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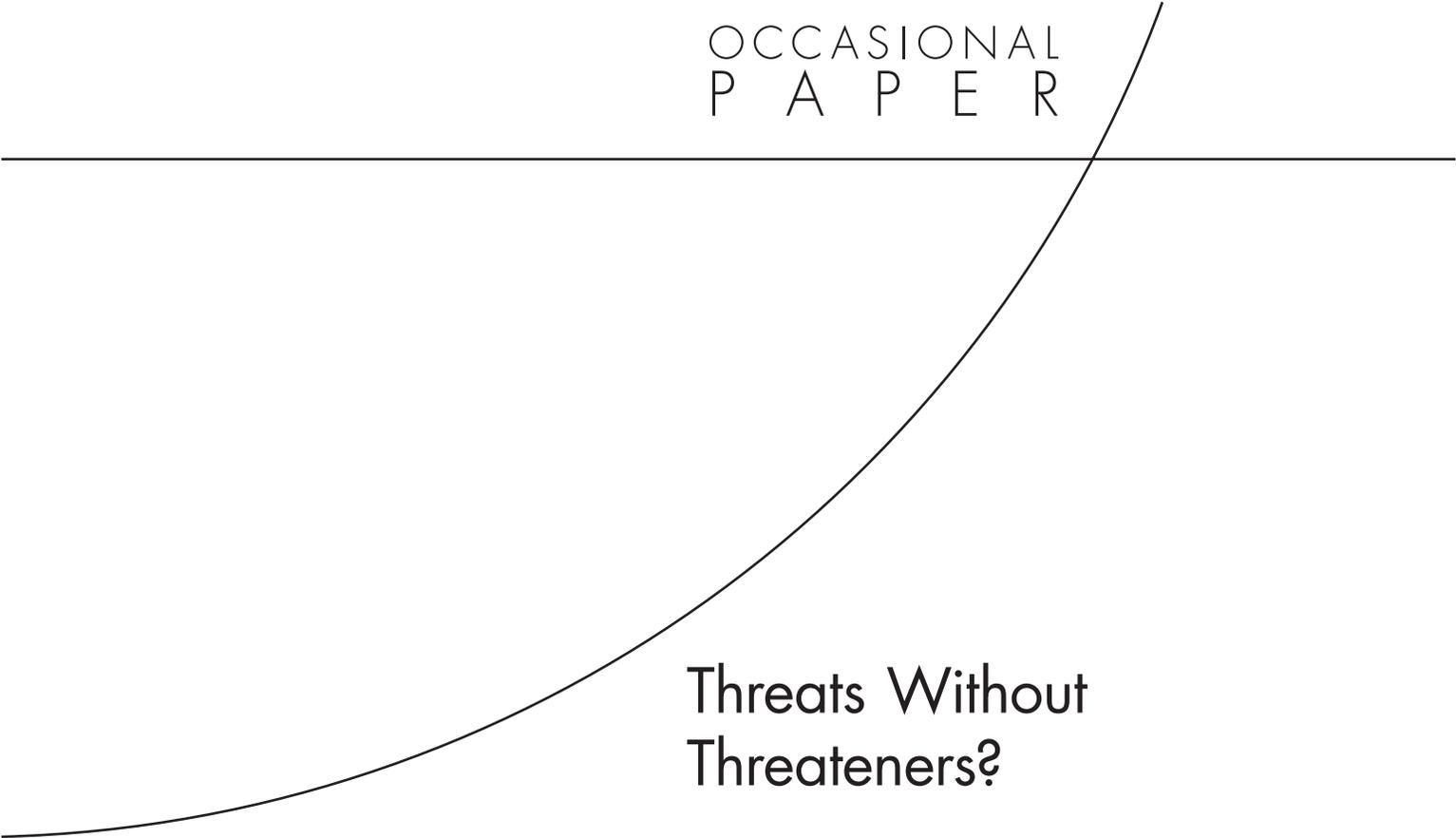
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P A P E R



Threats Without Threateners?

Exploring Intersections of
Threats to the Global Commons
and National Security

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Prepared for the Skoll Global Threats Fund



NATIONAL SECURITY RESEARCH DIVISION

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Summary

Could three global issues—climate change, water scarcity, and pandemics—be posed as national security challenges with interconnected threats to the global “commons”?¹ And, if so, could this perspective help trigger new approaches for addressing them? For the United States, impacts on national security are important but mostly indirect, resulting from the ripple effects of direct impacts on other countries and regions, especially poor ones. This paper explores the interconnections of these issues and discusses a range of policy ideas: not to recommend them as “solutions,” but to stimulate an alternative way of thinking about policy—one that might be characterized as indirect, not direct; bottom-up, not top down; and opening new possibilities, not “fixing” the problem.

Parsing the Issues

The three issues are, in different degrees, globalized in that they respect no national borders. They are social in the sense that individuals, acting in their own interest, generate negative effects on the commons. This is true whether people release carbon into the atmosphere, use water, or simply enjoy the benefits of rapid travel by air. In that sense, if they can be regarded as global threats, they are “threats without threateners.”

The risks of all three are hard to assess, and thus building coalitions for action is difficult. Climate change, especially, is chronic, not acute, so inaction today carries little immediate cost.² Water scarcity is similar, and while a future pandemic may be virtually certain, its timing and severity are not. Policies to address the three require current investments for future and, in some cases, uncertain gains. In that sense, to the extent that they are commons problems, all three are beset by “free-riding.” Free-riding is most visible in regard to climate change because all nations would like to reduce global carbon emissions, but many would prefer that other nations actually undertake the reductions.

¹ “Commons” derives from the old English commons—that is, grazing land jointly owned by a village and thus a public good. Absent some regulation or division into private patches, each villager had an incentive to graze one more animal, then another, and so on. Since the incentives were the same for all villagers, the result was overgrazing of the commons. The term has been extended to a wide range of public policy problems in which the self-interested decisions of individuals, made separately, combine to damage interests they hold in common—producing what are sometimes called public “bads.” Here, the commons is used as a metaphor for that category of policy problems. The classic article is “The Tragedy of the Commons” by Garrett Hardin (1968).

² To the extent that extreme weather events predicted by the climate-change models—heat waves, floods, droughts—are plausibly connected to global warming, those acute episodes will diminish the chronic (i.e., future worry) perception of climate change.

The connection between climate change (or global warming) and safe water is plain to see. Climate change increases the risk of both regional water scarcity and flooding, which reduces safe water supplies. Limited supplies of safe water in turn increase vulnerability to purposeful contamination and might facilitate natural spread of diseases. Cholera, for instance, is linked to unsafe water.³ Migration is a key connection among the three. Again, that connection is most clear regarding water scarcity, where migration driven by the search for water already has been a source of conflict when areas to which the water-hungry migrate are unprepared or unwilling to accept them. Climate change will touch off migration both as water becomes locally scarce, as sea levels rise, or as the climate becomes uninhabitable due to extreme heat or cold.

Disease, too, might set off movements of people, and such movements, however caused, might also touch off disease, exporting diseases to places that did not previously have them—a version of the fate that befell the native populations in the Americas when European colonizers arrived.

Yet the differences among the three issues are also critical in conceiving policy. Climate change was immediately recognized as an issue of the global commons, while pandemics have only recently come to be thought of in that way—despite the devastating experience of 1918. Pandemics, as well as water scarcity, contrast with climate change in that they could result either from Mother Nature or from a malevolent foe. All three can be viewed as global, but effects will be felt and policies framed nationally and regionally, especially for water. The three also differ in how susceptible they are to unilateral actions, especially by the United States. Purely national measures offer the most benefits in dealing with pandemics; less so for the other two.

Conceiving Alternative Policy Approaches

Looking at specific cases that illustrate current principal policy approaches to the three issues provides a starting point for assessing the need for alternatives. For pandemics, international cooperation has been increasing; in two recent major disease outbreaks—severe acute respiratory syndrome (SARS) and H1N1 influenza—the world has had the good luck to “practice” cooperation on viruses that were neither very contagious nor very lethal. To deal with the security consequences of conflict driven at least in part by water scarcity, two principal international instruments have been used: negotiations among river basin countries and ad hoc responses by coalitions of the willing. For climate change, the foremost international instrument—broad, formal negotiations in the Kyoto Protocol under the U.N. Framework Convention on Climate Change (UNFCCC)—has not worked. The main reason is that the arguments made by poorer countries for free-riding (“You rich countries got rich by emitting carbon and now you’re trying to deny us that path”) give license to other countries, like the United States, to opt out as well. Although not intended to be a rigorous assessment of policy success or failure, this paper’s review of current approaches raises enough questions to suggest the value of considering alternatives.

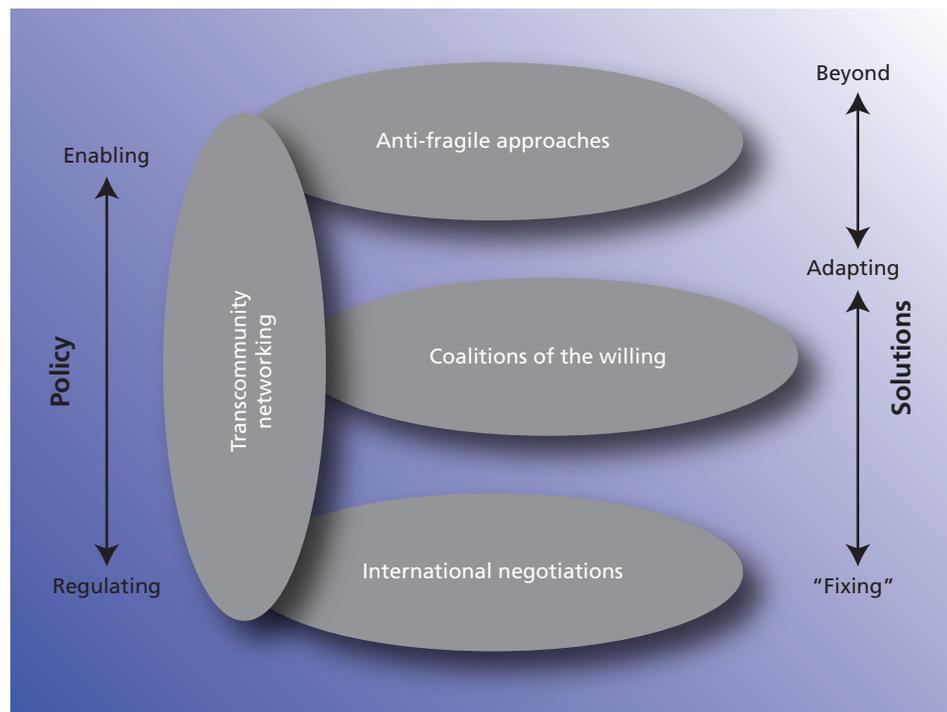
³ For links between cholera outbreaks and scarcity of safe water, see, Dasgupta (2010) and Holmner and others 2010, and for modeling of the spread of plague according to different scenarios of climate change, see Holt and others (2009).

In conceiving such alternatives, policy approaches to the three issues can be thought of in four overlapping clusters, roughly along continuums from centralized to decentralized; from government dominated to private-sector driven; from regulating to enabling; and from “fixing” to adapting. Figure S.1 depicts the four across the spectrums of approaches to policy and solutions.

The first two, international negotiations and coalitions of the willing, are familiar, and so is the third—transcommunity networking—though it has been dramatically enhanced by new information technology and experience. The fourth cluster—anti-fragile approaches—requires more explanation.

1. **International Negotiations.** Kyoto failed to reduce global carbon emissions mostly because the free-rider problem was insoluble. However, formal negotiations require nations to say “yes” or “no.” Forced to do so, China had to say no. Yet the real Chinese answer is not “no,” rather “yes, but in our own way” (National Development Reform Commission, 2009). China knows that its current consumption of fossil fuel, especially coal, will bring short-term riches only at the price of long-run ruin of its own environment. That recognition is demonstrated by China’s aggressive alternative energy programs even as it continues to build new coal plants.
2. **Coalitions of the Willing.** In effect, Kyoto drifted to a coalition of the willing. A fairly effective coalition of the willing was demonstrated in the international cooperation that

Figure S.1
Four Clusters of Approaches to Policy and Solutions



dealt with the SARS outbreak; the World Health Organization (WHO) and national health authorities provided some infrastructure and the coalition worked well because national interests were aligned, in general, with shared international ones.

3. **Trans-community networking.** This cluster might be better regarded as a facilitator for the other three more than as an approach in its own right. Web-based social networking provides a virtual platform in which best practices can be shared and transnational coalitions of the willing can form. This approach is particularly applicable for all three threats because they all involve deeply uncertain events and affect multiple tiers within society. For example, information sharing must be a key component of any discussion of global preparedness for pandemics.
4. **Anti-fragile approaches.** For Nassim Taleb, statistician and author of *The Black Swan*, language that uses “robust” or “unbreakable” to describe the opposite of “fragile” is wrong. Rather, objects that are the opposite of fragile would be ones that *benefit* from shocks that would destroy fragile things—thus “anti-fragile.” When antibiotics do not kill bacteria colonies, for instance, they make them stronger as resistant strains survive and multiply. Just as nothing is perfectly fragile, nothing is perfectly anti-fragile; the antibiotics could still kill the bacteria. Being open to anti-fragile logic serves as an antidote to what seems a deeply rooted human tendency to want to “fix” a problem (even one as big as climate change) much as we “fix” a broken plate—returning it as close to its previous state as possible. Kyoto sought to “fix” climate change by stabilizing greenhouse gas (GHG) emissions. It failed in that purpose—emissions increased by a quarter in the first eight years after its signing—largely because its logic fell prey to the free rider problem.

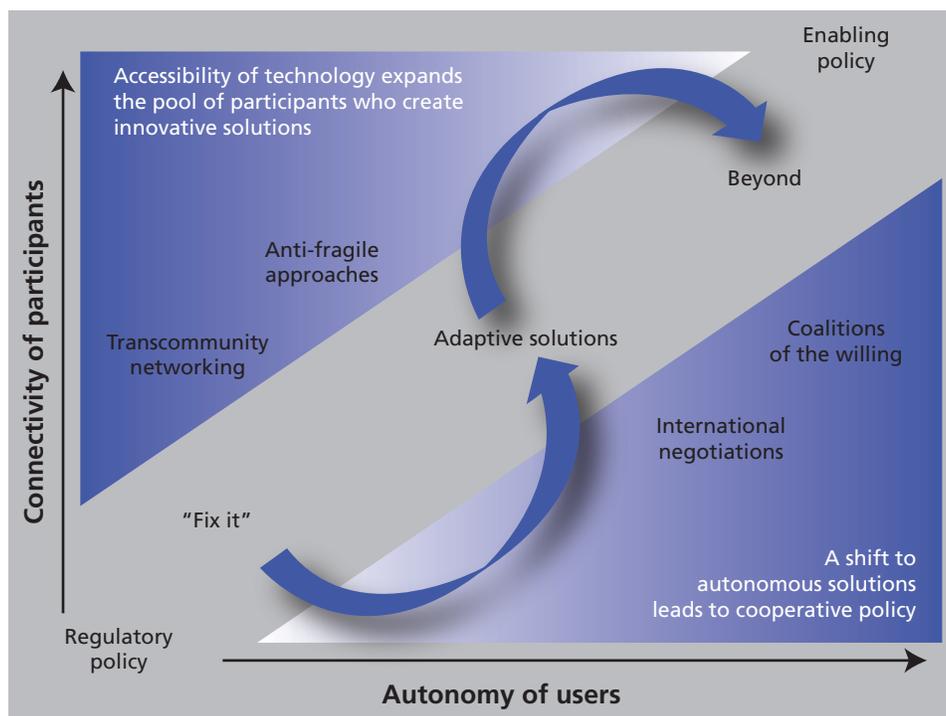
From “Fixing” to Adapting and Beyond

Anti-fragile systems do not just cope with challenges or mistakes; they learn from them. From the perspective of problems of the commons, an anti-fragile approach would be “adapting-plus”: it would search for alternatives that could attract new participants, scale to accommodate those new participants, and then perform as well or better than the legacy system. The approach would create a positive feedback loop, one continually improving the system as time passed and the legacy system suffered more disruptions.

Figure S.1 introduced three of the clusters as relatively discrete and suggested a linear progression from regulating to enabling and from “fixing” a problem to adapting to the consequences of a threat. As depicted in Figure S.2, policy approaches are more likely to evolve through an interplay of familiar and more novel approaches. The axes represent increasing autonomy of solutions and an increasing connectivity among participants who implement them. Somewhat counterintuitively, the combination of autonomy and connectivity can foster an evolution from policy that imposes regulations to policy that enables innovative solutions.

For water scarcity, an idea as simple as collecting rainwater meets some anti-fragility criteria. It can scale because individuals can opt in at any time without more infrastructure or placing demands on the system (i.e., my decision to start collecting rainwater does not infringe on your ability to do so). Up to a point, the scheme is encouraged by shortages in water supply

Figure S.2
Evolution of Four Approaches to Policy



RAND OP360-S.2

systems. Disruption may also inspire the development of innovative, sustainable technologies such as collecting water from fog in arid regions.⁴

For pandemics, detection represents an aspect of anti-fragility. Techniques that enable detection despite political concerns and social stigma contribute to an anti-fragile approach. For example, smart phones and social networking provide a medium through which health care professionals could spontaneously serve as collectors of intelligence on the spread of a disease.

Regarding climate change, potential policy steps beyond Kyoto-as-a-coalition-of-the-willing include adapting—for instance, building dikes or changing to water-frugal crops—or geoengineering to reduce either atmospheric carbon or solar radiation. However, neither approach is anti-fragile, and only adapting broaches the premise that the previous status quo is beyond recovery. By contrast, four other ideas with anti-fragile characteristics suggest an alternative, indirect view of policy. All could have the side effect of reducing carbon emissions. They do not provide a “Solution” with a capital “S” to the challenge, primarily for reasons of ability to scale, but are meant to be illustrative.

⁴ A technology that mimics the mechanism of the Namib beetle for collecting moisture from fog may help with water collection in mountainous regions and deserts distant from water sources (see “Water Good Idea,” 2011).

- **Local fabrication using three-dimensional printing.** Three separate strains of customized production methods—rapid prototyping machines, numerical control systems, and personal three-dimensional printers—offer the promise of manufacturing done locally, on demand. Local fabrication of a range of items could attract new participants, enabling them not only to survive shocks to the legacy production system but actually get stronger by selling their neighbors products made locally. It is hard to be categorical about the net effect on carbon emissions, for that depends on factors such as the energy required to transport raw materials and the emissions of local production in comparison to traditional manufacturing, but the best estimates thus far are positive.
- **Local smart grids and local power production.** Individual households would generate some of their own power through rooftop solar panels or micro wind turbines. They would then share unused power over a neighborhood smart grid that could operate autonomously during national grid disruptions or as part of the national grid on a day-to-day basis. Participants in this local electrical power generation platform would be positioned to survive during shocks to the fragile legacy system.
- **“Passive house” design standards.** This focuses on maximizing efficiency of a system as a whole, instead of suboptimizing components of the system. The American environmental scientist and writer Amory Lovins has pointed out that the logic that energy efficiency improvements have decreasing marginal returns fails to hold if houses can be insulated so well that they no longer need a central heating or cooling source by using what are called “passive house” design standards. The long-term cost savings from neither having a furnace nor needing fuel might dwarf the upfront costs of super-efficient insulation and windows.
- **Resilient communities.** Each of the previous ideas is suggestive, but putting them together not only might produce reductions in GHG emissions but also improve resilience to natural disasters, terrorist attacks, and financial crises. For example, local fabrication would mean that some replacement parts for a wind turbine could be locally produced in an emergency. Communities composed of radically efficient homes built or renovated using passive house design principles would require significantly less energy than legacy homes, reducing the amount of local power required to meet these needs, freeing power to be used for public services, or for sale outside the community.

Notice that this alternative approach to policy is worth considering whether or not the issues are regarded as ones of national security. What the national security dimension adds to these three issues is a sense of urgency to thinking of new ways to address them. While “national security” usually implies top-down action, for alternative approaches the government becomes the enabler, not the enactor. Its role becomes one of adjusting regulations that stand in the way of alternatives, and tempering the force of lobbies wedded to legacy approaches.