The Fragmentation of Global Governance Architectures: A Framework for Analysis

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Introduction

Most research on global governance has focused either on theoretical accounts of the overall phenomenon or on empirical studies of distinct institutions to solve particular governance challenges. Only very recently have scholars begun to investigate the middle level, that is, larger systems of institutions and governance mechanisms in particular areas of world politics, which are sometimes referred to as regime complexes, clusters, or networks.[2] In this article, we conceive of such clusters of norms, principles, regimes and other institutions as the "governance architecture" of an issue area.[3] We focus our analysis on one aspect of global governance architectures that, we argue, is turning into a major source of concern for observers and policy-makers alike: the "fragmentation" of governance in important issue areas of world politics. Our investigation is driven by an apparent lack of consensus in the academic literature on the consequences of fragmentation. In the different strands of academic research that we outline in this article, we find different predictions that range from a positive, affirmative assessment of fragmentation to a rather negative one.

A key example is global climate governance, where the advantages and dis-

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2. For the concept of regime complexes, see for instance Raustiala and Victor 2004. On clustering, see Gehring and Oberthür 2006, 364–366; von Moltke 2005; and Young 1996.
3. The analytical problem of governance architectures has been identified as one of five major future challenges in the emerging field of earth system governance research. See the Science and Implementation Plan of the Earth System Governance Project, a core activity under the International Human Dimensions Programme on Global Environmental Change (Biermann et al. 2009).

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advantages of a fragmented governance architecture have become important elements in proposals and strategies for future institutional development. Several plans for a future climate governance architecture have been put forward that explicitly assert the value of fragmentation—often referred to as "diversity"—or at least implicitly accept it. Others, however, remain supportive of a more integrated overall architecture. And yet, political science lacks a conceptual framework for the comparative study of different types and degrees of fragmentation of global governance architectures.

In this article, we attempt to help resolve this problem. In the next section, we seek to conceptualize the notion of global governance architectures and different types and degrees of their fragmentation. After that, we illustrate these concepts in the field of global governance in response to climate change. Then we analyze key hypotheses on the relative advantages and disadvantages of fragmentation. Finally, in conclusion, we provide a brief discussion of how to address the possibly harmful effects of fragmentation of the global climate governance architecture.

Conceptualization

Architectures of Global Governance

The term "global governance architecture" is now widely used in the literature.[4] It has been employed to describe the broader institutional complex in areas of international relations such as international security,[5] finance,[6] trade,[7] and protection of the environment.[8] There is no commonly agreed definition. We define the term here as the overarching system of public and private institutions that are valid or active in a given issue area of world politics. This system comprises organizations, regimes, and other forms of principles, norms, regulations, and decision-making procedures.[9] Architecture can thus be described as the *meta-level* of governance.[10]

We locate this meta-level between two other concepts frequently used in

4. See for instance Hurrell 2007; MacIntyre 2002; Muldoon 2004; and Young 2008a, to name but a few.
5. Aybet 2000; and Kernic 2006.
6. Fanelli 2008; Peuker 2006; Soederberg 2004; and Thirkell-White 2007.
7. Das 2007; and Wilkinson 2000.
8. Aldy and Stavins 2007; Biermann 2007 and 2008, 287–290; Ivanova and Roy 2007; and Kanie 2007.
9. International regimes are defined as "sets of implicit or explicit principles, norms, rules, and decision-making procedures around which actors' expectations converge in a given area of international relations." Krasner 1983, 2. International institutions, as the more generic term, comprise international regimes, international organizations and implicit norms and principles. See Keohane 1989, 3–4.
10. O'Neill 2007, 2009. On the role of overarching norms, see also the Science and Implementation Plan of the Earth System Governance Project (Biermann et al. 2009), which suggests norms as one of four crosscutting themes in earth system governance research.

international relations research: "regimes" and "order." On the one hand, the concept of architecture is broader than the concept of international regimes, which are in most cases distinct institutional elements of a larger governance architecture. Here, the concept of architecture allows for the analysis of situations of both synergy and conflict between different regimes or other types of institutions across a given issue area. It also allows us to study synergy and conflict between the overarching norms and principles that govern these interactions, and to analyze overarching norms and principles that run through distinct regimes, for example the principle of common but differentiated responsibilities and respective capabilities that is common to many modern institutions in the field of global environmental governance.[11]

On the other hand, through its focus on a particular issue area, the concept of governance architecture is narrower than the notion of order. Both concepts share a focus on the overarching governance structures that reach beyond single regimes. Yet while international order reflects the organization of the entire system of international relations,[12] architecture is a more appropriate concept for distinct issue areas of global governance. Moreover, the concept of international order often implies an optimistic bias regarding the coherence and internal coordination of the international system. Architecture, for its part, is more neutral and accounts for dysfunctional and non-intended effects too. Thus, architecture, as conceptualized here, does not presuppose a normatively loaded understanding of global order.

Fragmentation of Governance Architectures

Instead, high degrees of fragmentation are a frequent characteristic of global governance architectures, and conceptualizing governance architectures in different issue areas allows for the comparative analysis of different degrees and types of fragmentation. We advance the notion of global governance architecture in particular for this reason: because it allows for the analysis of (the many) policy domains in international relations that are not regulated, and often not even dominated, by a single international regime in the traditional understanding. Many policy domains are instead marked by a patchwork of international institutions that are different in their character (organizations, regimes, and implicit norms), their constituencies (public and private), their spatial scope (from bilateral to global), and their subject matter (from specific policy fields to universal concerns).

These situations we understand as *fragmented* global governance architectures. This notion of fragmentation relates to earlier debates in the 1970s on interlocking institutions,[13] which were followed by more recent studies on institu-

11. Rajamani 2005.
12. Bull 1977.
13. Aldrich 1979; Galaskiewicz 1979; Guetzkow 1966; Pfeffer and Salanick 1978; and Schmidt and Kochan 1977.

tional "interlinkages," "overlaps," "interactions," or "interplay."[14] While these studies analyzed dyadic relations between distinct institutions (for instance between the Convention on Biological Diversity and the Agreement on Trade-Related Aspects of Intellectual Property Rights [TRIPS] under the World Trade Organization [WTO])[15] and interlinkages across policy domains (for example trade-environment linkages), the concept of fragmentation of global governance architectures focuses on the *overall institutional setting* in which distinct institutions exist and interact. The question of fragmentation of global governance architecture is thus broader than the mere focus on institutional interaction, which is but one element in the architecture research program.

The notion of fragmentation is widely employed in international legal literature.[16] Some see fragmentation here as a sign of the expansion of international law to previously unregulated fields, such as international commerce, human rights, or the environment.[17] As Koskenniemi and Leino put it, "[s]pecial regimes and new organs are parts of an attempt to advance beyond the political present that in one way or another has been revealed unsatisfactory."[18] Increasingly, scholars in international relations and international economics also refer to the "fragmentation" of arrangements, especially regarding environmental governance.[19] Some authors also conceptualize fragmentation in a broader socio-cultural sense as the opposite of globalization.[20] Similar phenomena are captured at times under different terminology, including the "decentralization"[21] or "multiplicity" of global environmental governance,[22] "division of labor" among international norms and institutions,[23] or, with a more negative connotation, "treaty congestion."[24]

Regarding our conceptualization of fragmentation, three points are important to emphasize. First, we use the term fragmentation as a relative concept. All global governance architectures are fragmented to some degree; that is, they consist of distinct parts that are hardly ever fully interlinked and integrated.

14. Andersen 2002; Biermann and Brohm 2005; Chambers 2001; Falkner and Gupta 2009; Gehring and Oberthür 2004; Gupta and Falkner 2006; Gupta 2008; King 1997; Oberthür and Gehring 2006a, 2006b; Rosendal 2001; Selin and VanDeveer 2003; Stokke 2001; van Asselt, Gupta, and Biermann 2005; Young 1996 and Young et al. 2008; and Zelli 2008.
15. For example Andersen 2003, 2008; and Rosendal 2001, 2006.
16. See for example Hafner 2000, 2004; International Law Commission 2006; and Koskenniemi and Leino 2002.
17. Lindroos and Mehling 2005.
18. Koskenniemi and Leino 2002.
19. For instance, Andresen 2001; Bernstein and Ivanova 2007; Biermann 2008, 287–290; Kanie 2007; Najam 2005; and van Asselt 2007b, 52.
20. Clark 1997; and Menzel 1998.
21. The concept of fragmentation differs from that of decentralization. While we concur that much of what we cover under fragmentation is similar to processes of decentralization, we also believe that this term presupposes a governance center and, as a consequence, a periphery, which reduces its value for our research purposes.
22. Ivanova and Roy 2007.
23. Haas 2004, 8; and Siebert 2003.
24. Weiss 1993, 697ff.

Non-fragmented, "universal" architectures are theoretically conceivable as opposite of fragmentation: an architecture would be universal if all countries relevant in an issue area are subject to the same regulatory framework; participate in the same decision-making procedures; and agree on a core set of common commitments. Empirically, however, such a situation is difficult to trace in current world politics. Even one of the most widely supported international treaties, the convention on the rights of the child, has been ratified by 193 parties yet not by the United States and Somalia,[25] and its optional protocols on children in armed conflicts and on child pornography and prostitution lack ratification by all nations. Fragmentation, in other words, is ubiquitous. Yet the degree of fragmentation varies from case to case. The concept of architecture allows here for the comparative analysis of issue areas and policy domains, and for the study of overarching phenomena that the more restricted concept of regimes could not capture.

Second, we consider both the concepts of architecture and fragmentation to be value-free. We assume neither an *a priori* existing state of universal order nor a universal trend towards order. In most empirical cases, architectures are likely to result from incremental processes of institutionalization in international affairs that are decentralized and hardly planned. In other words, the concept of architecture does not assume the existence of an "architect."

Third, empirical research on fragmentation of global governance architectures depends on the perceived scale of the problem. The larger this scale, the higher the degree of fragmentation is likely to be. Fragmentation is evident in more narrowly defined global governance architectures, that is, between parallel policies and regimes in the same issue area for example in areas such as climate governance or governance of plant genetic resources.[26] It is here where the concept of architecture and the comparative analysis of different degrees and types of fragmentation are likely to be most fruitful.

Yet fragmentation is a useful concept also at a higher scale, that is, the comparative analysis of entire policy domains. For instance, in global environmental politics more than 700 multilateral agreements are in force.[27] Most have evolved independently, cover different geographic and substantial scopes, and are marked by different patterns of codification, institutionalization, and cohesion. A decade ago, in response to this fragmentation, a United Nations task force recommended stronger cooperation between multilateral environmental institutions to facilitate synergies and promote policy coherence.[28] This fragmentation has also been at issue in numerous policy proposals that call for the

25. Todres, Wojcik, and Revaz 2006; and Verhellen 2000.
26. McGee and Taplin 2006; Raustiala and Victor 2004; and van Asselt 2007a. We understand the term "issue area" in a narrow sense compared to the more generic term "policy domain." Environment and trade constitute two different policy domains, whereas, for instance, climate change and biological diversity are two issue areas, both pertaining to the domain of environment.
27. Mitchell 2007.
28. United Nations General Assembly 1998.

Table 1
Typology of Fragmentation of Governance Architectures.

	Synergistic	*Cooperative*	*Conflictive*
Institutional integration	One core institution, with other institutions being closely integrated	Core institutions with other institutions that are loosely integrated	Different, largely unrelated institutions
Norm conflicts	Core norms of institutions are integrated	Core norms are not conflicting	Core norms conflict
Actor constellations	All relevant actors support the same institutions	Some actors remain outside main institutions, but maintain cooperation	Major actors support different institutions

clustering and integration of environmental institutions, notably through establishment of a world environment organization, to create a less fragmented architecture in this field.[29] While some observers support a world environment organization to tackle fragmentation in global environmental governance,[30] others oppose the idea of "organizational tinkering"[31] and emphasize the benefits of a more fragmented architecture.[32] The creation of the WTO and of the World Intellectual Property Organization are examples of similar strategies to address a fragmented global governance architecture in a policy domain.[33] Also the International Law Commission has included fragmentation in its work program.[34] Another indicator for growing attention among policy-makers is the increasing recognition of interlinkages with other treaties in legal documents.[35]

Degrees of Fragmentation

Degrees of fragmentation can be assessed on a number of criteria. We employ here three criteria to differentiate between degrees of fragmentation: degree of institutional integration and degree of overlaps between decision-making systems; existence and degree of norm conflicts; and type of actor constellations. Based on these criteria, we propose to differentiate between three types of fragmentation (see Table 1): (1) synergistic fragmentation, (2) cooperative frag-

29. Arguments against and in favor of such a new organization are compiled in Biermann and Bauer 2005.
30. Biermann 2000; Charnovitz 2005; and Kirton 2005.
31. Najam 2005.
32. Najam 2005; Oberthür and Gehring 2005; and von Moltke 2005.
33. Zelli 2007.
34. International Law Commission 2006.
35. For an overview see Neumann 2002, 317ff.; Pauwelyn 2003, 237ff.; and Wolfrum and Matz 2003, 120–133.

mentation, and (3) conflictive fragmentation. In empirical research, boundaries between these three types will not be clear-cut; the criteria and types are meant as a conceptual tool to determine and compare degrees of fragmentation of different issue areas in comparative research. Likewise, long-term analyses might find that an architecture has shifted from one type of fragmentation to another.

We speak of a situation of *synergistic fragmentation* when (a) the core institution includes (almost) all countries and (b) provides for effective and detailed general principles that regulate the policies in distinct yet substantially integrated institutional arrangements. An example is the 1985 Vienna Convention and its 1987 Montreal Protocol on Substances that Deplete the Ozone Layer and its amendments from London (1990), Copenhagen (1992), Montreal (1997), and Beijing (1999).[36] Each amendment to the protocol adds new substances to the regulative system, including decision-making procedures on further policies on these substances. Each amendment requires ratification by governments. Since not all governments have ratified all amendments, and since only parties to an amendment can participate in the respective decision-making, the governance architecture on ozone depletion comes close to a system of five concentric circles, with the 1987 Montreal Protocol having the most parties, and each of the four amendments a more restrictive reach. However, the overarching Vienna Convention and Montreal Protocol govern all amendments in every important aspect, serving as integrative umbrella and authority in linking the different amendments and political processes. No significant institutions exist on this issue outside the framework of the Vienna Convention and the Montreal Protocol, which shows a high degree of integration within this governance architecture.

We speak of a situation of *cooperative fragmentation* when an issue area is marked by (a) different institutions and decision-making procedures that are loosely integrated, (b) when the relationship between norms and principles of different institutions is ambiguous; and/or (c) when the core institution does not comprise all countries that are important in the issue area. Policies in the same area are then defined, decided and monitored through different institutions, or through core institutions, on the one hand, and individual countries that are not part of this institution on the other. However, overall integration within the governance architecture in the issue area is sufficient to prevent open conflicts between different institutions. One example is the relationship between the United Nations Framework Convention on Climate Change (hereafter "climate convention") and the detailed provisions of its Kyoto Protocol that has initially not been ratified by all major nations, and is still not ratified by the United States. We discuss this in more detail in the next section.

We speak of a situation of *conflictive fragmentation* when an issue area is marked by different institutions that (a) are hardly connected and/or have different, unrelated decision-making procedures, (b) have conflicting sets of prin-

36. United Nations Environment Programme 2007.

ciples, norms, and rules, and (c) have different memberships and/or are driven by actor coalitions that accept, or even advance, these conflicts. One prominent example is the regulation of access and benefit sharing of plant genetic resources. Here, two regimes attempt to regulate this issue, the Convention on Biological Diversity and the TRIPS Agreement. The latter seeks to strengthen and harmonize systems of intellectual property rights, whereas the former reaffirms sovereign rights of states over biological resources.[37] The negotiations of both regimes, which partly took place in parallel, were marked by intense conflicts between developing and industrialized countries. Consequently, the relevant rules of the biodiversity convention remain rather abstract and imprecise, and the United States did not ratify the convention. As Rosendal suggests, a virtual "arms race" has taken place through additional agreements that try to flesh out the regulations of both regimes.[38] Several regional accords on intellectual property rights have been adopted that favor one approach over the other.[39] While some bilateral agreements on bio-prospecting endorse the biodiversity convention, other bilateral agreements between industrialized countries (notably the United States and the European Union) and developing countries on intellectual property rights include provisions that even exceed TRIPS demands. In addition, different negotiating forums on access and benefit sharing and prior informed consent have been established within the UN Food and Agriculture Organization and the World Intellectual Property Organization.[40]

In empirical research, these three ideal types of fragmentation in global governance architectures will hardly be clear-cut, and the boundaries may remain difficult to ascertain in specific cases. In addition, the three types are not mutually exclusive, but may coexist to some degree within the same architecture. The three types are thus meant to serve as a conceptual tool for comparative empirical analysis in order to advance understanding of the causes and consequences of fragmentation in global governance architectures. Based on the conceptualization of these three ideal types of governance fragmentation, comparative empirical research can shed light on the core question of the relative costs and benefits of different types and degrees of fragmentation. In addition, it becomes possible to analyze in much more detail possible political, legal, and institutional solutions to problems of fragmentation, which may depend on the types and degrees of fragmentation at hand.

The Case of Global Climate Governance

This section uses the case of global climate governance to illustrate how the typology developed in section 2 can be applied in practice. We show that

37. For a detailed analysis of the conflictive constellation between the biodiversity convention and the TRIPS agreement, see for instance Görg and Brand 2006; and Rosendal 2001, 2006.
38. Rosendal 2006, 94.
39. Raghavan 2000; Rosendal 2006, 21; and Zerbe 2007.
40. Andersen 2003, 2008.

the governance architecture in this area has elements of all three types of fragmentation—synergistic, cooperative, and conflictive—but that the overall situation is best described as a case of cooperative fragmentation.

First, the core of the climate governance architecture has elements of *synergistic fragmentation*. The institutional core of the architecture is the 1992 United Nations Framework Convention on Climate Change, ratified by almost all nations. The convention lays down a number of fundamental principles. These include the "ultimate objective" of climate governance to prevent "dangerous anthropogenic interference with the climate system" (article 2),[41] the principle of common but differentiated responsibilities and respective capabilities, and a precautionary approach (article 3). In addition, the convention provides for a sizeable international bureaucracy for administrative support, data collection, and policy development, as the organizational nodal point of the governance architecture in this area.[42] The 1997 Kyoto Protocol is part of the larger climate convention and shares its basic principles.

Yet in addition, the climate governance architecture has strong elements of *cooperative fragmentation,* which is the most fitting overall description. The protocol provides for quantified emissions limitation and reduction obligations only for industrialized countries, and includes several new institutional mechanisms (such as international emissions trading, the Clean Development Mechanism and various funding arrangements) that go beyond the convention and that do not apply to all nations. Importantly, one of the world's largest greenhouse gas emitters, the United States, is party only to the convention and not to the protocol, which creates a high degree of fragmentation within the regime. It also opens up new venues and opportunities of forum shopping for both public and private actors.[43] This fragmentation is obvious in current negotiations on future climate governance, which occur in separate tracks for the convention and the protocol.[44] The 2007 and 2008 conferences of the parties showed the increased complexity, with dozens of agenda items discussed in more than thirty contact groups and informal negotiations, and many items postponed to later sessions.[45]

In addition to the UN climate regime, there are an increasing number of additional institutional governance arrangements at different levels. Some arrangements, such as Methane to Markets, are public-private partnerships registered with the UN Commission on Sustainable Development after the 2002 World Summit on Sustainable Development. Other initiatives, such as the Carbon Sequestration Leadership Forum and the International Partnership for a Hydrogen Economy, are not registered with the Commission on Sustainable Development, even though their form is similar. Other initiatives include high-

41. Gupta and van Asselt 2006.
42. Busch 2009.
43. On forum shopping, see Hafner 2000; and Raustiala and Victor 2004.
44. Clémençon 2008.
45. See for instance International Institute for Sustainable Development 2007b.

level ministerial dialogues, such as the Dialogue on Climate Change, Clean Energy, and Sustainable Development, initiated by the meeting of the Group of Eight in Gleneagles, Scotland, in July 2005.[46]

The start of the European Union emissions trading scheme in 2005 marked the launch of another UN-independent initiative. Although based on the Kyoto Protocol, the trading scheme's start did not depend on the protocol's entry into force. In October 2007, the International Carbon Action Partnership was launched. This initiative comprises the European Union and other countries and regions that have created (or plan to create) carbon markets through mandatory cap-and-trade systems, but is not formally linked to the climate convention. Finally, there are sub-national initiatives such as California's Global Warming Solution Act and the Regional Greenhouse Gas Initiative in the United States, as well as private institutions that attempt to regulate issue areas relevant for climate governance, such as the Carbon Disclosure Project or the Investor Network on Climate Risk.[47]

In sum, some arrangements explicitly relate to the institutional core, such as the EU emissions trading scheme (which in 2008 connected to the transaction log of the climate convention) or public-private partnerships to implement the climate convention. Other initiatives are connected to the UN regime mainly through the participation of key actors in various forums. Most initiatives acknowledge the UN process, even though many do not provide for a coordination mechanism that could ensure mutual compatibility.

Finally, the climate governance architecture shows indications of *conflictive fragmentation*. In particular, the 2005 Asia-Pacific Partnership on Clean Development and Climate departs from key features of the UN climate regime, notably the consideration of climate change impacts and the differentiation between industrialized and developing countries. Even though not being comparable to the UN regime in terms of financial endowment or membership, the Asia-Pacific Partnership still provides an alternative to international climate action that may reduce incentives for complying with, or signing up to, international legally binding commitments.[48] A similar initiative is the Major Economies Process on Energy Security and Climate Change launched by the United States in 2007.[49] This Process includes 17 of the world's largest economies and aims at a long-term greenhouse gas emissions reduction goal;[50] its relation to the UN climate regime is ambiguous and partially conflictive. For example, during the 2007 conference of the parties to the climate convention, the delegation of the European Union threatened to boycott the next session of the US-initiated Ma-

46. Group of Eight 2005.
47. Pattberg and Stripple 2008.
48. For more details on the relation between the Asia-Pacific Partnership and the UN climate regime, see Christoff and Eckersley 2007; McGee and Taplin 2006; and van Asselt 2007a.
49. The process is continued by the new US administration under President Obama as the Major Economies Forum on Energy and Climate, with 16 world leaders. It is too early to ascertain whether and how the recent change in US government will affect this analysis.
50. De Coninck et al. 2008; and White House 2007.

jor Economies Process. As argued by Germany's Environment Minister Sigmar Gabriel, "[n]o result in Bali means no Major Economies Meeting."[51] Representatives from the Group of 77 and China, too, argued that the UN climate regime should remain the central platform for addressing action on climate change.[52]

Importantly, these instances of fragmentation in climate governance are intentional.[53] The Asia-Pacific Partnership and similar proposals—backed by the United States—were created not out of ignorance of the climate regime but *because* of it, at a time when the climate convention and the Kyoto Protocol were well established and in force. In addition, the emergence of numerous initiatives outside of the climate regime indicates that the global climate governance architecture may become more fragmented over time. Many new initiatives include the United States, which has rejected the Kyoto Protocol; most are not (or are only loosely) linked to the UN climate regime; and the compatibility of some norms and principles with those of the core institution is often ambiguous.

Nonetheless, the overall architecture of climate governance, at present, can be best characterized as an example of cooperative fragmentation.

Consequences of Fragmented Governance Architectures

Different degrees of fragmentation of governance architectures are likely to show different degrees of governance performance. More integrated governance architectures may promise a higher effectiveness in terms of solving the core problems in an issue area. Yet this claim is contested, and several authors emphasize the potential benefits of a multitude of agreements, institutions, and approaches within an overall fragmented architecture. Claims in favor and against stronger or lesser fragmentation are found in a variety of literatures, ranging from international relations and international law, to the comparative study of environmental policy. In this section, we review these claims, organized around the question of (1) the relative speed of reaching agreements; (2) the level of regulatory ambition that can be realized; (3) the level of potential participation of actors and sectors; and (4) the equity concerns involved.

The four aspects of speed, ambition, participation, and equity are interrelated, and eventually will have a bearing on overall governance performance. While we use them here to structure arguments on the *consequences* of fragmentation, the criteria we presented in Table 1 help assess the *degree* of fragmentation. This assessment of existing propositions views fragmentation as a contin-

51. Sigmar Gabriel, quoted in *Der Spiegel OnLine,* available at http://www.spiegel.de/international/world/0,1518,523211,00.html, accessed 8 July 2009.
52. International Institute for Sustainable Development 2007a. To some extent, this reluctance towards US initiatives is in line with predictions by the scholarly literature on non-hegemonic regimes. See for instance Brem and Stiles 2009.
53. For a discussion of the problems related to intentional interplay, see Young 2008b.

uum, with different claims as to the relative positive or negative consequences of higher (conflictive) or lower (synergistic) degrees of fragmentation.

Speed

Proponents of fragmentation in governance architectures emphasize, first, that small-n agreements that encompass only the most important countries may on average be faster to negotiate and to enter into force. Fragmentation, in its cooperative form with different memberships, loosely integrated institutions and common core norms, could thus be a positive quality of governance architectures, or at least not a reason for concern. With regard to climate governance, Victor for instance favors an approach of one "club" that involves small numbers of nations that would negotiate and review climate policy packages.[54] Others have suggested that the United States should conclude alternative, regional agreements with like-minded countries, for example in Latin America,[55] or with China and, possibly, other key developing countries.[56] Bodansky, for instance, argued for an "institutional hedging strategy" with the United States becoming the creator of "a more diversified, robust portfolio of international climate change policies in the long term."[57] In terms of actor constellation, such regional or small-n agreements could incorporate the world's largest greenhouse gas emitters and allow for experimentation with alternative international regulatory frameworks. For some, such an approach would allow more profound negotiations with "moderate" developing countries, while avoiding interference or obstruction by "hard-line" developing countries.[58] Likewise, Barrett argues for a multi-track climate treaty system, with protocols for research and development into mitigation technologies; the development and diffusion of these technologies; funding for adaptation; and geo-engineering.[59] Similarly, Sugiyama and Sinton suggest an "orchestra of treaties" that would have many elements described here as cooperative fragmentation. This orchestra of treaties would complement the climate convention with a focus on mitigation and adaptation technologies, clean development in developing countries, and carbon markets.[60] Countries could apply a pick-and-choose strategy and sign only those treaties that promote their own interests.

However, it is doubtful whether the speed of reaching small-n initial agreements would indeed improve the overall governance performance. An architecture with a cooperative or conflictive degree of fragmentation produces solutions that fit the interests only of the few participating countries. There is no

54. Victor 2007.
55. Bodansky (2002, 6) suggests Colombia, Costa Rica and Mexico, traditionally close allies of the United States and, in the case of Mexico, even members of NAFTA.
56. Stewart and Wiener 2003.
57. Bodansky 2002, 1.
58. Bodansky 2002, 6.
59. Barrett 2007.
60. Sugiyama and Sinton 2005.

guarantee that other countries will join. A quick success in negotiating small-n agreements might run counter to long-term success, when important structural regime elements have not been sufficiently resolved.[61] A certain degree of instant problem solving through a small-n agreement might provide disincentives for third-party countries to engage in climate action and could further disintegrate the overall negotiation system.

The 1987 Montreal Protocol illustrates many of these problems. Even though the protocol was relatively quickly negotiated within the OECD group, major developing countries did not accept it. Two years after adoption of the protocol, only 10 had ratified the treaty, and of the 13 developing countries whose chlorofluorocarbon consumption appeared to rise in 1987 most sharply, only Mexico, Nigeria, and Venezuela had joined.[62] In August 1989, a UN working group hence warned that "for the Protocol to be fully effective in its purpose of controlling the emissions of chlorofluorocarbons and halons, all countries must become Parties."[63] Both China and India agreed to ratify the treaty only after substantial changes to its basic structure had been made. In the ozone regime, the Southern contribution to the problem was small, yet threatened to grow. In climate governance, by contrast, the Southern role is much larger from the outset. Regional agreements of a few like-minded players, in the hope that others will later follow, do not promise to bring the long-term trust and regime stability that is needed in the climate domain. An "institutional hedging strategy"[64] with different policies and regimes scattered around the globe might hence eventually move towards a more conflictive degree of fragmentation with conflicting norms and different actors supporting different institutions. This outcome might wreak havoc on the larger goal of building long-term stable climate governance.[65]

Ambition

Some strands of cooperation theory suggest that small-n agreements within a fragmented architecture might prove more progressive and far-reaching. While a universal architecture might include all nations and ideally even reach full compliance, its eventual norms and standards could be rather low and modest. So-called "narrow-but-deep" agreements that achieve substantial policy goals with relatively little participation may be superior to a situation of a less demanding regime even if it has full participation and compliance ("broad-but-shallow").[66] A fragmented architecture could also increase opportunities for side-payments.

61. Biermann 2005; and van Asselt 2007a.
62. Kohler, Haaga and Camm 1987.
63. Informal Working Group of Experts on Financial Mechanisms for the Implementation of the Montreal Protocol 1989, para. 8.
64. Bodansky 2002.
65. See also Müller et al. 2003; and Biermann 2005.
66. Aldy, Barrett and Stavins 2003.

Bilateral agreements among countries may allow for concessions that governments would find unacceptable to grant to a larger group of states. Such concessions could include bilateral trade concessions, the bilateral exchange of technology, or support for enhanced political influence in international organizations. In a 2007 position paper for the UN climate negotiations, the United States has indicated that "[i]n some cases, it may be most appropriate for some activities to be undertaken in other multilateral fora."[67] At the same time, the United States, Japan, and Canada have expressed support of sectoral approaches,[68] although there is no international agreement on their usefulness.[69]

Some strands of the literature on environmental policy analysis also suggest that fragmentation and regulatory diversity increase innovation and thus overall governance performance.[70] In federal political systems, for instance, regulatory competition may allow for the development of different solutions in different regulatory contexts, of which the most effective will "survive" and be diffused to other regulatory contexts. Fragmentation may enhance innovation at the level of the firm or public agency and increase innovation in the entire system. A key tenet is the notion of diffusion of innovation, including innovations of policies, technologies, procedures, and ideas. This is also central to the claim of environmentally beneficial consequences of trade, which would reduce artificial barriers to the free transfer of technologies and products, and thus increase efficiency and innovation.[71] Stewart and Wiener, for example, propose that the United States should initially stay outside the Kyoto framework and seek to establish a new framework with China and, possibly, other key developing countries. This would address the world's two largest greenhouse gas emitters and allow for experimentation of alternative international climate regulatory frameworks.[72]

However, quickly negotiated small-n agreements might decrease also the level of ambition in the long run. At a later stage, when interest-constellations change and new situations arise, it might be difficult to reach agreement within the international community without an existing overall agreement that includes those structural elements. In addition, smaller agreements only with few like-minded countries will decrease the opportunity for creating package deals, which will minimize overall policy acceptance and effectiveness.[73]

Economic modeling projects that compared different hypothetical universal and fragmented climate regimes—based on criteria of environmental effectiveness, cost effectiveness, and cost distribution—also concluded that the more fragmented a regime is, the higher the costs are to stabilize greenhouse gas con-

67. UNFCCC 2008a, 87.
68. UNFCCC 2008a, 88; 2008b, 9; 2008c, 11.
69. International Institute for Sustainable Development 2008.
70. Jänicke and Jacob 2006.
71. Tews, Busch, and Jörgens 2003.
72. Stewart and Wiener 2003.
73. Folmer et al. 1993; Haas 1980; and IPCC 2001, 626–627.

centrations at low levels, because more ambitious reduction targets need to be achieved by a smaller number of countries.[74] As Aldy, Barrett, and Stavins concur, "[c]urrent understanding of the benefit and cost functions characterizing climate change suggest that the latter type of policy [broad-but-shallow] is more likely to satisfy the dynamic efficiency criterion. Since marginal emissions control costs increase steeply, a broad-but-shallow policy would result in lower overall costs."[75]

Similarly, economic model calculations show that emission trading brings both higher environmental effectiveness and cost-effectiveness if based on a universal architecture. If one compares the relative costs of four possible architectures for emissions trading—global trading based on the Kyoto Protocol, formal linking of regional emission trading, indirect linkages of regional emissions trading through common acceptance of credits, and a mixed approach that combines elements of these three scenarios—then one finds that an environmentally ambitious global trading approach is the best to control global emissions, while formal linking of emission trading systems can be a fallback option. A more fragmented architecture, for example through indirect linking, is less likely to lead to a comprehensive and effective response.[76]

In addition, regulatory fragmentation in combination with free trade and economic competition might result in the general decline of environmental standards, the so-called "race to the bottom." This hypothesis has only limited empirical support regarding *current* environmental policies. However, the increasing future needs of more stringent environmental policies, notably in climate governance, will also increase costs of regulation, which will then make regulatory differentials in some sectors more relevant for a "race to the bottom" scenario (also known as the "chilling effect"[77]). This problem is central to domestic complaints by energy-intensive industries in many countries.[78] Related is the concern of a general regulatory "chaos" not only in environmental issue areas, but also in associated domains such as energy, agriculture, or transport. For example, investors in the Kyoto Protocol's Clean Development Mechanism have emphasized the importance of clear signals of a long-term commitment of all actors to one stable process. In sum, governance architectures of the conflictive type that do not unite all major actors in one coherent and consistent regulatory framework and that include conflicting norms and principles are likely to send confusing messages to all, thus reducing the overall performance of the system.

Participation

Some suggest that a higher degree of fragmentation might reduce entry costs for actors, including private entities such as industry and business. The role of pri-

74. Hof, den Elzen and van Vuuren 2010.
75. Aldy, Barrett, and Stavins 2003, 378.
76. Flachsland et al. 2010.
77. Eckersley 2004.
78. van Asselt and Biermann 2007.

vate actors and new forms of governance beyond the state are a key concern in recent institutional scholarship on the environment.[79] A loose network of various institutions, many of which might be public-private, could make it easier for business actors to engage in rule making and thus help creating regulatory systems that are easy to implement and affordable from a business perspective. In addition, a fragmented governance architecture might make it easier to broaden the coverage of relevant sectors. A positive understanding of (synergistic) fragmentation could circumvent negotiation stalemates among countries that may have been caused by attempts to find a universal agreement. For example, the Kyoto Protocol does not yet require emission reductions from aviation and international maritime transport, whereas the European Union has taken up aviation in its emissions trading scheme. Thus, higher degrees of cooperative fragmentation where key norms are not in conflict may allow for more and different policy approaches, which could facilitate the inclusion of more relevant actors and areas than would be feasible through a more integrated but static architecture.

Yet again, serious problems may outweigh benefits. First, conflictive fragmentation, where different actors pull in different directions, may complicate linkages with other policy areas. There may be strong economic implications—in terms of international competitiveness—if one coalition of states adopts a stringent policy (for example binding emission ceilings), while other coalitions opt for a less rigorous way of reducing emissions (for example voluntary pledges). This, in turn, could have severe ramifications for the world trade regime that unites both coalitions under one uniform umbrella. A less fragmented architecture, on the other hand, could allow for systematic and stable agreements between the institutional frameworks of the world trade regime and environmental institutions. Since a fragmented architecture may decrease entry-costs for private actors, it is also conceivable that business actors use regulatory fragmentation to choose among different levels of obligation, thereby starting a race-to-the-bottom within and across industry sectors.[80]

Equity

A fragmented architecture might offer solutions that are specifically tailored for specific regions and thus increase equity by better accounting for special circumstances. Reinstein, for example, proposed a bottom-up process in which countries—similar to trade negotiations—would put on the table acceptable climate policies and measures in line with national circumstances.[81] Some lawyers also argue that increased fragmentation in international law is a way of accom-

79. Biermann and Pattberg 2008; Falkner 2003; Jagers and Stripple 2003; Jordan 2008; Pattberg 2005, 2006; and Pattberg and Stripple 2008.
80. Vormedal 2008.
81. Reinstein 2004.

modating different interests of states. As a result, specialized regimes may better serve the interests of governments and have higher compliance rates.[82]

Yet, fragmented architectures also raise serious concerns of equity and fairness. Cooperation theory assumes that bilateral and small-n agreements grant more bargaining power to larger and more influential countries, while large-n agreements allow smaller countries to enter into coalitions, such as the Group of 77 and China, that protect their collective interests from encroachment by larger countries. In the end, perceptions of inequity and unfairness are linked to policy effectiveness through its legitimacy—a governance system that is not seen as fair by all parts of the international community is likely to lack in overall effectiveness.[83] As stressed by Benvenisti and Downs, "powerful states have increasingly turned to fragmentation to maintain their control."[84] Fragmentation allows powerful states to opt for a mechanism that best serves their interests, in the form of "forum shopping,"[85] or to create new agreements if the old ones no longer fit their interests.

In the same vein, many climate-related initiatives like the Asia-Pacific Partnership, the Carbon Sequestration Leadership Forum, or the Methane to Markets partnership include leading developed and developing countries while excluding least developed countries.[86] The investment agendas of these initiatives therefore do not reflect the immediate interests of many of those countries that are most affected by climate change. The bulk of developing countries thus continue to support the multilateral approach in climate policy as in other policy domains. Less fragmented and more integrated architectures allow the South to count on its numbers in diplomatic conferences and gain bargaining power from a uniform negotiation position. They allow for side-payments across negotiation clusters within an issue area and across different policies, and minimize the risk for developing countries to be coerced into bilateral agreements with powerful nations that might offer them suboptimal negotiation outcomes.[87] For the many smaller and medium-sized developing countries, unity is strength, and multilateralism may seem its core guarantee. Since the emergence of the climate issue, the South has therefore sought to bring all negotiations under the UN framework and to frame global warming as an overarching political problem with implications far beyond mere environmental policy.

82. Hafner 2004, 859, argues that a "less-than-global approach seems particularly necessary when different States clearly hold different beliefs about what basic values should be preserved by international regulation."
83. On the link between legitimacy and effectiveness, see Andresen and Hey 2005; and Dingwerth 2005. In general on the role of accountability and legitimacy as analytical problems in earth system governance research, see the Science and Implementation Plan of the IHDP Earth System Governance Project (Biermann et al. 2009).
84. Benvenisti and Downs 2007, 626.
85. Hafner 2000; and Raustiala and Victor 2004.
86. Ott 2007, 18.
87. Abrego et al. 2003.

Conclusions

This article has focused on the issue of fragmentation, which we see as a ubiquitous structural characteristic of global governance architectures today. We have shown that different types of fragmentation exist, and have conceptualized the debate by differentiating between three degrees of fragmentation, which we termed synergistic, cooperative, and conflictive. Subsequently we have illustrated these concepts in the field of global climate governance. Building on this conceptualization, we have discussed the potential consequences of different degrees of fragmentation. We found that different types of fragmentation are likely to have different degrees of performance. While cooperative forms of fragmentation may entail both significant costs and benefits, we did not find convincing arguments in favor of a high, or conflictive, degree of fragmentation. On balance, conflictive fragmentation of global governance architectures appears to bring more harm than positive effects, and can generally be seen as a burden on the overall performance of the system. On the other hand, what we described as "synergistic fragmentation" might often be a realistic second-best option in a world of diversity and difference in which purely universal governance architectures are more a theoretical postulate than a real-life possibility.

This raises the policy question of how to minimize extreme cases of conflictive fragmentation and how to address some of the negative effects of cooperative fragmentation. This policy question is particularly important for the area of climate governance. Here it seems crucial to increase synergies within the policy area, to better integrate processes under the climate convention and the Kyoto protocol and to reduce duplication, for instance in the current parallel negotiations on technology transfer in different arenas. Negotiations leading to future agreements should address key topics—such as deforestation, technology transfer, or capacity building—in only one forum. Regarding the cooperative and partially conflictive fragmentation between UN climate governance and climate arrangements outside this umbrella, it is imperative to open these institutions to additional members. For example, the Asia-Pacific Partnership could be broadened to also include least developed countries and small-island developing states in the region, and to ensure through formal declarations or clauses better integration with the overall UN processes. Furthermore, formal coordination between these arrangements and the UN negotiations could ensure that they work towards common objectives.[88] The UN climate regime also needs to be better coordinated with non-environmental institutions in order to minimize conflictive fragmentation, most importantly with regard to the WTO. Russia's ratification of the Kyoto Protocol demonstrates that linking both arenas can create additional incentives for countries to support climate policies. Better integration can help identify similar constellations of actors. For instance, like the climate regime, the WTO is hosting discussions on the transfer of climate-friendly goods and services in the special session of the WTO Committee on

88. van Asselt 2007a.

Trade and Environment. As long as this discussion remains within the WTO and is not linked to similar debates in the climate regime, integration is unlikely. Policy-makers have recognized this problem: in 2007, trade ministers, senior trade officials and the WTO director-general met for the first time during a conference of the parties to the climate convention to discuss trade-related aspects of climate change. Yet this meeting also reflected the increasing fragmentation of the climate governance domain, with only a few countries—and none from Africa—represented.

Finally, yet importantly, our analysis shows that major scholarly literatures offer conflicting statements regarding the relative advantages and disadvantages of fragmentation. This calls, we argue, for a continuation of this line of work, both through more in-depth empirical studies of fragmentation in particular policy domains and through larger comparative study programs that reach beyond the environmental policy domain. Such studies could also provide theory-driven explanations for the causes and consequences of fragmentation of given architectures, as well as for possible changes of the degree of fragmentation over time. This article, with its typological overview of degrees and consequences of fragmentation and its review of relevant academic writing, offers one starting point on which such further research could build.

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