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Source: *International Security*, Vol. 20, No. 2 (Autumn, 1995), pp. 35-62

Published by: The MIT Press

Stable URL: <http://www.jstor.org/stable/2539228>

Accessed: 17/09/2008 09:44

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Is the Environment a National Security Issue?

Marc A. Levy

In the spring of 1994, when the U.S. government was trying to put its less-than-successful intervention in Somalia behind it while contemplating future troubles in Haiti, an *Atlantic Monthly* article painted a picture of the world in which such conflicts could be expected to magnify and spread. Robert Kaplan's "The Coming Anarchy" captured Washington's attention with its dire vision of a world beset with collapsing state authority. President Clinton was reported to have scribbled marginal notes on his personal copy, and citation of it became practically *de rigueur* for Cabinet members appearing before Congress. Much of Kaplan's analysis centered on the role of environmental degradation in sparking "the coming anarchy," and his article therefore marks a decided elevation of the environment and security debate.

However, to call it a debate is to stretch things. Since the late 1980s, when public discussion of environment and security links began in earnest, a ground swell of support for the core proposition that environmental degradation constitutes a security risk has encountered hardly any voices of dissent.¹ Critics of the core idea have voiced their opinion by way of silence rather than debate, perhaps hoping the discussion would fade away. But because the ideas are getting more, rather than less, attention, it is time to subject them to a serious review.

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I am grateful to Jill Cetina and Jason Holley for research assistance, and to Peter Barsoom, Shinju Fujihari, Ron Mitchell, Ted Parson, and participants in the Olin Institute workshop on Economics and National Security, December 3, 1993 for comments on an earlier draft. Tad Homer-Dixon helped to correct some errors in an earlier version. Support for this work was provided by the Olin Institute's Project on the Changing Security Environment and American National Interests.

1. The only significant exception is Daniel Deudney, "The Case Against Linking Environmental Degradation and National Security," *Millennium*, Vol. 19, No. 3 (Winter 1990), pp. 461-476; also see Daniel Deudney and Richard Matthew, eds., *Contested Ground: Security and Conflict in the New Environmental Politics* (Albany: SUNY Press, forthcoming); and Richard A. Matthew, "Environmental Security: Demystifying the Concept, Clarifying the Stakes," *Environmental Change and Security Project Report*, No. 1 (Spring 1995), pp. 14-23. A somewhat critical and very thoughtful review is found in Lothar Brock, "Peace Through Parks: The Environment on the Peace Research Agenda," *Journal of Peace Research*, Vol. 28, No. 4 (November 1991), pp. 407-424.

This essay examines the proposition that global environmental degradation is a security threat to the United States. I focus on three distinct forms of connection between the environment and security, which I term the existential, the physical, and the political. This article reviews each link and evaluates each on its own terms. All of these views pertain to links *from* processes of environmental degradation *to* deterioration in security positions. Connections that run in the opposite direction (from use of force to deterioration in environmental quality) are not examined here.²

Adherents to the existential view, such as Jessica Tuchman Mathews and Norman Myers, argue that certain aspects of the global environment are so intimately connected to our deepest national values that they are constitutive of our security interests. When these environmental values are threatened, our security is threatened, *ipso facto*. I argue that this position has no basis except as a rhetorical device aimed at drumming up greater support for measures to protect the environment. These advocates probably hope for more than is realistic in this regard, because the rhetorical act of pointing out that environmental degradation endangers important national values begs the question of how such values ought to be traded off against one another. In addition, the political task of gaining support for the environment may in many cases fare better on the level of low politics than high politics, as I explain.

I find that proponents of the direct physical link between environment and U.S. security have serious arguments worth considering, but that these arguments require difficult assessments of competing alternative responses. A combination of prevention, adaptation, and “letting nature take its course” is likely to emerge as optimal. This conclusion is unsettling to many advocates of the environment and security link, but unsurprising to students of security studies: it amounts to an argument that to “roll back” global environmental change is forbiddingly costly, and that a better policy consists of a combination of “containment” and “co-existence.”

Finally, this paper finds that the indirect, political threat from environmental degradation (involving environmental refugees, resource wars, and so on) is at once both the weakest substantive threat to U.S. security and the strongest

2. Such connections are important and worthy of further study; Arthur Westing and his colleagues have written about this theme, which has received increased attention in the aftermath of the Gulf War. See Arthur H. Westing, ed., *Cultural Norms, War and the Environment* (Oxford: Oxford University Press, 1988). On the Gulf War, see United States Senate Committee on Environment and Public Works, Gulf Pollution Task Force, “The Environmental Aftermath of the Gulf War: A Report,” March 1992.

intellectual challenge to the field of security studies. That is, the United States has the least to fear from political conflicts caused by environmental harm (because such conflicts are likely to be limited to regions removed from direct U.S. interests); but nonetheless this is where the academic community has the most catching up to do, because the question of how regional conflicts emerge and evolve is one of the most neglected areas of security studies, and analysts have made a strong case that environmental degradation is an important causal factor. I argue, however, that to conclude that we need more research on environmental causes of conflict *per se* is wrong. The reason we do not know much about the role of the environment in sparking regional conflict is not that we have neglected the environment. On the contrary, few good studies of regional conflict neglect natural resources as central factors. Rather, we do not know much about the role of the environment in causing conflict because we do not know much about what causes regional conflict overall. What we need, if we wish to come to grips with any “coming anarchy,” is research on conflict, not on the environment.

Definitions

Because both “environment” and “security” are flexible enough to mean almost anything one wishes, one must be explicit in defining them.³ The appropriate test for the definitions offered here is whether they are useful for thinking about a class of foreign policy issues. After reviewing the way the terms are used in the literature, I propose a definition of “environment” that emphasizes the connection to physical and biological systems, and a definition of “security” that emphasizes protection of national values against foreign threats. Whether or not one accepts the definitions offered here, one conclusion is inescapable. The literature to date has either failed to offer definitions at all, or has offered plainly self-serving and closed-minded ones. If there is to be any serious consideration of environmental threats by the security studies and security policy communities, we need more thoughtful consideration of how to define the potential common ground.

At the broadest level, the “environment” can refer to anything in which something takes place or which affects what people do; in other words, almost

3. Computer searches on articles containing both the word “environment” and the word “security” generate thousands of references, of which only about 10 percent or so have anything to do with the topic of this essay.

anything at all. In reference to a particular issue-area, the term is used only somewhat less broadly and seldom without explicit definitions. The classic textbook on international environmental policy devotes an entire page to defining “policy” but nothing to defining “environment.”⁴ Ironically, even a 272-page “dictionary of environment and development” fails to define “environment” (or “development,” for that matter).⁵

At a practical level, people use the term “environment” to refer to physical and biological systems, as distinguished from political, economic, and other social systems. An issue is an environmental issue if it involves physical or biological systems to a significant extent. But that is a broader definition than most people use in practice. Deposits of valuable minerals, for example, are components of a physical system, yet most people do not consider the gold supply, say, to be an environmental issue. However, other mineral deposits—for example, petroleum deposits—are sometimes treated as environmental issues.

In fact, the earliest work on environment and security considered all natural resources to be “environmental resources,” from oil to fish to farmland. Arthur Westing’s work on the environment and war has consistently adopted this highly encompassing view of the term.⁶ This definition may have some degree of logical coherence, but it fails the test of usefulness. Under Westing’s classification, virtually every war counts as an “environmental” war, because natural resources of some sort have figured to some degree in almost every belligerent’s war aims.⁷

Westing’s use of the term, and that of others who include economic resources with biological or physical roots, fails to capture what is novel about environmental problems as they relate to security issues, and for that reason is not helpful to advancing our thinking about security.

I find Stephan Libiszewski’s definition most useful. He argues that we ought to restrict our use of the term “environment” to phenomena in which there are ecological feedbacks and equilibria. Natural resources characterized by a fixed stock steadily depleted over time, or systems in which the feedbacks are strictly

4. Lynton Keith Caldwell, *International Environmental Policy: Emergence and Dimensions*, 2nd ed., rev. (Durham, N.C.: Duke University Press, 1990). A casual survey of other texts reveals similar inattention to defining the term.

5. Andy Crump, *Dictionary of Environment and Development* (Cambridge, Mass.: MIT Press, 1993).

6. Arthur H. Westing, ed., *Global Resources and International Conflict: Environmental Factors in Strategic Policy and Action* (Oxford: Oxford University Press, 1986).

7. See appendix 2 in *ibid.*, listing a dozen twentieth-century “environmental wars,” including World Wars I and II.

economic and not ecological, ought not to be considered environmental.⁸ I find this argument compelling. It accords with the common sense of the term “environment,” and it focuses attention on those phenomena that have not commonly been associated with security issues and therefore have the potential to help us learn something new.

What this definition excludes is the sense in which “environmental” phenomena include those systems necessary for the support of life. Struggle over some groundwater resources, for example, may not involve any significant ecological feedbacks but may instead be dominated by pure extraction and economics. Yet depletion of freshwater resources is commonly considered an environmental problem. The explosion at Bhopal was also considered an environmental accident even though no important feedbacks were involved: people were simply killed and injured by poison.

In this essay I use the term “environment” for issues involving biological or physical systems characterized either by significant ecological feedbacks or by their importance to the sustenance of human life. Natural resources not embedded in such systems (such as mineral deposits) are excluded.

“Security” is no easier to define. The question of “whose security” (a nation, an international system, all of humanity) is easy to dispense with, however, because the choice depends on the goals of the analysis. Because this paper is aimed at exploring the implications for U.S. policy, I look at national security. This is not to say that there is no such thing as global security, only that this is not the focus of the present analysis.

But once one has bounded the jurisdictional scope, the choices become more problematic. The traditional definition equates security with, in Helga Haftendorn’s words, “the absence of a military threat or with the protection of the nation from external overthrow or attack.”⁹ This definition, perfectly adequate to the “normal” study of security, is clearly useless for any exploration of what reformulations of the study of security are appropriate because it excludes environmental and other non-military threats by definition. What one needs is

8. Stephan Libiszewski, “What is an Environmental Conflict?” Occasional Paper No. 1, Environment and Conflicts Project (Bern: Swiss Peace Foundation, 1992), p. 3.

9. Helga Haftendorn, “The Security Puzzle: Theory Building and Discipline Building in International Security,” *International Studies Quarterly*, Vol. 35, No. 1 (1991), pp. 3–17. Stephen Walt’s review essay does not define “security,” but defines “security studies” in an equally traditional way, as “the study of the threat, use, and control of military force.” Stephen M. Walt, “The Renaissance of Security Studies,” *International Studies Quarterly*, Vol. 35, No. 2 (June 1991), pp. 211–239; see p. 212.

a definition that includes the traditional threats while permitting environmental and other important threats (without necessarily requiring them). It must do so in a way that the identified area of concern is recognizable by practitioners of traditional security studies; otherwise there is no hope of persuading them that the “new” threats constitute security threats.

Richard Ullman’s effort along these lines is more promising:

A threat to national security is an action or a sequence of events that (1) threatens drastically and over a relatively brief period of time to degrade the quality of life for the inhabitants of a state, or (2) threatens significantly to narrow the range of policy choices available to a state or to private, non-governmental entities (persons, groups, corporations) within the state.¹⁰

Ullman’s definition fares well at permitting the inclusion of non-military threats. It has been cited favorably in numerous examinations of environment and security.¹¹ It has not been recognized, however, by the mainstream security studies community, judging from citations and usage. It appears to have broadened the scope so much that the original content of “security” is swamped by intruders, rendering it utterly alien to the security studies community. That will not do.

The definitions that have been offered fail to engage both analysts of environmental threats and traditional security analysts. This means either that there is no overlap between these two groups or that a useful definition exists but has not yet been formulated. I prefer to think that the latter is the case; in any event the only way to find out is to attempt to find that common ground. If one takes the Haftendorn/Walt and Ullman definitions as marking the opposite poles (only military force is in, or almost everything is in), what is needed is a more sensible middle. I propose the following: “A threat to national security is a situation in which some of the nation’s most important values are drastically degraded by external action.” This definition owes much to Ullman, but retains the sense that the actions of foreigners are involved, which is missing from Ullman’s formulation. This is not to argue that foreign threats

10. Richard Ullman, “Redefining Security,” *International Security*, Vol. 8, No. 1 (Summer 1983), pp. 129–153; see p. 133.

11. Recent works that approvingly cite Ullman’s definition include Joseph J. Romm, *Defining National Security: The Nonmilitary Aspects* (New York: Council on Foreign Relations Press, 1993), p. 36; Peter H. Gleick, “Environment and Security: Clear Connections,” *Bulletin of the Atomic Scientists*, Vol. 47, No. 3 (1991), pp. 17–21; 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; Norman Myers, *Ultimate Security: The Environmental Basis of Political Stability* (New York: W. W. Norton, 1993), p. 21.

are always more severe than domestic (such a view is clearly untenable); it is merely to suggest that a focus on the actions of foreigners is a defining trait of security studies; one cannot expunge that from one's definition and still claim to be talking about the same subject. "External action" does not mean action in which the nation has no role whatsoever. It refers to action in which the participation of foreigners is central, whether or not domestic action is also harming national values.

This definition is not easy to put into practice, but no useful definition of security could be. The Haftendorn/Walt definition is easy to use but so restrictive that it does not serve any purpose—why bother to call it "security" studies if the only thing it can possibly mean is the study of the use of military force? Any useful definition of security will have to have blurry edges. In fact, debates over what constitutes the most important national values and what constitutes significant levels of degradation are central themes running through the history of security studies.¹²

Environmental Degradation as an Existential Threat to U.S. Security Interests

I begin with a discussion of the view that environmental protection and U.S. security are existentially linked, because proponents of this view are largely responsible for launching the contemporary debate on environment and security. The two most cited authors are Jessica Tuchman Mathews and Norman Myers, writing in two of the most prominent foreign policy organs, *Foreign Affairs* and *Foreign Policy*. (Myers subsequently weighed in with a book on the topic.) Writing in 1989, Mathews argued for a "broadening definition of national security to include resource, environmental and demographic issues."¹³ She reviewed a number of global phenomena, including soil erosion, population growth, biodiversity loss, and climate change, and argued that they affected U.S. interests in so many profound ways that they warranted a "new way of thinking." Mathews's analysis is representative of the existentialist view, though one must read between the lines to discover this.

12. A common thought experiment used to separate security threats from other threats (or vital interests from other interests) is to ask whether the values affected and the degree of degradation threatened are sufficient to provoke a military defense. For any alleged security threat, one can ask, "Would we fight over it?"

13. Jessica Tuchman Mathews, "Redefining Security," *Foreign Affairs*, Vol. 68, No. 2 (Spring 1989), pp. 162-177; see p. 162.

Much of Mathews's analysis consists of discussion of specific environmental problems with more or less direct impacts on U.S. interests, as well as specific recommendations of how to solve these problems. However, she does not couch her overall argument in instrumental terms, but rather attempts to make the case rhetorically that global environmental protection is such a vital component of U.S. national security that one cannot be separated from the other. She catalogs a number of global environmental problems, for example, but rather than assess the impact of each on specific national interests, asserts that "the value and absolute necessity for human life of functioning ecosystems is finally becoming apparent." This conclusion is said to justify the claim that environmental protection and national security are inseparable.

Norman Myers's analysis is virtually identical in form to that of Mathews. He points out global trends indicating rapid environmental change and growing ecological interdependence, lists some examples of specific environmental problems the United States ought to be worried about, and concludes that there is a "need to incorporate an environmental dimension into security planning."¹⁴ Like Mathews, Myers sets as his task convincing us that environmental damage constitutes a security risk, not in proposing particular solutions to specific problems. He does offer some remedies, but they are vague and *ad hoc*: he advocates, for example, spending more money on Egyptian environmental protection and on reforestation efforts in El Salvador. In his book-length discussion, where he devotes an entire chapter to policy recommendations, he goes scarcely any further, adding recommendations to increase foreign aid, reduce Third World debt, liberalize trade, and discourage corruption.¹⁵

A more extreme version of the existential argument has been made by Renner, who writes that "environmental degradation imperils nations' most fundamental aspect of security by undermining the natural support systems on which all of human activity depends."¹⁶ Renner presents an apocalyptic vision in which, unless the "outmoded" traditional concept of national security is rejected in favor of a more comprehensive view that takes environmental harm into account, all of human society is at risk.

What these and other existential advocates have in common is the view that examining individual environmental problems on their own terms is in-

14. Norman Myers, "Environment and Security," *Foreign Policy*, No. 74 (Spring 1989), pp. 23-41; see p. 41.

15. Myers, *Ultimate Security*, chap. 16.

16. Michael Renner, *National Security: The Economic and Environmental Dimensions*, Worldwatch Paper 89 (Washington, D.C.: Worldwatch Institute, May 1989).

adequate, and that what is required is a fundamentally new thinking that takes global environmental protection to be an essential component of national security. This view is stated explicitly only occasionally but is implicit in the whole genre. What other point could there be to itemizing a long list of environmental problems and attaching it to a plea for new thinking about security?

The project that Mathews and others are engaged in, in which they try to link environment and security, is fundamentally flawed, because they are engaged either in double counting or in rhetorical flourishes aimed at boosting public support for environmental protection, and neither is defensible.

The possibility that double counting is going on emerges if one dissects the precise links that are alleged between environmental degradation and national security. For any environmental threat to be a security threat, there must be some demonstrable connection to some vital national interest. In the case of ozone depletion, the connection is to public health and human lives; in the case of environmental refugees, the connection is to humanitarian concerns, migration and regional stability; and so on. For each environmental threat that the existentialists itemize, a connection to some national interest is either spelled out or implied. These connections to national interests justify certain remedial measures—curbing chlorofluorocarbon (CFC) production, providing sustainable development assistance to the poor, etc. The appropriate level and form of remedy is dictated by the interests affected. How can the analysis of problem and remedy change if one clusters these phenomena under the security label? I argue that it cannot, for that would be to count the interests affected twice, once on their own terms and then a second time because they constitute a “security” interest.

If calling these problems “security” problems does change the analysis, but double counting is not going on, then “security” must mean something other than protection of vital national interests. Myers comes close to this in his 1993 book, where he despairs at his inability to convince a member of Britain’s foreign policy establishment who is crippled with “*realpolitik* indifference.” In the end Myers pleads, “Isn’t there a fresh type of security that also counts, an inner security that ultimately forms the bedrock of our being? This, I feel, is the clincher argument.”¹⁷ It is possible to imagine such constructions of security, but they would take the discussion so far from the mainstream as to

17. Myers, *Ultimate Security*, p. 16.

forswear any hope of linking environmental issues to the conventional security agenda.

It is probably not a coincidence that advocates of the existential link between security and environment provide the loosest definitions of security. Mathews's *Foreign Affairs* article is titled "Redefining Security," but it offers neither a definition nor a redefinition of the term. Renner also never defines security.¹⁸ Myers neglects to define security in his article, but does include a four-page sidebar in his book entitled "What is this Thing Called Security?" which reveals his existential position by including environmental protection as part of the definition of security¹⁹; however, such a definition cannot be of use in exploring potentially interesting links between the two phenomena. These writers avoid precise definitions, because, I believe, they would reveal the sloppy thinking contained in the existential view.

Why would intelligent people make such mistakes? One compelling reason suggested by Daniel Deudney is that to whip up greater support for global environmental protection, the security rubric is used as a rhetorical attention-getter.²⁰ Perhaps Mathews and others want people to engage in double counting because they do not think that the policies that emerge from "single counting" are adequate. If this is the case, then the justification for linking environment and security in an existential way lies in its effects in the competition for sound bites on the evening news and in political campaigns and, by extension, in the competition for budgetary and other scarce resources. Opening a 1989 conference on environment and security, Richard Stanley came close to stating this explicitly: "It is encouraging that we increasingly hear some people discuss environmental issues as threats to security. In international relations, security issues are generally regarded as the stuff of 'high politics' while economic, social and environmental issues are considered 'low politics.' National leaders, of course, give priority attention to high politics."²¹

18. Renner does wax effusive about something he calls "environmental security," which is superior to "military security." Environmental security is said to be better because it is "positive and inclusive" and seeks to "protect or to restore." Renner, *National Security*, p. 63. If it has any meaning at all, "environmental security" in this context is nothing more than a shorthand for outcomes favored by certain environmentalists.

19. Myers, *Ultimate Security*, p. 32.

20. Deudney, "The Case Against Linking Environmental Degradation and National Security," p. 465.

21. "Environmental Problems: A Global Security Threat," Report of the 24th United Nations of the Next Decade Conference, June 18-23, 1989, p. 10.

Few existential advocates have stated the justification as directly as this. (Deudney points it out in order to criticize it.) In fact, such a plan requires that its rationale remain hidden from view. Deudney has offered some cogent criticisms of this unstated rationale; in particular, he identifies a potential for application of undesirable attributes of the “security” mind-set to environmental problems.

A more basic criticism is that the existential view of environment as a security issue is far too blunt an instrument to generate appropriate policy responses. Because it seeks to obscure precise calculation of environmental threats and costliness of response strategies (in order to promote double counting), it discourages critical thinking about which environmental problems are serious and which are trivial. Thus analysts may make earnest claims that acid rain is a security threat, for example, when by any logical criteria acid rain would have to rank very far down on the list of threats to national security because the values threatened—trees, sports fishing, and so on—are far from vital.²² The existential view encourages the mistaken impression that any problem that is international and ecological is a security problem. This may be a recipe for more attention to environmental policy, but it is also a recipe for bad environmental policy. Public opinion is notoriously out of touch with the relative seriousness of environmental problems. An Environmental Protection Agency (EPA) study in 1987 found little correlation between public perception of the seriousness of environmental risks and the actual seriousness of those risks.²³ In an era of declining growth rates and rising budget deficits, surely we want resources devoted to the most pressing problems.

Another more fundamental criticism is that if all these analysts are up to is trying to garner more support for environmental issues, then their entire project is anathema to any effort to link up thinking on environment and security issues. Instead, it is an effort to raid the security issue in order to reap some of the deference that they believe politicians and publics pay to it. However, this adds nothing to the understanding of our security interests. Even if the ap-

22. Myers, “Environment and Security,” p. 23; John E. Carroll, “The acid challenge to security (acid rain),” *Bulletin of the Atomic Scientists*, Vol. 45, No. 8 (October 1989), pp. 32–35. The apparent exception is the German case, where one can more plausibly argue that the political crisis of 1981–83 surrounding the decline of the Black Forest demonstrates that acid rain affected important national values there. See Sonja Boehmer-Christiansen and Jim Skea, *Acid Politics: Environmental and Energy Policies in Britain and Germany* (London: Belhaven Press, 1991), chaps. 4, 10.

23. U.S. Environmental Protection Agency, *Unfinished Business: A Comparative Assessment of Environmental Problems* (Washington, D.C.: U.S. Environmental Protection Agency, Office of Policy Analysis, Office of Policy Planning and Evaluation, 1987).

proach succeeds at generating some increased public support, it will alienate foreign policy intellectuals; it is not feasible to imagine a successful redefinition of U.S. security policy that lacks support from major segments of the foreign policy intelligentsia, and it is difficult to imagine such support coalescing around an intellectually flimsy set of slogans.

Environmental Degradation as a Direct Physical Threat to U.S. Security Interests

Whereas the existential claim that environmental degradation constitutes a security risk *ipso facto* avoids delineating precise mechanisms by which U.S. interests are affected and demurs from proposing and justifying specific control measures, another group of proponents dwells on such things more systematically. These environment and security analyses are probably most similar to traditional security studies in identifying threats, spelling out the consequences of inaction, and evaluating competing options to respond to the threat.

However, this sort of environment and security assessment is also probably the least common of the three discussed here. Arguments along these lines tend to be accompanied by a litany of considerations that includes existential and indirect political threats, but does not isolate a distinct class of threats worth examining on their own. This must change if the environment and security debate is to remain sustainable. Direct physical threats provide the most compelling rationale for considering environmental degradation to be a security risk, but they receive the least attention as security threats.

Environmental degradation constitutes a direct physical threat to U.S. security interests when environmental damage results directly in the significant loss of life or welfare of U.S. citizens, or otherwise impairs our most important national values. A thinning of the ozone layer that threatens to kill and blind hundreds of thousands of Americans is easy to identify as a security risk.²⁴ Whereas the existential argument requires a radical broadening of the conception of what constitutes vital U.S. interests to retain coherence, the direct physical argument rests on conceptions of U.S. interests that are not contested.

24. In fact, *U.S. News and World Report* (not exactly a "green" publication) called it the "ultimate security risk" in a 1992 headline. S. Budiansky, "The Ultimate Security Risk: Holes in the Ozone Layer," *U.S. News and World Report*, February 17, 1992, pp. 6-7.

Because this form of the argument fits easily into ongoing thinking about security, any evaluation of it must be conducted at a more detailed level than the evaluation offered above of the existential argument. One must examine the specific environmental threats that constitute security risks, make judgments on their severity, and assess options for responding to the risk. Here I discuss the problems of stratospheric ozone depletion and climate change, two environmental problems that, I believe, come closest to constituting direct physical threats to U.S. security.

For a long-term research program, one would want to be more systematic about which risks to consider as security risks. One can start with a list of international environmental threats which people have argued are the most critical.²⁵ Without assessing the merits of any specific claims, one can ask for each risk whether the mechanism alleged to be at work is one that involves direct degradation of important American values. For those international environmental threats that have been proposed as among the most pressing, only climate change and ozone depletion affect important values directly. The others either do not affect vital interests, or do so only indirectly, by playing a role in a more complex causal mechanism in which other factors are more important. (See Table 1.)

OZONE DEPLETION

A review of the ozone depletion problem shows that while it clearly constitutes a security risk, and that efforts to cope with the problem have similarities with efforts to cope with important military threats, there is no evidence that labeling the problem as a security threat adds any value to our ability as a society to respond effectively. In fact, one reason political responses to the ozone depletion problem have been so effective may be that the problem was by and large not framed as a security problem, but rather as a more mundane public health and chemical hazard problem.

25. There are a variety of lists to examine: Caldwell, *International Environmental Policy*, pp. 17–18; World Bank, *World Development Report 1992: Development and the Environment* (New York: Oxford University Press, 1992), pp. 1–14; World Resources Institute, *The Crucial Decade: The 1990s and the Global Environmental Challenge* (Washington, D.C.: World Resources Institute, 1989); U.S. Environmental Protection Agency, *Unfinished Business: A Comparative Assessment of Environmental Problems: Vol. I, Overview* (Washington, D.C.: U.S. Environmental Protection Agency, Office of Policy Analysis, Office of Policy Planning and Evaluation, 1987); U.S. Council on Environmental Quality (CEQ), *United States of America National Report, UN Conference on Environment and Development* (Washington, D.C.: CEQ, 1992); and for the most comprehensive list imaginable, *Agenda 21* (New York: United Nations, 1993).

Table 1. U.S. Environmental Security Risks.

Environmental Threat	Process by which National Values Are Affected
Direct Security Risks	
Ozone depletion	Cancer deaths, blindness of citizens
Climate change	Large-scale economic disruption
Indirect Security Risks	
Desertification	Human suffering among rural poor overseas Regional conflicts sparked by scarcity
Ocean pollution	Ecosystem deterioration Declining fish stocks Water quality Regional conflicts sparked by scarcity Public health problems among poor overseas
Population growth	Increased stress on all environmental sectors
Erosion	Human suffering among rural poor overseas Regional conflicts sparked by scarcity
Biodiversity loss	Inherent value to species Loss of undiscovered drugs, industrial materials, important chemical products

NOTE: Some would raise legitimate objections to classifying biodiversity as even an indirect security problem. Whereas all the other problems on this list threaten to degrade a value that currently exists, species loss threatens to destroy values that might exist but will not if the threat is realized. If a foreign power somehow were able to threaten to destroy the ability to make penicillin for all time, that would surely constitute a security threat that would justify the use of force. But if a foreign power threatened to destroy its *own* ability to create things equally as beneficial as penicillin and which it could sell in the future, would other powers ever consider using force to prevent that? The answer has to do with the circumstances under which the failure to save a life is morally equivalent to the taking of a life — a complex question.

The problem of stratospheric ozone depletion has much in common with conventional security risks.²⁶ The values that are threatened are the lives and well-being of Americans, in addition to such other values as the lives and well-being of other citizens, ecosystem health, crop productivity, and materials destruction. As early as 1971, when stratospheric ozone was believed to be threatened by a proposed supersonic transport plane (SST), the potential in-

26. For overviews of the ozone case, see Edward A. Parson, "Protecting the Ozone Layer," in Peter M. Haas, Robert O. Keohane, and Marc A. Levy, eds., *Institutions for the Earth: Sources of Effective International Environmental Protection* (Cambridge, Mass.: The MIT Press, 1993), pp. 27–75; and Richard Elliot Benedick, *Ozone Diplomacy: New Directions in Safeguarding the Planet* (Cambridge, Harvard University Press, 1991). I have also made use of Nancy Dickson, William Clark, et al., "Stratospheric Ozone Depletion in the United States: A Historical Perspective of Risk Management," contribution number I.20 to the project on Social Learning in the Management of Global Environmental Risks, Kennedy School of Government, Harvard University, August 1992.

crease in human skin cancer was cited as a reason to take steps to prevent the risk.²⁷

Although the SST was never built as planned, the ozone layer was discovered in 1974 to be potentially in danger from the release of CFCs, an otherwise benign industrial chemical used as a propellant, a refrigerant, and a solvent. The EPA calculated that in the absence of corrective measures, a total of 12 million additional Americans would contract skin cancer, and that 200,000 of these cases would be fatal.

It may be asked, why not consider this a public health risk rather than a security risk? It is, of course, a public health risk, but it seems to meet fairly traditional criteria for security risks as well. The threats are to highly important national values, and they stem from global, not merely domestic, sources.

The ozone depletion problem is now in a fairly mature stage of management. To develop a security analogy, if the 1974 article identifying the CFC threat to ozone corresponds to George Kennan's "X" article of 1947, then the diplomacy and domestic regulations undertaken between 1987 and 1990 correspond to the tripling of the defense budget undertaken between 1950 and 1953.²⁸ Further, the 1987 confirmation of CFCs as the culprit behind the ozone hole played a catalytic role similar to the 1950 invasion of South Korea, which confirmed for many the "theory" behind Kennan's article.²⁹ We have now settled into a well-defined policy of "containing" chlorine levels in the stratosphere to approximately two parts per billion.

As with efforts to contain the Soviet Union, domestic efforts were accompanied by considerable diplomacy. In 1987 the Montreal Protocol, mandating a 50 percent reduction in the production and use of CFCs, was signed by all the major producers and a few potential producers, but not the biggest potential producers such as China and India. In 1990 the parties agreed to amendments

27. The ozone layer helps shield the earth's surface from ultraviolet radiation, overexposure to which is a cause of skin cancer. Some skin cancers are fatal, though most are not.

28. First to hypothesize that CFCs could destroy the ozone layer were F.S. Rowland and M. Molina, "Stratospheric Sink for Chlorofluoromethanes: Chlorine Atom-Catalyzed Destruction of Ozone," *Nature*, Vol. 249, No. 5460 (June 1974), pp. 810-812. On the 1950-53 defense budget, see Samuel P. Huntington, *The Common Defense: Strategic Programs in National Politics* (New York: Columbia University Press, 1961), pp. 63-64.

29. The ozone hole had been a worrisome anomaly between the time of its discovery in 1985 and critical experiments conducted in 1987, which definitively ruled out hypothesized meteorological causes and precisely pinpointed CFCs as the culprit. The results of these experiments and the chemical reactions explaining their results were among the central findings of the multilateral *Ozone Trends Panel Report*, whose release in 1988 precipitated a convergence among industrial democracies toward the goal of completely banning CFCs. See Parson, "Protecting the Ozone Layer," pp. 31-34.

that virtually eliminated CFCs as well as reducing production of other ozone-depleting compounds, and secured commitments from India, China, and other developing countries to sign the protocol in exchange for access to a financial assistance fund totalling roughly \$200 million. Further reductions were agreed to in 1992.³⁰

This history is widely considered a success story, even though some have significant reservations as to whether even all this has been enough to avert serious loss of life. What would we have gained by considering the ozone depletion problem as a security problem? Contrary to a key assumption underlying the environment and security literature, the ozone case suggests that as a society we managed to cope with a serious environmental problem fairly well without labeling it a "security problem." Even accepting the pessimists' view that we may have done too little too late, it is difficult to imagine how we could have done much better, especially if the problem had been dealt with the way we deal with other security problems. Most of the key decisions were made by sub-cabinet officials operating out of the limelight and with little congressional meddling. Yet the actions they took had costs roughly equal to a major weapon system, and greater than Bush's four-year request for spending on the Strategic Defense Initiative.³¹ It is hard to imagine how we could have considered the ozone problem as gravely as the literature linking environment and security calls on us to do, without also weighing the costs as gravely as we do conventional security risks. I am not arguing that the costs were prohibitive, only that if the costs had been subject to greater congressional and public scrutiny, we might have been less ambitious in meeting this threat. The few times that the issue did reach the attention of the cabinet, it almost got derailed by those who thought the control measures were too costly.³² It is hard

30. For the period 1987–90, see Parson, "Protecting the Ozone Layer"; and Benedick, *Ozone Diplomacy*. For the 1992 amendments, see Edward A. Parson and Owen Greene, "The Complex Chemistry of the International Ozone Agreements," *Environment*, Vol. 37, No. 2 (March 1995), p. 16.

31. It is difficult to estimate the cost that the United States has borne in meeting this threat. Hardly any of the cost appears in governmental budgets, but is reflected rather in higher manufacturing costs for firms prevented from using CFCs, and lower profits for CFC producers. A 1988 Regulatory Impact Analysis estimated the cost to the United States of implementing the Montreal Protocol measures at \$7–40 billion. A 1989 study by the EPA estimated the cost of a phase-out at \$49 billion; Dickson, Clark, et al., "Stratospheric Ozone Depletion in the U.S.," Table 7. The actual costs will almost certainly be lower than these estimates, however, because many former users of CFCs have found alternative manufacturing processes that are significantly cheaper.

32. In the spring of 1987 the issue was yanked away from the EPA and State Department and debated in the Domestic Policy Council, where opponents of action came very close to curbing U.S. diplomats working toward the Montreal Protocol. In 1990 Chief of Staff John Sununu almost derailed the creation of the multilateral fund that made it possible to secure critical Indian and Chinese participation in connection with the London amendments.

to escape the conclusion that we probably saved more lives by treating the stratosphere as low politics than we would have by treating it as high politics.

GLOBAL CLIMATE CHANGE

This lesson has been lost on advocates for action to prevent climate change, who have devoted considerable energy to raising the issue as high as they can on the political agenda and linking it to security wherever they can. Although climate change probably does constitute a security threat because of the severity of the potential impacts, I argue here that linkage to the security issue promises risks but no benefits.

Assessing the severity of climate change and evaluating response options is vastly more difficult than such tasks were with the ozone depletion threat. The range of effects is much wider; they involve biological and physical systems less well understood than stratospheric chemistry; they involve a far greater range of industries; and the diplomatic constraints are much more pressing. The upper range of projected adverse effects is high enough, however, and the lower range of cost estimates low enough to make it possible to envision an ambitious control strategy analogous to the strategy designed to combat ozone depletion.

The possibility that a buildup of greenhouse gases, especially carbon dioxide, might cause the earth's temperature to rise and cause traumatic climate change was first raised in 1896.³³ Various national assessments since 1979 have estimated global warming arising from a doubling of CO₂ emissions to be from 1.5 to 4.5 degrees Fahrenheit. Current CO₂ concentrations are about 25 percent above their pre-industrial level, and may reach a level twice as high within fifty years.

The consequences of such a temperature rise have been estimated for fresh water resources, sea level rise, erosion, wetlands loss, agricultural productivity, biodiversity, air quality, human health, and urban infrastructure. Taken all together, these effects would constitute a security risk if they threatened such a severe upheaval to the domestic economy that Americans would suffer greater hardship than we as a society consider tolerable.

Human health is the only risk that, by itself, might constitute a security risk. This risk has been studied far less than the impact of sea level rise. However, the little that has been done suggests the possibility of fairly significant threats.

33. This section makes considerable use of analysis prepared by the Social Learning in the Management of Global Environmental Risks project at the Kennedy School of Government, especially Nancy Dickson and William Clark, "Global Climate Change: A Historical Perspective of Risk Management in the United States," April 1993.

Warming threatens to increase the incidence of malaria, Rocky Mountain spotted fever, and other insect-borne diseases. A 1986 study estimated that a doubling of CO₂ would lead to more summer heat-caused deaths.³⁴ It is unlikely that the human health threat alone, however, would be enough to justify corrective measures, estimated to cost on the order of a few percentage points of gross national product (GNP).

The extent to which climate change constitutes a security risk for the United States thus hinges on the magnitude of the welfare losses from climate change, and the speed with which they might occur. Estimating the welfare losses is very difficult to do. William Nordhaus calculates that for reliably quantifiable risks, a doubling of CO₂ produces a welfare loss of .25 percent of GNP. He acknowledges that this misses many unquantifiable but important factors, and argues for using a figure of about 1 percent.³⁵ Others have estimated losses closer to 5 percent of GNP.³⁶ A 1991 National Academy of Sciences report avoids making a precise damage estimate, instead providing evidence to suggest that some significant degree of damage is likely, even though it cannot be quantified.³⁷ Some remotely possible disasters would generate massive negative effects that swamp the most likely estimates.

The debate over the feasibility and cost of various response options is in a similar state of irresolution. Some estimates of the cost of reducing CO₂ emissions are forbiddingly high, while others produce estimates that are quite low or even negative.³⁸

Given the degree of debate over the magnitude of likely effects and the costs of control measures, there is little U.S. consensus on appropriate policy measures, aside from the commitment to increase our capacity to understand the

34. Whereas currently about 1,200 elderly Americans die each summer from heat-related stress, after carbon doubling the total would increase to 7,500. L.S. Kalkstein, et al., *The Impact of Human-Induced Climate Warming Upon Human Mortality: A New York Case Study*, Proceedings of the International Conference on Health and Environmental Effects of Ozone Modification and Climate Change (Washington, D.C., 1986) as cited in Dickson and Clark, "Global Climate Change."

35. William D. Nordhaus, *Managing the Global Commons: The Economics of Climate Change* (Cambridge, Mass.: The MIT Press, 1994).

36. For a sophisticated alternative assessment, see William R. Cline, *The Economics of Global Warming* (Washington, D.C.: Institute for International Economics, 1992).

37. National Academy of Sciences, *Policy Implications of Greenhouse Warming* (Washington, D.C.: National Academy of Sciences, 1991).

38. Macroeconomic models tend to produce high estimates, on the order of 5 percent of GNP, while technology-based models tend to produce lower estimates. For the former, see A. Manne and R. Richels, "CO₂ Emission Limits: An Economic Cost Analysis for the USA," *The Energy Journal* Vol. 11, No. 2 (April 1990), pp. 51-74. For the latter, see Amory Lovins, et al., *Least-Cost Energy: Solving the CO₂ Problem* (Andover, Mass.: Brick House, 1981).

problem, and to create the global machinery for undertaking collective action should we decide that it is desirable. The 1991 National Academy report recommends a mixture of adaptation and mitigation strategies. It justifies the adaptation measures in terms of relative cost-effectiveness as compared to mitigation, and because even draconian mitigation measures are unlikely to prevent some warming.³⁹

Although it makes sense to consider climate change a security threat because of potential economic upheaval and potential loss of American lives, it is less clear how doing so enhances the way we think about the threat. Although those who have linked the climate case to security have done so hoping to spur greater action,⁴⁰ making an issue a security issue does not put it on the fast track. Some security threats are better ridden out. Some are quagmires waiting to bog down imprudent policy-makers. For every Korea that spurs greater diligence, there will be a Vietnam that counsels caution. As the ozone example suggests, success may be independent of, even impeded by, wrapping the problem in the security mantle. It is instructive that when climate change was being debated by heads of state and branded as an issue of U.S. security by members of Congress and other elites during the last few years of the Bush administration, there was virtually no progress at the level of grand, overarching policy. But in the depths of the EPA, so far removed from the spotlight that many environmentalists did not even know about it, an innovative program was implementing a successful carbon reduction program.⁴¹

In looking at direct environmental threats to U.S. security, we have moved away from the literature that explicitly attempts to link environment and security, and toward a more self-contained environmental literature. That is where useful answers are most likely to be found to the relevant questions. There is one set of questions that cannot be answered in this way, however, and this is one area where the literature on environment and security could make a useful contribution but has not: the problems associated with making large-scale policy trade-offs among competing national interests. Under "traditional" definitions of security, these trade-offs were made at the national level in the defense budget and in the development of strategic plans by the Pentagon. Defense budgets and strategic plans embody judgments as to which

39. National Academy of Sciences, *Policy Implications of Greenhouse Warming*.

40. See, for example, David A. Wirth, "Climate Chaos," *Foreign Policy*, No. 74 (Spring 1989), pp. 3-22.

41. The EPA's Green Lights Program has been a silent success story. It has managed, on a shoestring budget, to put in place energy saving measures on an unprecedented scale.

security threats are most pressing and which responses are most appropriate. It is enormously difficult to make sound judgments, but a set of useful practices and evaluation procedures has emerged.⁴² If security is broadened to include environmental threats, the problem is even more challenging.

U.S. environmental policy-making has historically been characterized by a high reliance on legislative instruments and judicial review sparked by litigation. This has resulted in an environmental policy style characterized by a high reliance on scientific judgments and, where these are absent, on rigid legislative criteria capable of strict interpretation by the courts.⁴³ This policy style would be singularly unsuited to coping effectively with big security risks, which require complex judgments concerning highly uncertain phenomena. They require long-term strategies that may not necessarily be justifiable with reference to science, and flexibility that may be incompatible with rigid legislation.

If ozone depletion is considered the prototypical environmental security problem, then the existing style of environmental policy-making is appropriate. Ozone was a fairly rapidly emerging problem for which a solution was found that was fairly straightforward. It was like the security task of pushing back North Korea or of getting Saddam Hussein out of Kuwait. For action on problems like climate change, however, we need a policy-making style more like defense policy than environmental policy. Climate change is a problem much more like the problem of containing the Soviet Union; it requires a grand strategy to guide actions in the face of distant, uncertain threats, and an overarching commitment from high levels of leadership to stay the course through the ebbs and flows of popular sentiment.

Environmental Degradation as an Indirect Political Threat to U.S. Security Interests

Although consideration of direct threats to U.S. security leads us into the domain of physicists and economists and the mainstream environmental literature, when indirect threats are concerned, one can still identify a literature that styles itself as part of an "environment and security" research program. This literature looks for environmental causes of civil strife, regional conflict,

42. The literature is vast. Among others, see Huntington, *The Common Defense*; William W. Kaufmann, *A Reasonable Defense* (Washington, D.C.: Brookings Institution, 1986).

43. See David Vogel, *National Styles of Regulation: Environmental Policy in Great Britain and the United States* (Ithaca, N.Y.: Cornell University Press, 1986); and R. Shep Melnick, *Regulation and the Courts: The Case of the Clean Air Act* (Washington, D.C.: Brookings Institution, 1983).

and mass migration, all of which could in turn potentially constitute a threat to U.S. security interests. In these cases, environmental degradation is an indirect, rather than direct, threat to the United States because the environmental change itself does not degrade the most important American values; rather, these values are degraded by political change sparked by the environmental change.

Thomas F. Homer-Dixon presents the rationale for considering the possibility that environmental degradation might be responsible for violent conflict and outlines a research strategy for understanding the links.⁴⁴ One aim of the research effort is to "help identify key intervention points where policy makers might be able to alter the causal processes linking human activity, environmental degradation, and conflict."⁴⁵

The suggestion that environmental change might spark political conflicts that could harm U.S. security interests is not new. Following surprising declines in world food production in the early 1970s as a result of abnormal weather patterns, the U.S. Central Intelligence Agency (CIA) conducted an analysis of the climate change risk in 1974 and concluded that should abnormal weather continue, U.S. interests would be threatened by the resulting political instability overseas.⁴⁶ Homer-Dixon cites work from 1977 and 1980 sounding similar alarms. More recently, it is possible to identify a more or less coherent effort at fashioning a research program, rather than isolated studies.

What are the findings of this fledgling research program, and what are its implications for contemporary U.S. security policy? The answer is far from clear. Reading this work is somewhat like trying to focus on a near and distant object at the same time through a camera. Sometimes the environmental theme comes into clear focus, and sometimes the security theme comes into focus, but the two never seem to come into focus together.

One effort to understand the role of environmentally induced mass migration in sparking violent conflict, for example, was able to find considerable evidence that migration can cause violence and that environmental degradation can cause migration, but no case in which degradation caused migration then caused violence.⁴⁷

44. Thomas F. Homer-Dixon, "On the Threshold: Environmental Changes as Causes of Acute Conflict."

45. *Ibid.*, p. 88.

46. Central Intelligence Agency study cited in Dickson and Clark, "Global Climate Change."

47. Astri Suhrke, "Pressure Points: Environmental Degradation, Migration and Conflict," Occasional Paper No. 3, Project on Environmental Change and Acute Conflict, March 1993.

The results of two years of study by some thirty scholars under the aegis of the Environmental Change and Acute Conflict Project have been summarized recently.⁴⁸ While the evidence clearly refutes the null hypothesis that environmental degradation is irrelevant to political conflict, it is less clear what the evidence might affirmatively show. Although Homer-Dixon criticized prior writing on environment and security as “anecdotal,”⁴⁹ the empirical results of this effort still amount only to a collection of illustrations of violent conflict in which environmental resources played some important role. It offers more anecdotes, but not more understanding. Moreover, in many of these illustrations environmental factors are playing fairly uninteresting analytical roles. In many cases they are simply the scarce resource over which conflict is waged. But in economies dominated by natural resources rather than manufacturing, it should not be surprising to find natural resources the focus of political conflict; this is the case in the example of white Mauritanian Moors expelling black Mauritanians from farm land made valuable by the construction of a dam on the Senegal River.⁵⁰ In other cases environmental degradation is clearly a secondary or tertiary phenomenon behind more fundamental forces that are responsible for violence; this is the case in the example of Philippine guerrillas who have found support among landless peasants.⁵¹

The research on environmental degradation and political conflict has failed to generate new findings largely because of limits inherent in the cases that have been studied. The main thrust of the effort has been to look at cases of violent conflict and then to investigate the environmental factors involved. Homer-Dixon says that he and his colleagues chose only cases where there was environmental damage and where conflict was either under way or imminent, in order to falsify most effectively the null hypothesis that the two factors are not causally related.⁵² But it is difficult to imagine not being able to find conflicts in developing countries involving renewable resources. Developing

48. Thomas F. Homer-Dixon, Jeffrey H. Boutwell, and George W. Rathjens, “Environmental Scarcity and Violent Conflict,” *Scientific American*, Vol. 268, No. 2 (February 1993), pp. 38–45; Thomas F. Homer-Dixon, “Environmental Scarcities and Violent Conflict: Evidence from Cases,” *International Security*, Vol. 19, No. 1 (Summer 1994), pp. 5–40. For results on a similar research project, consult the occasional paper series of the Environment and Conflicts Project, Swiss Peace Foundation, especially Volker Böge, “Bougainville: A ‘Classical’ Environmental Conflict?” No. 3 (October 1992); and Mohamed Suliman, “Civil War in Sudan: The Impact of Ecological Degradation,” No. 4 (December 1992).

49. Homer-Dixon, “On the Threshold,” p. 83.

50. Homer-Dixon, Boutwell, and Rathjens, “Environmental Scarcity,” p. 41.

51. *Ibid.*, p. 42.

52. Homer-Dixon, “Environmental Scarcities,” p. 7.

country elites fight over renewable resources for the same reason that Willy Sutton robbed banks: that is where the money is. The more logical research strategy under the circumstances would be to compare societies facing similar environmental problems but exhibiting different levels of violent conflict. That would permit some precision in identifying the conditions under which environmental degradation generates violent conflict and when it does not, and for formulating useful policy advice on how to avoid violent outcomes. By instead taking aim at a null hypothesis that has virtually no advocates, researchers have lost the ability to say anything more than “the environment matters,” something not seriously disputed before this work was undertaken. Even in those cases where no significant violence is present, researchers have squandered the ability to ask “why not?” and instead have spent their time asking “what will it look like when it happens?”⁵³

One justification given for devoting analytical efforts to understanding “what will happen,” instead of explaining what did happen, is to be relevant to unfolding policy debates. How useful is the policy advice coming out of the environment and security scholarship? Writing in *International Security*, Homer-Dixon demurs from offering policy prescriptions, except to counsel reevaluation of predictions of Chinese stability. In *Scientific American*, Homer-Dixon and his collaborators write that “there are significant causal links between scarcities of renewable resources and violence. To prevent such turmoil, nations should put greater emphasis on reducing such scarcities. This means that rich and poor countries alike must cooperate to restrain population growth, to implement a more equitable distribution of wealth within and among their societies, and to provide for sustainable development.”⁵⁴

These recommendations are too general to be the “key intervention points” promised in Homer-Dixon’s 1991 article. The policies recommended after the scholarship are no more precise than the banal advice on the table before the research was conducted, nor are there any new reasons to think such advice might work.

53. The case studies on China are clear examples of this. See Jack A. Goldstone, “Imminent Political Conflicts Arising from China’s Environmental Crises,” Occasional Paper No. 2, Project on Environmental Change and Acute Conflict, December 1992. As prognostications, these and similar efforts appear to be of high quality. As such, however, they can illustrate what scholars already know but not add to our store of knowledge.

54. Homer-Dixon, Boutwell, and Rathjens, “Environmental Scarcity,” p. 45. Homer-Dixon offers more extensive discussion of policy recommendations in “Environmental and Demographic Threats to Canadian Security,” *Canadian Foreign Policy*, Vol. 2, No. 2 (Fall 1994), pp. 7–40. These discussions, while more extensive, largely reflect insights that are not attributable to any of the research done on environment and security links.

Ironically, then, efforts to study environment and security more rigorously and to formulate more precise policy advice appear to have circled back to the comfortable rhetoric and bland recommendations that marked their point of departure.

It does not have to remain this way. Better research and better advice can grow out of an understanding that environmental factors interact with a variety of other factors to spawn violent conflict. By the time one arrives at the end of the logical chain—violent conflict—so many intervening variables have been added that it is difficult to see the independent contribution of environmental degradation. There appear to be no interesting mechanisms that are purely and discretely environmental. Therefore any research strategy aimed at deepening understanding of security problems by studying only the environmental connections can never succeed. That would be like trying to estimate the coefficient for one variable in a multiple regression equation without estimating the others. Instead, for those who worry about global conflict, the attention ought to be on how the whole constellation of factors that promote or impede violence operate.

To reframe the point in this way is to shed light on a major shortcoming of contemporary security studies; specifically, it has seriously neglected the study of regional military conflict for over a decade.⁵⁵ Therefore, in a rather indirect way, the environment and security debate has done a service by reminding students of security of the need to retool in the post-Cold War era, to be able to offer useful judgments on how regional and internal military conflicts emerge and how they can be prevented.⁵⁶ A renewed research program on the causes of regional conflict is much more likely to generate useful policy advice than one trying to view the world through an environmental lens, if the goal is to prevent such conflicts and manage them better when they do occur.

Such research is under way, and we can assess its comparative advantage by examining its findings and policy advice, and comparing it to what emerges from the environment and security literature. Consider what Homer-Dixon refers to as problems engendered by “population movement and group-identity conflicts,” one of two environment-conflict phenomena to receive significant empirical confirmation in his research (the other being “economic

55. Walt, in his essay surveying “The Renaissance of Security Studies,” scarcely touches on the topic.

56. The debate sparked by Samuel Huntington’s thesis that future conflicts are likely to fall along civilization fault lines has served this same purpose. Samuel P. Huntington, “The Clash of Civilizations,” *Foreign Affairs*, Vol. 79, No. 3 (Summer 1993), pp. 22–49.

deprivation, institutional disruption, and civil strife"). Homer-Dixon argues that environmental scarcity in Bangladesh, attributable to population growth, is responsible for large migration into the Indian states of Assam and West Bengal, in turn sparking high levels of political violence. He argues that environmental scarcity in large areas of the developing world is likely to spark similar conflicts. (That is an unwarranted extrapolation from a single case study, especially one that was deliberately selected because it was known to reflect environment-conflict linkages.) A recent comparative study of ethnic conflict, by contrast, paints a quite different picture. Ted Robert Gurr finds that by far the most significant factor prompting communal groups to fight is contention for state power. Gurr finds some support for the proposition that "ecological and demographic stress" is partially responsible for political agitation on the part of indigenous groups (but not all minorities); however, he observes that this factor is declining in significance.⁵⁷ Gurr's policy recommendations focus on strategies for clarifying group rights and resolving inter-group conflicts, rather than economic or environmental assistance from outside.⁵⁸ Gurr's results are based on a systematic study of all the world's minorities that are either facing serious discrimination or are actively mobilizing on behalf of political demands; this makes his generalizations considerably more reliable than Homer-Dixon's case studies. If our goal is to reduce the harm from violent conflict, Gurr's advice is more likely to succeed than Homer-Dixon's.

Gurr identifies the "weak, heterogeneous states like those of Africa" as the prime locations for likely future violence. Such states have tended to generate the most refugees. In 1993 Africa was home to 36 percent of the world's refugees, the Middle East to 30 percent, and Asia to 18 percent. North America accounted for only a little over 1 percent.⁵⁹ Because refugees tend to flee one poor country to seek safe haven in another poor country, refugee flows present a very weak threat to direct U.S. interests.

This suggests that if the American public is going to be mobilized to devote diplomatic and financial resources to alleviation of environmental pressures to migrate, efforts to frame the problem as a threat to U.S. security is not a wise

57. The core results of the study are summarized in Ted Robert Gurr, "Peoples Against States: Ethnopolitical Conflict and the Changing World System," *International Studies Quarterly*, Vol. 38, No. 3 (September 1994), pp. 347-378. The full results are in Ted Robert Gurr, *Minorities at Risk: A Global View of Ethnopolitical Conflicts* (Washington, D.C.: United States Institute of Peace, 1993).

58. Gurr, "Peoples Against States," pp. 367-368.

59. U.S. Committee for Refugees, *World Refugee Survey—1994* (Washington, D.C.: U.S. Committee for Refugees, 1994), pp. 40-41. The global refugee population in 1993 was 16,255,000.

move to make. Almost all the most likely “environmental refugees” are too far away to affect U.S. security except quite remotely. Humanitarian motives are likely to go further than strategic ones.⁶⁰

This is *not* to say that environmental degradation does not pose serious problems in much of the world, or that there are not compelling reasons to seek solutions to such problems. It is only to argue that focusing on these environmental problems is a misguided method for attacking the problem of violent conflict. Environmental scholars such as Homer-Dixon have succeeded at showing that the environment matters in processes of political conflict. Most sophisticated scholars of political conflict already knew that, and now even more do. The role of Homer-Dixon and his colleagues can be likened to the scholars earlier in this century who drew attention to the economic factors that led nations into war. While many of those scholars overstated their case, they did invaluable service in helping spark a general rethinking of the causes of war and of strategies for peace. Such a rethinking required abandoning the most zealous claims, however, and focusing more on the complex phenomenon of war and less on the single cause of economic conflict. Now is the time for a similar shift in the environment and security debate.

Conclusions

The assertion that many environmental problems constitute security risks is correct, and is of very little importance.

The purely rhetorical line of argumentation that urges us to consider environmental problems and security problems as by their very nature inseparable is probably destined to disappear. Whatever needs for attention-getting may have been present in the late 1980s, they are past now. If the problems these writers point to are really as serious as they say, then the more pressing need is not for more “new thinking” but for effective solutions.

60. There is another important reason to be cautious about linking violent conflict, refugee flows, and environmental degradation. Historically the term “refugee” has been reserved for those fleeing political persecution, and such modifiers as “economic” have been added as a way of designating people to whom the world owes a lower level of assistance: “economic” refugees generally are granted fewer rights, less aid, and less sympathy than political refugees. Even though most proponents of the term “environmental refugee” intend it to help increase support for the poor who must flee their homelands, the actual effect may thus be the reverse. An early proponent of the term “environmental refugee” was Essam El-Hinnawi, *Environmental Refugees* (Nairobi: United Nations Environment Program, 1985). For criticisms, see Richard Black, “Geography and Refugees: Current Issues,” pp. 3–14 in Richard Black and Vaughan Robinson, eds., *Geography and Refugees: Patterns and Processes of Change* (London: Belhaven Press, 1993). I am grateful to Jill Cetina for this citation and for first raising this issue with me.

The existential strand of the environment and security literature may have been unique to the historical moment in which it emerged. At a time when environmental awareness was rapidly rising among publics, politicians were competing for “green” votes, a global convention was succeeding at eliminating a whole class of dangerous compounds, and the Cold War was ending, for many in the environmental community the world seemed poised on the threshold of a new age. It was possible to pose the question (with all seriousness) in a mainstream journal: “Could the time be coming when as much lasting security can be purchased through trees as through tanks?”⁶¹

Those heady days of optimism are past. The world of 1995 looks nowhere near as primed for a nudge toward ecotopia as the world of 1989 did. Proposals for new thinking are giving way to more appropriate attention to work on developing creative solutions to specific problems. Those writers who continue to brandish the environment-*qua*-security rhetorical sword are likely to find themselves unable to communicate with those who view security in conventional terms.

I argue that ozone depletion and climate change are the only significant environmental problems that currently pose a direct physical harm to U.S. interests. While both problems can thus properly be considered as security problems, and both warrant serious responses, it is not clear whether engaging in the first task facilitates the second. Although many analysts accept in principle the connection between these environmental risks and security, there is no evidence that this affects in any way the kind of research they undertake or the kind of recommendations they make. The equation does not appear to do any great good, and the ozone example suggests that in some cases better results can be obtained without it.

Other important environmental problems that have security implications do so through indirect routes, through processes of violent conflict in domestic and regional settings in the developing world. But to respond effectively to these problems one needs to deepen understanding of regional and civil conflict; the environment occupies only one of many causal roles. By the time one moves from understanding conflicts to recommending responses, the environment is likely to fade far into the background.⁶²

So in the end, the pleas to consider the environment as a security issue lead us further and further from the environment and security nexus. Examination

61. Myers, “Environment and Security,” p. 41.

62. This certainly does not mean that we do not need policies to solve environmental problems in developing countries, only that the route to devising such policies is through research on environment and development, not research on violent conflict.

of direct threats to American values settles within the traditional domain of environmental policy studies and stays there. Examination of indirect threats stemming from phenomena such as violent conflict in the Third World settles in another traditional domain—studies of war and unrest—and stays there. Neither path delivers on the promise of what Mathews calls a “new way of thinking,” but perhaps what we need is better old thinking. In fact, now that the environmental advocates have got everyone’s attention, this is precisely the time to turn away from slogans and toward the more mundane work of integrating environmental considerations into research and analysis.