

# Correspondence

Environment and Security

Thomas F. Homer-Dixon

Marc A. Levy

*To the Editors:*

Professor Marc Levy of Princeton University has lately published several critiques of recent scholarship on environmental security, including one in *International Security*.<sup>1</sup> He gives particular attention to the results of a major research project on “Environmental Change and Acute Conflict” sponsored by the Peace and Conflict Studies Program at the University of Toronto and the American Academy of Arts and Sciences. As the lead researcher for this project and its successors, and as the sole or lead author of several articles that Levy cites,<sup>2</sup> I respond to his comments here.

I largely agree with Levy’s contention that many commentators use “security” as a rhetorical device: by talking about the impact of environmental problems on “security,” they make these problems seem like big issues in a highly competitive market for public and policy-maker attention. In my writings, I have generally avoided using the word “security,”<sup>3</sup> and instead focused on the links between environmental stress and violence. Violence is easier to define, identify, and measure; this focus helps bound our research effort.

I also agree with Levy that ozone depletion and climate change could endanger core American values and are therefore direct threats to U.S. security interests.<sup>4</sup> Unfortunately, though, Levy does not adequately acknowledge that these are unlikely to be near-term threats to the United States, whereas many regional environmental problems — including land scarcity,

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1. Marc Levy, “Time for a Third Wave of Environment and Security Scholarship?” *Environmental Change and Security Project: Report*, Issue 1 (Spring 1995), Woodrow Wilson Center, pp. 44–46; and Marc A. Levy, “Is the Environment a National Security Issue?” *International Security*, Vol. 20, No. 2 (Fall 1995), pp. 36–62.

2. Thomas F. Homer-Dixon, “On the Threshold: Environmental Changes As Causes of Acute Conflict,” *International Security*, Vol. 16, No. 2 (Fall 1991), pp. 76–116; Homer-Dixon, Jeffrey Boutwell, and George Rathjens, “Environmental Change and Violent Conflict,” *Scientific American*, Vol. 268, No. 2 (February 1993), pp. 38–45; Homer-Dixon, “Environmental Scarcities and Violent Conflict: Evidence from Cases,” *International Security*, Vol. 19, No. 1 (Fall 1994), pp. 5–40.

3. Two exceptions are Thomas Homer-Dixon, “Environmental and Demographic Threats to Canadian Security,” *Canadian Foreign Policy*, Vol. 2, No. 2 (Fall 1994), pp. 7–40; and Jeffrey Boutwell and Thomas Homer-Dixon, “Environmental Change, Global Security, and U.S. Policy,” in Charles Hermann, ed., *American Defense Annual*, 1994, 9th ed. (New York: Mershon Center, Lexington Books, 1994), pp. 207–224.

4. Levy, “Is the Environment a National Security Issue?” pp. 46–47.

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*International Security*, Vol. 20, No. 3 (Winter 1995/96), pp. 189–198.

fuelwood scarcity, and depletion of water supplies and fish stocks — are today affecting the core values of hundreds of millions of people in the developing world.

Levy's exclusive focus on U.S. security interests is parochial. In the Acute Conflict project and its successors, we recognize that such a focus would produce an impoverished research program. Moreover, Levy's agenda would be unacceptable to the many experts in developing countries who contribute to our work. We therefore address the links between environment and violent conflict in the developing countries mainly as they affect those countries, not as they affect the United States.

There are four points where I sharply disagree with Levy.

#### CONVENTIONAL WISDOM

First, Levy claims that our research findings from the Acute Conflict Project simply repeat conventional wisdom. The project's results, he writes, "are virtually identical to the conventional wisdom that prevailed before the research was carried out."<sup>5</sup> Moreover, by aiming to refute the null hypothesis that environmental stress does not cause violence, our research project "lost the ability to say anything more than 'the environment matters,' something . . . we knew before this work was undertaken."<sup>6</sup>

Levy is wrong. Before we began our research, conventional wisdom did *not* hold that environmental stress was an important contributor to violence in developing countries. There was very little literature prior to our work that analyzed the linkages between environment and conflict. Levy cites a CIA report; and in the first few footnotes of my 1991 article "On the Threshold," I cite almost all the rest of the relevant post-World War II literature. While some of this material was very good, none was at the center of research or policy discourse on causes of conflict in developing countries. Instead, the vast bulk of past analysis focused on the geo-strategic sources of conflict in the developing world, mostly arising from the superpower rivalry and in some cases from the machinations of regional powers such as South Africa and India. If the conventional wisdom has long been that environmental problems cause conflict, where is the literature reflecting this wisdom?

In fact, our preliminary findings partly contradict those of the most prominent work of the last decades linking resource scarcity and conflict — Nazli Choucri and Robert North's *Nations in Conflict*.<sup>7</sup> Whereas Choucri and North suggest that internal resource scarcities will increase the chances of resource wars among countries, our work suggests that this is not true in the case of renewable resources (Choucri and North did not clearly distinguish between renewables and non-renewables.)

Moreover, many thoughtful people have actually disputed our findings. There have been serious attacks on our work in the press.<sup>8</sup> Early on in the project, some senior scholars were

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5. Levy, "Third Wave," p. 45.

6. Ibid. Levy refers here to the null hypothesis, which guided our initial research, that environmental scarcity does not cause violent conflict. See Homer-Dixon, "Environmental Scarcities," p. 7.

7. Nazli Choucri and Robert North, *Nations in Conflict: National Growth and International Violence* (San Francisco: Freeman, 1975).

8. For example, see Marcus Gee, "Apocalypse Deferred," *Globe and Mail*, April 9, 1994, pp. D1–D2; my reply appeared as Homer-Dixon, "Is Anarchy Coming? A Response to the Optimists," *Globe and Mail*, May 10, 1994, p. A21.

adamant that we had found little evidence of a connection between environmental stress and conflict.<sup>9</sup> Similarly, senior U.S. demographers and economists have attacked our findings by saying that “resources aren’t very important anymore” (because of the modern ability to substitute among resources), so they are unlikely to be a key source of conflict.

If there is a conventional wisdom about the links between environment and conflict, it exists largely within narrow circles of political science scholars concerned about environmental matters. To the extent that this conventional wisdom is becoming more widely held, it may actually be a function of research projects such as ours.

Levy further claims that access to resources is what people usually fight about in developing countries, that analysts therefore almost always consider the role of natural resources in regional conflict, and that most such conflict is thus analytically uninteresting.<sup>10</sup>

But there are obviously many conflicts in developing countries that do not involve renewable resources, except in perhaps the peripheral sense that the conflict is over territory that includes cropland. These are struggles over secession, ethnic survival, or control of the state. Analysts quite rightly do not mention renewable resources when they discuss these conflicts, because resources are not central factors. Moreover, in cases where resource scarcities do contribute to conflict, our research shows that it is rare for people to fight directly over resources. Violence usually arises indirectly from the economic and institutional dislocation caused by resource stress.

We argue that these conflicts are interesting because they represent early indications of worse to come. We do not claim that the types of conflict themselves are new: insurgency, ethnic clashes, and rebellion are ancient forms of violence. We do, however, claim that because environmental stress is worsening, we can expect an increase in the frequency of conflicts with an environmental component. If that is not interesting to security analysts, then what is?

In addition, Levy contends that our research has not produced useful knowledge.<sup>11</sup> Again, he is wrong. He largely ignores the findings identified in my recent article in *International Security*, which summarizes the results of our first stage of research. Here, in short form, are six:

The key independent variable in research on the social impacts of environmental stress is not environmental degradation but the scarcity of renewable resources. There are three important sources of this “environmental scarcity”: decreased supply of the resource due to depletion and degradation, increased demand due to population growth or increased per capita resource consumption, and unequal resource distribution.<sup>12</sup> Researchers and policymakers

9. For example, in August 1992, Professor Ernst Haas wrote to me that although he felt there might be important environment-conflict linkages in the future, “I continue to be a candidate for persuasion that something very telling can be demonstrated about a significant linkage in the past.”

10. “Developing country elites fight over renewable resources for the same reason that Willy Sutton robbed banks: that is where the money is.” “[Few] good studies of regional conflict neglect natural resources as central factors.” Levy, “Is the Environment a National Security Issue?” pp. 56–57 and 37.

11. “The research on environmental degradation and political conflict has failed to generate new findings. . . . [The research] offers more anecdotes, but not more understanding.” *Ibid.*, p. 56.

12. Homer-Dixon, “Environmental Scarcities,” pp. 8–9.

should focus on the general problem of environmental scarcity rather than exclusively on environmental degradation. (Levy apparently missed this point, since he refers to environmental degradation throughout his critiques of our work.)

Environmental scarcity's most pernicious social effects result from interactions among its three sources. Two interactions seem to be particularly common: resource capture and ecological marginalization.<sup>13</sup>

Institutions such as the state are vulnerable to environmental scarcities.<sup>14</sup>

The capacity of societies to adapt to environmental scarcities and population pressures can be undermined by the scarcities themselves.<sup>15</sup>

Environmental scarcities are unlikely to cause interstate "resource wars." Rather, most of the conflict that arises from environmental scarcity will be diffuse, persistent, and subnational.<sup>16</sup>

Environmental scarcities are not wholly endogenous to political, economic, and social factors within society.<sup>17</sup>

Some of these points are entirely new, while some have been made individually by other scholars. However, before our project, no one had brought them together into a single, integrated analysis, nor provided detailed supporting evidence and argument. If these six findings do not add to our understanding, then Levy is imposing such a high threshold for "new" knowledge that the work of most political scientists also fails to add to our understanding.

## INTERACTION

Levy suggests that our project has neglected to note that environmental factors interact with many non-environmental factors to cause violent conflict.<sup>18</sup> This is a misrepresentation of our work. We have been acutely attentive to non-environmental factors. We have never claimed — as he implies — that there are mechanisms producing conflict that are "purely and discretely environmental." In fact, we wrote that "it is important to note that the environment is but one variable in a series of political, economic and social factors that can bring about turmoil."<sup>19</sup> Furthermore, in both of my *International Security* articles, I devote many pages to discussing a range of key intervening and interacting factors.<sup>20</sup>

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13. *Ibid.*, pp. 10–16.

14. *Ibid.*, p. 25.

15. *Ibid.*, pp. 16–17.

16. *Ibid.*, pp. 18–20.

17. *Ibid.*, pp. 35–36.

18. "Better research" will grow out of "an understanding that environmental factors interact with a variety of other factors to spawn violent conflict." Levy, "Is the Environment a National Security Issue?" p. 58.

19. Homer-Dixon, Boutwell, and Rathjens, "Environment Change and Violent Conflict," p. 38.

20. Homer-Dixon, "On the Threshold," pp. 85–88; Homer-Dixon, "Environmental Scarcities," pp. 20–21 and especially pp. 25–28.

### FOCUSING ON THE APPROPRIATE VARIABLE

Levy argues that rather than focusing on the environment as a cause of conflict, we should turn our attention to the full range of causes of regional conflict. “We do not know much about the role of the environment in causing conflict,” he writes, “because we do not know much about what causes regional conflict overall.”<sup>21</sup>

Levy is caught in a contradiction. On one hand he says that the connections between environmental pressures and conflict, as we have identified them, are conventional wisdom. On the other hand, he says that we do not know much about the connections. Actually, he is entirely wrong on both counts: many of our findings do not repeat conventional wisdom at all, and they represent real progress in our understanding. Thanks to our research and that of others, we actually do know a fair amount about the connections between environmental pressures and conflict.

But Levy’s main point here is that we should focus our research efforts on the dependent variable rather than on the independent variable. I strongly disagree. As I have argued elsewhere,<sup>22</sup> environment-conflict research does not aim to determine the whole range of factors that currently cause changes in the value of the dependent variable (the incidence of violent conflict). Rather, it seeks to determine if a hypothesized independent variable *in particular* (environmental scarcity) can be an important cause of changes in the dependent variable.

This focus is reasonable when two conditions hold: first, the value of a variable in a complex system is changing significantly or is thought likely to change significantly in the future; and second, researchers want to know if this change will affect other variables that interest them. These conditions apply here: evidence suggests that environmental scarcity is getting worse rapidly in many parts of the world; and the incidence of violent conflict around the world is of interest to many researchers.

Levy would have environment-conflict researchers divert resources in directions that are largely irrelevant to their interests and inappropriate given the nature of the subject matter. He is advocating an unnecessarily rigid and often sterile approach to social science.

### CHOICE OF CASES

Levy suggests that rather than selecting cases for study that appear to show a link between environmental stress and conflict, we should have compared “societies facing similar environmental problems but exhibiting different levels of conflict.”<sup>23</sup> Since I have addressed this argument in detail elsewhere,<sup>24</sup> I make only a few quick points here.

First, the strategy Levy suggests does not accord with usual scientific procedure: Levy advocates holding the independent variable constant and varying the dependent variable,

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21. Levy, “Is the Environment a National Security Issue?” p. 37.

22. Thomas Homer-Dixon, “Strategies for Studying Causation in Complex Ecological-Political Systems,” Report of the Project on Environment, Population, and Security, American Association for the Advancement of Science, June 1995.

23. Levy, “Is the Environment a National Security Issue?” p. 57.

24. Homer-Dixon, “Strategies.”

whereas an experimental or quasi-experimental approach would vary the independent variable and then examine subsequent changes in the dependent variable.

Second, since, I would argue, such experimental approaches are unworkable in research on complex ecological-political systems, there is some merit to the approach Levy suggests. But there is an important caveat. It would be grossly inefficient to make a large investment of resources early in environment-conflict research to study “null” cases in which environmental stress is present but conflict does not occur. Before closely examining such cases, analysts need a good understanding of the boundary conditions governing their hypotheses about environment-conflict links, an understanding that can best be gained from an exacting study of the causal processes in cases in which environmental scarcity appears to lead to conflict.

This is the well-known methodology of process tracing. In violation of the strict canons of conventional political science, cases are selected explicitly on both the independent and dependent variables. The aim is to determine if the independent and dependent variables are actually causally linked and, if they are, to derive inductively from a close study of many such cases the common patterns of causality and the key intermediate and interacting variables that characterize these links.<sup>25</sup> Process tracing often involves dropping down one or more levels of analysis to develop a more finely textured and detailed understanding of the causal steps between the independent and dependent variables.

During early research in a new field, especially if the subject matter is highly complex, scholars can use research resources to best advantage by examining cases that appear, *prima facie*, to demonstrate the causal relations hypothesized — that is, by selecting on the independent and dependent variables. This narrow focus will allow the researcher to identify conceptual errors and basic empirical weaknesses efficiently in the early hypotheses. Later, as the hypotheses become more refined and understanding of boundary conditions more textured, they can be subjected to more rigorous testing.

The approach Levy suggests is most effective — indeed, I would argue, can only be effective — at later stages of research as part of a process of progressive refinement of hypotheses and their boundary conditions. Perhaps environment-conflict research has now reached a stage where Levy’s approach would be fruitful; we have, in fact, included the “null” case of Indonesia in our latest round of case studies. But it is nonsense to suggest that our early research “failed to generate new findings” because of the way we selected our cases. If we had followed Levy’s strategy early on, we might have produced a study acceptable to the defenders of methodological orthodoxy, but we would have far less to show, in terms of substantive findings, for our efforts.

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25. Alexander George and Timothy McKeown, “Case Studies and Theories of Organizational Decision Making,” in Robert Coulam and Richard Smith, eds., *Advances in Information Processing in Organizations*, Vol. 2 (London: JAI Press, 1985), pp. 24–43.

*The Author Replies:*

I welcome the chance to reply to Professor Homer-Dixon's thoughtful and impassioned response to my article. As I said in that article, I consider the environment and security literature to suffer from a starkly low level of critical debate. I learned things from Homer-Dixon's response that I had not appreciated in his other writings, and I take that as at least *prima facie* evidence that more debate is better; that is ultimately for others to judge, however.

Before I take up Homer-Dixon's main points individually, let me state that I did not intend my article to be an attack on Homer-Dixon as a scholar. My comments on his research program were part of a sweeping review of the entire genre. In places my tone or choice of words may have been a bit extreme, and while I stand by my analytical conclusions, I apologize if I created any impression of disrespect. In fact, I consider Homer-Dixon to be a model scholar who sets very high standards worthy of emulation.

Now I will address Homer-Dixon's main criticisms; my headings are slightly different than his but I have tried to reply to each major point.

IS U.S. SECURITY AN INAPPROPRIATE ANALYTICAL FOCUS?

Homer-Dixon says that my focus on U.S. security interests is parochial and dismissive of the hundreds of millions of people in the developing world who face serious security problems engendered by environmental change. He would be right if I argued that U.S. security were all that mattered, but I explicitly said the opposite. My reason for focusing on the United States was that, when it comes to policy recommendations, virtually all of the environment and security writing eventually comes around to arguing for a major reorientation of U.S. policies, many of which have significant financial implications. If the United States is ever going to engage in such measures, it is reasonable to expect some explicit rationale delineating the benefits to the United States that will result. From a globalist perspective it may be unfortunate, but it remains true, that to point out that a particular foreign aid package might prevent mass violence in developing countries will not guarantee it clean sailing through Congress. I argued that the U.S. government is unlikely to be moved by arguments connecting Third World violence to U.S. security interests, but that other appeals might fare better (though surely in the short run any optimism at all rests on shaky grounds).

WILL THE REAL CONVENTIONAL WISDOM PLEASE STAND UP?

Homer-Dixon says I do not give enough credit to his work for breaking new ground, by claiming that it arrives at conclusions identical to the prior conventional wisdom. He says my characterization of the conventional wisdom is in fact true only of a narrow band of environmental scholars. Perhaps. I may suffer from having gone to college in the late 1970s, when courses in departments of government, sociology, history, and anthropology (in addition to environmental studies) all pointed out quite explicitly the connections among natural resource scarcity and violent conflict in the developing world.

When I read Homer-Dixon's work it seems like *déjà vu*.<sup>1</sup> Yet I confess to being shocked at the private correspondence with a leading scholar that he cited to help make his point, which I acknowledge does reveal a different view of the conventional wisdom than I averred. If Homer-Dixon's work helps persuade such scholars that they are wrong, then he indeed deserves a great deal of credit.

In the end, my critique does not hinge on whether others have made these points before, or whether it is possible to find serious adherents to the null hypothesis, because I also argue that the points made in the research program to date are too shallow to be useful.

Homer-Dixon summarizes his key results better than I did in my article, which tried to examine a much broader range of the literature than just his work. His six findings are stated clearly enough for interested readers to judge whether they add up to "a single, integrated analysis"<sup>2</sup> that carries us to new intellectual terrain. My point is that these findings are not specific enough to be of much use either analytically or practically. They do not tell us what kinds of conditions are likely to trigger these dynamics and what conditions are likely to dampen them, what kinds of strategies make things worse and what kinds make them better, what kinds of states are especially vulnerable and what kinds especially robust. The conclusions are all highly contingent, but the contingencies are not satisfactorily elaborated or explored. The closest thing to a categorical conclusion — that interstate resource wars are unlikely — is also the one that was made most clearly by an earlier work.<sup>3</sup> We are left with claims that sometimes environmental scarcity produces violent conflicts but not knowing what conditions matter most and what intervention points are most promising; even if it were true that we did not know that before, knowing it now does not seem all that helpful.

My view that the findings are shallow explains the apparent contradiction of which Homer-Dixon accuses me, when I say both that he has recreated the conventional wisdom and that we need more studies of the causes of conflict generally because we do not understand it adequately. The conventional wisdom on the role of the environment in sparking violence is rather shallow; we need more work on regional violence because it is not deep enough to understand the interactions and contingencies that help explain individual cases. I am accusing Homer-Dixon of recreating a shallow conventional wisdom instead of deepening our understanding of conflict processes; that is not a contradiction.

But ultimately, what this work adds up to is an empirical matter: if readers gain new insights from these results that in turn lead them to generate useful knowledge, then Homer-Dixon is right and I will gladly concede this point. In private communication he has shared

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1. The Brundtland Commission report, prepared in 1986 and published in book form in 1987, has an entire chapter devoted to demonstrating that "environmental stress is both a cause and an effect of political tension and military conflict." World Commission on Environment and Development, *Our Common Future* (Oxford: Oxford University Press, 1987), p. 290. This report had political and intellectual influence that was too widespread to qualify it as "narrow."

2. Homer-Dixon letter, p. 192.

3. Ronnie D. Lipshutz, *When Nations Clash: Raw Materials, Ideology, and Foreign Policy* (Cambridge, Mass.: Ballinger, 1989).

compelling evidence that this sort of dynamic is occurring. I remain skeptical about the long run, though, for reasons that are primarily methodological.

#### WHAT METHODOLOGICAL STRATEGIES ARE LIKELY TO BE MOST PRODUCTIVE?

Homer-Dixon argues that the case studies carried out in his project “provided detailed supporting evidence and argument” for his findings.<sup>4</sup> I disputed this in my article by arguing that the selection of cases constrained the analysis, especially because all cases had both serious environmental scarcity problems and serious political violence problems.<sup>5</sup>

Homer-Dixon says this method is appropriate for determining whether environmental scarcity<sup>6</sup> is an important cause of political violence. I agree that process tracing of the sort Homer-Dixon and his colleagues have carried out is a good way for ascertaining causal pathways in complex social systems. But when it comes to identifying whether these causal pathways are “important,” I think the selection of what amount to most-likely case studies imposes a fundamental constraint. To label a cause as “important” is to say that it has some combination of explanatory power and policy utility that is high, relative to other causes. But it is very hard to support such a judgment with evidence when all the cases were chosen because they were thought to have strong environment-conflict links.

For example, to label environmental scarcity an important cause of conflict is to say something about its power relative to political institutions as causes of conflict.<sup>7</sup> What if one held a hypothesis that, in the cases of violent conflict studied by Homer-Dixon and his colleagues, weak political institutions were more “important” as causes than environmental scarcity? (Such a hypothesis might be true even if it turns out that scarcity exacerbates institutional weakness.) In principle, this is a testable proposition, but in practice Homer-Dixon’s case studies do not permit the test to be carried out. Yet the claim that environmental scarcity variables are “important causes” makes a judgment about what that test would reveal.

When process tracing is done right, it is highly sensitive to counterfactuals: how might a given case of scarcity have evolved differently if political institutions were closer to the Singapore or Costa Rica model, say, than the Bangladesh model? Such questions help sharpen our quest for understanding the importance of specific variables in explaining a particular case, especially when cases are complex. But counterfactual analysis requires a grounding in reliable knowledge, either theoretical or empirical, to be valid; if we ask how things would have been different under Singapore- or Costa Rica-like institutions, we have to know some-

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4. Ibid.

5. The number of case studies is also a limiting factor. Some of his conclusions are empirically grounded in only one or two cases.

6. Homer-Dixon faults me for referring to environmental “degradation” rather than “scarcity.” I did not mean the term degradation to rule out scarcity; to me scarcity is one form of degradation. Ground water resources can be degraded, for example, by becoming scarcer in quantity, or by becoming contaminated with salts resulting from excessive fertilization.

7. The most thorough treatise on variation in political institutions as an explanation for variation in political conflict in the developing world is Samuel P. Huntington, *Political Order in Changing Societies* (New Haven, Conn.: Yale University Press, 1968).

thing about Singapore and Costa Rica. In the phenomena of interest to Homer-Dixon, it seems clear that better use of counterfactuals in making causal arguments will require empirical investigation of cases where there is more variation in the important variables. Otherwise, assertions about certain variables' importance amount to guesswork.

Homer-Dixon seems to think I want scholars to do nothing but strictly controlled quasi-experimental case studies. Nothing could be further from the truth. Elsewhere my colleagues and I have argued strongly for methodological pluralism in a spirit that Homer-Dixon will, I think, find hospitable.<sup>8</sup> Yet methodological pluralism does not mean doing whatever you feel like, and any mixture of techniques is likely to have some flaws. While Homer-Dixon is right that the research strategy he pursued had many merits, that does not mean it does not also suffer from the limits I have identified.

Let me conclude with the methodological point that I think represents the most serious difference between us: whether engaging in the research strategies I recommend would constitute a diversion of resources in a direction that would be "largely irrelevant" to scholars interested in environment and conflict.<sup>9</sup> I feel quite strongly that shifting the focus to conflict *per se*, rather than environmentally caused conflict, would be more appropriate for both intellectual and humanitarian reasons. My arguments on intellectual grounds are summarized above. My reasoning on humanitarian grounds is fairly straightforward. Environmental scarcity is but one cause of political violence; we do not disagree about that at all. Political violence is a very serious problem on its own terms, both for the people affected directly and those others who for a variety of reasons are concerned about preventing such violence (again, I cannot imagine that we disagree about that). On humanitarian grounds, it is the violence *per se* that is important, not whether it was caused by environmental scarcity. Therefore we would be making a grave mistake if we did not tackle head on the multiple causes of political violence. What if there are more feasible or relevant means of preventing political violence than through intervening in the environmental domain? Or what if some environmental interventions will get overwhelmed by other factors if the latter are not addressed too? And, since it would be folly to presume that we will ever completely prevent environmental security problems, do we not have an obligation to study measures for responding to violence when they break out? For these reasons I think moving to what I have called a "third wave"<sup>10</sup> of environment and security scholarship, in which political violence occupies center stage and the environment joins a cast of other causal agents, would go furthest in helping us achieve the important goals we share.

—Marc A. Levy  
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8. Marc A. Levy, Oran Young, and Michael Zuern, "The Study of International Regimes," *European Journal of International Relations*, Vol. 1, No. 3 (Fall 1995), pp. 267–330.

9. Homer-Dixon letter, p. 193.

10. Marc A. Levy, "Time for a Third Wave of Environment and Security Scholarship?" *Environmental Change and Security Project*, No. 1 (Spring 1995), pp. 44–46.