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Remarks at Surviving Climate Change: Adaptation and Innovation

Panel on "Building Resiliency"

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http://www.adaptationconference.com/index.html

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RESILIENCE AS EMERGENT BEHAVIOR

Summary

In this paper, I briefly review the diversion of the climate policy world into a single-minded fixation with mitigation. I assert that it is increasingly clear that the main game is now adaptation which renders mitigation no less urgent, but shifts the political equation in dramatic ways that cannot be ignored any longer. I suggest that global state and market-based solutions will fall far short of an adequate response. The responsibility will devolve to cities and local communities to pick up the pieces. I review some of the swarming and network strategies that may enable these communities to supplement or supplant state-based adaptation frameworks over the coming generation.

1. Mitigation-Adaptation

The first phase (1988-2008) of climate change policy and research work focused on gaining traction with the political elites. The task entailed overcoming political, cultural and institutional resistance to recognition of the validity and soundness of the science on the one hand, and learning from practical grappling with the problem in the real world on the other. The political path of least resistance over these two decades was to create a global scientific consensus based on modeling and compilation of data sets with which to inform and push policy makers to attend to the climate issue, while focusing on the tractable, affordable and (in principle) global positive sum game of

"mitigation" on the basis that an ounce of mitigation now is worth a pound of adaptation later, especially when the benefits of mitigation are global no matter where achieved and shared, whereas the benefits of adaptation are mostly local and not shared.

This political task was enshrined in the 1992 Climate Change Convention which created new institutions and related methods, in particular, the GEF and implementing agencies. The issue of burden-sharing was largely ignored in the pursuit of efficient allocation of the minimal resources that were made available to build mitigation capacity in poor countries. Equitable and adequate international burden-sharing of mitigation cost was mostly ignored in the effort to "start the ball rolling" and to keep the climate negotiations alive, with or without the United States as a prime mover.

In this startup phase, adaptation was accorded secondary importance and subordinated to the primary task of achieving policy consensus that climate change exists and matters. The intention was to avoid distraction from mitigation, and the strategy was grounded in the belief that mitigation was and is the first order of business. The first of these goals—achieving a global consensus that climate change risk is real and pressing--was achieved, albeit belatedly; but the result was that science of climate was diverted away from investigating many urgent and critical adaptation issues and bent instead via the IPCC to the demands of negotiations and to defining impacts. Consequently, a global adaptation conceptual and institutional framework is almost absent.

2. What's at Stake?

In 1972, Jun Ui published his basic theory of *kogai*, derived from the experience of the victims of mercury poisoning at Minamata in the nineteen sixties.[1] Ui was the first modern theorist to explain the displacement in space and time of biological and physical costs via ecological systems from one class of beneficiaries to other classes of victims. In many respects, this dynamic is similar to the problem of land mines that are strewn for short-term military advantage, but remain *in situ* for years, even decades, until they explode and maim or kill civilians who had no relationship to the original conflict. One can think of the imposition of the array of biological, physical and social-cultural climate costs in a similar manner to hurling hand grenades randomly into the future without knowledge or concern as to when or where they fall to the ground, and who would be hurt or killed when exploded. In short, climate risk has a global spatial and temporal dimension.

[1] See Jun Ui (ed.), *Industrial Pollution in Japan*, Tokyo: United Nations University Press, 1992.

The costs of climate change relative to conceivable worlds without massive anthropogenic climate loading are huge although still unknown with any precision. It is well understood already that these costs will fall disproportionately on those least able to bear them. Incremental adaptation costs are likely to exceed the marginal costs of mitigation and justified global burden sharing (roughly $30 billion per year in 1994 dollars)[2] by at least an order of magnitude, possibly much more. Displacing the costs of climate change due to the activities of this generation's wealthy and powerful elites and societies onto future poor and vulnerable populations on Earth will be by far the biggest rip-off in history; all that remains is to see just how big.

In short, adaptation is now the main game, not mitigation. Moreover, far from being the enemy of mitigation, it is at least conceivable that the constituencies mobilized by climate impacts may finally muster the political will to achieve the requisite levels of mitigation that has been missing to date. That is, adaptation will be the friend, not the enemy of mitigation.

3. Global Frameworks

In most treatments of climate change politics and economics, the key protagonists are states and corporations, and the key institutions are treaties and markets; sometimes scientists and social movements are recognized as playing epistemic or bridging roles to overcome yawning institutional or market failures; but they are usually viewed as being epiphenomenal.

Without going into detail (other speakers at this event will do so), the emerging global framework for building adaptive capacity is, to put it mildly, weak and inadequate.[3] If mitigation related incremental funding is running at about 1 percent of a justified level based on capacity-to-pay and historic-responsibility-to-pay, incremental adaptation funding will likely run at perhaps 0.1 percent (less money, far greater incremental needs for adaptation than in mitigation) of a justified level. Yes, GEF, UNDP, and the many multilateral and bilateral adaptation projects in developing countries are exploring the

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[2] As calculated at that time in the "obligation to pay index" in P. Hayes and K. Smith, editor, *Global Greenhouse Regime: Who Pays?,* UN University Press/Earthscan Press, Tokyo and London, 1993, available at: http://www.unu.edu/unupress/unupbooks/80836e/80836E00.htm

[3] See P. Hayes, "Multiple jeopardies: emerging global rules for climate change adaptation," Austral Policy Forum 06-19A 9 June 2006, at: http://www.nautilus.org/~rmit/forum-reports/0619a-hayes.html and at: China-U.S. Climate Change Forum: What's at Risk?...at http://youtube.com/watch?v=u5j87MteMXk&feature=related

new adaptation terrain. As they do so, they are revisiting old lessons from decades of misplaced, abused, and failed development assistance and discovering new challenges and potential routes to reducing social vulnerability and to increasing social resilience. This is all excellent, exciting, and worth investment and support.

But state-based international assistance is almost certainly far too little arriving way too late to rely on as a route to successful adaptation in most of the world. Given the level of enduring and increasing global poverty, the ability of markets to create adaptive capacities in most rural areas and slums is highly constrained and like states, unlikely to create or deliver the capacities needed for either mitigation or adaptation and without which, massive and potentially catastrophic climate change cannot be avoided.

I am driven, therefore, to search for radical new solutions based on linked communities at a global level. If states and markets fail as badly as seems likely, then legitimate leadership that responds to the global climate adaptation challenge will emerge primarily at the sub-national state, city, and local community levels, supplemented by global civil society (roughly 25,000 intergovernmental and non-governmental international organizations).

Fortunately, this set of diverse global-local players is already inclined to communicate, coordinate, and collaborate in the search for shared solutions via trans-governmental processes, inter-city linkages, and vibrant diasporic and "glocal" networks between local communities of all kinds. The cost of long distance communication and coordination is falling rapidly; the number of pro-active players at this level is increasing exponentially. Already, 200 major cities, perhaps 20,000 medium and small cities and towns, and perhaps 200,000 local communities are wired and active in one active in attempting to solve one or more of the dozens of interrelated global problems and solutions, many of which are linked directly or indirectly with climate change, as well as tackling climate change adaptation directly.

At this local level, cooperative outcomes are sought out of necessity and are based on the identification of joint interest and cooperative benefits realized directly by communication and coordination. Such joint interests or organic reasons to cooperate include: direct ecological interdependence (downwind); trade; shared cultural heritage; historical origins (metropole-colonial cities); common climate circumstances; shared threats (terrorism); etc. This process will be facilitated (and blocked as well) by some of the innovative inter-state and market-based approaches discussed at this event, many of which provide clues about the future that are fresh and provocative. My argument s that none of these are likely to be as powerful as the combination of

necessity and solidarity that will drive city and community-level cooperation and collaborative problem-solving and orchestrated by transnational networks.

Nobody knows how escalating levels of connectedness (as I write, 7,507,225 Skypies are on-line!) will enable cities and communities to create and share new tools and explore new strategies to adapt to climate change. Part of the challenge is to make the stocks of existing knowledge and research capacity available to knowledge users in response to rapidly emerging climate "issue clusters" that cross bureaucratic-disciplinary-sector boundaries in unexpected and unconventional ways. Another is to explore the true complexity of the interrelated problems that drive climate change and block mitigation and adaptation, using new research methods such as agent-based rather than system-based modeling.[4]

In this view, the most urgent task is not to focus on inter-state negotiations, important as these may be. Rather, it is to establish principles and practices of direct cooperation between cities and local communities of all kinds;[5] to identify practical and testable tools and practices that can be developed in one locale, and shared and replicated with dozens or hundreds of others on a tailored-to-need basis;[6] and to establish mechanisms for transmission and sharing of these tools and practices that work.[7] The right metaphor for this process is not institutional architecture, but think-nets, small worlds-network theory, immunological "swarming" behavior, and other learning strategies that rely on viral replication for scale and success.

Fortunately, there are many, many examples to choose from in this early learning phase of bottom-up, "emergent" adaptation. Most of you know about the

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[4] See P. Hayes, "Agent-Based Modelling and Climate Change Adaptation," Global Cities Institute Climate Change Adaptation Program, RMIT University, February 8, 2008, at: http://gc.nautilus.org/gci/agent-based-modelling/RMIT%20overview%20rev%20Jan31-08.pdf/view; an early application, A. Patt and B. Siebenhuner, "Agent Based Modeling and Adaptation to Climate Change," *Vierteljahrshefte zur Wirtschaftsforschung* (*Quarterly Journal of Economic Research*) 74(2): 310 – 320 at: www.vulnerabilitynet.org/OPMS/getfile.php?bn=seiproject_hotel&key=1140130223&att_id=953; S. Moss et al, "Agent-based integrated assessment modeling: the example of climate change," *Integrated Assessment*, 2: 17-30, 2001; and for an overview of the field, "Adaptive Agents, Intelligence, and Emergent Human Organization: Capturing Complexity through Agent-Based Modeling," *Proceedings of the National Academy of the Sciences* (US), May 14, 2002; 99 (Suppl. 3) , at http://www.pnas.org/content/vol99/suppl_3/

[5] See the five climate principles adopted by the SF Business Council on Climate Change at: http://www.bc3.cc/

[6] See Power Tools for policy influence in natural resource management, at http://www.policy-powertools.org/

[7] See Climate Change Adaptation at the Global Collaborative, at http://gc.nautilus.org/

International Council of Local Environmental Initiatives or the Clinton Foundation's C40 Large Cities Climate Leadership Group and Climate Initiative. I am personally most involved at this level in bilateral projects related to Ho Chi Minh City, Melbourne, Jakarta, Beijing, Seoul, and Pyongyang. But San Francisco-Bay Area is a global dynamo in this dimension and almost everyone is involved in this dynamic in one way or another. Indeed, if it can escape its programs being stove-piped, Google Foundation may be the single most powerful and creative force on the planet, particularly if it can align with partners such as the Aga Kahn Foundation.

4. Conclusion

That these social capacities will collide with state and market-based frameworks in critical respects is more or less inevitable. Whether they will also be nurtured and provide critically needed support and extension of these frameworks is less obvious although one should always be optimistic! Overall, my guess is that over the next generation, cities and corporations will merge, and vibrant city-states will become more powerful relative to nation-states. The membership of the UN may increase by tenfold or more as a result by 2050 at which point the climate change die will be mostly cast for the coming millennia. This shift in power ratios, the rise of many sources of innovation and interconnection, and above all, high levels of work-related migration, will transform the global landscape. Of particular importance is not what happens in the United States or Europe, but in China and India, because these two societies and economies represent the most salient development models for most communities on the planet; and (again, a guess) in Indonesia, because its 40 million Muslims may generate an Islamic renaissance that represents a new source of global leadership for Muslims trapped in dead-end petrodollar states.

Whether cities and local communities will prove up to the task of picking up the pieces dropped by states and markets is unknowable at this stage. What is virtually certain is that this is where the main action will take place. As John Holdren has long argued, we *will* adapt: the only question is the ratio between the types of adaptation—mitigation, pro-active and anticipatory adaptation, or just plain suffering.[8]

Faced with this reality, we can only pray for insight while acting to facilitate this bottom-up mobilization in every way we know how.

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[8] J. Holdren, "Science and Technology for Sustainable Well-Being," *Science*, 5862, 319, *January 25, 2008, pp. 425-34, at: http://www.sciencemag.org/cgi/reprint/319/5862/424.pdf*

Questions for moderator

1. OK, you wax lyrical about the potential of "global" community-community or inter-city initiatives to increase resilience or to build adaptive capacity. Give us some examples!
2. What are some metrics to measure the relative contribution of states, markets, and your transnational or "glocal" networked communities to building adaptive capacity?
3. How will rising social capacities working across borders collide with state and market-based frameworks?
4. What does increasing resilience mean? And what do you mean by "emergent behavior" when you refer to local communities cooperating with each other to enable the poor and vulnerable to adapt?
5. Isn't it dangerous to counsel ignoring or putting inter-state negotiations or frameworks on a back burner in terms of where to invest effort and time today?