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Global Integrationist Multimodality: Global Environmental Governance and Fourth Generation Environmental Law

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I. INTEGRATIONIST MULTIMODALITY ON A GLOBAL SCALE

At this journal's recent symposium, most presenters discussed ongoing regulatory efforts to address environmental challenges in terms of integrationist multimodality and other key features of the "fourth generation" of U.S. environmental law discussed in Professor Tony Arnold's article *Fourth Generation Environmental Law: Integrationist and Multimodal*.¹ As description of regulatory evolution and analytical tool for policy development, movement toward integrationist multimodality (that is, toward employing multiple modes and methods of regulation, but in more integrated ways than prior generations of environmental law) may also have relevance of environmental regulation beyond of the United State, where complex international and global environmental challenges have largely persisted despite decades of regulatory efforts. This Article explores the value of integrationist multimodality as a means of understanding the evolutionary trajectory of international environmental law and, ultimately, of informing decisions that may shape the future regulation of global environmental challenges. In a sense, this article explores how the trends identified by Professor Arnold are related to scale and context by asking whether they are also occurring outside the United States and in the international realm.

Professor Arnold suggests that the emergence of integrationist multimodality in the "fourth generation" of U.S. environmental law arises from a complex and dynamic interaction of social, legal, and ecological systems as they respond to the inadequacy of pre-existing unimodal and fragmented approaches to deal with complex environmental challenges.² Related developments are occurring in international efforts to address international and global environmental challenges. Much as an integrationist and multimodal approach to environmental law offers hope in the United States, it may also offer hope on a global scale.³ Indeed, it may be that it is

¹ Craig Anthony Arnold, *Fourth-Generation Environmental Law: Integrationist and Multimodal*, 35 WM. & MARY ENVTL. L. & POL'Y REV. 771, 771 (2011).

² *Id.* at 777-88.

³ See Craig Anthony (Tony) Arnold, *Environmental Law, Episode IV: A New Hope? Can Environmental Law Adapt for Resilient Communities and Ecosystems?* __ Journal of Environmental and Sustainability Law __ (2014-2015) (discussing the hope that

only with the recent emergence of a more multimodal and integrationist approach that environmental law is becoming capable of offering a viable response to the multilayered complexities presented by global environmental challenges.

The evolution of international environmental law is subject to similar pressures, and thus involves many of the same interactive processes, as those Professor Arnold discusses in the national-subnational context, but on a larger scale. Global environmental challenges are notoriously difficult to regulate, often for reasons that are more socio-political than environmental. Arguably, all efforts to address global environmental problems through international law, save one, have failed to reduce the harms they were designed to address.⁴ This failure provides an evolutionary pressure not unlike the pressure associated with particularly complex issues in the United States identified by Professor Arnold. There are further similarities as well. For example, as in the national context, many of the most significant advances in the global context occur at the margins of the most robust regulatory regimes. While this may not be particularly surprising – because new approaches tend to arise in areas that are not well-covered by existing law, where there is room for experimentation – it may also tend to highlight the relationships among environmental laws operating differing scales.

Environmental issues and the socio-legal systems that regulate them are increasingly multi-scalar, involving interaction among international, national, and subnational regulatory systems. Accordingly, it is often helpful to undertake a multi-scalar analysis in order to develop a clear picture of evolutionary trends. The vertical relationships of national and international actors, as well as the horizontal relationships among them give shape to the reality of environmental governance. To a significant degree, the emergence of integrationist multimodality in global environmental governance is associated with greater attention to incorporating an understanding of this inter-scalar activity into governance development. International

integrationist multimodality provides at the national scale).

⁴ See generally DANIEL BODANSKY, *THE ART AND CRAFT OF INTERNATIONAL ENVIRONMENTAL LAW* 267-71 (2010) (taking a rather optimistic view); cf. JAMES GUSTAV SPETH, *RED SKY AT MORNING: AMERICA AND THE CRISIS OF THE GLOBAL ENVIRONMENT* xi (2004) (“efforts to protect the global environment have largely failed”).

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environmental law no longer consists of either purely “soft” law encouraging national activity or partially successful attempts to create “hard” law standards at the international level to “command and control” national activity. Instead, more sophisticated attention to the realities of coordinating governance on the global scale to affect the behavior that underlies environmental change is forcing a multimodal approach and revealing the wisdom of integrationist regulatory design.

The development of integrationism and multimodality in U.S. environmental law has not occurred in isolation, but bears similarities and, often, significant connections to developments at the international and global scale. Recognizing that similar trends have begun to emerge at multiple scales offers an important perspective that can inform efforts to understand U.S. domestic environmental policy, particularly as it relates to globally significant issues such as climate change, and thus to improve such policy. Further, awareness of governance development outside the United States is increasingly important (in some cases, it is essential) to effectively addressing environmental challenges within the United States. At times, the effect of U.S. environmental governance outside the United States (by providing a model, developing knowledge, or demonstrating commitment, for example) may arguably be more important than its effect within U.S. borders, at least in terms of overall environmental quality.⁵

This article does not seek to produce an analysis of global and international environmental law that would somehow exist in parallel to the analysis of U.S. environmental law in *Fourth Generation Environmental Law*. Because environmental law is increasingly globalized – environmental laws of various countries and at the international level are coalescing around similar approaches to problems, and increasingly connected to each other – it is important that U.S. environmental law scholarship continue to expand its field of vision and account for developments beyond U.S. borders.⁶ While the United States has traditionally been a leader in environmental law, U.S. environmental law has also been influenced by developments and norms

⁵ See generally Yang & Percival, *supra* note 3.

⁶ See generally Yang & Percival, *supra* note 3.

imported from elsewhere.⁷ Accordingly, the analysis in this article doesn't simply apply the theoretical work performed by Professor Arnold to the international arena, but provides a discussion of the larger systemic context affecting the evolution of U.S. environmental law, particularly its future evolution. Thus, this article serves to illuminate some of the trends on larger (international and global) scales that are likely to interact with U.S. environmental law as it continues to become more integrationist and multimodal, and will therefore likely affect its future development. It can be difficult for scholars accustomed to working with U.S. environmental law to make sense of what is happening at the international and global scales. International law rarely contains the type of hierarchical structures and quantified binding requirements that make up a so much of U.S. environmental law. There is, of course, no global sovereign that can impose requirements upon the world's countries in a way that directly corresponds with the cooperative federalism that has characterized U.S. environmental law statutes since the 1970s. Undoubtedly, adding consideration of international political dynamics to an analysis of environmental problems increases the complexity of an already highly complex regulatory area. Yet, issues that plainly have a global dimension, such as climate change and biodiversity loss are forcing scholars to pay attention to environmental issues that exist beyond U.S. borders. U.S. environmental law scholars can play an important role in advancing more effective global regulation. For example, applying an understanding of lessons from U.S. regulatory successes and failures, or of conceptual tools developed to analyze U.S. environmental regulation (such as integrationist multimodality), to other parts of the world or to international governance, can help to clarify the types of efforts that should be supported by international institutions.⁸

⁷ See, e.g., *id.* at 618 (“there can be no question that the American politics and law of the environment is increasingly affected and shaped by international developments and trends”); See also Richard B. Stewart, *The Global Regulatory Challenge to U.S. Administrative Law*, 37 N.Y.U.J. INT’L L. & POL. 695, 697 (2005) (observing that “U.S. regulation is increasingly shaped by global influences” and maintaining that “[t]he mounting challenge of global regulation represents the third major phase in the evolution of U.S. administrative law”).

⁸ The direct practical value of such work was made clear to me recently when I was asked by the International Development Law Organization to complete a report on the implementation of the U.S. Coastal Zone Management Act in areas affecting Native

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International regulation of some resources – such as rivers and air pollution – has a relatively long history in many different parts of the world, which may offer some insight into the potential uses and limitations of international environmental law as a regulatory tool. However, the global environmental issues that seem likely to define twenty-first century environmental law (including, but not limited to, climate change and biodiversity loss) are not simply “international” issues. They are not only “global” because they affect the entire planet, they are also global in the governance sense – they permeate all scales of governance, from multilateral institutions to local governments.⁹ This adds a layer of complexity that often makes regulation particularly challenging. Global environmental law is not the same as international environmental law. While the latter refers to law developed among nation-states (more or less), global environmental law describes a much more complex web of law that exists within and across scales from international to subnational. In this context, this article suggests that integrationist multimodality may be an essential aspect of effective governance.

There is no panacea for complex environmental governance challenges. Global environmental challenges represent some of the most complex problems that humanity has ever faced and, therefore, the flexibility of a multimodal approach may prove to be a crucial feature of any effective effort. Integrationism can create solutions where previous fragmented approaches were ineffective or even counterproductive and, thus, may be equally important to confronting the tangled web of interacting changes in the planet’s environmental systems.

This Article highlights the development of integrationist multimodality in international environmental law and articulates its probable

American tribes for the express purpose of providing lessons learned to inform UN Convention on Biological Diversity governance initiatives in developing countries. *See generally*, Andrew Long, *Case Study on Native Americans and the Coastal Zone Management Act: Lessons for Achieving Aichi Biodiversity Target 14* (March 17, 2014) (on file with the author).

⁹ *See generally* LOUIS J. KOTZE, *GLOBAL ENVIRONMENTAL GOVERNANCE: LAW AND REGULATION FOR THE 21ST CENTURY* 267-293 (2013).

importance for the evolution of more effective global environmental governance in the future. Part II compares and contrasts the contexts of national, international, and global environmental law, setting the stage for a discussion of the latter two settings. Part III then briefly traces the history of international environmental law in order to highlight the need for, and movement toward, integrationist multimodality in a broader, multi-scalar governance approach to global environmental challenges. Part IV explores several indications that integrationist multimodality has arrived in global environmental governance and explains the several ways in which this emergence provides hope for making meaningful progress on issues that have thus far seemed virtually intractable. Part V briefly concludes.

II. COMPLEXITY IN NATIONAL, INTERNATIONAL, AND GLOBAL ENVIRONMENTAL CHALLENGES

Integrationist multimodality is emerging, according to Professor Arnold, because of “messy, chaotic, rapidly changing, multiscalar, multidimensional set[s] of problems that are evading solutions or even effective prevention or adaptation methods under the exiting generational iterations of environmental law.”¹⁰ He uses complex problems at the intersection of water, land use, and climate change in the United States to illustrate these types of problems, which serve as drivers for the evolutionary forces that lead to integrationist multimodality. Ensuring sufficient water quality and availability for both human and ecological uses has come to require approaches that interact not only with direct discharges as the Clean Water Act permitting system does, but also with state and local land use decisions, and must also account for contributions to and effects of climate change.¹¹ Building on work by Ruhl and Salzman, Professor Arnold describes this type of context as a “policy super-jungle of policy jungles” because of the many interacting components that create a complex socio-legal system for achieving environmental protection.¹² “The complexities of climate change have complex relationships with the complexities of land use

¹⁰ Arnold, *supra* note 1, at 797

¹¹ Arnold, *supra* note 1, at 814-820.

¹² Arnold, *supra* note 1, at 820-21; *See also* J.B. Ruhl & James Salzman, *Climate Change, Dead Zones, and Massive Problems in the Administrative State: A Guide for Whittling Away*, 98 CALIF. L. REV. 59, 80 (2010)

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problems, both of which have complex relationships with the complexities of water resources issues.”¹³

Many of the issues that international environmental law attempts to address can be characterized as policy super-jungles of policy jungles.¹⁴ To some extent, the issues that Professor Arnold discusses in the U.S. are handled as international environmental law issues in other regions. For example, water protection issues in Africa often must be addressed internationally, thus presenting a similar policy super-jungle of policy jungles that includes the added element of international cooperation. IPCC Working Group II’s recently released report discusses water issues in both North America and Africa, offering an opportunity for comparison. It suggests that climate impacts on North American freshwater availability will be relatively high and notes the important role of pre-existing and non-climate stressors in exacerbating the challenge.¹⁵ The situation in Africa, however, appears significantly more complex, partly because of the international aspects of the challenge. Over 90 percent of African water resources are shared internationally and of its 60 international river basins (covering 60 percent of the continent), five are shared by eight or more countries.¹⁶ Moreover, the pressure to address the challenge in Africa arises from humanitarian concern: 47 percent of the African population faced water stress in 2000, a figure that

¹³ Arnold, *supra* note at 821.

¹⁴ An alternative and partially overlapping analytical approach is that of “wicked” problems, under which climate change has been described as “super wicked.” *E.g.*, Richard Lazarus, *Super Wicked Problems and Climate Change: Restraining the Present to Liberate the Future*, 94 CORNELL L. REV. 1153 (2009); The wicked problems approach has its origin in Horst W. Rittel & Melvin M. Webber, *Dilemmas in a General Theory of Planning*, 4 POL’Y

SCIS. 155, 160-67 (1973); *See also* Holly Doremus, *The Purposes, Effects, And Future Of The Endangered Species Act’s Best Available Science Mandate*, 34 ENVTL. L. 397, 420-21 (2004).

¹⁵ *Climate Change 2014: Impacts, Adaptation, and Vulnerability Final Draft*, Internal Governmental Panel on Climate Change, Working Group II, at 4 (March 2014), *available at* http://ipcc-wg2.gov/AR5/images/uploads/WGIIAR5-Chap26_FGDall.pdf.

¹⁶ *Climate Change & Water in Africa: Analysis of Knowledge Gaps and Needs*, United Nations Economic Commission for Africa, *available at* www.uneca.org/sites/default/files/publications/wp4-water_gaps.pdf.

some estimates expect to rise to 65 percent by 2020.¹⁷ In other words, approximately half of all Africans face serious risks related to water shortage. Although parts of Africa are often cited as places where the impacts of climate change are likely to be particularly severe, IPCC WG II observes: “There is *poor understanding* in Africa of how climate change will affect water quality. This is an important knowledge gap.”¹⁸ Thus, the complexity of the African situation is compounded not only by international context and severe shortage, but also by poor information quality. Major reasons for the lack of reliable data on projected impacts are uncertainty about (1) future trends in non-climate impacts on water resources (which are expected to be more significant drivers of water stress than direct impacts of climate change) and (2) lack of observational data on groundwater sufficient to make accurate predictions.¹⁹ These uncertainties result, at least in part, from socio-political challenges that plague the region and may be partially attributed to difficulties of international cooperation. Inadequate governance reduces effective cooperation, makes prediction difficult, and undermines efforts to promote scientific inquiry into problems such as water insecurity. Further, political challenges in Africa create additional concerns that significantly increase the complexity of its water resources challenge: an appreciable, but mostly unpredictable, risk that resource scarcity will drive violent conflict and/or massive migration of peoples, both of which IPCC WG II notes without attempting to quantify.²⁰ Thus, efforts to ensure adequate water supply in Africa (and in many parts of Africa, if addressed regionally within the continent) face international political complexity, existing threats to human well-being due to water scarcity, a significant risk of exacerbation due to land use changes and population growth, severe knowledge gaps, and risk of war and large-scale human displacement, many of which are underlain by one of the most complex and persistent social problems anywhere: poverty. All of these factors interact to create an international regulatory context of dizzying complexity. In Africa, as in many parts of the world, poverty and power disparities result from a history of colonialism and other factors that

¹⁷ *Id.* at 5

¹⁸ *Climate Change 2014: Impacts, Adaptation, and Vulnerability Final Draft*, Internal Governmental Panel on Climate Change, Working Group II, at 4 (March 2014), available at http://ipcc-wg2.gov/AR5/images/uploads/WGIIAR5-Chap26_FGDall.pdf.

¹⁹ *Id.* at 19.

²⁰ *Id.* at 45.

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raise profound equity issues and may be understood to create ethical obligations for more powerful political actors such as the United States and European Union. Yet, at present, there is little reason to conclude that the situation will improve. Instead, suffering in Africa appears likely to increase. It's extremely rich biodiversity will likely plummet, and the ethical obligations of wealthy and powerful nations remain uncertain or contested.

Although Africa's water situation represents one of the more dire international environmental law concerns, it cannot be dismissed as an outlier among international environmental law's challenges. It represents well the complexity that efforts to advance international environmental protection must confront. This complexity forces evolution in the international context, much as the complexity described by Professor Arnold does in the domestic context.

As complex as the policy questions of domestic law may be, the African example illustrates that this complexity is often multiplied by political issues inherent in the international context, especially international environmental issues. Traditional international law doctrines – most importantly the concepts of sovereignty and its corollary requirement of state consent to be bound – virtually insure that there will be significant political obstacles to addressing international issues that are entirely absent from U.S. domestic environmental law. Geopolitical power disparities and economic competitiveness concerns (of nations and multi-national corporations) regularly provide strong disincentives to adopting environmental protection obligations on the international level in a far more direct and seemingly intractable way than they do in the U.S. domestic context. Further, poverty, security, and human rights considerations weigh heavily on efforts to implement environmental protection at the international level in a way that only occasionally surfaces in the U.S. domestic context. For inescapably global issues, such as climate change, and issues of global importance, such as freshwater availability, these complexities reach their peak in the international law-making process. International law-making of global scope attempts to coordinate the activities of nearly 200 independent and fully sovereign actors, and, through them, the activities of increasingly powerful multinational corporations and other private actors. The context for

addressing global environmental challenges, therefore, is often far more complex than even the context of African water resource challenges.

These types of multiscalar, complex challenges permeate nearly every effort to address global environmental issues and may be the best explanation for an abysmal record of failure in international environmental law. By some measures, *all* past efforts to address global environmental issues have failed to significantly improve the global environmental conditions they target, with the singular exception of the ozone regime. Unlike in domestic environmental law, where policy approaches such as command-and-control regulation had significant success before apparently reaching the limits of their usefulness, the evolution of international environmental law addressing global issues is marked primarily by failed efforts, nonbinding regimes, and a set of statistics potent enough to drive even the most optimistic reformers to the edge of despair.²¹ Given the stark contrast between the U.S. context addressed by Professor Arnold's *Fourth Generation Environmental Law*, which assumes effective rule of law mechanisms and relative resource abundance, and discouragingly complex context of global environmental politics, it is fair to question whether the concept of integrationist multimodality has any relevance to international law aimed at global environmental challenges. Perhaps surprisingly, I think the concept is not only relevant, but helps to clarify reasons to be cautiously optimistic about the prospect of addressing global environmental challenges.

There is reason for hope in global environmental governance, if not exactly in international environmental law as it has traditionally been thought of. That hope comes largely from the evolution of governance approaches occurring at the margins of international environmental law – through linkages across regimes, in innovative arrangements between countries and international institutions, and in the emerging public-private governance structures.²² In other words, the hopeful signs in global environmental

²¹ E.g., Secretariat of CBD, WORLD BIO DIVERSITY OUTLOOK 3, available at <http://www.cbd.int/doc/publications/gbo/gbo3-final-en.pdf>.

²² Some might suggest that recent developments during the UNFCCC COP 20 at Lima undermine this assertion, but that view reads too much into formal processes surrounding the negotiations. As discussed in Section III below, a core lesson of the history of international negotiations is that they depend very much on the context in which they occur. On Lima

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governance arise in ways that are congruent with the trends that Professor Arnold identified as integrationist multimodality in the United States.

III. THE EVOLUTION OF INTERNATIONAL ENVIRONMENTAL LAW

A.

This section briefly traces the evolution of international environmental law to highlight its similarities with the generational evolution of environmental law articulated by Professor Arnold. Although the geographic scale, allocation of authority, and political context are very different, international environmental law has evolved in ways that are fundamentally similar to national environmental law. Unlike other areas of law, environmental law addresses questions that are necessarily similar throughout the world and across scales because they involve natural systems (such as ecosystems, hydrological systems, or the global climate system) that function according to immutable scientific processes that do not change across space and time (at least as relevant to humanity).²³ Thus, upon reflection, the core similarities of evolution in international and domestic law should not be surprising. Instead, we might conclude that environmental law's "fourth generation" is an iteration with sufficient capacity to address complexity that it may begin to successfully address global environmental challenges and severe regional problems (such as Africa's water crisis). The Ad Hoc Era: To 1972

The origins of international environmental law are difficult to trace precisely because until 1972, international environmental law consisted entirely of ad hoc agreements or adjudications that generally involved only a few countries and addressed a very specific issue in terms of rights allocation. Among the best-known examples are the 1911 Convention for the

specifically, the question remains whether future progress will depend on "major factors . . . external to the UNFCCC process." See IISD Reporting Services, *Earth Negotiations Bulletin, Summary of the Lima Climate Change Conference: 1-14 December 2014*, 43, available at <http://www.iisd.ca/climate/cop20/enb/> (Last accessed February 6, 2015).

²³ See Tseming Yang and Robert Percival, *The Emergence of Global Environmental Law*, 36 *ECOLOGY L.Q.* 615, 652-53 (2009).

Protection and Preservation of Fur Seals²⁴ and the 1941 *Trail Smelter Arbitration*.²⁵ As environmental issues gained increasing prominence, particularly in developed countries during the 1960s and 1970s, the political will to address them in a more globally coherent manner began to coalesce. At the same time, however, development issues in developing countries (many of them recently independent from colonial rule) created a set of priorities that were very different from developed countries' goals and would help to shape the body of international environmental law. Efforts to coordinate global action toward environmental protection began to bear fruit with the first of two highly significant international environmental law conferences: the Stockholm Conference on the Human Environment in 1972.

B. The Beginning of Global Coordination: 1972-1992

The Stockholm Conference of 1972 marked the beginning of international environmental law as it is currently understood. The achievements in Stockholm established several key elements of international environmental law that remain significant. For example, the only principle of customary international law related to the environment, the principle against transboundary harm, arose at this time.²⁶ The principle against transboundary harm expresses principles that are not originally environmental in character, as applied to the environment (sovereignty over natural resources and the right of nations to exploit them pursuant to their independent goals) and, in that sense, epitomizes the era in which it was developed.²⁷ The international

²⁴ This and other early wildlife-regulating regimes are discussed in Andrew Long, *Protected Species* in INTERNATIONAL ENVIRONMENTAL LAW: THE PRACTITIONER'S GUIDE TO THE LAWS OF THE PLANET (Roger Martella & Brett Grosko, editors, ABA Publishing, 2014).

²⁵ See e.g. DAVID HUNTER ET AL., INTERNATIONAL ENVIRONMENTAL LAW AND POLICY 140-41 (4th ed 2011).

²⁶ See *INT'L COURT OF JUSTICE, LEGALITY OF THE THREAT OR USE OF NUCLEAR WEAPONS* (1996), available at <http://www.icj-cij.org/docket/index.php?sum=498&code=unan&p1=3&p2=4&case=95&k=e1&p3=5>. *Nuclear Test case recognized the principle as customary international law*. Id.

²⁷ See THE UNITED NATIONS CONFERENCE ON THE HUMAN ENV'T, DECLARATION OF THE UNITED NATIONS CONFERENCE ON THE HUMAN ENV'T (1972), available at <http://www.un-documents.net/unchedec.htm>. Principle 21 of the Stockholm Declaration provides: "States

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environmental law created at this time reflects the predominance of the pre-existing international legal order, into which environmental concerns were just beginning to enter. Accordingly, the major multilateral environmental agreements (MEAs) of the time, such as the Convention on International Trade in Endangered Species of Fauna and Flora (CITES) and the Ramsar Convention for the Protection of Wetlands of International Importance, embraced the primacy of national sovereignty, and explicitly rely on national institutions to implement and enforce provisions created internationally.²⁸ At the same time, however, these agreements created supranational structures that would become a model for future MEAs.

From these early environmental agreements through the end of the Cold War, global politics were generally favorable to the creation of international environmental law. For example, the United States' interest in supporting developing countries to resist communism and developing countries growing political voice (exercised primarily to demand sovereignty) were aligned to promote the development of international environmental law throughout the 1970s and 1980s.

The transition to the next major phase of international environmental law development came about, in part, because of unprecedented success of the regime created to address ozone depletion in the late 1980s. The regime began with a relatively weak framework treaty in 1985 and rapidly progressed to the signing of the 1987 Montreal Protocol, which created a process that rather quickly led to the elimination of many ozone depleting substances as its requirements were ratcheted-up and an increasing number of countries ratified. The rather surprising success of this international

have, in accordance with the Charter of the United Nations and the principles of international law, the sovereign right to exploit their own resources pursuant to their own environmental policies, and the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction." *Id.*

²⁸ See Andrew Long, Key Environmental Treaties and Agreements in INTERNATIONAL ENVIRONMENTAL LAW: THE PRACTITIONER'S GUIDE TO THE LAWS OF THE PLANET (Roger Martella & Brett Grosko, editors, ABA Publishing, forthcoming 2014) (discussing CITES use of national authority to advance international environmental protection goals).

environmental regime was seen by many as a potential model for future international environmental law development. Unique features of the ozone problem are now understood as underlying the Montreal Protocol's success, but the agreement's design seemed to offer a template for future efforts to tackle global challenges. In some ways, the Montreal Protocol also represents the most complete use of command-and-control style regulation in international environmental law, highlighting the borrowing of legal approaches across scales.²⁹ For example, provisions designed to afford flexibility, which was the focus of many U.S. environmental law reforms of the 1980s, highlight the influence of domestic environmental law thinking on international environmental law.³⁰ Indeed, the Montreal Protocol seemed to offer proof that international treaty regimes could address global environmental problems by adopting approaches similar to those employed in domestic environmental law. For example, the quantified emissions-reduction requirements of U.S. statutes, which had addressed industrial pollution problems, seemed to offer a viable approach not only to ozone depletion, but also to the increasingly prominent issue of climate change. Once the 1990 Clean Air Act amendments proved the viability of a cap-and-trade program for addressing acid rain, the approach would be borrowed for design of the Kyoto Protocol ten years after the Montreal Protocol was signed.³¹

C. The Supranational Era of Hope and Disappointment, 1992-2009

In the lead-up to the 1992 UN Conference on the Environment and Development (UNCED or "Rio Earth Summit"), an atmosphere of post-Cold War optimism fueled hope that sufficient political will existed to adopt sweeping top-down multilateral environmental treaties capable of addressing global environmental challenges.³² The Rio Earth Summit was a watershed moment in the development of international environmental law and gave birth to two of the most significant international environmental law treaty regimes: the UN Framework Convention on Climate Change (UNFCCC) and

²⁹ E.g. Andrew Long, *Complexity in Global Energy-Environment Governance*, 15 Minn. J. L. Sci. & Tech. 1055, 1060-61 (2014).

³⁰ E.g. Arnold, *supra* 1 note , at 789.

³¹ Long, *Complexity*, *supra* note 35, at 1061.

³² See, e.g., HUNTER, *supra* note 25, at 154-56.

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the Convention on Biological Diversity (CBD), both framework conventions that contemplated future development.

These regimes developed along issue lines and the UNFCCC, in particular, sparked voluminous literature examining policy architecture, regime design, and other topics implicitly driven by the idea that careful attention to treaty mechanisms could produce viable solutions to global environmental challenges. During this period, calls for a “Global Environmental Organization” with an authority over environmental issues similar to the authority of the WTO (which was also created in the 1990s) over trade issues gained momentum in both scholarship and practice.³³ Thus, the 1992 Rio Earth Summit began an era in which sophisticated, multilateral issue-specific treaty regimes were understood as the *sine qua non* for addressing global environmental challenges through international environmental law.

The seeds of disappointment were evident from the beginning of this era, however. The lead-up to Rio included a third major effort, aimed at developing a regime for the protection of tropical forests, which failed almost completely from the outset and highlighted divisions that would plague other Rio-era reform efforts. In particular, the continuing divide between developed and developing countries shaped all of the outcomes of Rio and continues to play a defining role in the development of the regimes it produced. While the global forests regime, if there even was one, limped along producing irrelevant and potentially harmful policy instruments,³⁴ the UNFCCC and CBD developed rapidly into robust regimes with extensive institutional structures and provided an (arguably false) sense of progress in international environmental law that sustained a near-exclusive focus top-down models based on a tragedy of the commons economic metaphor.

³³ E.g. DANIEL C. ESTY, THE CASE FOR A GLOBAL ENVIRONMENTAL ORGANIZATION IN MANAGING THE WORLD ECONOMY, (P.B. Kenen ed., Inst. For Int'l Econ. 1994).

³⁴ See e.g. Radolav S. Dimitrov, *Hostage to Norms: States, Institutions, & Global Forest Politics*, GLOBAL ENVTL. POL. (2005), http://www.woodlandleague.org/dimitrov_hostage_norms_global_forest_politics.pdf.

The cresting of the wave of top-down MEAs came with the UNFCCC's Kyoto Protocol, which was signed in 1997 and entered into force in 2005. Aside from the 1987 Montreal Protocol upon which it was partly modeled, the Kyoto Protocol is arguably the most legalistic, command-and-control-style, international environmental agreement ever to enter into force.³⁵ It aimed to reduce GHG emissions by requiring developed countries to make quantified emissions reductions during a 2008-12 commitment period. The United States famously repudiated the KP in 2001, largely because it did not impose requirements on developing countries, thus highlighting a major shortcoming that would undermine the Kyoto Protocol's potential to address climate change regardless of U.S. participation. The failure to address developing country emissions in any significant way was, in fact, a major practical defect because the rapidly rising emissions of some developing countries (most notably China, which now emits more GHG per year than any other country in the world) severely undercut the value of the modest emissions reductions requirements of developed countries under the Kyoto Protocol. Thus, despite the legalistic progress represented by the Kyoto Protocol and the CBD's Nagoya Protocol, international environmental law remained underdeveloped in terms of creating approaches to changing on-the-ground causes of global environmental problems and profoundly inadequate to address the mounting threats posed by anthropogenic disturbances to global environmental systems. Ultimately, the failure to negotiate a successor to the Kyoto Protocol shattered the illusions of the supranational era, providing a stark symbol of the end of optimism for what might now be called "traditional international environmental law."³⁶

The process of negotiating toward a successor to the Kyoto Protocol began in earnest in 2007, where the parties to the UNFCCC established a "roadmap" for a two-year process. Political and popular attention to climate change during the 2007-09 negotiation period was intense. The atmosphere at the 2009 negotiations in Copenhagen, which were supposed to produce the successor to the Kyoto Protocol, included a very significant and apparently hopeful NGO presence. This contrasted with the negotiations themselves,

³⁵ E.g. Long, *Complexity*, *supra* note 35, at 1060-61.

³⁶ Dale Jamieson, *Climate Change, Consequentialism, & the Road Ahead*, 13 CHI. J. INT'L L. 2, 8 (2013).

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which became highly divisive and led to serious questions about the future of a multilateral approach to addressing global environmental law issues. Thus, the Copenhagen negotiations were a clear and painful disappointment for many environmentalists and signaled a decisive end of the era of supranationalism.³⁷ Although there have been some notable developments for multilateral regimes,³⁸ it has become abundantly clear to nearly all observers that new approaches are needed.

Thus, the supranational era, from Rio to Copenhagen, can be seen as laying the groundwork for two characteristics now at the heart of the hopeful signs in global environmental governance, which can be understood as reflecting integrationist multimodality at the global scale. As I have discussed elsewhere,³⁹ these two aspects of emerging twenty-first century global environmental governance are: (1) issue linkage in multi-scale programs to enable on-the-ground progress toward global goals by overcoming the artificial barriers constructed by legal and institutional fragmentation; and (2) flexible polycentric governance structures in which a mix of public and private actors collaborate to govern in a particular geographic place or a policy “space” to advance global environmental goals by employing various policy methods and regulatory tools. The first characteristic – multiple issue linkages within programs – corresponds very closely to Professor Arnold’s definition of “integration” in domestic environmental law.⁴⁰ The second characteristic – polycentric governance employing a suite of policy approaches – embodies key features of what Professor Arnold describes as “multimodality.”⁴¹

³⁷ Cinnamon P. Carlarne, *Rethinking a Failing Framework: Adaptation and Institutional Rebirth for the Global Climate Change Regime*, 25 GEO. INT’L ENVTL. L. REV. 1, 12 (2013).

³⁸ See e.g., The Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the Convention on Biological Diversity (signed 2010), available at: <http://www.cbd.int/abs/text/>

³⁹ See, e.g., Andrew Long, *Global Climate Governance to Enhance Biodiversity & Well-Being: Integrating Non-State Networks and Public International Law in Tropical Forests*, 41 ENVTL. L. 95 (2011).

⁴⁰ ARNOLD, *supra* note 1, at 795-97.

⁴¹ ARNOLD, *supra* note 1, at 793-95.

IV. TOWARD GLOBAL INTEGRATIONIST MULTIMODALITY?

The future of international environmental law remains highly uncertain, but a few features of the landscape are clear and several recent development indicate likely trends. No global environmental organization to rival the authority of the WTO is on the horizon. No grand conference like the Rio Earth Summit is likely anytime soon,⁴² and there are very few, if any, indications that a major new regime like the UNFCCC, CBD, or the ozone regime will emerge in the foreseeable future. While a cursory glance at news headlines after the UNFCCC COP 20 negotiations in Lima, Peru may seem to suggest that the era of big global agreements remains ongoing, recent climate regime developments actually tell a different story. The primary outcome of the COP 20 negotiations, the Lima Call for Climate Action, highlights the interaction of national and international law and politics and suggests a step away from the top-down approach of the Kyoto Protocol.⁴³

Despite talk of a global climate agreement, the future of international environmental policy appears likely to continue moving toward approaches that fit within a globalized conception of integrationist multimodality. Four developments are discussed below to highlight trends that suggest this direction. First, the creation and expansion of the Initiative for a Renewable Energy Agency (IRENA) illustrates the emergence of more flexible institutions and movement away from the “hard law” approach of the 1990s. Second, the increasing emphasis on complex governance arrangements in theory reflect not only an effort to better understand existing international environmental governance, but also to better fit future efforts to the problems they seek to address. Third, developments within the UNFCCC suggest the importance of institutional adaptability. Brining these first three points

⁴² The “Rio+20” conference held in 2012 illustrated this. See e.g. Peter M. Haas, *The Road From Rio*, FOREIGN AFFAIRS (August 16, 2012).

⁴³ See generally UNFCCC, Lima Call for Climate Action, Decision -/CP.20 (Advance Unedited Version), available at: http://unfccc.int/files/meetings/lima_dec_2014/application/pdf/auv_cop20_lima_call_for_climate_action.pdf. For example, hope for a climate deal in 2015 rests primarily on “intended nationally determined contributions” to the goal of reducing greenhouse gas emissions, which places an emphasis on national political action over the coming year as a means of facilitating international agreement.

together, we can see a patchwork of pre-existing MEAs and newer, more nimble initiatives tending to create integrated efforts that deploy multiple modalities to advance on-the-ground environmental protection. Thus, the fourth theme is one of increasing attention to linkages (particularly of issues, but also of institutions), often as efforts to address gaps left by the development of issue-fragmented regimes, which present particularly important examples of an integrationist and multimodal approach to complex socio-environmental challenges.

1. Developing Flexible and Integrated Institutions: IRENA's Emerging Influence

IRENA was established in 2009 to promote renewable energy development in member states by facilitating information exchange, providing technical support, and supporting capacity-building in least developed countries.⁴⁴ Recent years have shown the lowest rate of environmental treaty formation and amendment since the 1980s, as well as the lowest rate of international organization creation over the same period.⁴⁵ Thus, the creation of IRENA stands out. Even more significant, 131 states have become members in the five years since IRENA was created and 35 others have begun process to become members.⁴⁶ Given its relatively unique success in the era that is best known for the failure of efforts to negotiate a climate treaty in Copenhagen, the creation of IRENA reflects important features of the current moment in international environmental law.

The creation of IRENA and its relatively successful start may indicate a shift away from concentrating on ambitious top-down supranational regimes, perhaps through efforts to compliment pre-existing regimes. Either way, IRENA's design is a strikingly flexible and soft change from the "hard law" efforts of the 1990s, which can be understood as comporting with an

⁴⁴ Johannes Urpelainen & Thijs Van de Graaf, *The International Renewable Energy Agency: A Success Story in Institutional Innovation?*, Int'l Envtl. Agreements 1 (2013).

⁴⁵ Urpelainen and Van de Graaf, *supra* note 38, at 5. (See figures 1 & 2).

⁴⁶ IRENA Membership, <http://www.irena.org/Menu/Index.aspx?mnu=Cat&PriMenuID=46&CatID=67> (last viewed June 20, 2014).

integrationist and multimodal understanding of governance in the largest sense. IRENA represents development of a new modality to address renewable energy in an integrated way that was not previously available. Although IRENA seems to be an increasingly important player for addressing environmental challenges related to energy, it is not primarily an environmental organization. It seeks to address a range of policy concerns within a framework that is explicitly sensitive to economic and equity concerns as well as environmental considerations. In this regard, it is integrationist in the “big picture” sense, reaching outside the environmental realm to integrate various trends affecting behavior in a way that advances environmental goals.

IRENA can also be understood as indicating large-scale movement toward multimodal governance. IRENA is a “soft” organization that does not impose legal obligations or serve as a framework for negotiating future commitments related to renewable energy. Instead, its mandate is to promote renewable energy development and technology transfer primarily through various forms of information exchange and technical assistance. IRENA was created to utilize a flexible “toolbox” approach to the particularly complex and difficult set of issues surrounding renewable energy development in poor countries while remaining sensitive to political and economic factors affecting countries currently leading the energy sector. It offers governance facilitation in ways that are decidedly different from the more rigid, binding, and explicitly environmental mandates of the supranational regimes created earlier. IRENA presents itself as a cooperative organization that “seeks out, establishes and develops new synergies, facilitates dialogue, and information and best practice sharing.”⁴⁷ Notably, IRENA appears conscious of its role as a facilitator, filling gaps in the renewable energy market and, as such, focuses largely on developing opportunities to meet energy needs in the least developed countries through renewable technology.⁴⁸ It can thus be conceptualized, at the grand scale, as one of several modes available to tackle

⁴⁷ IRENA Vision & Mission, <http://www.irena.org/menu/index.aspx?mnu=cat&PriMenuID=13&CatID=9>, (last visited June 20, 2014).

⁴⁸ *See Id.*; URPELAINEN & VAN DE GRAAF, *supra* note 38, at 23 (discussing IRENA’s emphasis on least developed countries).

energy-related issues (along with, *inter alia*, UNFCCC negotiations), and also as an organization with multimodality built into its mission and approach.

2. Conceptualizing Complexity: Global Governance, Regime Complexes, and Resilience

As the above discussion of IRENA suggests, theoretical tools to guide approaches to global environmental challenges are changing in ways that fit well with integration and multimodality. The widely recognized distinction between law and governance, and the movement toward focusing on the latter, is one indication. Similarly, the nuanced understanding of interaction across scale reflected in the concept of the “global,” as opposed to international or supranational, provides further evidence. More recently, the discussion of “regime complexes” in international relations and political science literature highlights the evolution of an increasingly complex understanding of how governance actually operates, as well as how effective governance of complex environmental issues might be better achieved. Finally, the near-ubiquitous recognition of the need to focus on systemic resilience rounds out the picture of where global environmental governance theory is heading. The picture is decidedly integrationist and multimodal.

In *The Emergence of Global Environmental Law*,⁴⁹ Tseming Yang and Robert Percival discuss the development of an environmental law that is integrated across scale in significant (but not complete) ways. The article discusses the transplantation, convergence, and integration/harmonization of environmental law among and between nations and international regimes, which produces important similarities and connections in environmental law throughout the planet. Yang and Percival offer a descriptive and normative account of the increasingly global nature of environmental law. More recent work by these and other scholars shows that global environmental law

⁴⁹ Yang and Robert Percival, *supra* note 29.

represents an ongoing development with increasing influence on legal evolution across scales and throughout the world.⁵⁰

The globalization of environmental concern is not limited to law as traditionally conceived, of course. It also manifests in an array of norms that are not formal law but nonetheless affect behavior. Thus, it makes sense to talk not only of global environmental law, but also of broader evolution of global environmental *governance*.⁵¹ The evolution of environmental law toward integrationist multimodality, then, might best be understood in the context of changes in broader governance systems addressing complex environmental challenges. So-called “hard law” is not necessarily the most effective way to change behavior for environmental benefit. Integrationist multimodality, at national or global scale, likely reflects this realization. Law is but a piece of governance addressing complex environmental challenges, a reality that is perhaps most visible at the global scale because of the political limitations on the creation and enforcement of quantified and binding requirements. Recent literature suggests development of theory to support and guide development of more complex and coordinated global environmental governance, which may suggest that global environmental governance is reaching a stage of evolution where it can begin to grapple with global environmental challenges far more effectively than its previous iterations.

Key recent developments toward an integrationist and multimodal conception of environmental governance reflect the increasing understanding of complexity in both the objects and processes of environmental governance, as well as the application of such insights in developing new regulatory approaches. Global environmental issues are complex not merely because the physical causes of the issue are complex, but because they exist across and within socio-ecological systems across and within multiple scales.

⁵⁰ E.g. Robert V. Percival, *The Globalization of Environmental Law* INTERNATIONAL ENVIRONMENTAL LAW: THE PRACTITIONER’S GUIDE TO THE LAWS OF THE PLANET (Roger Martella & Brett Grosko, editors, ABA Publishing, 2014); Tseming Yang, *The Relationship Between Domestic and International Environmental Law* in INTERNATIONAL ENVIRONMENTAL LAW: THE PRACTITIONER’S GUIDE TO THE LAWS OF THE PLANET (Roger Martella & Brett Grosko, editors, ABA Publishing, 2014).

⁵¹ See e.g., Kotze, *supra* note 9, at 267-293 (2013).

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Systems of law and governance, economic systems that affect distribution of wealth and externalities, and other social systems interact with environmental systems (e.g., hydrological, biological, and climate systems) in undesirable ways to create the “problems” that global environmental governance attempts to regulate. Such issues have posed tremendous governance challenges because they are “wicked” in the sense that they appear different from different perspectives, multi-layered in that they do not operate at only one scale, and complex because they arise from the interaction of multiple “components” (many of which are, themselves, complex interactive systems). As theories of governance have evolved to incorporate understanding of complex systems, it is becoming increasingly recognized that the task of governance is thus to affect one or more interacting components of relevant systems in order to produce more desirable results of systemic interaction. Thinking of not only environmental systems but also regulatory and governance systems as components of broader complex socio-ecological systems encourages development of regulatory tools targeting interaction of environmental and social systems in ways that can lead to better environmental governance and, thus, better environmental outcomes.⁵²

The increasing complexity of global environmental governance is an evolutionary development. Over time, efforts to address environmental problems have expanded their potential objects and goals. This was true within the United States, as illustrated by the emergence of an environmental justice movement with a radically different understanding of “environmental issues” than, for example, the early Sierra Club and its founder John Muir (the epitome of a preservationist approach). Environmental justice demonstrated that environmental issues are social issues, deeply embedded in social systems as much as in physical or chemical systems, by highlighting the major inequities in distribution of environmental risk across the United States. Similar equity concerns now present some of the most challenging aspects of addressing global environmental change.

The combined effects of climate change, biodiversity loss, ocean acidification, diminishing freshwater availability, decades of over-

⁵² E.g. Long, *Complexity*, *supra* note 35, at 1060-61.

exploitation of resources, and disturbance to a host of lesser-known geochemical cycles remain unpredictable. The risk to society, however, is undeniable. Nobel Laureate Paul Crutzen coined the term “Anthropocene” to suggest the severity of the human impact on earth systems. Others write of the planet in a “no analog state” to signify that nothing in the paleontological record offers guidance for the types of changes facing the world in the twenty-first century. How these changes are addressed by governance systems will play an important role in determining the distribution and extent of social disruption and human suffering that results from them as well as the effect on environmental systems and, thereby, acknowledge a more complete picture of the challenge.

While the language of “common but differentiated responsibilities” (CBDR) developed in the 1990s as an effort to distinguish the roles of various nations in meeting common global challenges, recent developments not only add more nuance (reflected in the recent “respective capacities” language added to CBDR), but also emphasized the need to address the inequitable *impacts* of global environmental system changes. Thus, they more fully incorporate the social aspects of environmental problems into governance of socio-ecological systems.

The social aspects of global environmental change are gaining increasing prominence, particularly in the context of climate change. Significant actors not traditionally associated with environmental activism, such as the Catholic Church, now argue that climate change should be understood in terms of morality and social justice, and that addressing climate change requires action targeting social values as much as it requires scientific study. Globally, environmental change is expected to strike the poor and vulnerable hardest, significantly increasing the risk of political instability, violent conflict over resources, and large-scale migration of populations to escape rising seas and drought-driven crop failures. As wealthy nations begin to prepare for their own adaptation challenges, they are increasingly confronted with ethical questions on an unprecedented scale.

For example, recent estimates suggest that as many as 200 million people may be forced to migrate internationally because of climate change by 2050. Although there have been proposals to address this concern through a binding multilateral instrument reminiscent of the supranational regimes

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created in the 1990s, these have gained little traction. Instead, as Katrina Wyman recently suggested, a more politically viable solution will be one that enhances the resilience of vulnerable communities.⁵³ This emphasis on resilience fits within a broader trend of scholars (and, increasingly, policymakers) focusing on resilience as a theme in the development of responses to environmental challenges, which reflects the increased traction of views advocating global environmental governance development from narrow focus on issues such as greenhouse gas emissions reduction to a broader and more complex understanding of climate within a complex global socio-ecological system.

Over recent decades, scientists from a variety of disciplines have come to employ the paradigm of complex systems and its concept of “resilience” to discuss not only environmental challenges, but also the policy response needed.⁵⁴ Over the last 10-15 years, this emphasis has exerted an increasing influence on environmental law thinking as well. For example, the phrase “stationarity is dead,” borrowed from scientific commentary, has entered the U.S. legal lexicon as a way of expressing the need to move legal regimes from an equilibrium model of sustainability toward a dynamic model seeking to build resilience.⁵⁵ A similar shift is visible in other regions and at the international level.⁵⁶ Several European authors recently suggested there

⁵³ Katrina Miriam Wyman, *Responses to Climate Migration*, 37 HARV. ENVTL. L. REV. 167, 200-02 (2013).

⁵⁴ E.g., LONG, *Complexity*, *supra* note 29, at 1059.

⁵⁵ Robin Kundis Craig, “Stationarity Is Dead” - *Long Live Transformation: Five Principles For Climate Change Adaptation Law*, 34 HARV. ENVTL. L. REV. 9 (2010). Craig borrows the phrase “stationarity is dead” from P.C.D. Milly et al., *Stationarity Is Dead: Whither Water Management?*, 319 SCIENCE 573 (2008) (which argues that due to climate change “[w]e need to find ways to identify nonstationary probabilistic models of relevant environmental variables and to use those models to optimize water systems.”); Other recent legal scholarship develops the concept of resilience as a potential goal of regulation. E.g., Robin Kundis Craig & Melinda Harms Benson, *Replacing Sustainability*, 46 AKRON L. REV. 841 (2013).

⁵⁶ E.g., Andreas Duit et al., *Governance, Complexity, and Resilience*, 20 GLOBAL ENVTL. CHANGE 363, 365 (2010); Rakhyun E. Kim & Brendan Mackey, *International Environmental Law as a Complex Adaptive System*, 14 INT’L ENVTL. AGREEMENTS 5, 7–8 (2014) (law); Robert O. Keohane & David G. Victor, *The Regime Complex for Climate*

is widespread agreement that “in order to govern processes of complex change, complexity in the external world must be matched by complexity in the governance system.”⁵⁷

The emphasis on resilience has emerged in the theoretical space once occupied by discussion of the “policy architecture” of top-down regimes, and emphasizes on-the-ground impacts as the measure of environmental law and policy success. The concept of a “regime complex,” which has gained significant traction in international relations literature, describes the practical reality that the unimodal supranational regimes of the 1990s do not represent a panacea to the complex realities of global environmental challenges. A “regime complex” is a web of loosely coupled institutions with overlapping and interacting competencies and jurisdiction.⁵⁸ Thus, the regime complex for climate change is conceived as involving not only the UNFCCC, but also the Montreal Protocol, institutions such as the World Bank, clubs such as the G8, bilateral agreements, regional regimes, national and subnational efforts, and other elements of the policy arena in which climate change regulation emerges.⁵⁹ This complex governance arrangement is not a planned enterprise. Instead, it reflects precisely the type of socio-legal evolution that underlies the emergence of integrationist multimodality generally. Regime complexes have been described for a variety of globally significant environmental issues, indicating that the concept reflects a relatively broad

Change, 9 PERSPECTIVES ON POL. 7 (2011) (international relations); Liliana B. Andonova & Ronald B. Mitchell, *The Rescaling of Global Environmental Politics*, 35 ANNU. REV. ENVIRON. RESOURCES. 255 (2010) (political science).

⁵⁷ Andreas Duit et al., *Governance, Complexity, and Resilience*, 20 GLOBAL ENVTL. CHANGE 363, 365 (2010).

⁵⁸ ., Kal Raustiala & David G. Victor, *The Regime Complex for Plant Genetic Resources*, 55 INT’L ORG. 277, 279 (2004) (plant genetic resources regime complex); Jeff D. Colgan et al., *Punctuated Equilibrium In The Energy Regime Complex*, 7 REV. INT’L ORG. 117 (2012) (energy regime complex); Peter Gluck et al., *Core Components Of The International Forest Regime Complex*, IUFRO, EMBRACING COMPLEXITY: MEETING THE CHALLENGES OF INTERNATIONAL FOREST GOVERNANCE (2011) (forest regime complex); See also Amandine Orsini et al., *Regime Complexes: A Buzz, a Boom, or a Boost for Global Governance?*, 19 GLOBAL GOVERNANCE 27, 29 (2013) (introducing an issue dedicated to examining the utility of the regime complex concept in the study of global governance).

⁵⁹ KEOHANE & VICTOR, *supra* note 49, at 10. (See figure 1).

trend in governance and governance thinking.⁶⁰ The identification of regime complexes and evolution of the concept into a useful way of discussing global governance can be seen as evidence of multimodality at the global scale often in integrationist ways. Regime complexes are a particularly complex example of what Professor Arnold described as a node of connectivity among actors and also exemplify other forms of connectivity that he discussed.⁶¹

3. Adaptive Regimes: The Changing Climate of Climate Change Negotiations

As discussed above, the climate change regime (created primarily by the UNFCCC and evolving primarily through negotiations thereunder) is a product of the Rio era. Indeed, not long after the creation of the Kyoto Protocol, the regime was often celebrated for its extensive and complicated rules, its top-down structure, and, especially, its quantified limitations on greenhouse gas emissions (which were seen as the most effective way to combat climate change by most observers). The failure to reach a Kyoto-like agreement at Copenhagen in 2009 provides a recognizable transition marker for all of international environmental law – it was the single event that epitomized failure to address global environmental challenges through approaches advanced during the Rio era. It was not, however, the end of the climate change regime. Instead, the failure at Copenhagen can be seen as moving the climate change regime itself into a period of adaptation.

⁶⁰ E.g., Kal Raustiala and David G. Victor, *The Regime Complex for Plant Genetic Resources*, 55 *International Organizations* 277, 279 (2004) (plant genetic resources regime complex); Jeff D. Colgan et al., *Punctuated Equilibrium In The Energy Regime Complex*, 7 *Rev Int Organ* 117 (2012) (energy regime complex); Peter Gluck et al., *Core Components Of The International Forest Regime Complex* in IUFRO, *EMBRACING COMPLEXITY: MEETING THE CHALLENGES OF INTERNATIONAL FOREST GOVERNANCE* (2011) (forest regime complex); see also Amandine Orsini et al., *Regime Complexes: A Buzz, a Boom, or a Boost for Global Governance?*, 19 *Global Governance* 27, 29 (2013) (introducing an issue dedicated to examining the utility of the regime complex concept in the study of global governance).

⁶¹ Arnold, *supra* note 1, at 868-74.

The concept of “adaptive law” has been discussed by Professor Arnold and others, particularly in the context of U.S. environmental law, in a way that includes integrationist multimodality as a feature or characteristic.⁶² The core concept is that law itself must change in response to changing social and ecological conditions, and that it should do so in a way that fosters the resilience of social and ecological systems.⁶³ The UNFCCC, as presently operating, appears to be demonstrating its adaptive capacity.

Despite its origins as perhaps the single most significant expression of the Rio era approach to international environmental law, the UNFCCC regime exhibits many features of adaptive law and is beginning to demonstrate its ability to transition away from past failures and, in response to social and political context as well as environmental concern, develop new approaches that hold promise for advancing climate stabilization and adaptation of populations to climate change impacts. Indeed, many features of adaptive law as described by Arnold and Gunderson – such as goals seeking resilience of both social and ecological systems, tolerance of uncertainty, embrace of iterative processes – are relatively widespread in international environmental law.⁶⁴ For example, nearly all of the major international environmental treaties dating back to the 1972 Convention on International Trade in Endangered Species of Fauna and Flora (CITES) create an institution charged with making decisions under the convention through iterative negotiations. These institutions give international environmental law regimes a remarkable degree of flexibility. At times, the broadly written language of many international environmental agreements (particularly those that were created with some expectation of a future protocol, such as the UNFCCC and the Convention on Biological Diversity) have been sharply criticized by environmental advocates for failing to impose specific exacting environmental standards. While the efforts to create such standards has produced little clear direct environmental benefit (with the exception of the Montreal Protocol and, arguably CITES), the structures and

⁶² E.g. Craig Anthony (Tony) Arnold and Lance H. Gunderson, *Adaptive Law and Resilience*, 43 E.L.R 10426, 10428 (2013) (describing an adaptive legal system as having, *inter alia*, “polycentric, multimodal, and integrationist structure”).

⁶³ See generally *id.*

⁶⁴ *Id.* at 10428.

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process created by the broadly worded, quasi-soft law treaties have proven remarkably resilient through changing socio-political conditions and seem to be demonstrating the value of their inherent flexibility by providing the forums for international environmental law development below the level of formal treaty-making. Thus, the constraints of international law's formal requirement of state consent to be governed – the most persistent and imposing obstacle to the development of binding requirements in international environmental law – might be seen as having forced international environmental law to take forms that are inherently more adaptable than many of its more rigid domestic counterparts.

Under the UNFCCC, it is primarily the annual negotiations of the Conference of the Parties that enables the regime to evolve in significant, policy-adjusting ways over time. The Kyoto Protocol, the failures at Copenhagen, and the recent decision at Lima are all outcomes of this iterative process. Further, the UNFCCC was designed with recognition of scientific uncertainty and, like most such regimes, confronts areas of significant uncertainty in nearly every aspect of its functioning. Notably, the Intergovernmental Panel on Climate Change (IPCC), a scientific institution and part of the climate change regime complex loosely connected with the UNFCCC, was created explicitly because of the scientific uncertainty surrounding climate change and has played an important interactive role in the evolution of the UNFCCC. The IPCC's reports have been crucial for the development of the regime, including the 1997 Kyoto Protocol. Most recently, its 5th Assessment Report was often cited as an important source of momentum for the 2014 negotiations in Lima. As a final example of its fit with the concept of adaptive law, the UNFCCC regime approaches the problem of climate change, increasingly, with recognition that its goals involve not only the climate stabilization (upon which early negotiations focused almost exclusively), but also the resilience of social and biological systems.

The specific trajectory of negotiations under the UNFCCC suggest that its adaptation is toward greater integration and multimodality, moving it away from the top-down, relatively rigid structure of the Kyoto Protocol focusing primarily on the single issue of greenhouse gas emissions. The Copenhagen negotiations exacerbated a deep rift among various negotiating

factions, particularly developing and developed countries. However, they also introduced or highlighted several points that have proven important to the regime's ongoing adaptation to political reality. One year after Copenhagen, in Cancun, negotiators began to repair the apparent damage of the previous year, in part by emphasizing emerging new approaches such as the REDD+ mechanism (discussed in the following section). While it would take longer for other elements of the regime to evolve in a way that suggests adaptation, the Lima negotiations of 2014 offer hints that the future climate change regime may be built through adaptation from specific sticking points that drove Copenhagen's failures.

The key feature of the Lima conference was agreement on Individually Nationally Determined Contributions (INDCs) as the route toward creating a global structure for addressing greenhouse gas emissions. This approach seems to reflect the suggestions of the United States at Copenhagen, where the idea of "nationally appropriate mitigation actions" was advanced as an alternative to the top-down structure of Kyoto. Several years later, in Durban, the parties agreed to work toward reaching a broad agreement that would include all parties by 2015 without specifying the form commitments would take.⁶⁵ The challenge was reconciling major emitters, especially the United States and China, to a common approach that overcame the divide between developed and developing countries that had been firmly embraced in the Kyoto Protocol. A significant bilateral agreement between the United States and China in November 2014 appears to have created the necessary bridge for finding broader agreement on a multilateral approach in Lima the following month. The Lima negotiations suggest that INDCs will be the key mitigation-related mechanism of any further agreement in 2015. The INDCs are to be set by each party for itself and then submitted to the UNFCCC Secretariat as the regime's new approach to addressing greenhouse gas emissions.

The INDC approach endorsed at Lima is a sharp contrast from the Kyoto Protocol's of negotiating reduction amounts at the international level for top-down implementation. Problems with the Kyoto Protocol involved, among other things, difficulty in creating incentives for low carbon

⁶⁵ *E.g.* IISD Reporting Services, *supra*, note 9 at 25.

technology and, especially, concerns about the lack of commitments by developing countries, and it was the lack of an alternative to the Kyoto Protocol approach that drove Copenhagen's failures. The INDC approach can be seen as a direct response to each of these prior shortcomings. First, by leaving the control of target setting with each country at the national level, INDCs may allow developing countries to take some mitigation action without fearing they will be pressed to limit economic growth necessary for poverty reduction. Second, the process of establishing INDCs at the national level may be advantageous in helping to establish the necessary national and subnational context for taking actions to reduce carbon, reflecting the need for a global – rather than simply international – approach to greenhouse gas mitigation.

Lima left many unanswered questions, particularly those involving finance for both mitigation and adaptation to impacts in developing countries. However, it was but one round of the UNFCCC's iterative negotiation process and, as such, helped to frame issues for future negotiations. While it isn't clear whether UNFCCC will meet its self-imposed goal of an agreement in 2015, it is clear that UNFCCC's approach to climate change is evolving in response to events and circumstances. The institution is facilitating legal adaptation. As the following section suggests, the direction of such adaptation is integrationist and multimodal.

4. Evolving at the Margins: Linking Issues and Institutions for Comprehensive Coverage

A fourth indication of the emergence of integrationist multimodality in international environmental law is an increasing emphasis on linkage, particularly at the margins of existing environmental law instruments and to cover policy areas not directly addressed by a major convention. Although initiatives for linking institutions have been mounted for decades in international environmental law, recent emphasis on the linkage of issues as a means of developing more effective policy approaches represents a significant development toward integrationist multimodality. Linking environmental issues to other issues gives perspective on environmental challenges and offers means of developing new approaches to unresolved challenges. The linkage of environmental issues to human rights, for

example, is emerging as a way to discuss the inequitable impacts of global environmental problems and may play a crucial role in developing a means to redress them.⁶⁶ Linkages among environmental issues are also gaining increasing attention as efforts to achieve meaningful benefits on-the-ground reveal the extent to which issues such as climate change and biodiversity loss are inextricably connected. Unlike the development of issue-segregated supranational regimes in the 1990s, current thinking and policy development strikes a more holistic note, often drawing on cross-cutting connections through focus on issues that have been marginalized in the development of supranational policy infrastructure (such as forestry, agriculture, and energy).⁶⁷

Perhaps no issue area better illustrates the significance of issue linkages emerging at the margins of pre-existing unimodal and fragmented approaches than forest protection. International forest policy has been described as a fragmented regime complex in which an integrated, multi-level approach to governance reform is both needed and emerging.⁶⁸ Deforestation, as noted above, was a major issue in the lead up to the 1992 Rio Earth Summit, but efforts to negotiate a framework convention for addressing it failed. Since that time, the public international law response to deforestation has been among the most dysfunctional international environmental law efforts, described by one commentator as producing idle institutions that serve as “decoys designed to preempt governance.”⁶⁹ The emergence of an integrated response to the problem of deforestation, therefore, provides a strong signal of important changes in the landscape of international environmental law. This hopeful development in the field of international policy development is, of course, REDD+. REDD+ builds forestry governance around a node of issue linkages, provides perhaps the

⁶⁶ This linkage gained significant prominence at the recent UNFCCC negotiations in Lima. See e.g., Open Letter of Human Rights Experts, <http://newsroom.unfccc.int/media/127348/human-rights-open-letter.pdf>

⁶⁷ E.g., Anne Florini & Benjamin Sovacool, *Bridging the Gaps in Global Energy Governance*, 17 GLOBAL ENERGY GOVERNANCE 57 (2011).

⁶⁸ Michael Howlett et al., *Overcoming The Challenges To Integration: Embracing Complexity In Forest Policy Design Through Multi-Level Governance*, IUFRO available at http://www.iufro.org/download/file/6571/5017/ws28-ch06_pdf/

⁶⁹ Dimitrov, *supra* note 41, at 4.

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best example of integrationist multimodality in international environmental law, and, arguably, highlights a new way forward that could be applied to a range of currently marginalized issues.

Although REDD+ is important for forests, it grew primarily out of the climate change regime and has been among the most intriguing and hopeful developments in that area as well. REDD+ emerged as a program to reduce emissions from deforestation, essentially because emission reductions in tropical forests were thought to be cheaper than equivalent emission reductions in developed countries.⁷⁰ It stood as the point of greatest agreement among the nations from Copenhagen in 2009 until at least Durban in 2011, while countries were utterly unable to reach agreement on an overarching approach to climate change, and remains among the most hopeful developments to emerge from the climate negotiations and surrounding civil society engagement. The REDD+ “program” is really more of a loose collection of collaborative efforts by a wide range of actors that cuts across scales of governance and operates similarly to a regime complex. Arguably, it is grounded in the climate change regime, but it would be misleading to suggest it is solely, or even primarily, a climate mechanism in the eyes of all parties whose participation is integral to the program’s success. Perhaps more than any other development in international environmental law, REDD+ demonstrates the emergence of integrationist multimodality in global environmental governance. It has made progress on the ground in ways that prior efforts to address tropical deforestation have not and, thus, can be understood as bringing together at least two of the greatest challenges in international environmental law to produce opportunities that neither climate nor forestry efforts could achieve in isolation.⁷¹ This type of

⁷⁰ NICHOLAS STERN, *THE ECONOMICS OF CLIMATE CHANGE: THE STERN REVIEW* 604–21 (2007)

(discussing the emissions benefits of actions to reduce deforestation).

⁷¹ E.g., Andrew Long, *Re-orienting REDD Toward Sustainable Forestry: Adaptation & Polycentrism in Global Forest Governance*, 6 *TROPICAL CONSERVATION SCI.* 384 (2013). Any complete discussion of REDD+ must also recognize, as the cited article does, that issues related to biodiversity preservation and the well-being of previously marginalized local communities (most notably indigenous communities) are among the foremost considerations to operationalizing REDD+ as a meaningful program on the ground.

synergy illustrates the promise of integrationist multimodality for global environmental challenges.

The development of REDD+ is significant partly because the development of forests as an object of climate governance represents an expansion from prior efforts to address tropical deforestation, but conceiving of forests as objects of climate governance REDD+ creates a risk that the complex processes producing deforestation will be simplified and misunderstood.⁷² The risks to local communities dependent on the forests (including indigenous communities), biodiversity, and ecosystem services gained attention as REDD+ began to take shape. At the same time, the potential for significant synergistic benefits caught the interest of scholars, environmental NGOs, international institutions, and others. Increasingly, REDD+ has come to be seen in terms of a broad suite of potential risks and benefits of local and global significance related to tropical forests.⁷³ In other words, REDD+ is increasingly becoming an integrationist project that includes not only climate change mitigation goals, but also climate change adaptation, human well-being, biodiversity, and ecosystem-protection goals. Conceived as a multi-issue (integrationist) program, REDD+ holds the potential to advance a range of globally significant environmental priorities beyond what was achievable through development of issue-fragmented regimes over the preceding twenty-plus years of siloed attention to issues such as climate change, human rights, and biodiversity loss in the tropical deforestation.

Moreover, REDD+ demonstrates the emergence of multi-layered governance that depends for its success on multimodality. Although it began within the climate change regime, REDD+ has spread horizontally by involving other international institutions and civil society organizations, as well as vertically through national and subnational governments down to the

⁷² E.g., LONG, *Re-Orienting REDD*, *supra* note 57, at 389-90; See also William Boyd, *Ways of Seeing in Environmental Law: How Deforestation Became an Object of Climate Governance*, 37 *ECO. L. Q.* 844, 916 (2010) (concluding that the process leading to the inclusion of forests in the climate regime included development of an understanding that “represents a radical simplification of complex social and biological systems”).

⁷³ *Projects*, CLIMATE COMMUNITY BIODIVERSITY ALLIANCE, available at <http://www.climate-standards.org/category/projects/> (last visited January 30, 2015).

extremely local level of small forest-dwelling communities.⁷⁴ Perhaps the most notable horizontal institutional linkage is the involvement of the CBD in promoting biodiversity preservation goals related to REDD+.⁷⁵ In addition, REDD+ involves both horizontal and vertical public-private cooperation in various forms, including project sponsorship, technical assistance, and certification by NGOs to provide market signals.⁷⁶

This involvement of civil society highlights one way in which REDD+ is multimodal. Its development, finance, and implementation arises in multiple ways, depending on a range of factors, most of which relate to the local conditions of the specific forest areas at issue in a particular case. For example, local conditions (such as stability of government, quality of governance, and projected cost-benefit ratio of investments) often affect the range of financing options available for forest protection. Thus, some projects involve sponsorship through traditional development aid (such as USAID), while others emphasize market-based strategies. Likewise, a suite of national and subnational measures receive support through bilateral treaties, international regimes, NGO involvement, or other means. REDD+ is the most advanced and widely recognized example of international environmental law's evolution toward integrationist multimodality, but it is not the only movement in this direction.⁷⁷

⁷⁴ As an example of the latter, the issue of "benefit-sharing" in multi-cultural context has provided some of the most socially complex governance issues in international environmental law. See e.g. Andrew Long, [[[Brazil book chapter]]].

⁷⁵ CBD COP has adopted a number of decisions aimed directly at avoiding risks of REDD+ and encouraging biodiversity benefits from REDD+. See Secretariat of CBD, *REDD Plus & Biodiversity*, TECHNICAL SERIES NO. 59 at 19-22 (2011) (discussing CBD decisions with regard to REDD+ up to 2011).

⁷⁶ CLIMATE COMMUNITY BIODIVERSITY ALLIANCE, *supra* note 59. (See *Projects* page).

⁷⁷ Within nations other than the United States, movement toward innovative integration is apparent. For example, in South Africa, the "Working for Water" program was developed to provide economic benefits while removing invasive species in order to enhance water availability while providing significant biodiversity benefits. B.W. van Wilgen et al., *Win-Win-Win: South Africa's Working for Water Programme in Mainstreaming Biodiversity*, DEVELOPMENT CASE STUDIES FROM SOUTH AFRICA 2, at 9 (2002), available at http://www-wds.worldbank.org/servlet/WDSContentServer/WDSP/IB/2003/01/17/000094946_03010904

Significant steps toward developing integrationist multimodal programs in sectors such as agriculture and energy are being taken by international and national actors.⁷⁸ In the agricultural sector, linkage between climate, biodiversity, and human well-being is particularly strong. Soil holds the potential to sequester roughly 20 to 40 gigatons of carbon. Increasing the amount of carbon stored in soils will also yield significant agricultural productivity increases in many areas.⁷⁹ Improvements in agricultural practices that support biodiversity will also yield substantial benefits for human well-being.⁸⁰ These might include increased tree plantings, reduced pesticide and herbicide use, livestock rotation, and other techniques. Programs capitalizing on these multiple benefits are, at best, in their infancy but the potential is becoming increasingly recognized and gaining interest among policy actors at multiple scales, such as FAO, CBD, NGOs, and several nations.

Agriculture provides a prime example a complex, globally important issue area that has been marginalized in international environmental law but appears ripe for emergence of integrationist multimodality. An effective REDD-like approach to agriculture will need to incorporate widely recognized issues – such as climate change, biodiversity loss, and food security – as well as lesser recognized and under-regulated issues, such as nitrogen and phosphorous cycling. The surplus of nitrogen and phosphorous accumulated over the twentieth century is astoundingly large with significant environmental impacts.⁸¹ The continuation of this trend to meet food requirements of a growing population over coming decades is likely to produce more than a doubling of eutrophication of terrestrial, freshwater, and

013987/Rendered/PDF/multi0page.pdf.

⁷⁸ Andrew Long, *Developing Linkages to Preserve Biodiversity*, 21 Y.B. OF INT'L ENVTL L. 1, 32 (2012).

⁷⁹ Lal, R. 2004. Soil Carbon Sequestration Impacts on Global Climate Change and Food Security. *Science*: Vol. 304. no. 5677, pp. 1623 – 1627, DOI: 10.1126/science.1097396.

⁸⁰ Secretariat of the Convention on Biological Diversity (CBD), *Sustainable Use of Biological Diversity in Socio-Ecological Production Landscapes*, TECHNICAL SERIES No. 52 (2010), available at <http://www.cbd.int/doc/publications/cbd-ts-52-en.pdf>.

⁸¹ E.g. Lex Bouwman et al., *Exploring Global Changes in Nitrogen & Phosphorus Cycles in Agriculture Induced by Livestock Production Over the 1900–2050 Period*, 110 PNAS 20882 (2013).

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coastal-marine ecosystems with significant negative impacts.⁸² Although this concern has been virtually ignored in most major MEAs, international attention to the connection of agriculture to major global environmental challenges is growing in a way likely to address the integrated issues through multiple modes of regulation. For example, the World Bank has focused research efforts on understanding both climate change impacts and adaptation needs related to climate change,⁸³ while its Biodiversity and Agricultural Commodities Program (BACP) “seeks to reduce, in an innovative and large-scale manner, the threats posed by agriculture to biodiversity of global significance.”⁸⁴

V. CONCLUSION

The integrationist multimodality of the “fourth generation” of U.S. environmental law described by Professor Arnold appears to reflect developments that are much larger than the scope of U.S. domestic environmental law. Recent international environmental law developments suggest a similar integrationist multimodality occurring at the global scale, which connect with the developments discussed in *The Fourth Generation of Environmental Law* and similar developments in other parts of the world. This suggests that integrationist multimodality may be a feature of global environmental law and, considering the range of instruments and authorities engaged in global environmental policy warrants more direct attention in the study of global environmental governance.

Viewed in this light, the development of integrationist multimodality suggests the potential for developing effective on-the-ground approaches to

⁸² David Tilman et al., *Forecasting Agriculturally Driven Global Environmental Change*, 292 SCI. 281 (2013).

⁸³ *Climate Change & Agriculture*, WORLD BANK, available at <http://econ.worldbank.org/WBSITE/EXTERNAL/EXTDEC/EXTRESEARCH/EXTPROGRAMS/EXTEAER/0,,contentMDK:22361739~pagePK:64168182~piPK:64168060~theSitePK:5991650~isCURL:Y,00.html> (last visited January 30, 2015).

⁸⁴ *International Finance Corporation: About the BACP*, WORLD BANK GROUP, available at http://www.ifc.org/wps/wcm/connect/RegProjects_Ext_Content/IFC_External_Corporate_Site/BACP/ (last visited January 30, 2015).

massively complex global environmental issues that seem intractable when understood through the lens of the unimodal, issue-fragmented, and scale-restricted approaches of past decades. This article has just begun to sketch the implications of integrationist multimodality as a feature of global environmental governance. Nonetheless, it highlights the importance of this perspective for future research into global environmental problems and, more importantly, suggests that further policy development in this direction may significantly enhance the ability of humanity to address the global environmental challenges that appear likely to define the twenty-first century.

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