

Global Governance in Complex Times: Exploring New Concepts and Theories on Institutional Complexity

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This article, and the special issue it introduces, seek to contribute to the emerging and much-needed dialogue between the study of global governance and the study of social complexity. We hold that, while there is wide acceptance that global governance is becoming increasingly complex, studying this complexity still faces significant challenges in terms of concepts, theory, and methodology.

The article outlines why that dialogue is needed, and how the complexity sciences can help us address some of these challenges. It then introduces key questions central to such an integrated research programme, for instance: under what conditions can a global governance system be regarded as complex? Which methods can help us recognize and assess patterns of stability, iteration, and change in global governance? How can a theory-driven analysis take into account that complexity may influence spaces for political agency, i.e. that it may alter key aspects of legitimacy, accountability, transparency, technocracy, and power and ultimately the strategic options of certain actors? Finally, the article looks ahead to the special issue and summarizes how the authors contribute crucial conceptual, theoretical, and methodical ideas for addressing these and other questions.

Keywords: Institutional complexity; complexity theory; global governance; interdisciplinarity; research agenda

Introduction

Global governance can be defined as “all coexisting forms of collective steering of social affairs, by public and private actors, that directly or in their repercussions, transcend national frontiers” (Zelli, 2018). Following this broad understanding, global governance today is increasingly characterized by a proliferation of actors and relationships, including intergovernmental and transnational institutions, technological artefacts, information flows, intergovernmental treaties, and trade/financial lending dependencies. A dense network of connections between these elements across scales and spheres of authority has turned global governance increasingly complex.

Although the importance of this development is widely recognized, studying this complexity still poses significant challenges. Different scholarships, e.g. on international relations, international law, and institutional economics, have addressed the phenomenon over the past decades, starting from work on interlocking organizations and polycentricity in the 1960s (e.g. Galaskiewicz, 1979; V. Ostrom & E. Ostrom, 1965; cf. Aligica & Tarko, 2012) and has since led to a series of research programmes around overlapping concepts like institutional interlinkages, fragmentation, or regime complexes (e.g. Oberthür & Gehring, 2006; Biermann et al., 2009; Raustiala & Victor, 2004). These different literatures have broken important ground on conceptualizing and theorizing the complexity of governing global affairs.

Yet, as we argue in this introduction to our special issue, they have almost exclusively done so by revisiting and adapting theories from their own turfs, such as organizational and institutional theories from law and the social sciences. While these important literatures set out to better understand complexity in global governance, they emphasized existing governance theories while not (yet) engaging with theories dedicated to complexity itself. As a consequence, while there seems to be a wide acceptance that global governance is becoming increasingly complex, studying this complexity still faces significant challenges in terms of concepts, theory and methodology.

It is against this backdrop that this special issue seeks to contribute to the emerging and much-needed dialogue between the study of global governance and the study of social complexity. To this



end, the special issue brings together scholars from research traditions as different as international relations, complexity sciences, institutional economics, and network analysis. They contribute short think-pieces that point towards new approaches in research as well as full-fledged research articles that use ideas from social complexity research to answer questions about global governance.

This introduction will first outline why that dialogue is needed, and how the complexity sciences speak to conceptual, theoretical, and methodical endeavours that may be employed for studying the complexity of global governance. Next, we introduce the key questions central to such an integrated research programme. In a third step, we summarize how the authors in this special issue contribute crucial conceptual, theoretical, and methodical ideas for addressing some of these questions.

Rationale for a Stronger Cross-disciplinary Collaboration

Considerable conceptual and theoretical work by scholars of international relations, international law, and institutional economics has been dedicated to *institutional* complexity. “International institutions,” be they intergovernmental, non-governmental, or a mix thereof, are understood as “persistent and connected sets of rules (formal and informal) that prescribe behavioural roles, constrain activity, and shape expectations” (Keohane, 1989, p. 3). In this interpretation, the “international institution” is a generic concept which covers both international organizations – that have the capacity to act, e.g. to assess the compliance with rules – and international regimes – that represent treaties or sets of treaties (ibid.).

The themes of the aforementioned early literatures on polycentricity of institutions and interlocking organizations (Aldrich, 1979; Galaskiewicz, 1979; Guetzkow, 1966; Pfeffer & Salancik, 1978; S. Schmidt & Kochan, 1977; Polanyi & Prosch, 1975; V. Ostrom & E. Ostrom, 1965; cf. McGinnis, 1999; Aligica & Tarko, 2012) demonstrate awareness of complexity in the global realm. The link between institutional research and complexity spurred some of the foremost advances in institutional research, especially in the field of international relations. In their pioneering work on neoliberal institutionalism, Robert Keohane and Joseph Nye (1977) argued that complex interdependence, both in terms of content (complexity of the problem) and structure (complexity of the institutional landscape), transforms international politics and chances for cooperation. Since the 1990s the notion of “global governance” has become linked to the ascent of new, transnational types of institutions, which, in turn, represent a large diversity of norms and interests and add a further dimension of complexity (Rosenau & Czempiel, 1992).

Over the last twenty years then, scholars directed more attention toward coordination problems between institutions, and their competition for regulatory primacy. Complexity in this research programme was not so much seen as a condition for a thriving and organically growing landscape of global governance, but as a property or consequence of, as well as a challenge to, global governance. One research tradition scrutinized dyadic overlaps between two or more individual institutions, e.g. between the UNFCCC and the WTO on questions of emissions trading and border adjustments (Oberthür & Gehring, 2006; Zelli, 2010). This research perspective includes literatures on inter-organizationalism (cf. R. Biermann & Koops, 2017) regime interaction and global constitutionalism (since the 1990s, esp. Herr & Chia, 1995; Chambers, 1998, 2001, 2008; Young, 1996, 2002; Oberthür & Gehring, 2006; Stokke, 2012; Oberthür & Stokke, 2011; Selin & VanDeveer, 2003; Faude & Fuss, 2020).

Other research programmes looked at complexity among institutions of an entire policy field. Arguably the most influential of these programmes addresses “regime complexes” for particular issue areas like climate change or plant genetic resources (Keohane & Victor, 2011; Orsini et al. 2013; Raustiala & Victor, 2004), with similar studies conducted under labels such as institutional fragmentation, polyarchy, contested multilateralism, or the nexus approach (cf. Faude & Parizek, 2020; Morse & Keohane, 2014; Zelli, 2011a,b; Zelli et al., 2010, 2020). To explain the degree and shape of institutional complexity in several global governance domains, scholars adapted various existing



theories of international relations, such as different strands of institutionalism (e.g. Stokke, 2012; Van de Graaf, 2013; Zelli et al., 2013), sociological differentiation theory (Zürn & Faude, 2013), and problem-structuralism (Zelli et al., 2017). The growing research efforts around such questions led to today's consensus that a thorough understanding of an intergovernmental or transnational institution is not possible without taking its wider governance environment into account.

Notwithstanding these achievements, the more scholars brought complexity into their institutional research, the more they came to recognize the considerable need for stronger theoretical foundation, conceptual clarity, cross-disciplinary fertilization, and systematic empirical analyses. Recent developments in global governance and the need for their more comprehensive explanation fuelled such calls, from the resistance to scientific knowledge on environmental issues and the reignition of trade wars to Brexit and the deterioration of established multilateral institutions (Geyer, 2003; Haynes, 2015; Jervis, 1997; Kavalski, 2007; Keohane & Victor, 2011; Room, 2015; Zürn & Faude, 2013).

To address these gaps in a comprehensive manner, scholars on complex global governance today should, we argue, make further efforts to take on board complexity-related tenets and work with scholars from other disciplines to advance their theoretical thinking and methodical repertoire – in particular for embracing major properties of complexity such as uncertainty and unpredictability (Gerrits, 2012; Jervis, 1997; Reed & Harvey, 1992).

The benefits of integrating such concepts and methods in research on international institutions have been demonstrated by pioneering studies such as Robert Axelrod's (1986) evolutionary model of norms dynamics or Thomas Schelling's (1971) agent-based model of segregation mechanisms. These are early examples of how social scientists have tried to address the complex nature of social interactions in theory and method.

More recently, Abbott et al. (2016) showed this for *organizational ecology* theories, in their focus on density, resources and niches to hypothesize trajectories of institutional populations. Likewise, *social network analysis* (SNA) has become popular among global governance scholars, offering transparent and replicable measures to classify network structures and to identify structurally privileged actors within them (Knoke et al., 2021). Closely related to SNA, *statistical network modelling* is increasingly used to investigate how changes in complex multi-level governance systems are produced by concatenations of social mechanisms (Hollway et al., 2020; Milewicz et al., 2018). In a similar vein, *actor-network theory* was brought into global governance research to examine the mutual constitution of networks and technological developments in the international society (Spaargaren, 2011). *Evolutionary psychology*, finally, has been employed in several analyses to understand the heuristics through which political actors navigate their complex environment (Gerrits, 2012; Gerrits & Marks, 2017; Wagenaar, 2007).

Central to these examples of complexity-embracing studies in politics and governance is the recognition across disciplines that the conventional thinking that discerns between dependent and independent variables, and that builds on a linear understanding of causation, is considerably limited in its explanatory scope (McEvoy & Richards, 2006). In turn, a non-linear approach that embraces the complex ways in which variables relate in order to explain change and stasis is more fitting for the study of the types of problems that governance scholars are facing today.

Building on these efforts, we believe it is time to integrate insights from the complexity sciences much more strongly in global governance. "Complexity sciences" is an umbrella term for a whole set of theories and methods that starts from the idea that interactions between actors (of any type) can create very complex patterns, such as institutions. As a suite of ideas rather than a unified theory, the term covers approaches as different as, e.g. system dynamics modelling, cluster analysis, fractal analysis, or dynamic pattern synthesis (Mitchell, 2009; Reed & Harvey, 1992). As Jervis (1997) suggested two decades ago, complexity sciences could help global governance research to tackle some of the fundamental conceptual, methodological, and theoretical challenges of the discipline. Most of this great potential, however, is still unexploited.

Questions and Challenges for a Research Programme on Global Complexity

This special issue follows from a three-day interdisciplinary workshop on complexity in global governance, held at the Centre for Global Cooperation Research / Käte Hamburger Kolleg in Duisburg, Germany, in late 2017. We are highly indebted to the centre for their logistical, financial, and intellectual support in setting up that workshop.

The approximately 30 participants, including many prominent researchers from the fields of international relations, public policy, and political sociology, identified a series of key questions and challenges that they encounter in their own day-to-day research. In response to these questions and challenges, the participants outlined the elements of a comprehensive and interdisciplinary research programme for studying complexity. The purpose of this research agenda is thus not to re-invent the wheel, but to begin a dialogue among disciplines, in which the pressing issues of contemporary politics meets the analytical tools offered by the complexity sciences.

We summarize this research agenda along the workshop's original themes of concepts, methods and theories, with the triple purpose to, first, further elaborate on our rationale for a stronger cross-disciplinary dialogue and collaboration on the complexity of global governance; second, to pave the way for the contributions to this special issue and show which part of this research agenda they help addressing; and third, to invite further collaborative endeavours that pursue this research agenda and its vital and pressing questions.

Conceptual challenges

The conceptual part of the research agenda comprises crucial questions not only in terms of which phenomena need definitions and operationalizing, but also from which angles such efforts could be taken. Which disciplines could collaborate in a research agenda on complexity in global governance? Political science and international relations scholars certainly need to keep playing a key role as their research questions – and related concepts, methods, and theories – are at the heart of this research agenda. They include the forms and processes of governance complexity, the roles of power, norms, discourses, or knowledge in causing and proliferating this complexity, the implications of complexity for questions of democracy, transparency, legitimacy, accountability, or effectiveness, and, ultimately, the political responses that are either needed or feasible (Zelli & van Asselt, 2013).

Yet, research efforts on these topics need crucial input from other disciplinary angles. In addition to the complexity approaches mentioned in the previous section, this includes – without being exhaustive – other social and behavioural disciplines like sociology, psychology, social anthropology, human geography, and history. These disciplines provide invaluable perspectives and concepts to describe and analyze the evolution, shape and consequences of social networks, perceptions and behavioural patterns in complex contexts, and the impact of social relationships across levels and spaces. Likewise, a series of natural sciences can make vital contributions to the research on complexity in global governance, such as biology, ecology, or physics, e.g. on the implications of complex systems, cybernetics, keystone actors, steering under conditions of complexity, and scenario-building for the development of complex systems.

Learning from these disciplines and their concepts, we argue, implies taking into account crucial properties of complex systems that these disciplines established. This fundamental aspect is still considerably understudied in key global governance disciplines like international relations. Complex global governance systems have been mostly researched as *complicated* systems, by decomposing them into individual institutions, processes, or interactions (Cudworth & Hobden, 2011). This reductionist perspective has missed fundamental properties of complexity, such as embeddedness and emergence, non-linearity and feedback loops, unpredictability and uncertainty, and self-organization and adaptability.

In this special issue, and for a wider research agenda, we stress the need to analyze global governance as a *complex system* that is more than the sum of its parts. This appeal echoes earlier calls for a fifth debate on complexity in international relations research (Geyer, 2003; Kavalski, 2007), and



parallels contemporary efforts to integrate complexity science thinking into global governance research (Le Prestre, 2017, Orsini et al., 2019). The contributors to this issue challenge the critique that these calls and efforts have met and demonstrate that a complexity lens does not ontologically exclude mid-range theories for specific and timely research questions (Gunitsky, 2013; Pollitt, 2009).

Based on such an overarching understanding, a series of conceptual questions on how to identify and assess complexity needs to be addressed from different disciplinary angles, such as:

- Under what conditions can a global governance system be regarded as complex, and what are its characteristics?
- What constitutes the system's boundaries, and who gets to draw them?
- What new ways are there to assess processes in and of complex systems, such as their performances, transformations, self-organization and adaptability?

To be clear, these questions have already been addressed in the complexity sciences, but in generic terms that require translation into the realm of global governance. A common vocabulary is needed to avoid a proliferation of parallel terms and a conceptual and theoretical lock-in that characterized some of the abovementioned research traditions on polycentricity, interlinkages, fragmentation, and regime complexes.

Methodological challenges

One core question from our workshop is whether complex systems need different research methods than those that are common in global governance research. Put differently: does the notion of complex global governance, that is seeing a governance system as more than the sum of its parts, generate research questions that require different methodological approaches?

Related to this are questions about limitations in studying such systems. Compared to complicated systems, efforts towards modelling complex systems, for instance, require a stronger focus on dynamics and uncertainties, and ultimately may have to accept that predictions are much harder to come by. By the same token, a particular challenge for global governance scholars that choose to engage with the complexity sciences is the steep learning curve needed to grasp their methods and the seeming inaccessibility of their analyses.

We hold that it is worth working on this bridge from both ends. A creative and pragmatic approach to meet this challenge is for both camps to consider and deploy methods that match the complex nature of global governance systems in various regards:

- We need methods that help determine analytical boundaries of complex governance systems, based on the criteria for system borders, properties, and interdependences that novel concepts of complexity provide. Which methods can identify which institutions, actors, materials, and themes are endogenous or exogenous to a complex governance system?
- We need methods that help in understanding complexity from the perspective of particular actors and that help in explaining their behaviour. How can we grasp the perspectives and roles of these actors without oversimplifying or disaggregating the system in which they are embedded?
- We need methods to recognize and assess patterns of stability, iteration and change in global governance. Instead of predicting the most probable outcomes, we may do better in using scenarios to outline different possible outcomes, along with tools to identify the underlying conditions for the various patterns and scenarios to materialize.
- We need methods that are accessible to practitioners and policy makers. As scholars of global governance, our aim is not only to understand and explain a phenomenon in the most precise way possible, but also to communicate our findings to political and administrative decision makers. Studying global governance as a complex system should not imply delivering overly

complex results, but rather provide new insights and perspectives that can contribute to political change.

To address such challenges in a manageable and accessible way, research on governance complexity needs to rely on a mix of methods – one that brings together tools from complexity sciences, e.g. machine learning or network analysis, with more qualitative approaches used in conventional governance research, such as institutional and discourse analysis. Such a sensible combination is a tall order and requires creative combinations of skills and expertise. Respective combinations are challenging but feasible, as innovative methods like qualitative and discursive network analysis (Bellotti, 2014; Fuhse & Mützel, 2011; Leifeld, 2017) or the integration of qualitative scenarios and quantitative simulations (Symstad et al., 2017) show.

Theoretical challenges

Scholars have already developed theories about how individual actors react to institutional complexity. This includes the use of specific strategies such as the prioritizing of one institution over others, so-called forum-shopping or -shifting (cf. Alter & Meunier, 2009; Orsini, 2013); the creation of competitive organizations or regimes (cf. Morse & Keohane, 2014); and non-hierarchical and indirect forms of governance of one institution over others such as orchestration (cf. Abbott et al., 2015). Global governance scholars have also addressed questions at the institutional systems level, expecting, for example, new equilibria and institutional divisions of labour to evolve in the face of complexity (e.g. Abbott and Faude, 2020, Abbott et al., 2016; Gehring & Faude, 2013; Oberthür & Pożarowska, 2013; Tosun et al., 2016; Zürn & Faude, 2013). Others rather anticipate iterations of governance processes across scales or “fractals” (Chettiparamb, 2014; Bernstein & Hoffmann, 2018), while highlighting a steady increase in governance experimentation and innovation (Hoffmann, 2011).

Notwithstanding these crucial achievements, we hold that these and other theoretical efforts need to be expanded in three ways to address major research gaps about the complex world order:

- We should not only focus on the complexity of a single institutional system, but also seek to explain its interaction with networks of actors across scales and levels (national, international, and transnational) as well as constellations of materials, norms, knowledges or discourses.
- We should go beyond identifying the specific strategies of actors and engage more with the wider implications of complexity when researching political agency (Room, 2015; Haynes, 2015; Möller, 2020). Concretely, a theory-driven analysis should take into account that complexity may influence spaces for political agency. As such, it may alter key aspects of legitimacy, accountability, transparency, technocracy and power, – which in turn may impede or facilitate the possibility to employ certain strategies, or to even perceive the need for such responses (cf. Bäckstrand et al., 2018; Faude & Große-Keul, 2020). We need to know more about the conditions that impact these (de)politicising effects in complexity, e.g. how certain sources of power matter more than others and how certain forms of governance draw attention while others remain largely unperceived (Gupta & Möller, 2019).
- We need to move beyond a simple disaggregation of complex systems if we want to appropriately grasp the dynamics between agency and structure. This poses the challenge of not just studying particular actors and institutions, or even the structure and behaviour of a certain governance system as a whole. In addition, we need to scrutinize how the relationship between agents and structures causes conditions of stability and change in global governance, and how these conditions in turn affect the emergence and reproduction of certain patterns across governance systems and scales (cf. Young, 2017).

Focusing on the relations between components of a governance system, and bridging governance scholarship on the behavior of both actors and systems can already provide crucial insights to these three research gaps. At the same time such a research focus would acknowledge the non-linearity and interdependence inherent to a complex governance system.

In addition, there are several possible routes to integrate complexity perspectives from other disciplines into theories of global governance. On the one hand, governance scholars can learn from different literatures, e.g. the one on ecological management which offers important examples about how to account for uncertainties when theorizing about dynamics, transformations and responses in complex governance systems (Levin et al., 2012). These ways of theory-building are compatible with a series of subjectivist and interpretive approaches in political science and other social sciences that seek to understand, rather than to explain, important contingencies in political systems. On the other hand, learning from formal approaches like computational modeling can help us to identify which aspects of complex governance systems are still predictable and hence can be theorized by explanatory or objectivist approaches, e.g. certain types of behaviour of actors or conditions for systemic stability (Symons & Boschetti, 2013).

New concepts, methods, and theories on institutional complexity: Contributions from the Special Issue

In response to the conceptual, methodological, and theoretical questions raised above, some of the workshop participants have offered their own ideas, from their perspective as global governance scholars, in the form of short think-pieces or fully-fledged research articles. In this spirit, some contributions represent conceptual endeavours that evaluate the applicability of ideas from the complexity sciences to a global governance setting. Others engage with methodological questions, relating to fundamental issues such as the determination of analytical boundaries or the contextualization of interdependent cases. Still others engage with theoretical aspects of the research agenda, exploring how complexity-based theories can be useful for answering global governance questions, or putting forward own theories of complex dynamics within a given system of global governance.

The result is a smörgåsbord of ideas on researching complexity in global governance. It represents a cross-section of the creativity and engagement we experienced during the three-day workshop, where participants felt free to experiment with ideas that were new and exciting to them. It is also meant as a way to reach out to scholars who engage with complexity in other disciplines and fields, laying out questions that governance researchers engage with and inviting response, collaboration, and involvement from interested readers.

Concepts

Fundamental to the workshop discussions was an endeavour to clarify the difference between a governance system that is complex versus a governance system that is complicated. As we argued above, much of the literature on institutional complexity has focused on the proliferation of institutions and fields, often disaggregating institutional complexes and their relations into dyadic institutional overlap or conflict (cf. Oberthür & Gehring, 2006; Stokke, 2012). By contrast, the notion that the complexity of a system is more than the number of its components and bilateral connections, but rather depends on the manner and results of their overarching set of relations, caused extensive debate during the workshop and the ensuing work on this special issue. Is it at all possible to study complexity in a governance system if one cannot disaggregate its components?

Against this backdrop, several contributors to this special issue focus explicitly on the fundamental question of what complexity in global governance means, and what kinds of properties or characteristics one can study without falling into the disaggregation trap. To begin with, James Hollway asks how and in what ways a given regime complex is “complex”. He argues that (regime) complexes consist of both spatial and temporal dependence, and that conceptual tools of network, time-series and sequence analysis can help us diagnose how complex a system is on each of these dimensions. Benjamin Faude addresses the question of how to conceptually determine system boundaries and points at the trigger function of events or shocks that are external to these boundaries.

Moreover, David Alemna with colleagues, Benjamin Faude, Peter Haas and Jon Western, James Hollway, Marielle Papin, and Andrea Schapper all engage with what we call ‘input descriptors’,

meaning characteristics of a governance system that make this system complex. These complexity markers differ from author to author in terms of both terminology and substance, but all point at important relational qualities that represent more than the sum of a system's components. They include, among others, the notions of diversity and differentiation (Faude), dependency (Hollway), openness (Papin), interventions and patterns (Alemna et al.), and a new quality of complexity as an overarching systemic property with severe implications for political decision-making (Haas & Western). Moreover, Schapper elaborates on “super-networks” as new forms of transnational advocacy that link institutions from different policy fields.

Marielle Papin and Benjamin Faude also address what we call ‘output descriptors’, meaning the resulting properties of a complex system once this system is running. Papin stresses in particular the three aspects of self-organization, emergence, and adaptability and how these may impact functional distributions, authority and cooperation patterns and the balance of power in a complex governance system. Faude equally stresses the importance of adaptability that comes with the further institutional differentiation of a governance system in reaction to external events.

Methods

Some of the methodological discussions in the workshop revolved around the fit of conventional methods with complexity. Much scholarship on institutional complexity is qualitative and has traditionally relied on literature analysis, interviews, and observations of single or a small amount of case studies, with few pioneering studies addressing complexity in larger systems (cf. Zelli, 2015). Quantitative scholarship on the complexity of global governance originated in the statistical approach used by many political scientists, but has meanwhile ventured somewhat into the realms of network analysis and agent-based modelling. Despite some advances into new terrain, many global governance scholars face the challenge of learning complexity-compatible methods while remaining true to the research questions that motivate their engagement.

Going beyond these conventional approaches, the methodological contributions that this special issue makes reflect on issues such as what new approaches one could take, what kind of additional data one would need and what sorts of alternative assumptions one might need to develop. The first question is, again, a question of analytical boundary. Where should complexity research start, and where should it end? James Hollway argues that decomposing a system into individual institutions, or pairs thereof, or studying them cross-sectionally, is only warranted for those (increasingly rare) settings that are marked very low dependence. He takes aim at common research design considerations—sampling, prediction, and replication—and points out what non-linearity and interdependence imply for the use of statistical methods.

Taking a more empirical angle, David Alemna and colleagues, Andrea Schapper, as well as Peter Haas and Jon Western, provide us with examples of how a complexity perspective can be used to study specific developments of concern to global governance scholars. Alemna et al. analyse the structural effects of interventions by the International Monetary Fund in Latin America using longitudinal data and a quantitative method called Dynamic Pattern Synthesis, based on Qualitative Comparative Analysis and configurational modelling. With this methodology they seek to defy reductionist explanations. They manage to identify evolving policy patterns that are far from the original intentions of the International Monetary Fund whose interventions they analyse in their case study.

While Alemna and colleagues thereby take a birds-eye perspective on the complexity patterns in a governance system, Schapper seeks to understand complexity from the perspective of actors that are navigating therein. She analyses the collective strategy that a network of actors adopted when bridging the interface between human rights and climate change in international negotiations, using qualitative interviews and observations to capture their perspectives. She can show how creative agency could make use of governance complexity, with transnational advocacy networks building a super-network that managed to incorporate rights principles into the 2015 Paris Agreement. On the other

hand, the complexity contributed to the eventual loss of momentum of that super-network since it put continuous demands on each actor for keeping up expertise and relationships.

Haas and Western, finally, contribute an historical analysis of the system of international institutions, contrasting the relatively “simple” mandates on which these were built with the change in perceived complexity amongst decision makers and the recent backlash against norms of international diplomacy. With this angle they can identify potential institutional reforms that can help a key actor like the US government to do better justice to the new quality that marks the complex world order of today.

With these either more structural or agent-based angles and methods, each contribution found its unique positioning within the agency-structure dynamics of complex governance research. While being mindful of not repeating a disaggregation of the systems they put under scrutiny, they provide different methodological answers to the question of how much political agency and power actors may hold and act upon in an ever more intricate system.

Theories

Strongly connected to this last point, one key theoretical question at the core of governance scholarship is the form and effect of power, and so much of the discussion around complexity in global governance linked back to this concept. Connecting power to the theoretical challenges we discussed above has led us and the contributors to this special issue to questions like: is power somehow different in a complex system? Do actors in a complex system wield other kinds of power? Does the system itself embody some kind of power and can thereby inhibit or enable the actors it contains to realize their goals?

The contributions to this special issue address power in complex systems both directly and indirectly. In line with their methodical approaches, Alemna et al. take a structuralist theoretical approach, showing how the complex institutional environment qualified the agency of the IMF and facilitated a series of non-intended outcomes. Andrea Schapper, on the other hand, takes a more agent-oriented theoretical perspective, showing how non-governmental organizations may navigate and adjust regime complexes to achieve institutional linkage and thereby work towards their political goals. Haas and Western found some middle ground between these two perspectives by identifying certain spaces where domestic governmental agency is still possible within wider complex governance systems.

Another set of core questions particular to the literature on institutional complexity revolves around stability and change. Why do institutional landscapes evolve in the way they do? What causes differences in their structure and manifestation? How can their trajectories of development be explained? And what effects do such changes have on political and social behaviour?

Some of the contributors to this special issue offer their own answers to such questions. Benjamin Faude identifies exogenous shocks as triggers for structural change and further differentiation in the institutional system. Building on sociological differentiation theory, he argues that such shocks may lead to adaptation through increased complexity, meaning that institutional proliferation may be a strategy to improve the overarching resilience of the affected governance system. Dennis Schmidt looks at the further consequences of such structural changes and differentiation in the institutional system. He establishes the notion of complexity as law-governed emergence, based on his adaptation of English School tenets to the study of complex global governance. Schmidt holds that this emergence has two major consequences for institutional settings in global governance, fragmentation, and clustering. The resulting dynamics may, in turn, reinforce changes in overarching normative structures in which this institutional complexity is embedded.

Conclusions and Outlook

Our reflections about the need for a complexity science perspective in global governance research, as well as the contributions by the authors in this special issue, have largely focused on different challenges of studying institutional complexity as a complex system. On the one hand, we



embrace the challenge of acknowledging the characteristics inherent to complex systems and avoiding the disaggregation trap. On the other hand, we also heed the challenge of staying true to core questions of political and social science (power, legitimacy, justice) while learning to employ tools and perspectives of the complexity sciences.

A subject that has not been as prominent in these reflections is the role of policy responses that could be stimulated with such an interdisciplinary perspective on institutional complexity. What could research with a complexity science lens contribute in the “real” world? What is its societal impact? Some important ideas around such questions were also gathered at our workshop in Duisburg, and we briefly reflect upon them in this outlook on the next research frontiers.

In general, we feel that adopting the meta-level approach that a complexity science lens offers can provide important insights for decision makers and practitioners about *why* certain things happen in the way they do, including a diversity of non-intended results. Researching global governance dynamics from a complexity angle can raise awareness about the drivers behind the actions and responses of different actors in a complex system as well as about the dynamics that lead to intentional and non-intentional consequences of these actions. It can uncover underlying goals and motivations of responses, including the navigation of complex systems through forum-shaping or shifting, the changing of a complex institutional system through orchestration and management, or the harnessing of a complex governance system through simplification and the use of certain heuristics (Zelli et al., forthcoming).

In uncovering these dynamics, such a lens can also highlight the kinds of capacities needed to attain agency in a global governance setting that is increasingly defined by complexity. Understanding the dynamics at work will help different actors to both tailor and time their resources and efforts in more efficient ways, e.g. by identifying important brokers in a network that they can target for their purposes. It can also help these actors see wider connections between different governance systems, as well as the emergent effects and consequences that certain types of actions and behaviours can have. Gaining insight into these dynamics can help decision makers and practitioners identify important levers of change that may otherwise stay hidden or unrecognized. In the face of proliferating global crises, we think that this kind of knowledge is urgently needed.

The biggest challenge regarding responses and societal impacts remains, then, to communicate the results of research on institutional complexity in a way that is accessible and useful to a wider audience. Taken together with the aforementioned challenges, we conclude that scholars of institutional complexity today need to navigate a three-dimensional plane of challenges: first of all, the challenge of truly acknowledging and integrating the particular characteristics of complex systems into their research; secondly, doing this without compromising on key research foci of political and social sciences, while being open for new perspectives and questions on how to approach these foci; and thirdly, making sure the results are available and understandable for a wider audience.

To meet these challenges, and to move the research agenda on institutional complexity forward calls for a kind of creativity and collaboration that has so far been lacking in this research field. Creativity is called for in terms of asking new kinds of questions, exploring unfamiliar theories, and combining as yet un-combined methods. Collaboration is called for in terms of multi-, inter-, and trans-disciplinarity, combining the methodological expertise of different disciplines, attaining a holistic theoretical perspective on the subject matter, and integrating the concerns and struggles of decision makers and practitioners into the heart of the institutional complexity research agenda. It also requires carrying the ensuing knowledge out into the world, beyond the paywalls and jargon of academic journals and publications. We believe that creativity and collaboration, as experienced during our Duisburg workshop, provide the key to achieving this tall, but necessary, order. Likewise, we hope that this special issue can make a contribution to stimulate further creativity and collaboration across our different disciplines on the complexity of global governance.

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