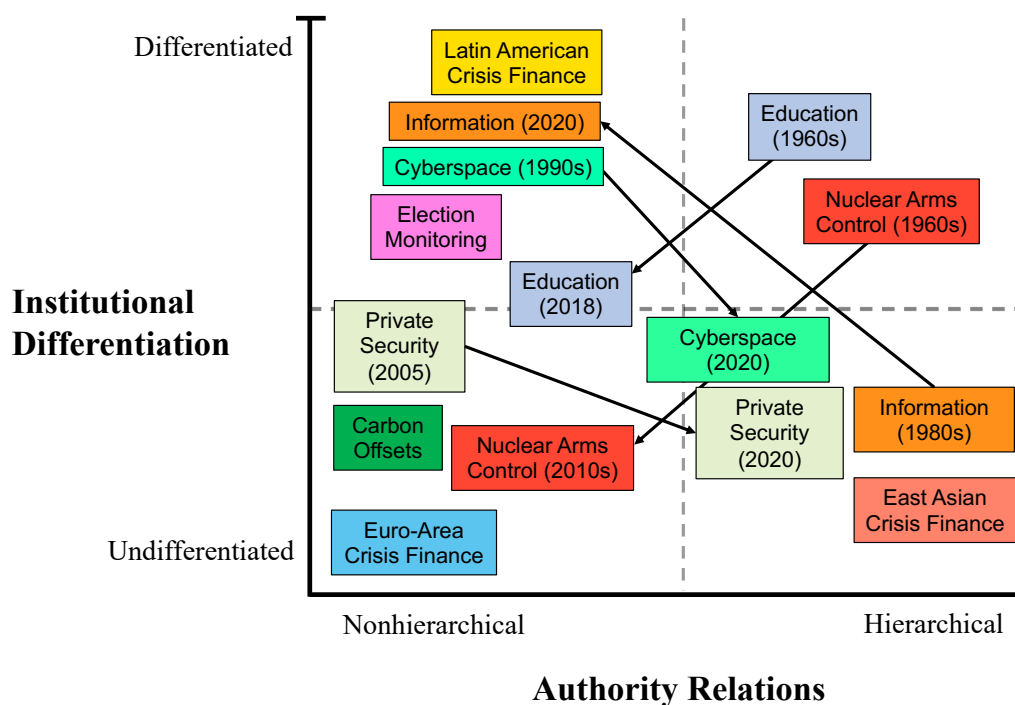


Figure 3: Regime Complexes Compared in this Special Issue

Hierarchical-differentiated cases are represented by the complexes for nuclear arms control and education. Eilstrup-Sangiovanni (2021) argues that nuclear arms control was centered on the “core” of the Nuclear Non-proliferation Treaty (NPT) before the 1970s but included a diverse set of functionally and geographically differentiated agreements related to nuclear weapons placement, testing, materials, and technology. Consistent with our expectations, she finds a high degree of rule coherence and policy adjustment during this period. Kijima and Lipsy (2021) argue that the regime complex for education was dominated by UNESCO in the 1960s; but that it, like the nuclear arms control complex, was subsequently augmented by additional institutions, which reduced differentiation and eroded hierarchy. Notably, they find that the regime complex produced intermediate levels of policy adjustment – lower than expected given the architecture in the 1960s, but consistent with the “equilibrium” architecture of the issue area that was realized in later years. Institutional proliferation in both cases demonstrates that barriers to change on the part of hierarchical-differentiated complexes can be overcome by strong exogenous shocks: profound changes at the United Nations that would accompany decolonization, coupled with low barriers to entry, in the case of education, and the Indian nuclear detonation in 1974, in the case of nuclear arms control.

East Asian finance and contemporary private security provide examples of hierarchical-undifferentiated complexes. Henning (2021) argues that East Asian creditor states designed regional bodies to overlap with IMF functions, but also ensured they deferred to IMF rules and authority. As a consequence, debtor countries within East Asia have uniformly eschewed borrowing, relied on own resources (via reserve accumulation), and pressed for modest softening

of the link to the Fund (regime shifting). Westerwinter (2021) similarly situates the contemporary regime complex for global private security governance nearest to this corner. He identifies the International Code of Conduct for Private Security Service Providers' Association (ICoCA) as dominant, supported by important principals such as the United States. Outcomes coincide with expectations in both cases.

With respect to nonhierarchical-differentiated regime complexes, Pratt (2021) argues that the regime complex for election monitoring lacks an authoritative “core” institution and is differentiated by both regional focus and rigor. He finds that differentiation precludes opportunistic forum shopping and strengthens policy adjustment in the regime complex. The crisis finance complex for Latin America is located in this corner as well, and exhibits intermediate policy adjustment and multiple attempts at regime creation, as predicted. Bonifai, Li, Newman, and Zhang (2021) situate the contemporary regime complex for information governance in this corner, and Hofmann and Pawlak (2021) locate an earlier incarnation of the regime complex for internet and internet-related technologies, which they label cyberspace, there. Since both of these digital governance articles primarily address evolution of these complexes, and debate theoretical underpinnings, we reserve discussion of them for below.

Finally, three articles examine nonhierarchical-undifferentiated complexes: present-day nuclear arms control, forest carbon-offset certification, and euro-area crisis finance. Policy adjustment is weak in contemporary nuclear arms control (Eilstrup-Sangiovanni 2021) and offset certification (Pratt 2021), as expected. By contrast, however, policy adjustment decidedly overshoots expectations in the case of the euro area, which Henning explains by introducing state-sponsored collaboration among institutions as a third factor shaping lending programs. In comparative perspective, such collaboration does in fact distinguish the euro-area troika from the other two complexes in this corner. Westerwinter finds that interinstitutional collaboration also arises in the more hierarchical and less differentiated private-security complex.

Overall, the correspondence between expected and observed substantive outcomes is high. Exceptions identified in contributions to the special issue highlight the ability of actors to strategically adapt in the face of challenging architectures. For example, Henning (2021) explains the most notable outlier, policy adjustment in the euro crisis, by supplementing the core theoretical framework with processes of state-led institutional collaboration. Somewhat greater challenges to the framework arise in connection with the evolutionary trajectories of complexes, to which we now turn.

5. THE EVOLUTION OF REGIME COMPLEXES

Up to this point, our explanation for the effects of architecture on outcomes has been largely an exercise in comparative statics. But our classification scheme leads readily to the question of whether and how complexes might move along the dimensions of hierarchy and differentiation over time. Complexes can in principle migrate in any direction or, if the migration is great enough, from one corner to any other corner in Figure 2. The framework

developed here enables us to make progress theorizing how complexes are likely to evolve under various conditions.

Drawing on theories of institutions, we employ the basic distinction between *exogenous* and *endogenous* change of regime complexes.⁴⁸ By exogenous change, we refer to independent shifts in the original, underlying sources of regime complex architecture identified in Figure 1. These variables – transformations in state preferences and power, for example – are commonly shaped by forces external to the operation of the regime complex. As they evolve, we expect corresponding changes in hierarchy and differentiation among institutions in the complex, albeit with possible lags or distortions. We refer to change that originates from the operation of complexes over time, by contrast, as endogenous. In our framework, endogenous change emerges due to feedback loops between the substantive outcomes and regime complex architecture, and it is the theoretically more challenging of the two sources of evolution.⁴⁹

Endogenous processes of change are graphically illustrated by the two dashed feedback arrows in Figure 1. The shorter of the two arrows, linking strategies of contestation to regime complex architecture, is relatively straightforward. Depending on the existing degree of hierarchy and differentiation, dissatisfied states may be more likely to engage in regime shifting and/or competitive regime creation. These, in turn, have direct effects on the architecture. Regime creation generates new institutions that overlap with existing ones, making complexes less differentiated. Regime shifting tends to erode the dominance of the peak institution, making the complex less hierarchical. If sustained over time, these processes can move the regime complex downward in both dimensions represented in Figures 2 and 3.

The longer feedback arrow, linking institutional policy outcomes to the original sources of regime complex architecture, embraces a broader set of mechanisms. In many cases, outcomes arising from regime complex architecture feed back into the preferences of member states. Shifts in the division of labor or authority of institutions in the complex, for example, can alter the relative influence of government bureaucracies in domestic competition over national policy. Changes in the locus of regulation-making within the complex can produce corresponding changes in the pattern of interest group lobbying at the domestic level, as some legislative committees and bureaucracies become more relevant and others less so. Each of these processes shape governments' preferences in international cooperation. In the long run, the distributive implications of policy adjustment exacted by complexes can reshape the relative capabilities of states, and thus sow the seeds of subsequent institutional reforms by which increasingly powerful actors consolidate their gains.

⁴⁸ Greif and Laitin (2004), Pierson (2004), Mahoney and Thelen (2010, 1-37), Keohane (2017), and Fioretos (2017).

⁴⁹ Our use of the terms “exogenous” and “endogenous” mirrors a recent turn in institutional scholarship. Recent scholarship recognizes that institutions can evolve both exogenously – via a change in their primary underlying determinants – or endogenously – as a consequence of their operations' feedback effects on members' preferences and relative influence. Endogenous change holds the possibility that global governance can evolve independently from nation states, whose politics are parochial and thus collectively undersupply global public goods, and thus is more normatively appealing to some analysts.

Endogenous change often depends on the manner in which institutions respond to jurisdictional overlap. Contributors to this volume highlight *competition* and *collaboration* as key institutional responses. Kijima and Lipsey (2021) stress competition, which depends in part on issue-area structure, while Henning (2021) and Westerwinter (2021) emphasize collaboration. Both strategies are responses to the potential for conflict to which overlap gives rise – although they can be promoted by principals directly as well – and have consequences for the subsequent evolution of the architecture. Competition is likely to produce winners and losers, contributing to hierarchy, or, if institutions avoid competing, niche finding. By contrast, collaboration is likely to perpetuate overlaps and less hierarchical authority relations.

Exogenous and endogenous mechanisms by which regime complexes evolved are identified in several of the articles in this special issue. Kijima and Lipsey theorize that issue area characteristics (an exogenous variable) shape the evolution of the education regime complex. Low barriers to entry and the absence of network effects in the policy domain drive competition among institutions. As a result, the complex evolves toward less hierarchy and a mix of differentiated and undifferentiated institutions, promoted by weaker and stronger states respectively. The regime complex for education originated as hierarchical and differentiated, with UNESCO and the International Association for the Evaluation of Educational Achievement at the core, but became nonhierarchical and less differentiated as the United States and other advanced countries shifted resources to institutions that better reflected their preferences, such as the World Bank and OECD. Such migration is consistent with the framework, as depicted by stage one and the shorter feedback arrow in Figure 1.

Eilstrup-Sangiovanni identifies both exogenous and endogenous sources of evolution of the nuclear arms control complex. Exogenous shocks, including technological change and the end of the Cold War, set into motion the erosion of hierarchy and differentiation in the regime complex. Regime creation and shifting by states created a negative feedback loop in which the attrition of hierarchy and differentiation became self-reinforcing, begetting further fragmentation. The “time-inconsistent bargain” between nuclear and non-nuclear states that lies at the heart of the regime is equally important in driving this evolution.

Private security regulation, information, and cyberspace governance are issue areas in which exogenous change creates new problems that are met with an endogenous response. The complex for private security emerged with a completely nonhierarchical, moderately undifferentiated architecture around the year 2000, and has since become substantially hierarchical and modestly less differentiated. Westerwinter’s article attributes this shift to coalescence around standard setting and monitoring as core functions of the complex once ICoCA was created.

Hofmann and Pawlak examine an important source of endogenous regime complex evolution rooted in a novel strategy of contestation: competition among issue frames. Actors with different preferences have promoted a variety of alternative frames to shape governance of cyberspace. Eventually the competition consolidated around a small number of issue frames, hardening substantive policy differences and conferring authority on the multilateral institutions over plurilateral and multi-stakeholder organizations. Their analysis demonstrates how framing

competition over a new governance problem can enhance both overlap and hierarchy simultaneously.

Bonifai, Li, Newman and Zhang seem to trace an arc for information governance that is contrary to that traced by Hofmann and Pawlak. For them, exogenous technical change shapes the interests of the big data companies and, with them, the preferences advanced by the United States, European Union and China. Powerful firms and their (sometimes captured) states used strategies of insulation to create silos that protected their interest in these three areas. Within the silos, principals layered new institutions on top of existing ones. As a consequence, the information multiplex, as they refer to this particular type of regime complex, evolved from a hierarchical, semi-differentiated architecture originally, to a nonhierarchical-differentiated one presently. The diverging trajectories traced by the two papers stem from differences in their temporal and conceptual scope: Bonifai, Li, Newman and Zhang begin prior to the technology revolution and examine a relatively narrow set of digital issues, while Hofmann and Pawlak begin their analysis after that revolution and examine a very expansive issue set. Once we take account of these differences, the two articles are not as inconsistent; in fact, they agree on the trajectory of internet governance.

The two articles on digital governance underscore the possibility that endogenous preference formation is likely to be especially strong in regime complexes for newly emergent issue areas. In such environments, domestic regulatory structures, stakeholder alliances, and government preferences might be non-existent or unusually fluid. Because domestic interests are not yet fully entrenched, international agreements and complex architectures can have an outsized impact on preference formation; domestic and international governance have a better chance of evolving together rather than sequentially.

Developing mechanisms of endogenous feedback further, we observe that the architecture of a regime complex also reshapes the information landscape for states and other actors.⁵⁰ The degree of hierarchy and differentiation in the regime complex affects the diversity and quality of information that institutions disseminate, from economic forecasts to signals about state compliance. The quality of information bears not only on actors' ability to cooperate substantively but also on the ability of principals to foresee the consequences of their choice of architecture. We conjecture that, with high-quality information, successive reforms of complexes will yield stable configurations, but that complexes that generate little new or poor information are more likely to cycle through reforms of the architecture without settling into stable equilibria. Information generation will bear, in other words, on whether endogenous change is adaptive or maladaptive.⁵¹

⁵⁰ We acknowledge Duncan Snidal for this important insight.

⁵¹ Complex adaptive systems are driven largely, though not necessarily exclusively, by endogenous sources of change. While attracted to that approach, we aim to shape a positive research program around testable expectations that are tighter than it presently allows. We believe that such expectations can be specified conditionally on hierarchy and differentiation; that is, the trajectories of complexes over time can be predicted using our framework.

Collectively, these papers highlight a shift over time in the initial architecture that characterizes new regime complexes. The quarter century after WWII witnessed the creation of several global multilateral institutions that loomed large in their respective issue areas. These became the focal institutions around which regime complexes emerged in the last quarter of the twentieth century, which would include nuclear arms control, education and trade. As Kahler (2020) observes, the dramatic increase in globalization, mobilization of domestic interest groups, decline in the cost of organization (Abbott and Faude 2020), proliferation of civil society organizations, and emergence of new issues on the agenda rendered global governance much more complex after the end of the Cold War. Thus, whereas new regime complexes tended to emerge in the hierarchical-differentiated corner of Figure 2 during the early postwar decades, they instead tended to emerge in the less hierarchical and less differentiated spaces during the two decades of the twenty-first century. Articles in this special issue suggest a difference between truly novel issues and those that are formed from existing but segmented issues bleeding into one another, owing to economic transformation or technological change.

We expect that in the future complexes for genuinely new issues will tend to emerge in the nonhierarchical-undifferentiated corner, given the limits on principals' ability to anticipate emerging issues and their tendency to create new institutions without specifying their relationship with overlapping bodies. However, our framework also suggests that nonhierarchical and undifferentiated institutions are inherently competitive. Secretariats, when operating autonomously, can differentiate their institutions along lines of comparative advantage, selecting niches that reduce institutional conflict. By creating winners and losers, or displacing institutions, competition will tend to establish or reinforce hierarchy. Some institutions might defer to others, or hierarchy might be instilled through other means, to soften competitive pressure.

We thus conjecture that the regime complexes in the nonhierarchical-undifferentiated corner are dynamically *unstable* and will – if left to their own devices and given sufficient time – migrate toward one of the other three corners. The well-documented cases of trade in GMO products and patenting of AIDS drugs are examples where intense rule conflict eventually yielded to a *modus vivendi* among the institutions.⁵² The trajectory of the complex for private security provides another, more contemporary example. Regime complexes may remain in the nonhierarchical-undifferentiated corner for extended periods, if principals actively manage interinstitutional disputes or, perceiving benefits from competition, block mutual accommodation – a caveat that we emphasize. But absent such intervention, we expect regime complexes to migrate away from the nonhierarchical-undifferentiated corner over time.

6. CONCLUSION

Given the increasing institutional density of international relations, theories of cooperation that do not take account of the relationships and interactions among international institutions are seriously incomplete. The concept of international regime complexity has thus generated substantial interest among international relations scholars. However, continued

⁵² See, for example, Gehring and Faude (2014) and Faude (2015).

progress in this research program requires pairing the concept with conditional theories that explain variation in how regime complexes shape international cooperation. In this article, we emphasize the different patterns of institutional interaction that can emerge among clusters of institutions. These patterns alter the strategic environment in which states and other actors interact, influencing a range of cooperative outcomes.

We employ two dimensions to characterize how institutions in the same issue area interact: relations of authority and differentiation. These dimensions vary significantly across empirical regime complexes. Our approach uses them to classify the institutional architecture of regime complexes and argues that variation in this architecture helps explain substantive outcomes. We believe that this classification scheme has analytical benefits relative to schemes employed previously in complexity research.

The main contribution of the article is articulating the effects of different architectures on substantive outcomes. We develop testable expectations with respect to all four combinations of hierarchy and differentiation, which shape the extent of policy adjustment and the strategies of contestation adopted by dissatisfied actors. The study applies the framework by identifying regime complexes in specific issue areas that express each of these architectures and finds outcomes that generally correspond to our *ex ante* expectations. A second important contribution is theorizing the evolution of regime complexes, identifying circumstances under which their architectures become more or less hierarchical, or differentiated, over time and sorting endogenous from exogenous processes of change.

Our intention is to offer a theoretical framework that can serve as a productive platform for comparative research on regime complexes and improve cumulation across studies in this research program. To that end, this special issue tests the framework's expectations across ten regime complexes examined in seven articles. We find generally high correspondence between the expectations of the framework and the outcomes observed in the companion articles. These articles also highlight areas where the framework and the broader research program on regime complexity require elaboration – with respect to the importance of inter-institutional collaboration in shaping substantive outcomes and the permeability and malleability of issue-area boundaries, for example.

Overall, these contributions demonstrate the promise of the framework, underscoring the range of issue areas and time periods in which it can be employed, while drawing on a rich diversity of methodological approaches. The ultimate test of the value of our approach is whether it enables authors to better explain the outcomes of cooperation and conflict in dense institutional settings, facilitates discovery of new causal channels, and improves cumulation of research across studies.

While our volume contributes directly to scholarship on regime complexity, it also suggests several further steps to continue advancing the research agenda. First, scholars should establish and refine metrics for authority relations and differentiation that can be deployed comparatively. Scholars have developed measures of hierarchy, and to a lesser extent differentiation, but would benefit from refashioning them for analysis of *interinstitutional*

interaction as well as configuring them to be applicable *across*, not simply within, different regime complexes. Similarly, our touchstones for outcomes, policy adjustment and dissatisfied actors' strategies, would benefit from more detailed specification, but again in forms that facilitate cross-complex comparison. The research program would also benefit from compiling additional data on institutional interactions. Quantitative measures of institutional competition and collaboration can reinforce the use of comparative case studies and process tracing to ensure findings are robust across different methods.

Yet another fruitful step would be to extend comparisons of historical trajectories of complexes, as theories of regime-complex evolution remain relatively unexplored terrain. Finally, our field of scholarship would benefit from developing normative approaches to the design of complexes to enhance the substantive quality of governance, improve information, bolster the resilience of well-performing institutions, and facilitate reform of under-performing complexes.

REFERENCES

- Abbott, Kenneth W. 2012. “The Transnational Regime Complex for Climate Change.” *Environment and Planning C: Government and Policy* 30 (4): 571–90.
- Abbott, Kenneth W. 2014. “Strengthening the Transnational Regime Complex for Climate Change.” *Transnational Environmental Law* 3 (1): 57–88.
- Abbott, Kenneth W., and Benjamin Faude. 2020. “Choosing Low-Cost Institutions in Global Governance.” *International Theory*. June. DOI:10.1017/S1752971920000202.
- Abbott, Kenneth W., Jessica F. Green, and Robert O. Keohane. 2016. “Organizational Ecology and Institutional Change in Global Governance.” *International Organization* 70 (2): 247–77.
- Abbott, Kenneth W., Philipp Genschel, Duncan Snidal, and Bernhard Zangl (eds.). 2015. *International Organizations as Orchestrators*. Cambridge: Cambridge University Press.
- Aggarwal, Vinod K. 1998. “Reconciling Multiple Institutions: Bargaining, Linkages, and Nesting.” In *Institutional Designs for a Complex World: Bargaining, Linkages, and Nesting*, edited by Vinod K. Aggarwal, 1–31. Ithaca, NY: Cornell University Press.
- Alter, Karen J., and Sophie Meunier. 2009. “The Politics of International Regime Complexity.” *Perspectives on Politics* 7 (1): 13–24.
- Alter, Karen J., and Kal Raustiala. 2018. “The Rise of International Regime Complexity.” *Annual Review of Law and Social Sciences* 14: 329–49.
- Aubry, Sylvain. 2019. “The Future of Digital Sequence Information for Plant Genetic Resources for Food and Agriculture.” *Frontiers in Plant Science* 10:1046, doi: 10.3389/fpls.2019.01046.
- Biermann, Frank, Philipp Pattberg, Harro van Asselt, and Fariborz Zelli. 2009. “The Fragmentation of Global Governance Architectures: A Framework for Analysis.” *Global Environmental Politics* 9 (4): 14–40.
- Bonifai, Niccolo W., [Siyao Li](#), Abraham L. Newman, and Qi Zhang. 2021. “The Digital Regime Multiplex.” Working Paper.
- Busch, Marc L. 2007. “Overlapping Institutions, Forum Shopping, and Dispute Settlement in International Trade.” *International Organization* 61 (4): 735–61.
- Bush, Sarah Sunn, and Prather, Lauren. 2018. “Who’s There? Election Observer Identity and the Local Credibility of Elections.” *International Organization* 72 (3): 659–92.

- Brosig, Malte. 2015. *Cooperative Peacekeeping in Africa: Exploring Regime Complexity*. NY: Routledge.
- Carnegie, Allison, and Christoph Mikulaschek. 2020. "The Promise of Peacekeeping: Protecting Civilians in Civil Wars." *International Organization* (online first). <https://doi.org/10.1017/S0020818320000442>.
- Cecchetti, Stephen G. 2018. "Collaboration in Financial Regulatory Reform: The IMF, the Financial Stability Board, and the Standard Setting Bodies." Background Paper BP/18-02/04. Washington, D.C.: Independent Evaluation Office of the International Monetary Fund.
- Christiansen, Thomas, and Christine Neuhold (eds.). 2012. *International Handbook on Informal Governance*. Cheltenham: Edward Elgar Publishing.
- Colgan, Jeff D., Robert O. Keohane, and Thijs Van de Graaf. 2012. "Punctuated Equilibrium in the Energy Regime Complex." *The Review of International Organizations* 7 (2): 117–43.
- Davis, Christina L. 2009. "Overlapping Institutions in Trade Policy." *Perspectives on Politics* 7 (1): 25–31.
- Durkheim, Emile. 1893. *The Division of Labor in Society*. Translated by George Simpson, 1933. New York: Free Press, 1964.
- Eilstrup-Sangiovanni, Mette. 2018. "Death of International Organizations. The Organizational Ecology of Intergovernmental Organizations, 1815–2015." *The Review of International Organizations*.
- Eilstrup-Sangiovanni, Mette. 2021. "The International Regime Complex for Nuclear Non-Proliferation." Working Paper.
- Faude, Benjamin. 2015. *Von Konkurrent zu Arbeitsteilung: Komplexität und Dynamik im Zusammenspiel internationaler Institutionen*. Frankfurt am Main: Campus Verlag GmbH.
- Farrell, Henry, and Abraham Newman. The New Interdependence Approach: Theoretical Development and Empirical Demonstration. *Review of International Political Economy* 23:5, 713-736, DOI: 10.1080/09692290.2016.1247009.
- Fioretos, Orfeo. 2017. "Institutions and Time in International Relations." In *International Politics and Institutions in Time* (ed: Orfeo Fioretos): 3-36. Oxford University Press.
- Fortna, Virginia Page. 2008. *Does Peacekeeping Work?: Shaping Belligerents' Choices after Civil War*. Princeton University Press.
- Gehring, Thomas, and Benjamin Faude. 2014. "A Theory of Emerging Order within Institutional Complexes: How Competition among Regulatory International Institutions Leads to Institutional Adaptation and Division of Labor." *The Review of International Organizations* 9 (4): 471–98.

- Green, Jessica F. 2013. *Rethinking Private Authority: Agents and Entrepreneurs in Global Environmental Governance*. Princeton: Princeton University Press.
- Green, Jessica F. 2018. "Transnational Delegation in Global Environmental Governance: When Do Non-state Actors Govern?" *Regulation & Governance* 6 (2): 259–84.
- Green, Jessica F. Forthcoming. "Complexity and Hierarchy in Global Governance: Understanding Authority in Antarctic Governance." *International Studies Quarterly*.
- Green, Jessica F., and Graeme Auld. 2016. "Unbundling the Regime Complex: The Effects of Private Authority." *Transnational Environmental Law* 12 (2): 263–76.
- Greif, Avner, and David D. Laitin. "A Theory of Endogenous Institutional Change." *American Political Science Review* (2004): 633-652.
- Hadden, Jennifer. 2015. *Networks in Contention: The Divisive Politics of Climate Change*. Cambridge: Cambridge University Press.
- Haftel, Yoram Z., and Stephanie C. Hofmann. 2019. "Rivalry and Overlap: Why Regional Economic Organizations Encroach on Security Organizations." *Journal of Conflict Resolution* (2019): 1-27.
- Heldt, Eugénia C., and Henning Schmidtke. 2019. "Explaining Coherence in International Regime Complexes: How the World Bank Shapes the Field of Multilateral Development Finance." *Review of International Political Economy* DOI: 10.1080/09692290.2019.1631205.
- Henning, C. Randall. 2017. *Tangled Governance: International Regime Complexity, the Troika, and the Euro Crisis*. Oxford: Oxford University Press.
- Henning, C. Randall. 2019. "Regime Complexity and the Institutions of Crisis and Development Finance." *Development and Change* 50 (1): 24-45. DOI: 10.1111/dech.12472.
- Henning, C. Randall. 2021. "International Regime Complexes in Crisis Finance: A Comparison of Regional Architectures." Working Paper.
- Hofmann, Stephanie C. 2010. "Why Institutional Overlap Matters: CSDP in the European Security Architecture." *Journal of Common Market Studies* 49: 101-20.
- Hofmann, Stephanie C. 2013. *European Security in NATO's Shadow*. Cambridge: Cambridge University Press.
- Hofmann, Stephanie C. 2018. "The Politics of Overlapping Organization: Hostage-Taking, Forum-Shopping and Brokering." *Journal of European Public Policy* 26 (6): 883-905.
- Hofmann, Stephanie C., and Andrew I. Yeo. 2018. "Divergent Paths to Regime Complexity in Asia and Europe." Paper presented to the American Political Science Association Annual Meetings, Boston, August 31.

- Hofmann, Stephanie C., and Patryk Pawlak. 2021. "Governing Cyberspace: Issue Frames, Institutional Springboards and Frame Consolidation." Working Paper.
- Howard, Lise M. 2019. *Power in Peacekeeping*. New York: Cambridge University Press.
- Johnson, Tana. 2014. *Organizational Progeny: Why Governments are Losing Control over the Proliferating Structures of Global Governance*. Oxford: Oxford University Press.
- Johnson, Tana. 2016. "Cooperation, Co-optation, Competition, Conflict: International Bureaucracies and Non-Governmental Organization in an Interdependent World." *Review of International Political Economy* 23 (2): 737–67.
- Johnson, Tana, and Johannes Urpelainen. 2012. "A Strategic Theory of Regime Integration and Separation." *International Organization* 66 (4): 645–77.
- Jupille, Joseph, Walter Mattli, and Duncan Snidal. 2013. *Institutional Choice and Global Commerce*. Cambridge: Cambridge University Press.
- Jupille, Joseph, Walter Mattli, and Duncan Snidal. 2017. "Dynamics of Institutional Choice." In *International Politics and Institutions in Time*, edited by Orfeo Fioretos, 117–43. Oxford: Oxford University Press.
- Kahler, Miles. 2016. "Complex Governance and the New Interdependence Approach (NIA)." *Review of International Political Economy* 23 (5): 825–39.
- Kahler, Miles. 2018. "Global Governance: Three Futures." *International Studies Review* 20 (2): 239–46.
- Kahler, Miles. 2020. "The Arc of Complex Global Governance: From Organization to Coalition." Manuscript, American University. Presented to the APSA Annual Meetings, 10-13 September.
- Kelley, Judith. 2009. "The More the Merrier? The Effects of Having Multiple International Election Monitoring Organizations." *Perspectives on Politics* 7 (1): 59–64.
- Keohane, Robert O. 2017. "Observations on the Promise and Pitfalls of Historical Institutionalism in international relations." In *International Politics and Institutions in Time* (ed: Orfeo Fioretos).
- Keohane, Robert O., and David G. Victor. 2011. "The Regime Complex for Climate Change." *Perspectives on Politics* 9 (1): 7–23.
- Keohane, Robert O., and David G. Victor. 2013. "The Transnational Politics of Energy." *Daedalus* 142 (1): 97–109.
- Keohane, Robert O., Jeff D. Colgan, and Thijs Van de Graaf. 2012. "Punctuated Equilibrium in the Energy Regime Complex." *The Review of International Organizations* 7 (2): 117–43.

- Kijima, Rie, and Phillip Y. Lipsky. 2021. "The Regime Complex for Education." Working Paper.
- Kleine, Mareike. 2013. *Informal Governance in the European Union: How Governments Make International Organizations Work*. Ithaca, NY: Cornell University Press.
- Koops, Joachim A., et al. 2014. *Oxford Handbook on United Nations Peacekeeping Operations*. Oxford, UK: Oxford University Press.
- Krasner, Stephen D. 1982. "Structural Causes and Regime Consequences: Regimes as Intervening Variables." *International Organization* 36(2): 185–205.
- Lake, David A. 2009. *Hierarchy in International Relations*. Ithaca, NY: Cornell University Press.
- Lesage, Dries, and Thijs Van de Graaf. 2013. "Thriving in Complexity? The OECD System's Role in Energy and Taxation." *Global Governance* 19 (1): 83–92.
- Lipsky, Phillip Y. 2015. "Explaining Institutional Change: Policy Areas, Outside Options, and the Bretton Woods Institutions." *American Journal of Political Science* 59(2): 341–56.
- Lipsky, Phillip Y. 2017. *Renegotiating the World Order: Institutional Change in International Relations*. Cambridge: Cambridge University Press.
- Mahoney, James, and Kathleen Thelen, eds. 2010. *Explaining Institutional Change: Ambiguity, Agency, and Power*. Cambridge: Cambridge University Press.
- Martin, Lisa L. 2019. "Formality, Typologies, and Institutional Design." *Review of International Organizations*. <https://doi.org/10.1007/s11558-019-09375-9>.
- Mattern, Janice Bially, and Ayse Zarakol. 2016. "Hierarchies in World Politics." *International Organization* 70(3): 623-54.
- Meunier, Sophie, and Jean-Frederic Morin. 2017. "The European Union and the Space-Time Continuum of Investment Agreements." *Journal of European Integration* 39 (7): 891–907.
- Moravcsik, Andrew. 1997. "Taking Preferences Seriously: A Liberal Theory of International Politics." *International Organization* 51: 512-53.
- Moravcsik, Andrew. 2008. "The New Liberalism." In *Oxford Handbook of International Relations*, edited by Christian Reus-Smit and Duncan Snidal, pp. 234-254. Oxford/New York: Oxford University Press.
- Morin, Jean-Frédéric. 2020. "Concentration Despite Competition: The Organizational Ecology of Technical Assistance Providers." *The Review of International Organizations*. <https://doi.org/10.1007/s11558-018-9322-7>.

- Morin, Jean-Frédéric, Sélim Louafi, Amandine Orsini, Mohamed Oubenal. 2016. “Boundary Organizations in Regime Complexes: A Social Network Profile of IPBES.” Social Science Research Network paper at <https://ssrn.com/abstract=3051767>.
- Morin, Jean Frédéric, Joost Pauwelyn, and James Hollway. 2017. “The Trade Regime as a Complex Adaptive System: Exploration and Exploitation of Environmental Norms in Trade Agreements.” *Journal of International Economic Law* 20 (2): 365–90.
- Morse, Julia C., and Robert O. Keohane. 2014. “Contested Multilateralism.” *Review of International Organization* (March) DOI 10.1007/s11558-014-9188-2.
- Morse, Julia C., and Robert O. Keohane. 2016. “Reply to Critics.” Special Issue *Global Constitutionalism* 5 (3): 344–50.
- Nye, Joseph S., Jr. 2014. “The Regime Complex for Managing Global Cyber Activities.” Global Commission on Internet Governance Paper No. 1. Waterloo, ON: Centre for International Governance Innovation and Chatham House, May.
- Orsini, Amandine, Jean-Frédéric Morin, and Oran Young. 2013. “Regime Complexes: A Buzz, a Boom, or a Bust for Global Governance?” *Global Governance* 19 (1): 27–39.
- Pattberg, Philipp, Lisa Sanderink, and Oscar Widerberg. 2017. “The Climate Governance Regime Complex: Institutions, Actors and Discourses.” In *Governing the Climate Change Regime: Institutional Integrity and Integrity Systems*, edited by Tim Cadman, Rowena Maguire, and Charles Sampford, 47–69. Abingdon, Oxon.: Routledge.
- Pierson, Paul. 2004. *Politics in Time: History, Institutions, and Social Analysis*. Princeton: Princeton University Press.
- Pratt, Tyler. 2018. “Deference and Hierarchy in International Regime Complexes.” *International Organization* 72 (3): 561–90.
- Pratt, Tyler. 2021. “Angling for Influence: Institutional Proliferation in Development Banking.” *International Studies Quarterly*, sqaa085, <https://doi.org/10.1093/isq/sqaa085>.
- Pratt, Tyler. 2021. “Value Differentiation, Policy Change, and Cooperatin in International Regime Complexes.” Working Paper. https://www.tylerbpratt.com/s/Pratt_ValueDifferentiation_Nov2020.pdf.
- Raustiala, Kal. 2012. “Institutional Proliferation and the International Legal Order.” In *Interdisciplinary Perspectives on International Law and International Relations: The State of the Art*, pp. 293-320, edited by Jeffrey L. Dunoff and Mark A. Pollack. Cambridge, UK: Cambridge University Press.
- Raustiala, Kal, and David G. Victor. 2004. “The Regime Complex for Plant Genetic Resources.” *International Organization* 58 (2): 277–310.

- Rixen, Thomas, Lora Anne Viola, and Michael Zürn (eds.). 2016. *Historical Institutionalism and International Relations: Explaining Institutional Development in World Politics*. Oxford: Oxford University Press.
- Ruggie, John Gerard. 2014. "Global Governance and 'New Governance Theory': Lessons from Business and Human Rights." *Global Governance* 20 (1): 5–17.
- Stone, Randall W. 2011. *Controlling Institutions: International Organizations and the Global Economy*. Cambridge: Cambridge University Press.
- van Asselt, Harro. 2014. *The Fragmentation of Global Climate Governance: Consequences and Management of Regime Interactions*. Cheltenham: Edward Elgar.
- Van de Graaf, Thijs. 2013. *The Politics and Institutions of Global Energy Governance*. Basingstoke, Hampshire: Palgrave Macmillan.
- Van de Graaf, Thijs, and Ferdi de Ville. 2013. "Regime Complexes and Interplay Management." In *Insights from Global Environmental Governance*, edited by Jean-Frédéric Morin and Amandine Orsini. Special Issue *International Studies Review* 15 (4): 562–89.
- Voeten, Erik. 2016. "International Human Rights Institutions: Competition and Complementarity." In *Global Order and the New Regionalism*, edited by Miles Kahler, pp. 55-66. New York: Council on Foreign Relations.
- Voeten, Erik. 2017. "Competition and Complementarity between Global and Regional Human Rights Institutions." *Global Policy* 8 (February): 119-24.
- Walter, Andrew. 2019. "Fragmentation and Centralization in Global Economic Governance: Why Is Financial Regulatory Standard-Setting Different?" Report for the Centre for International Governance Innovation (CIGI). Manuscript. July.
- Waltz, Kenneth N. 1979. *Theory of International Politics*. Reading, MA: Addison-Wesley.
- Westerwinter, Oliver, Kenneth W. Abbott, and Thomas Biersteker. 2021. "Informal Governance in World Politics." *The Review of International Organizations*, 1-27.
- Westerwinter, Oliver. 2021. "Hierarchy, Differentiation, and Cooperation in the Regime Complex for Global Private Security Governance." Working Paper.
- Williams, Paul D. 2016. "Global and Regional Peacekeepers." In *Global Order and the New Regionalism*, edited by Miles Kahler. Council on Foreign Relations Discussion Paper Series on Global and Regional Governance, September, pp. 70-83.
- Williams, Paul D., and Arthur Boutellis. 2014. "Partnership Peacekeeping: Challenges and Opportunities in the United National-African Union Relationship." *African Affairs* 113/451, 254-78.

- Young, Oran R. 2012. "Building an International Regime Complex for the Arctic: Current Steps and Next Steps." *The Polar Journal* 2 (2): 391–407.
- Zelli, Fariborz. 2011. "The Fragmentation of the Global Climate Governance Architecture." *WIREs Climate Change* 2 (March/April): 255-270.
- Zürn, Michael, and Benjamin Faude. 2013. On Fragmentation, Differentiation, and Coordination. *Global Environmental Politics* 13 (3): 119–30.

