

**Contesting the Global Response to Climate Change:
A Research Agenda for Examining Experiments in Climate Governance**

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Let A Hundred Flowers Bloom?

Aren't we a little too self-righteous to pretend that all strategy is here in the toolbox of Kyoto, where there are only numerical target, timeline, some flexible mechanisms and detailed punishment plan? Shouldn't we be a little more humble to the awesome might of nature and human action and start exploring many more tools and strategies on top of the Kyoto's tool box?

Japanese Presentation at Nairobi COP12/MOP2, 2006¹

The global governance of climate change is in flux. Perhaps flux, as understood as a period of continuous change and dynamism, has always characterized efforts at governing climate change, but current events have made such an observation patently obvious. The conventionally understood mode of global environmental governance—universal, interstate, multilateral negotiations quintessentially represented by the 1997 Kyoto Protocol—has essentially been stymied in climate change by the yawning gulfs that exist between the negotiating positions of major states. Yet stalemate at the state-centric level is not equivalent to the lack or demise of global governance of climate change. On the contrary, we are currently witnessing the emergence of multiple governance experiments at multiple levels of political organization.

This current burst of creativity can be linked to three factors. First, the stalemate in conventional state-centric governance mechanisms has opened political space or opportunity for innovation. Traditionally, climate governance has been circumscribed by state-centricity and multilateralism, but the failure of the Kyoto process to move forward expeditiously has eroded this embedded understanding.² Second, the perceived (and demonstrated) urgency of the problem has led to discontent with the stalemate and a refusal to rely solely on the Kyoto Protocol or its potential successors for the global response to climate change. A number of actors refuse to accept the lack of forward motion in multilateral climate governance believing that the climate problem is simply too serious for patience. This demand for governance experiments can be satisfied because of the final factor—the availability of relatively non-technical solutions to the climate change problem. Simply put, while the climate system is intricate and complex, the solution to climate change is paradoxically simple—emit less net carbon dioxide.³

¹ Japanese Presentation at First in-session workshop of the AWG on Further Commitment for Annex I Parties under the Kyoto Protocol, November 2006: (http://unfccc.int/files/meetings/cop_12/in-session_workshops/application/pdf/061107_4_awg_japan_1.pdf)

² Bulkeley argues that the conventional understanding is problematic in its own right because it “effectively serves to disembodify the cause and consequences” of the climate change problem. Harriet Bulkeley, “Reconfiguring environmental governance: Towards a politics of scales and networks,” *Political Geography* 24 (2005): 879. See also Matthew J. Hoffmann, “What’s global about global governance? A constructivist account,” in Alice D. Ba and Matthew J. Hoffmann, eds., *Contending Perspectives on Global Governance: Coherence, Contestation, and World Order* (London: Routledge, 2005).

³ This statement does not arise from naiveté as I fully recognize the difficulty and complexity of agreeing who should cut emissions and how this should be accomplished and monitored. However, unlike some other environmental problems (e.g. nuclear waste, biological diversity loss, etc), there are a number of relatively simple things that can be done at many levels to address climate change.

There exist a number of non-technical ways to do just this, facilitating the proliferation of experiments at multiple levels of political organization.

The implications of these three factors are that a number of actors have begun to challenge the conventionally unquestioned authority of nation-states to create rules and manage transnational problems. Governance experiments have emerged at all levels:

- Uncoordinated Individuals—the blossoming of carbon offsetting markets.
- Civil Society—carbon rationing action groups (CRAGs) that are linked (potentially transnationally linked) local groups.
- Corporate—Insurance and re-insurance companies and associations.
- Local government—Cities for Climate Protection Program.
- States/Provincial—subnational, yet transnational carbon markets.
- Multilateral—Asia-Pacific Partnership.

These experiments are not unknown and the literature has begun to chronicle their emergence; speculating on the changing nature of authority and governance.⁴ However, the approach thus far has focused on particular experiments, and we lack a rubric for thinking about this new pattern of climate governance holistically. How are we to make sense of this flurry of creativity and its implications for the evolution of climate governance?

One way to put this experimentation in context is to consider how the experiments contribute to the construction of foundational social norms that underlay governance efforts. The rules made to facilitate a response to climate change flow from accepted (within specific groups) notions of appropriate behavior. Specifically, climate governance flows from elemental normative commitments along (at least) four dimensions: the appropriate actors to enact governance; the appropriate response to uncertainty (no-regrets or precautionary principle);⁵ the appropriate role for regulation or market measures; and the appropriate priority given to mitigation or adaptation. Every experiment in climate governance embodies a position on these four dimensions that shapes how communities are steered. From this norms-based viewpoint, the key tasks are thus to understand how the experiments with their associated normative commitments emerge and how they serve to construct what counts as the overall global response to climate change.

This paper presents a framework for undertaking these tasks by combining insights from the study of complex adaptive systems and constructivist international relations theory.

⁴ See e.g., Bulkeley “Reconfiguring environmental governance”; Matthew Paterson, “Risky Business: Insurance Companies in Global Warming Politics,” *Global Environmental Politics* 1, no.4 (2001): 18-42; Matthew Auer, “Who participates in global environmental governance? Partial answers from international relations theory,” *Policy Sciences* 33 (2000): 155-180; Michele Betsill and Harriet Bulkeley, “Transnational Networks and Global Environmental Governance: the Cities for Climate Protection Program,” *International Studies Quarterly* 48 (2004): 471-493.

⁵ The no-regrets principle states that in the face of uncertainty, one should only take actions that can be justified for other reasons (usually economic).

To provide context I first briefly describe select governance experiments at various levels of political organization. In the subsequent two sections I develop the complex adaptive/social constructivist approach used to make sense of these experiments. I focus, in turn, on how it can provide leverage in understanding how adaptive actors initiate experiments and how the experiments contribute to contests over the social norms at the foundation of climate governance. Finally, I outline a research agenda for fully elaborating this line of argument including a discussion of agent-based computer simulation modeling and the empirical work necessary for grasping the flux in the governance of climate change.

Climate Governance Experiments

The Kyoto Process represents the culmination of governance trends towards the primacy/legitimacy of universal, state-centric, multilateral mechanisms for the creation, maintenance, and alteration of governance rules. Kyoto is a universal agreement, negotiated and signed (if not ratified) by the vast majority of states in the world. It is a model of governance through multilateral negotiations. States, as the highest political authorities on the planet, came together to decide upon rules to govern the transnational climate problem. As we are told, time and again, climate change is not a problem that can be solved by any single nation, global cooperation is necessary. The Kyoto Protocol emerged from a governance model in which multilateral treaties/organizations devised and managed by states count as the global response to environmental problems.

The Protocol itself, though routinely criticized, did achieve some modest accomplishments. It requires modest emission reductions from Northern states, an average of 5% below 1990 emission levels. It includes flexible implementation measures aimed at keeping the costs of emission reduction relatively low. Finally, it contains an initial foray into the delicate issue of the North-South impasse with the Clean Development Mechanism. To be sure the criticisms of Kyoto are not without foundation. The treaty provisions are only in force through 2012 and many countries have already announced difficulty with meeting the requirements. Most importantly, US recalcitrance and withdrawal has cast an enormous shadow over Kyoto and the negotiations aimed at the post-Kyoto period.

Unfortunately then, Kyoto is also a model of the drawbacks of the universal, state-centric global governance model. First, universal state-centric participation does not guarantee progressive environmental agreements.⁶ On the contrary, such universality has an at best ambiguous effect on environmental improvement. Certainly universality increases the chances for an equitable response to climate change, but it has also facilitated political stalemate by multiplying the interests represented at the negotiating table.⁷ In addition, state-centrism itself has potential drawbacks. While it is desirable to pursue global rule making with clearly authoritative actors who can enforce agreements, when approaching a controversial and complex issue like climate change a single comprehensive approach

⁶ See Matthew J. Hoffmann, *Ozone Depletion and Climate Change: Constructing a Global Response* (Albany: SUNY Press, 2005).

⁷ Hoffmann *Ozone Depletion and Climate Change*

may not be the optimal approach. It is subject to lowest common denominator pitfalls and the potential for being held hostage to powerful veto states. States do provide legitimate authority and perhaps the most efficient means of enforcing global rules, but a state-centric approach can be a straightjacket that hampers effective governance mechanisms.

While the Kyoto Protocol represents the apex of the universal state-centric model of global governance, it may have simultaneously triggered the decline of this governance model's dominance. Stalemate at the interstate level has been met with the emergence of governance experiments at other levels. Like-minded groups and individuals have begun to fill the governance gap in climate change with new experiments. Communities, united by intersubjective agreement about how to approach climate change, have emerged, challenging the reliance on state-centric governance mechanisms. This rule-setting at multiple levels is not as comprehensive as universal multilateral treaty-making, but these experiments are worthy of inspection for both how they instantiate new ideas of what counts as governance and how they do or do not comprise an effective global response to climate change.

Emergent Governance through Uncoordinated Individual Actions—Carbon Offsetting

At the most elemental level of political behavior, carbon offsetting organizations, both for-profit and non-profit, have emerged to cater to individuals (and organizations like this conference) who want to reduce their carbon impact without necessarily changing their lifestyles. These organizations allow individuals/organizations to calculate/estimate their personal carbon emissions and pay to support projects/businesses that pledge to reduce carbon dioxide emissions by the requested amount.

This type of activity is not immediately recognizable as global governance in a traditional sense. However, if we take Rosenau's notion of steering mechanisms seriously, then we have to consider how the development of a carbon offsetting industry steers peoples' behavior vis a vi climate change.⁸ Clearly rules are emerging, not only in terms of how people should act in response to climate change, but also how offsetting organizations should act.

The former concerns the emergence of a voluntaristic, personal responsibility rule in the response to climate change. Individuals in an uncoordinated, but intentional manner, follow rules about how to emit carbon dioxide or really how to ameliorate their own emissions. This governance mechanism does not facilitate the emergence of an intersubjective limit to carbon emissions and is not subject to enforcement, but it does move at least towards the notion that reductions (or even carbon neutrality) are appropriate goals that can be met through voluntary actions. As one organization argues on its website:

We like to think of it as an experiment in democracy, opening the market to public participation. Not only does your participation neutralize emissions, but it also matures, develops, and proves a cutting-edge market in pollution reduction.

⁸ On governance as steering mechanisms see James N. Rosenau, *Along the Foreign-Domestic Frontier: Exploring Governance in a Turbulent World* (Cambridge: Cambridge University Press, 1997).

When governmental policy eventually catches up to the markets (and it will), you'll already be a part of the solution.⁹

Lest we reject such a governance model out of hand as inadequate, it is noteworthy that there now at least 47 companies/organizations in this burgeoning industry.¹⁰ In addition, while we lack good data on the amount of emissions reductions from this industry, most organizations claim 1000s of members and 100s of businesses as clients with at least one organization (Terrapass) claiming 250 million pounds of carbon dioxide offset.¹¹

This movement has also spawned meta-governance discussions as well.¹² As carbon offsetting grows in popularity, the need to monitor and govern offsetting organizations grows concomitantly—there is a demand for verification of the types and accuracy of the projects used to offset emissions. Global environmental governance studies are not unfamiliar with this dynamic—there is a lively literature on certification programs for sustainable forestry and other kinds of sustainable production.¹³ Effective governance through individual offsetting behavior is, in many ways, dependent on the development of standards amongst offsetting organizations.

Though this is a clear market-based mechanism of governance—the market will determine the cost of offsets and the appropriate/successful manner of offsetting—we should not naively consider that it is independent from the workings of other governance efforts. Specifically, the carbon offset market is dependent on a stable understanding of the price of carbon dioxide—a value determined in part by governance efforts at other levels.

Private Authority and Corporate Governance Mechanisms—the Insurance Industry

Private authority as an alternative to state-centric governance is currently en vogue in the international relations literature and policy world.¹⁴ Suggestions of corporate governance mechanisms have been viewed cautiously in climate change, yet for a variety of strategic and altruistic reasons, some industries have begun to push for climate governance and pursue rule setting of their own.¹⁵ The insurance industry, perhaps the most aware of the

⁹ http://www.driveneutral.org/what_we_do

¹⁰ Anja Kollmuss and Benjamin Bowell, "Voluntary Offsets For Air-Travel Carbon Emissions Evaluations and Recommendations of Voluntary Offset Companies," Tufts Climate Initiative, December 2006 (http://www.tufts.edu/tie/tci/pdf/TCI_Carbon_Offsets_Paper_Jan31.pdf).

¹¹ <http://www.terrapass.com/about/index.html>

¹² See Kollmuss and Bowell.

¹³ See e.g. Benjamin Cashore, *Governing through markets : forest certification and the emergence of non-state authority* (New Haven: Yale University Press, 2004).

¹⁴ See e.g. John G. Ruggie, "global_governance.net: the Global Compact as Learning Network," *Global Governance* 7, no. 4 (2001): 371-378; Benedicte Bull, Morten Boas, and Desmond McNeill, "Private Sector Influence in the Multilateral System: A Changing Structure of World Governance?" *Global Governance* 10 (2004): 481-498; Virginia Haufler, *A Public Role for the Private Sector: Industry Self-Regulation in a Global Economy* (Washington: Carnegie Endowment for International Peace, 2001). Biersteker, et al, Global Compact, etc.

¹⁵ Beyond the insurance industry the Chicago Carbon Exchange is a voluntary arrangement for businesses to cap and trade carbon emissions with members whose total emissions exceed those of Great Britain. See (http://www.driveneutral.org/who_we_are) and (<http://www.chicagoclimatex.com/about/>)

potential costs of climate change has long been a source of hope for the environmental movement.¹⁶ Yet, while the insurance industry has not had the kind of impact on climate governance that some would have liked to see, the activities of this industry do point to an emergent source of governance—corporate rule-making.

In the 1990s environmentalists had grand expectations that the insurance industry, as a powerful bloc of institutional investors, would change their investment patterns and move the global economy towards renewable energy, away from fossil fuels.¹⁷ The hope was that the insurance industry would see self-interest in “aggressively investing in renewables to mitigate global warming.”¹⁸ An altered investment pattern by a major set of players in global finance could go a long way to reorganizing the economy along more climate friendly lines. To the dismay of the environmental community, this has not yet come to pass. This is not to say that the insurance industry has neglected climate change. On the contrary, it has been at the forefront of climate governance in a number of explicit and implicit ways; only not always in the manner approved of by environmentalists.

Explicitly, members of the insurance industry have teamed up with the United Nations Environment Program (UNEP) and formed an Insurance Working Group in 2006 under the auspices of the UNEP Finance Initiative (there is also a climate working group within this initiative). The objectives are relatively ambiguous, but focus mainly on integrating climate change adaptation measures with larger goals of sustainable development.¹⁹ Beyond the UNEP linkage, the insurance industry has also experimented with carbon dioxide intensity baselines as a means for providing investors with a new view of risk—i.e. higher baselines translate to higher risk.²⁰ Of course the effectiveness of these parameters are dependent upon the emergence of a set of governance mechanisms (global, multilateral or otherwise) that limit the price of carbon by reducing demand for it.

More subtly, but perhaps more importantly, the insurance industry constructs rules governing the global response to climate change in how it sets premiums and in its attempts to securitize the risks of catastrophe. Raising premiums in areas expected to bear the brunt of climate change (in the global north) and/or removing insurance coverage from certain areas or activities, serves to alter how people and eventually countries act in the face of climate change. It is a subtle, but powerful set of rules for adapting to climate change. Similarly, by commodifying the risk of catastrophe in the form of catastrophe bonds, the insurance industry is shaping how the problem of climate change and its management is understood by investors, countries, and the whole global economy.²¹

¹⁶ Jeremy Leggett, *Climate Change and the Insurance Agency: Solidarity Among the Risk Community* (London: Greenpeace). See also Paterson “Risky Business” and Sverker C. Jagers and Johannes Stripple, “Climate Governance Beyond the State,” *Global Governance* 9, no. 3 (2003): 385-399.

¹⁷ See Paterson “Risky Business” and Jagers and Stripple “Governance Beyond the State”.

¹⁸ Paterson “Risky Business,” 19.

¹⁹ See http://www.unepfi.org/work_streams/insurance/index.html.

²⁰ Jagers and Stripple, “Governance Beyond the State”

²¹ Jagers and Stripple, “Governance Beyond the State”

The rules that the insurance industry is proposing and imposing represent a very specific kind of governance. The rules are essentially about adaptation to climate change—where people can live, who can live in what places and expect to get help. This moves the global economy and politics towards an ability to adapt to the risks of climate change in a very specific (and not necessarily equitable or desirable) way. In addition, insurance industry practices subtly challenge the state-centric model of governance, by providing an additional authoritative actor with a vision of what counts as a global response to climate change.

*Governance through Local Organization—Carbon Rationing Action Groups (CRAGs)*²²

Though the Kyoto process is bogged down, the provisions of the agreement have served as a model for political organization at other levels, specifically the notion that carbon dioxide emissions should be capped at reduced levels for certain groups. Kyoto caps the emissions of Annex I parties at reduced levels. CRAGs translate this idea to groups of individuals. In a remarkable example of self-organization, carbon rationing action groups have sprung up in the UK and these groups exemplify the adaptive possibilities in climate governance. CRAGs are groups of people that are unwilling to wait for multilateral governance and have organized into groups where the individual members pledge to reduce their carbon dioxide emissions to specified levels, paying into a community fund if they miss their targets.

These groups are seen as very much a reaction to the stalemate at the multilateral level. A member of one CRAG in Glasgow noted that he is a member “for many reasons but perhaps most importantly because it allows me to do at a local scale what I think our governments should be doing at a global scale.”²³ These local, self-governing groups decide as a community how much carbon dioxide each person is allowed to emit, how to calculate emissions, and how members compensate for exceeding limits.

This grassroots action is possible because of the non-technical nature of solutions to climate change abatement mentioned above. It is not necessarily an easy way to respond to climate change:

Making lifestyle changes can be tough. ‘We’re already seeing Kyoto-type negotiations in miniature in the groups,’ CRAG member Andy Ross tells *The London Observer*. ‘It underlines how difficult it will be [for countries] to cut emissions if we can’t get 10 people to agree across a table.’²⁴

Yet, achievable changes in lifestyle can have appreciable effects on an individual’s carbon footprint (e.g. drive less, bike more, change consumption patterns). While this movement is currently taking place on a small scale (23 established CRAGs) and in only one country (United Kingdom), it is still an interesting governance experiment for a number of reasons. First, there is no reason that this could not be a transnational movement—there is nothing stopping groups of individuals anywhere from organizing similar communities. Second, CRAGs are clearly designed as steering mechanisms, setting up rules for responding to climate change that hold within the individual

²² <http://www.carbonrationing.org.uk/what>

²³ <http://www.carbonrationing.org.uk/glasgow/threads/who-are-we>

²⁴ *Toronto Globe and Mail* “The New Climate Almanac” 2 February 2007.

communities. Finally, the effect is not necessarily limited to the individual communities—the CRAGs also represent a growing sentiment that carbon emissions must be curtailed and that local communities are (or could be) authoritative actors in accomplishing it.

Globalized Subnational Governments I—Municipalities

A similar principle is at work at a more established level of political organization—cities. The Cities for Climate Protection Program coordinates actions of hundreds of municipalities (674 in 30 countries)²⁵ that pledge to work towards climate change mitigation through five steps: determine a baseline emissions inventory, decide upon an emissions reduction target, develop an action plan, implement policies to operationalize the plan, monitor the results of the plan.²⁶ The cities that join tend to be significantly more progressive on emissions targets than the Kyoto targets given to their home states. For instance, Copenhagen has pledged a 35% reduction as opposed to Denmark’s 21% reduction from 1990 levels.²⁷ Salt Lake City has agreed to uphold Kyoto targets at the US level even after the US withdrew from the agreement.²⁸

This network of municipalities contributes to a global response to climate change in and of itself, given its transnational nature and the fact that the network represents 15% of global carbon dioxide emissions.²⁹ As Betsill and Bulkeley argue, the cities program “has created its own arena of governance through the development of norms and rules for compliance with the goals and targets of the network.”³⁰ Beyond this direct influence on governance—the direct steering of large populations across the globe—the cities network also has an impact on governance efforts at other levels. Because cities are embedded in larger governmental structures, their efforts at promotion of climate protection contributes to climate politics at the national and multilateral level.³¹ This subtler influence is not just encompassed by traditional lobbying and is, instead, an attempt “to reframe an issue which is usually considered in global terms within practices and institutions which are circumscribed as local.”³² Thus beyond challenging received notions of which actors are legitimately authoritative, the cities program also questions the conventional wisdom of where the global response to climate change should be centered.³³

Globalized Subnational Governments II—States and Provinces

Similar to the cities program, but at a higher level of government, activist governors in the United States in potential partnership with provincial leaders in Canada have begun working to establish carbon markets that are simultaneously subnational and transnational. Consider these recent news reports:

²⁵ <http://www.iclei.org/index.php?id=809>

²⁶ <http://www.iclei.org/index.php?id=810>

²⁷ <http://www.habitatjam.com/viewIdea.php?iid=58§ion=6>

²⁸ <http://www.sl.gov.com/mayor/pressreleases/kyoto%20protocol.htm>

²⁹ <http://www.iclei.org/index.php?id=811>

³⁰ Betsill and Bulkeley, “Transnational Networks,” p. 151.

³¹ Betsill and Bulkeley, “Transnational Networks.”

³² Bulkeley, “Reconfiguring,” p. 893.

³³ Bulkeley, “Reconfiguring.”

The governors of Arizona, California, New Mexico, Oregon and Washington state agreed to develop a regional target to lower greenhouse gases and create a market-based program aimed at helping businesses reach the still-undecided goals... Such a market pact is close to becoming reality among a number of Northeastern and Mid-Atlantic states, which plan to impose caps on power plant emissions and encourage trading of allowances among utilities. More than two dozen states have drawn up plans to combat warming in various forms, and many governors have signed onto efforts to use 25 percent renewable energy sources by 2025.³⁴

A new report from CIBC World Markets, the wholesale and corporate banking arm of the Canadian Imperial Bank of Commerce (CIBC), forecasts that all jurisdictions in Canada and the US will have carbon dioxide regulations in place by the end of the decade to address global warming concerns. The report predicts that every province and state in North America will follow the lead of California and implement not only a CO₂ emissions cap but also an emissions trading system that will allow larger polluters to buy emissions credits from other firms whose emissions are less than what is allowed under the cap.³⁵

The dynamics are nearly identical to the cities program and the CRAGs idea in that groups of like-minded political actors (individuals, cities, states/provinces) agree amongst themselves to address climate change in a specific way—mainly choosing mandated reductions for members of the groups with flexible (market-based) mechanisms for achieving the reductions along with varying forms of enforcement. What we are seeing emerge is a patchwork of progressive action on climate change self-organize at multiple levels of government and political community. These measures lack an overall comprehensive approach that multilateral treaty-making begets, but they do serve to catalyze potentially climate-friendly action at multiple levels, provide a range of activities for reducing emissions, and question the received understanding of multilateral approaches as the sole legitimate form of global environmental governance.

Multilateral Competition for Kyoto—The Asia-Pacific Partnership

The stalemate in the Kyoto process has not stifled all multilateral approaches to climate governance. One response has been the emergence of a competing multilateral approach—the Asia-Pacific Partnership. Catalyzed by the US and Australia, the most vocal Kyoto opponents, the APP brings together 6 countries (China, India, Australia, South Korea, Japan, and the US) in a market based, voluntary governance arrangement designed to respond to global climate change through technological diffusion.

This new pact approaches climate change in a market-based manner and one of its members claims that “The Asia-Pacific Partnership on Clean Development and Climate (AP6) is a ground-breaking climate change approach bringing together key developed

³⁴ Robert Tanner, “Frustrated Govs Forge Pioneering Global Warming Pact” Associated Press February 27, 2007. (<http://www.technewsworld.com/story/55977.html>)

³⁵ http://www.greencarcongress.com/2007/01/forecast_us_and.html#more

and developing countries on practical, pro-growth, technology-driven efforts.”³⁶ While the members of the Asia-Pacific Climate Group have taken pains to say that this is not a challenge to Kyoto, the contrast is striking and it certainly represents a governance experiment that challenges the dominance of the universal, state-centric multilateral treaty-making model of governance.

By putting tangible material resources behind this experiment, the members of the pact are legitimating a governance experiment that addresses climate change as a side effect of the pursuit of technological innovation and economic development. While many observers remain skeptical of the sincerity of the program, there are over 90 proposed projects in 8 sectors.³⁷ By taking this route—proposing an alternative institutional structure—the US and its partners are proposing a governance mechanism that stresses voluntary action by states, a significant departure from the foundation that Kyoto is built upon.

Further, while the Asia-Pacific partnership is ostensibly open to other states (and thus in principle universal), in practice it is a sub-group approach to the global response to climate change—like-minded states are grouping together and pursuing governance mechanisms that fit their understanding of climate change. In essence this development could challenge universal state-centric approaches and harkens back to suggestions about how to structure a climate change regime that were made before universal participation became the dominant frame—through limited participation of key states.³⁸

Assessing the Blooms?

In one sense this enumeration of climate governance experiments provides a sense of optimism. There are diverse actors taking climate change very seriously and attempting to implement rules and policies to address the problem. Yet we lack a general explanation for how these experiments emerge and, perhaps more importantly, an understanding of how they fit together into a broader global response to climate change. The following sections develop a complex adaptive/social constructivist approach to making sense of the diverse and expanding experiments in climate governance.

Adaptive Governance and the Emergence of Experimentation

“Adaptive governance” has recently enjoyed significant popularity in the environmental politics and environmental studies literatures.³⁹ The approach provides a conception of how human governance systems react to, manage, and learn from changing

³⁶ <http://www.dfat.gov.au/environment/climate/ap6/>

³⁷ To this point the funding is “in principle” but Australia has pledged \$59AUS million and the US is proposing \$52 million for the fiscal 2007 budget. Beyond direct dollars, the material incentive is in opening up investment opportunities. <http://www.dfat.gov.au/environment/climate/ap6/>

³⁸ See Hoffmann *Ozone Depletion and Climate Change*; and James Sebenius, “Designing Negotiations Toward a New Regime: The Case of Global Warming,” *International Security*, 15, no. 4 (1991): pp. 110-48.

³⁹ For an overview of the adaptive governance literature see Carl Folke, Thomas Hahn, Per Olsson, and Jon Norberg, “Adaptive Governance of Social-Ecological Systems,” *Annual Review of Environmental Resources* 30 (2005): 441-473.

environmental circumstances and how social and ecosystems are locked in feedback relationships. It is a compelling rubric for examining self-organizing attempts at ecosystem management and for prescribing how to respond to the “need to account for interactions across spatial and temporal scales to secure the capacity to reorganize in the face of change.”⁴⁰ The goal of adaptive governance studies is to understand and suggest ways to “generate desirable pathways for societal development in the face of increased frequency of abrupt change.”⁴¹

Climate change promises disruptions and even potentially catastrophic transformations of climates and ecosystems, and thus a focus on adaptive governance as understood in this literature is certainly a worthy pursuit.⁴² However, considering adaptive governance as solely governance mechanisms aimed at managing the implications of climate change overlooks how adaptive actors construct and contest the *institutional context* of climate governance—one aspect of which is deciding whether to prioritize adaptation to the implications of climate change or the mitigation of climate change. This paper takes a broader view of adaptive governance, focusing on the adaptive nature of actors—how they react to their institutional and environmental contexts and how those contexts shape actors understanding of climate change. This section outlines a particular adaptive behavioral model drawn from the complex adaptive systems literature and discusses how it can shed light on the emergence of governance innovations.⁴³

Complex adaptation is a feedback process between adaptive agents and a dynamic context (which can be institutional or physical). Adaptive agents are defined by internal rule models or schema.⁴⁴ These rule models represent the agent’s internal (or subjective) understanding of the world around them. With the rule models, the agents perceive and define their situation, predict the consequences of action, and act. I posit that actors at many levels of political organization have an internal rule model that contains their understanding of the climate change problem and the appropriate governance response. The actions that adaptive agents undertake and the interactions in which they participate reproduce/alter their context. Macro patterns, or a global response to climate change in this case, emerge from the actions and interactions of the agents.

The agents’ context is not passive, however. In a complex system, the context influences agents’ internal rule models through co-evolutionary processes. When some agents change their behavior this alters the context for the other agents. A new context catalyzes change in agents’ rule models as the context determines what rules, goals and interests are appropriate and/or possible. Adaptation in this coevolutionary process is facilitated by evaluations of behavior—both the outcomes of an agent’s own actions and observations of other actions. For instance, when political stalemate between states in

⁴⁰ Folke et al “Adaptive Governance,” p. 443.

⁴¹ Folke et al, “Adaptive Governance,” p. 443.

⁴² See W. John Adger, “Scales of Governance and Environmental Justice for Adaptation and Mitigation of Climate Change,” *Journal of International Development* 13 (2001): 921-31.

⁴³ Complex adaptation is also employed in the conventional adaptive governance as well. See Folke et al, “Adaptive Governance,” pp. 447-452.

⁴⁴ See John Holland *Hidden Order* (New York: Addison-Wesley Publishing Company, 1995) and Murray Gell-Mann, *The Quark and the Jaguar* (New York: W.H. Freeman and Co, 1994)

multilateral treaty negotiations arises, other actors evaluate this and incorporate those evaluations into their rule models—potentially changing how they perceive the climate problem and the global response to it.

The complex adaptive approach posits an explanation for the emergence of climate governance experiments that begins with the understanding that the institutional context for responding to climate change has, until quite recently, been dominated by multilateral treaty making. States, through their status as the most legitimate and authoritative actors on transnational issues, pursued universal multilateral negotiations that resulted in the 1992 UN Framework Convention on Climate Change (UNFCCC) and the Kyoto Protocol (along with the clarifications and modifications that have occurred subsequently). The global response to climate change has, in many ways, been synonymous with the multilateral negotiation process. This is not to say that the multilateral process has existed in isolation. On the contrary, there are many efforts to address climate change from the individual level to the national level. But there has been a general understanding and reinforcing of the primacy of the UNFCCC and Kyoto process. Many non-state efforts have been either coordinated with the UNFCCC process or geared towards influencing it.

A complex adaptation perspective, however, posits that the conventional understanding of governance through multilateral treaty-making is not necessarily static and that innovations emerge through an adaptive process. Adaptive actors continually evaluate and interpret the results of their actions and their institutional context. Since 2001 and the US withdrawal from the Kyoto process, actors who view the climate problem as one requiring urgent action have begun to challenge the primacy of multilateral approaches. In negatively evaluating their rule model that encapsulated the understanding that multilateral approaches counted as legitimate governance, various actors opened up political space for innovation. Multiple actors began to alter their understanding of climate governance—their rule models. The new conceptions of climate governance allowed for actions outside the official process.

Smith and Stacey discuss a similar dynamic in an organizational context where an informal network or “organizational shadow” emerges in a way that “generates innovation and new strategic direction.”⁴⁵ This is likely to occur when the organizational context has become brittle. In this environment, adaptive actors within the organization self-organize into groups “each following its own rules of behavior” in order to “acquire information, to learn, to conduct political activity, and to change the system they are a part of.”⁴⁶ The complex adaptive perspective posits that the stalemate in the Kyoto process has catalyzed this very kind of activity. Individuals, NGO’s, corporations, and politics at multiple levels evaluated the official governance process and found that it did not match their internal understanding of the urgency of the climate problem. This brittle context subsequently catalyzed self-organizing innovations—climate governance experiments.

⁴⁵ Michaela Smith and Ralph Stacey, “Governance and Cooperative Networks: An Adaptive Systems Perspective,” *Technological Forecasting and Social Change* 54 (1997): p. 80.

⁴⁶ Smith and Stacey “Governance and Cooperative Networks,” p. 85.

The complex adaptive perspective provides a coherent framework potentially useful for grasping how the consensus around universal multilateral negotiations as *the* global response to climate change has been challenged (if it has not broken down entirely) through the actions of disparate political actors. The adaptive response to the institutional context spurred significant experimentation with different governance mechanisms—self-organizing groups developing and following their own rules to respond to climate change. While the specific experiments arose in specific ways for a host of historically contingent reasons (discussed below in the section on a research agenda), the complex adaptive perspective provides a way to account for experimentation in general—it is a framework for organizing the details of the specific experiments.

Experimentation and the Contestation over Climate Governance

Explaining experimentation through adaptation is the first step in examining the evolution of climate governance. The second step is providing a framework for understanding how these experiments contribute to the construction of social norms at the foundation of the global response to climate change. This second step is necessary for because beyond proposing specific behaviors or policies for addressing climate change, these experiments also represent different groups' interpretations of their normative context—positions on appropriate sets of behaviors. These positions shape what kinds of rules are promulgated and indeed the very character of the global response to climate change. It is crucial to know what kind of normative foundation is emerging as the first step in assessing the effectiveness and appropriateness of the global response to climate change. Contestation is inherent in the process of experimentation.⁴⁷ The normative positions will not always cohere and it is crucial to understand the dynamics of contestation to grasp how the overall normative context of climate change evolves. Will it be an inchoate babble? Will one interpretation dominate? Will a hybrid of multiple positions emerge?

Unfortunately, our grasp of norm contestation dynamics is quite limited. Constructivists have reinforced a notion of social norms as static social facts by focusing how norms elicit conformance within a community. While perhaps a necessary step in achieving acceptance for ideational approaches to world politics, this focus is problematic because norms, rather than fully settling political questions and fully stabilizing an institutional context, act to define the boundaries for thought and debate. Social norms do elicit conformance and do represent “standards of appropriate behavior for actors with a given identity.”⁴⁸ However, we must not confuse the establishment of standards and the ability to elicit conformance with closure of debate. Actors will inevitably have different

⁴⁷ Full theoretical development of this model of normative contestation is beyond the scope of this paper—for a more in-depth treatment see Matthew J. Hoffmann “My Norm is Better Than Your Norm: Contestation and Norm Dynamics,” Paper presented at the annual meeting of the International Studies Association, 2007. See also, Antje Weiner, “Contested Compliance: Interventions on the Normative Structure of World Politics,” *European Journal of International Relations* 10, no. 2 (2004): 189-234.

⁴⁸ Martha Finnemore and Kathryn Sikkink, “International Norm Dynamics and Political Change,” *International Organization* 52, no. 4 (1998): 891.

interpretations of what is appropriate or what they are to conform to *even when a normative context is relatively well established and internalized*. Rather than settling questions, social norms establish the contours of what actors argue over and how they debate.

Even established norms are not static; they are constantly (re)interpreted and acted upon. This does not imply pure voluntarism—norms are recognizable by the boundaries they establish on possible or conceivable interpretations and actions. Guzzini is surely correct when he argues that norms “are intersubjective and not individual” and that agents cannot individually create the world just by believing.⁴⁹ Yet, it is through interpretation and action based on interpretation that norms emerge and change over time. Gregg argues that “the very identity of a norm first emerges with its interpretation. Because it is interpretive, identity is variable or changeable, never settled. Meaning is created time and again...”⁵⁰

Specifically, I argue that when different actors interpret their normative context, variations and different normative positions are inevitable. Groups of actors contest each other’s interpretations of social norms and it is through this contestation that the normative context is altered or reified. I envision this contestation as a recursive three-stage process: 1) Stable normative context; 2) Emergence of innovation and contestation; 3) Resolution and emergence of new normative context. I illustrate the potential functioning of this process with the contestation brought about by the emergence of climate governance experiments.

In the first stage, there is an established normative context internalized within a community. There is stability in the normative context in that most major actors agree on the major normative underpinnings of governance. In the context of climate governance we can consider that the Kyoto Protocol was negotiated within a relatively stable normative context. The normative context is never uncontested, but there was at least broad acceptance of the major normative underpinnings. This means that there were clear positions on the normative dimensions discussed in the introductory section:

- Authoritative Actors: Nation-states
- Response to Uncertainty: Precautionary Principle
- Nature of the Response I: Mix of regulation and market mechanism.
- Nature of the Response II: Prioritize Mitigation over Adaptation

Focusing on norm contestation reminds us that internalization or stability in a normative context is not an end stage. As discussed above, adaptive actors continually evaluate and interpret their normative context as they determine what they think is appropriate (subjectively) given the intersubjective context and they determine how to operationalize that interpretation (act). Actors are reflective entities, not structural automatons. In Stage 2 of normative contestation, these adaptive actors may innovate and challenge the accepted normative context engendering normative contestation. Finnemore and Sikkink

⁴⁹ Stefano Guzzini, “A Reconstruction of Constructivism in International Relations,” *European Journal of International Relations* 6, no. 2 (2000): 155.

⁵⁰ Benjamin Gregg, *Coping in Politics with Indeterminate Norms* (Albany: SUNY Press, 2003): 22.

(1998) discuss this as normative entrepreneurship. The beginning of their norm life cycle consists of entrepreneurs making suggestions about (new) ways to conceive of the normative context—different ideas about appropriateness. The complex adaptive perspective highlights the process through which innovation emerges from the activities of adaptive actors.

The emergence of innovation leads inevitably to contestation. Entrepreneurs and their followers work to convince others that their interpretation is correct. Actors bring rhetorical, strategic, and material resources to bear in support of their positions, but it is not often or always an argument or debate directly about social norms. The contest over interpretations of social norms plays out in debates over, for instance, particular policy options or governance experiments. However, actors pursue policies and actions that have their interpretation of the normative context at their foundation.

In climate governance, stage two begins with the stalemate following the US withdrawal from the Kyoto process (though some experiments pre-date this occurrence). Adaptive actors produced a series of governance experiments. Each experiment contains positions on the four key normative dimensions. Table 1 provides a summary of these positions.

Table 1: Normative Dimensions of Governance Experiments

<u>Experiment</u>	<u>Response to Uncertainty</u>	<u>Authoritative Actors</u>	<u>Nature of Response I</u>	<u>Nature of Response II</u>
<u>Carbon Offsetting</u>	Precautionary Principle	Individuals and/or organizations	Market	Preventive
<u>Insurance Industry</u>	Precautionary Principle	Corporations	Market	Mix
<u>CRAGs</u>	Precautionary Principle	Individuals	Mix	Preventive
<u>Cities for Climate Protection</u>	Precautionary Principle	Cities	Mix	Preventive
<u>States/Provinces</u>	Precautionary Principle	States/Provinces	Mix	Preventive
<u>Asian Pact</u>	No Regrets	Nation-States	Market	Mix

While the political actors involved in these experiments may not be directly interacting, this is still normative (and political) contestation. Actors are putting rhetorical and material resources behind these efforts. They are acting on their normative commitments and advocating particular responses to climate change. Some of these are complementary—for instance there is no reason that the CRAGs approach cannot co-exist with the CCP program. Others may conflict directly—the insurance industry actions may or may not coincide with the actions taken by states/provinces to mitigate climate change through cap and trade processes.

The current state of climate governance is probably at stage two at the moment. There are a number of extant governance options and it is not clear that one or a hybrid of multiple options has emerged as the intersubjectively dominant approach. In fact stage three, a resolution of the contestation, may or may not be reached in every issue area. If resolution happens it occurs when a critical mass of actors accepts a set of precepts⁵¹—either one of the variants becomes dominant or a hybrid of the variants emerges. This is often accompanied by political resolution and the new intersubjective understanding is frozen in political outcomes (like treaties, understandings, organizations, or even soft law). The result is that there now exists a new normative context from which governance proceeds.

In climate change we have yet to reach resolution and this is why the current flux is so easily observable. The breakdown of the dominance of a multilateral approach has yet to be followed by the emergence of a coherent normative context. Table one does, however, give a glimpse of possible resolution or at least some consensus on a number of dimensions. Resolution to normative contestation is *not* a simple matter of accumulating normative positions across different governance experiments. We need to assess whether a critical mass has emerged behind certain interpretations of the normative context.⁵² However, looking across governance experiments does provide a broad-brush notion of what may emerge as a dominant normative context. The precautionary principle might be positioned to become the dominant response to uncertainty. We cannot read too much into Table 1 because the single most powerful actor, the US, still officially holds quite tightly to the no-regrets principle, but throughout the rest of the governance experiments, the precautionary principle is seen as the appropriate way to proceed in the absence of scientific certainty about causes and effects of climate change.⁵³

Market mechanisms have also moved to the forefront of the global response to climate change. Always a crucial part of climate governance discussions, flexible market mechanisms that either stand alone (Asia Pacific Pact, Carbon Offsetting efforts, Insurance industry efforts) or are combined with regulations on emission caps are now a taken for granted aspect of the global response to climate change. Finally, at least in the experiments examined for this paper, prevention is still the dominant approach.⁵⁴ There is still an ethos that climate change can and should be prevented or at least ameliorated.

The dimension most contested is clearly that of which actors have the legitimate authority to pursue the global response to climate change. There is no answer to this question at this time, though a number of scenarios are possible:

⁵¹ Finnemore and Sikkink “International Norm Dynamics”

⁵² On the concept of critical mass see Finnemore and Sikkink “International Norm Dynamics” and Michael Macy, “Chains of cooperation: threshold effects in collective action,” *American Sociological Review* 56 (1991): pp. 730-47.

⁵³ The most recent Intergovernmental Panel on Climate Change report “Climate Change 2007: The Physical Science Basis” IPCC (2007) may have removed enough uncertainty as to make this normative concern less important

⁵⁴ This is not to say that adaptation is being ignored. On the contrary, news reports and academic writing are actively addressing the challenge of adaptation to climate change—however, it has yet to become the focus of many governance experiments.

- A return to multilateral authority—the negotiations for the post-Kyoto period could re-establish the dominance of universal multilateral negotiations and treaties. Recent resurgence of interest in addressing climate change within the US may portend a revitalization of the multilateral process.
- The emergence of a new key actor or network of actors—the CCP or networked subnational entities could emerge as the dominant actors, putting states and multilateral negotiations in a subordinate position.
- The mosaic that has emerged in the face of multilateral stalemate could continue—no dominant authoritative actor would emerge and the global response to climate change would be fragmented, although not necessarily ineffective if synergies and productive overlaps can be exploited.

The notion of norm contestation provides a framework for considering how the extant and multiplying climate governance experiments shape the global response to climate change. In combination with an adaptive model that accounts for the emergence of innovation, this framework provides a potentially powerful tool for examining the evolving normative underpinnings for governance and a holistic approach to studying a complex problem.

Research Agenda

The above analysis offers hints of the applicability of the complex adaptive/constructivist framework. There is clearly much work yet to be done to demonstrate its utility. However, this approach does have some distinct advantages. First, it supplies a behavioral model of agent behavior and a feedback process that dynamically links the internal understandings that agents have of their context with the context itself. This allows for an examination of both the emergence of governance experiments *and* how experiments interact to construct what counts as governance. It provides a general process that can incorporate multiple historically contingent experiments into a coherent whole. Second, the approach lends itself to an effective mixed method research agenda. Specifically, the complex systems perspective provides a set of methodological tools—agent-based computer simulation modeling—that can complement traditional case study and process-tracing analysis of climate governance.

Fulfilling the research agenda requires research in three linked areas. First, it is necessary to trace and explain the emergence of particular governance experiments to see if and how the complex adaptive model provides leverage. There has been some outstanding work done on the governance experiments, but too few have looked at them as instances of the same adaptive process. The complex adaptive/constructivist framework allows for in-depth research into the emergence of governance experiments from a common perspective.

The second area is computer simulation modeling and this requires substantially more discussion. Agent-based modeling (ABM) provides researchers with a laboratory previously unavailable to social scientists (Epstein and Axtell 1996; Richards 2001; Kollman, Miller, Page 1997; Cederman 1997; 2003; Axelrod 1997). The essence of ABM

lies in the writing computer programs that create artificial agents that can be envisioned as individuals, organizations, or even states. The modeler endows these agents with individual characteristics (attributes that change from simulation to simulation), the ability to perceive their environment, and decision-making apparatus. The modeler then places the artificial agents in an artificial environment (social and/or physical if modeling spatial/environmental interactions) and lets them interact. The goal is to simulate and understand processes through which macro patterns emerge from the actions and interactions of agents (and their context).

This research agenda will benefit from modeling norm contestation to examine the conditions under which governance experiments emerge and interact to shape the evolution of the global response to climate change. In my previous work (Hoffmann 2005), I developed a model of norm *emergence* based on Finnemore and Sikkink's norm life cycle. The next step is to develop a new set of models that explore the norm contestation outlined above. The new models will incorporate competing entrepreneurs, examining the effects of allowing agents to have diverse interpretations of their normative context, and exploring the emergence of distinct variants of norms as evidenced in the brief empirical discussion above. I will explore how and under which conditions competing norms can take hold in populations of agents and how contestation influences collective action.

The analysis of the simulated histories will provide insight into the possible ways that norm contestation can play out empirically. The modeling experiments will produce a range of conditions and hypotheses about the patterns of norm contestation that can be further evaluated through empirical analysis in much the same way that game theoretic results provide testable hypotheses for rationalist scholars. The ABM exercises are a rigorous way to assess norm dynamics in the abstract, laying a foundation for empirical analysis of how governance experiments merge in an overall global response to climate change.

This empirical process tracing is the third area of research in this agenda. It is necessary to examine how governance experiments interact and feedback across levels. This final, and most important, piece of the puzzle will provide insight into just what kind of global response to climate change is emerging as well as the potential for influencing it.

Conclusion

In their examination of complex adaptation in organizations Smith and Stacey find hope that an adaptive response can lead to innovative change. They argue:

...change becomes a possibility only when the informal system seeks to undermine the formal, but no one can guarantee that change will in fact happen, nor can anyone guarantee that the outcome will necessarily be good in some sense...The processes we would expect to observe as key in bringing about innovative change would be networking, politics of an alternating cooperative and competitive sort, learning communities of practice swapping stories that embody

their learning and redundancy taking the form of overlapping processes and activities.⁵⁵

The governance experiments in the global response to climate change are relatively new, but even at this stage we can see hope for innovative change. None of the experiments exists in isolation. There are clear and growing communities of practice. There is emerging redundancy. All of these efforts are undermining what is a currently stalemated formal global response embodied in multilateral negotiations. What remains is developing and assessing frameworks for understanding this ongoing evolution in the global response to climate change. An approach that combines the insights of complex adaptation and social constructivism may provide a fruitful way forward.

⁵⁵ Smith and Stacey “Governance and Cooperative Networks,” p. 85.