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Political Geography: Special Issue on Climate Change and Conflict (Review)

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Political Geography: Special Issue on Climate Change and Conflict

Edited by Ragnhild Nordås and Nils Petter Gleditsch
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Reviewed by ELIZABETH L. CHALECKI

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Given that the Nobel Committee awarded its 2007 Peace Prize to former U.S. Vice President Al Gore and the Intergovernmental Panel on Climate Change (IPCC), and that greenhouse gas emissions continue to increase around the globe, practitioners of peace and security will have to familiarize themselves with climatic drivers of conflict. To that end, the journal *Political Geography* has devoted an entire issue to exploring the links between climate change and violent conflict.

In the issue's opening article, "Climate Change and Conflict," Ragnhild Nordås and Nils Petter Gleditsch lament the lack of first-hand, peer-reviewed research on climate and conflict, noting that "statements about security implications have so far largely been based on speculation and questionable sources" (p. 628). They cite some of the recent documents addressing this linkage, including the paper for the Department of Defense's Office of Net Assessment (Schwartz & Randall, 2003), the Center for Naval Analysis' 2007 report written by retired military officers, two German reports (German Ministry of Environment, 2002; WGBU, 2007), and the recent UN Security Council debate (UN, 2007), among others. Nordås and Gleditsch are correct: Much of this literature has not been peer-reviewed, nor was it intended to be. The links between climate change and security are just emerging as fertile ground for both security practitioners and social scientists. Now, however, with world policy attention focused on climate, they rightly point out that these connections cannot be left to tenuous connections in white papers.

Nordås and Gleditsch recommend that future studies of the climate-conflict link should better combine climate models and conflict models, and point out an inconvenient truth about the IPCC reports: They only peripherally address the implications of climate change for security and conflict. Nordås and Gleditsch also maintain that further research on climate and conflict should:

- Differentiate between types of violence driven by climate change, including non-state violence;
- Recognize the capacity of humans to adapt to the positive and negative effects of climate change;
- Take regional variations into account; and
- Focus more on climate change's security implications for the world's poor.

After these common-sense recommendations, Nordås and Gleditsch veer off course with their assumption that the world is becoming more peaceful and that the climate-conflict connection is "self-denying" (p. 635). They point out that conflict models assume that the future will look like the past, and they also note that the "current trend toward a more peaceful world" (a trend measured only since the end of World War II) will not be reversed. However, the climate models, which have been

extensively developed and reviewed, predict the exact opposite: The future will not look like the past. If, as the authors recommend, climate and conflict models should be more tightly coupled, then the climate models must lead the way.

The second article, "Climate Change, Human Security, and Violent Conflict," by Jon Barnett and W. Neil Adger, states that climate change poses risks to human security because "the more people are dependent on climate-sensitive forms of natural capital…the more at risk they are from climate change" (p. 641). However, this sensitivity is mitigated by social and political adaptive capacity, which varies by region and era. In one of their most interesting observations, the authors point out that climate change-driven stresses can have a cascading effect, with failure in one primary production sector causing a downstream industry to slow down, thus leading to a market failure, etc. While intervening variables are rightly identified, this cascade theory is still particularly noteworthy because the independent variable of climate change is the primary driver.

Barnett and Adger's main finding is that climate change will undermine human security in two key ways: by reducing the opportunities people have to provide for themselves and thus constricting their livelihoods; and by eroding state capacity to provide the services that sustain livelihoods and therefore peace. They recommend three paths for future research, which I believe would all help conceptually strengthen the climate-conflict link:

- Assess the relative vulnerability of people's livelihoods to climate change (by region);
- Connect reduced livelihoods with violent conflict (e.g., why do individuals choose violence?); and
- Examine how climate threatens state capacity.

Rafael Reuveny, in "Climate Change-Induced Migration and Violent Conflict," notes that climate-induced migration appears in many climate change-to-violence scenarios. After studying the effects of other environmental problems on migration, he adapts the standard migration literature to the problem of environmental refugees, and argues that populations can respond to environmental changes in one of three ways: by staying and doing nothing; by staying and mitigating the effects; or by leaving the area.

Reuveny examines 38 cases in which environmental factors played a role in migration, from the Dust Bowl in the 1930s United States to modern-day Bangladesh and Brazil. Since less developed countries are more reliant on the natural environment for their livelihoods, they are more vulnerable to the effects of climate change. Environmental factors that "push" people to migrate include degradation of arable land, droughts, deforestation, water scarcity, floods, storms, and famines, all of which are predicted to intensify as the climate changes. Reuveny recognizes that environmental factors do not work in isolation, but argues that they nevertheless contribute significantly to migration episodes. However, "climate refugees" alone do not engender conflict; instead, conflict arises when migrants of a different nationality or ethnicity move quickly or in large numbers into countries that are themselves suffering from limited resources. Of the 38 migration cases Reuveny studied, 19 resulted in conflict.

Reuveny concludes that it will cost more in the long term to do nothing about climate change-induced migration than it would to formulate a policy for addressing the issue. Citing two examples of public policy interventions in major migrations, he concludes that government policy could help mitigate the effects of climate change on conflict. However, he has no specific policy recommendations for developed countries, and warns of high costs without any citations to back up his claims. Despite petering out at the end, Reuveny's article is one of the more straightforward examinations of the links between climate and conflict in the volume.

In "Climate Change, Environmental Degradation, and Armed Conflict," Clionadh Raleigh and Henrik Urdal report on their statistical analysis of three climate change effects:

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cropland degradation, freshwater scarcity, and population displacement. They mapped data on these variables over grid squares of 100 km x 100 km across the Earth's surface, and then overlaid intervening variables, including economic and political factors like GDP and polity scores. Raleigh and Urdal stress that more information can be gained by looking at sub-national regions than from national averages, since not all of a country's territory is usually under conflict at once, nor do environmental stressors fall neatly within national boundaries. Hence, local resource scarcity may be a better predictor of conflict than national-level scarcity. Most of their findings underscore the conventional wisdom that environmental stressors are indirect drivers of conflict, but they do find, surprisingly, that "degradation and scarcity variables are uniformly positively and significantly related to conflict" in higher-income countries and less so in lower-income states (pp. 688, 691).

The co-authors recognize that their analysis suffers from one of the key weaknesses of statistically-based conjectures about real world events: The statistical mean often hides substantial regional or temporal variations. Conversely, the exclusion of information about one country or region can make an otherwise significant result statistically insignificant. For example, Raleigh and Urdal determine that omitting data about Russia from one model negates the connection between land degradation, water scarcity, and conflict. Similarly, omitting data about Niger from another model renders the interaction between water scarcity and population growth insignificant. Yet it is not difficult to imagine that, on a very local scale, these drivers would be compelling. Just because a large-N study does not find a statistically significant relationship between two variables across an entire sample does not mean that the relationship might prove different if examined on a case-by-case basis.

The last two articles in the issue focus on Africa. In "Trends and Triggers: Climate, Climate Change, and Civil Conflict in Sub-Saharan Africa," Cullen Hendrix and Sarah Glaser argue that sub-Saharan Africa is especially vulnerable to the conflict-provoking effects of climate change, due to existing inequalities in resource access and distribution. However, Hendrix and Glaser find no significant correlation between rainfall and the onset of civil war, though they do recognize that the country-wide spatial scales they used could mask local hotspots.

In "Environmental Influences on Pastoral Conflict in the Horn of Africa," Patrick Meier, Doug Bond, and Joe Bond cross-reference conflict data gathered from on-the-ground observers in parts of Ethiopia, Kenya, and Uganda with environmental indicators such as vegetation, precipitation, and forage (pasture for grazing) in an attempt to determine whether the latter might serve as possible harbingers of pastoral conflict. They find that environmental drivers are significantly correlated with the incidence of organized pastoral raids, but not with the number of human deaths or the amount of livestock lost.

All these articles conclude that conflict is a complex dependent variable, and that environmental measures of climate change do not provide sufficient explanatory power without taking into account intervening political and economic variables. In addition, most authors lament the incompleteness of the available data sets, which is only to be expected; many countries do not have the inclination or the wherewithal to gather and compile sub-national data sets on environmental variables, and international agencies usually gather data only at the national level.

I have two main concerns with this issue. First, the authors overuse the principle of *ceterus paribus*—all other things being equal. But when are all other things *ever* equal? Such a relationship is a statistical convenience and does not reflect the real world. Attaching too much weight to the existence of a statistical relationship can shut down profitable avenues of inquiry into particular problems, especially if they do not occur on a macro level. If statistical correlation is what Nordås and Gleditsch mean when

they look for "more rigorous analysis," then they could miss the forest for the trees.

Second, these articles generally appear to conflate the ideas of *conflict* and *security*, assuming that if a region or nation is free from conflict, then by definition it must be secure. This assumption is faulty, as a nation does not have to engage in conflict in order to be insecure. The recent and startling data on Arctic ice melt provides a sterling example of an emerging area of insecurity for many circumpolar nations that has not (yet) devolved into conflict, whereas the pastoral conflict that Meier, Bond, and Bond examine does not rise to the level of a national security threat (though they do not claim that it does).

What the scholarly literature on climate and conflict needs now is not more theory or more attempts at statistical correlation, but opportunities to test out the existing theories on a subnational scale. This issue of *Political Geography* has opened the door to an upcoming and important field of research.

References

Center for Naval Analysis (CNA). (2007). *National security and the threat of climate change.* Alexandria, VA: CNA Corporation. Available online at http://securityandclimate.cna.org

German Ministry of Environment. (2002). *Climate change and conflict: Environmental policy.* Bonn, Germany: Federal Ministry for the Environment, Nature Conservation, Nuclear Safety. Available online at www.bmu.de/files/pdfs/allgemein/application/pdf/climges.pdf

Schwartz, Peter, & Doug Randall. (2003). *An abrupt climate change scenario and its implications for United States National Security.* Washington, DC: Environmental Media Services. Available online at www.ems.org/climate/pentagon_climate_change.html#report

United Nations. (2007). *Security Council holds first-ever debate on impact of climate change, 5663rd meeting.* New York: United Nations, Department of Public Information.

WBGU. (2007). Welt im Wandel e Sicherheitsrisiko Klimawandel [World in transition and climate change as a security risk]. Berlin, Germany: German Advisory Council on Global Change. Available online at http://www.wbgu.de/wbgu_jg2007_engl.pdf

Population, Land Use, and Environment: Research Directions

Edited by Barbara Entwistle and Paul C. Stern
Washington, DC: The National Academies Press, 2005. 321 pages.

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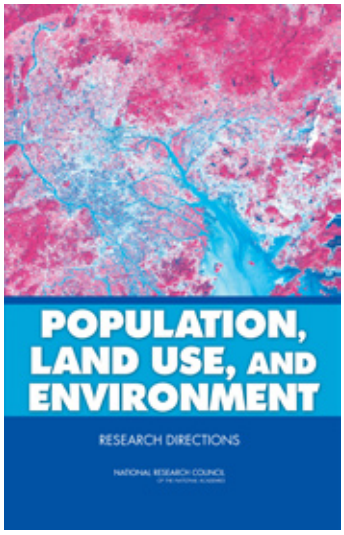

As seen from space, land cover change is far and away the signature imprint of human habitation on the surface of the Earth. What is driving changes in land use and the environment? What is the role of population? In addressing these questions, *Population, Land Use, and Environment* presents the goals and research directions of the National Research Council's (NRC) Panel on New Research on Population and the Environment along with state-of-the-art case studies. The three sections of this volume, edited by Barbara Entwistle and Paul C. Stern, focus on land use or land cover change where population is a prominent driving force.

David Carr of the University of California, Santa Barbara, has served as principal investigator on grants from NASA, the National Institutes of Health, and the National Science Foundation, and has authored more than 50 publications on land use/cover change, protected areas, migration, fertility, and health in the tropics.