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Introduction

Since the Cold War ended, scholars and policymakers have deliberated over whether to redefine traditional notions of security in light of new threats. Within this context, there is an increasingly prominent, multi-disciplinary debate over whether environmental problems—exacerbated by demographic change—should be considered as security concerns. An increasing number of scholarly articles have appeared on the subject, and the Clinton administration has issued several statements (included in this *Report*) that embrace environmental problems as security concerns. In addition, the administration has created several new government offices that address "environment and security" concerns—most notably, a "Global Environmental Affairs" Directorate at the National Security Council, a Department of Defense office for "Environmental Security," and an office of Under Secretary of State for Global Affairs.

The range of issues cited as "environmental security" matters are numerous, as are the arguments of those who oppose linking environment and security conceptually, linguistically or practically. The Environmental Change and Security Project, and its bi-annual *Report,* aims to provide an impartial forum in which practitioners and scholars who rarely meet can share ideas, and to expose a wide audience to the myriad arguments and activities associated with "environment and security" discussions. Since the Wilson Center does not take positions on any issues and is strictly non-partisan, the Project's Discussion Group meetings (summarized in this issue) bring together experts from widely divergent ideological, political and professional backgrounds—including current and former legislative and executive branch officials representing numerous agencies and departments, experts from the military and intelligence communities, and representatives from academia, non-governmental organizations, and the private sector. The Project does not seek to forge consensus, but rather to promote new ways of thinking. It is our hope that these exchanges, and this *Report,* will help foster networks of experts, disseminate information about disparate but related activities, and ultimately inform better policymaking and scholarly research.

This first issue of the *Report* focuses on North American perspectives and initiatives on environment and security, and includes literature surveys and a detailed bibliography to introduce readers to the writings to date. Subsequent issues will highlight specific themes and environmental problems, and will more fully incorporate other nations' perspectives and activities. We hope you find this issue helpful, and look forward to receiving your comments, suggestions and contributions.

Sincerely,

P.J. Simmons
Coordinator

Environmental Security: Issues of Conflict and Redefinition

by Geoffrey D. Dabelko and David D. Dabelko

THE CONTEMPORARY CONCEPT OF SECURITY HAS EMERGED LARGELY IN THE CONTEXT OF THE COLD WAR. AT its most basic level, Western security studies have focused on military strategies for nuclear weapons and conventional arms as instruments to guarantee security with armed force. Military threats have been countered with military might. But this preoccupation with a military conception of security has not been without costs.

The narrow military conception of security has largely excluded consideration of potential non-military threats and non-military means of providing security. Economic and ecological developments in an increasingly interdependent world present potential threats for actors at all levels of analysis. The causes, effects and solutions of these economic and environmental challenges ignore national boundaries, calling into question many assumptions of statist definitions of security.

The notion of "environmental security," conceived in a multitude of ways, represents an alternative paradigm for ordering and addressing threats in an increasingly interdependent and environmentally-degraded, post-Cold War world. This paper outlines some of the benchmark arguments in North American environment and security debates to help readers sort through the existing literature.[1] References to various authors and writings correspond to the bibliography appearing on page 10.

CONTEMPORARY CONCEPTIONS OF SECURITY

Modern definitions of security are closely tied to a state's defense of sovereign interests by military means. At its most fundamental level, the term security has meant the effort to protect a population and territory against organized force while advancing state interests through competitive behavior. The state has been the prevailing entity for guaranteeing security, and state-centered theories have dominated discussions of international relations, especially since World War II.

Within this state-centered analysis, threats typically have been perceived as military challenges and have traditionally been countered with armed force. This narrow focus on military threats and responses, or "high politics," has meant that other factors such as international economic transactions and the environment, or "low politics," have been considered secondary issues for the security of states.

This approach was challenged with the onset of the oil crises of the 1970s, which dramatically illustrated the relevance of economic and resource scarcity issues for the security of states. Two decades later, the collapse of the Soviet Union would further prompt a reconsideration of traditional conceptions of security. Without the unifying threat of the Soviet Union, Western powers have focused more on trade and economic competitiveness. This North-North competition has taken on

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Geoffrey D. Dabelko is a doctoral student in the Department of Government and Politics at the University of Maryland, College Park, and Project Associate for the Environmental Change and Security Project of the Woodrow Wilson International Center for Scholars. David D. Dabelko is Professor of Political Science at Ohio University, Athens. *A complete version of this article appears in the forthcoming* Environment & Security ("E & S") *1 (1): 1995. The authors thank* E & S *co-editors Paul Painchaud and Simon Dalby, and the Consortium for the Study of Environmental Security, for granting permission to reprint these excerpts. The authors are also grateful to Ken Conca, Philippe Le Prestre, Dennis Pirages, P.J. Simmons and an anonymous reviewer for their valuable comments.*

a security dimension and is viewed by some to be the battlefield of the 21st century (Pirages 1989; Turner 1991; Thurow 1992; Sandholtz *et al.* 1992).

During the same time period and continuing to the present day, a number of influential international reports and conferences have sparked public awareness of the seriousness of global environmental threats. Coupled with numerous environmental catastrophes and discoveries, these reports have helped to create a heightened "ecological awareness" (Brown 1989: 521).[2] The concept of environmental security, in the multiple forms discussed below, represents the results of efforts to bring environmental concerns to the high table of priority issues where security has traditionally had a seat.

Arguments For Considering The Environment As A Security Issue

Explicit calls for including environmental concerns within definitions of security have an extended history. This dialogue has become particularly intense with the end of the Cold War and the resulting search for an orienting security paradigm (Brown 1977; Ullman 1983; Mathews 1989; Buzan 1991; Pirages 1991; Myers 1993). The proposed conceptions of security range from viewing environmental stress as an additional threat within the conflictual statist framework to placing environmental change at the center of cooperative models of global security. The literature on environmental change and redefining security, just that written from the North American perspective, has become so extensive that only selected contributions can be highlighted in this review of this debate.

Richard Ullman (1983) argued for redefining security to include threats other than immediate military ones. Focusing exclusively on military threats carries the high opportunity cost of neglecting potentially more menacing dangers. Ullman acknowledged that it is intellectually challenging to incorporate non-military threats into the concept of national security. But he contended that such issues as population growth in developing nations and the accompanying competition for control of resources and transboundary migration, could result in severe conflict. Ullman postulated that diminishing resources, especially fossil fuels, would be a likely source of future conflict. He redefined a threat to national security as an:

> action or sequence of events that (1) threatens drastically and over a relatively brief span 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 the government of a state or to private, nongovernmental entities (persons, groups, corporations) within the state (1983: 133).

The addition of non-military threats to the definition of national security has roots in the economic oil crises and limits to growth arguments of the early 1970s (Meadows *et al.* 1972). Both internal instability and international conflict were the possible results of anticipated resource scarcities. A number of studies form the basis for efforts to formulate a theory of conflict based on resource scarcity (Gurr 1985; Timberlake and Tinker 1985; Westing 1986; Gleick 1993). Food, water and oil issues present examples of scarcity playing an important precipitating role in conflict. Traditional mechanisms of the market have proven inadequate for effectively alleviating stresses caused by such shortages. This resource scarcity literature does not necessarily employ the term "environmental security," but it does provide evidence for introducing the element of non-military threats into the modern conception of security.

Despite significant anecdotal evidence, some scholars have challenged the arguments for considering resource scarcity as a contributing factor to interstate conflict. Lipschutz and Holdren (1990) questioned the role non-renewable resources such as oil and minerals play in precipitating interstate conflict. They found that it was the disruptions of environmental services such as clean water and clean air—rather than natural resources goods—that were likely contributors to conflict.

Moving Beyond Strictly Statist Conceptions of Security

Beyond the resource scarcity debates, a number of observers have called for a more holistic definition of security that moves away from competitive models of state behavior (Mathews 1989; Mische 1989; 1992; Renner 1989; Prins 1990; Myers 1993). These conceptions often emphasized the importance of levels of analysis above and below the level of the state. Myers (1993: 31) enunciated one perspective by stating:

> In essence...security applies most at the level of the citizen. It amounts to human wellbeing: not only protection from harm and injury but access to water, food, shelter, health, employment, and other basic requisites that are the due of every person on Earth. It is the collectivity of these citizen needs—overall safety and quality of life—that should figure prominently in the nation's view of security.

Mathews (1989) has argued explicitly for redefining security in broader terms that include attention to environmental variables. Environmental degradation often undercuts economic potential and human well-being which in turn helps fuel political tensions and conflict. Occurring within and among states with domestic turmoil, these dynamics often produce consequences that extend beyond territorial borders. In keeping with a

more all-encompassing perspective, Mathews centered a great deal of her environmental security concerns on global issues such as stratospheric ozone depletion, greenhouse warming, and deforestation, while also including the importance of resource scarcity and regional degradation.

This theme of globalization distinguishes more holistic efforts to redefine security from prior conceptions that continue to emphasize the competitive behavior among states. The transboundary nature of global environmental problems suggest that cooperation, not competition, between states represents the best strategy for effectively addressing these challenges. Mathews (1989: 162) maintained that "environmental strains that transcend national borders are already beginning to break down the sacred boundaries of national sovereignty." From this perspective, non-governmental and intergovernmental organizations have emerged as critical actors that often utilize cooperation in facing these global environmental issues (Thomas 1992; Haas 1989; Lipschutz 1992). With the emphasis on cooperation rather than competition for achieving security, these arguments for redefinition focus more on "global" or "comprehensive" conceptions of security and less on national conceptions.

Humans Versus Nature

Still others view security threats from environmental degradation as related to the competitive relationship between humans and nature in the 21st century (Pirages 1989; 1991). Common opponents in such competition include disease causing micro-organisms that account for a much higher yearly death toll than warfare. Technological developments such as genetic engineering promise to expand the confines of social evolution beyond the process of natural selection. Territorial boundaries become less meaningful in this type of battle.

This conception of environmental security (sometimes referred to as "ecological security") presents an interesting paradox: while it promotes cooperative solutions to address problems, a very strong competitive element persists—that is, the competition between homo sapiens and other species. Simultaneously, only through human behavior and value modification, fostering cooperation and environmental awareness, can we hope to address such problems. Human actions are leading to the rapid extinction of species, proliferation and mutation of disease-causing agents, and degradation of ecosystems that in turn threaten human well-being. Overcrowding is pushing humans into heretofore relatively unpopulated areas where they come in contact with micro-organisms that can be "liberated" by the global transportation network. A real danger therefore exists that humans will depend only on technological innovation to combat and to overcome an increasingly hostile environment that is of their own making. This same technological innovation often adds to environmental degradation as it seeks to overcome it.

Environmental Stress as a Cause of Conflict

The predominant focus of recent research and writings about environmental security has been on whether there are causal links between environmental change and conflict. Various authors have tried to demonstrate these links through case studies, and have often argued for putting environmental change at the high table of international politics (Earthscan 1984; Timberlake and Tinker 1985; Gurr 1985; Westing 1986; Myers 1987; Molvær 1991; Libiszewsk 1992; Böge 1992; Gleick 1993; Kumar 1993; Saviano 1994).

At the forefront of this effort, Thomas Homer-Dixon and his colleagues (1991; 1993; 1994) have attempted to identify links between environmental scarcity and acute conflict without formulating a precise definition of environmental security.[3] His multi-year project focused on extensive, single case studies in developing countries suspected to be the most likely to exhibit environmental conflict.

At the beginning of the project, Homer-Dixon (1991) postulated an initial conception of the links between environmental degradation and conflict as *environmental change* precipitating *social change.* This *social change* would then figure prominently as a cause of *international conflict.* Environmental change presented a possible but not necessary antecedent for acute conflict. Homer-Dixon extended his theory by specifically relating individual types of environmental change to different types of conflict. However, the link between environmental change and conflict was not considered to the exclusion of intervening variables that mediated outcomes. Homer-Dixon (1991) cited ethnicity, class, religious structures, and regime legitimacy as factors that could affect this causal relationship.

Among the results of his investigations, Homer-Dixon (1993; 1994) found evidence of environmental scarcity serving as an underlying yet strong cause of intrastate conflict. This "sub-national," "diffuse" and "persistent" conflict took the form of ethnic clashes due to environmentally-induced population movements, and civil strife stemming from environmental scarcity that affected economic productivity and therefore livelihoods, elite interests, and state capacity to confront these challenges (Homer-Dixon 1994: 39). These internal conflicts could lead to a fragmentation of the state or, conversely, to a more authoritarian "hardening" of the state (Homer-Dixon 1994: 36). Few cases, however, supported the interstate conflict hypothesis in terms of renewable resources as the source of conflict.[4] Homer-Dixon also downplayed the possibility that global issues such as climate change and ozone depletion will make significant contributions to conflict in coming decades.

In response to the research on environmentally-induced conflict, some military security thinkers now

consider environmental stress as an additional threat to state stability that must be anticipated and planned for (Butts 1993; 1994; Constantine 1993b).[5] In addition, these considerations have found their way into official U.S. documents and institutions. For example, environmental issues have received more and more attention as security interests in each iteration of the U.S. National Security Strategy since 1991.[6] Furthermore, the Department of Defense created a new Deputy Under Secretary position for Environmental Security in 1993, the intelligence community created an Environmental Task Force in 1993 (described below), and Congress allocated over $420 million (beginning in 1992) for the Strategic Environmental Research and Development Program (Swords 1994).

These policy developments emphasize different goals under the environmental security banner. The office of the Deputy Under Secretary of Defense for Environmental Security has focused on cleanup and "greening" future military activities with its mission of "compliance, conservation, cleanup and pollution prevention plus technology" (Goodman 1993). Environmental Task Force (ETF) discussions have sought to identify procedures to "scrub" and declassify intelligence data gathered for other purposes in order to be released for scientific study. Defense intelligence analysts are being trained to be aware of environmental stress as a potential threat to regime stability. Finally, the armed forces and intelligence agencies have participated in relief missions to allay human suffering that is symptomatic of environmental catastrophes (Constantine 1993a).

While this paper does not present a detailed discussion of these emerging institutional arrangements and their specified goals, the aforementioned examples provide an indication of how government is interpreting and operationalizing these academic arguments.

Arguments Against Considering Environment As A Security Issue

The cases made against redefining security to include environmental issues and/or accepting environmental stress as a cause of conflict differ markedly in terms of the sources of the critiques and the critiques themselves. As might be expected, some observers favor keeping a narrow definition of security focused on military threats (Dunlap 1992-93). Others oppose a redefinition of security but fully support the identification of environmental degradation as a major concern (Deudney 1990; 1991; Dalby 1992; 1994; Bruyninckx 1993; Conca 1994; Diebert 1994). Deudney in particular questions the causal links between environmental change and interstate conflict, and therefore challenges the utility of using traditional security responses for pressing environmental problems.

"Keep a Military-Based Definition of Security"

Despite radically different geo-political circumstances after the Cold War, the disorder of the "new world order" still presents a multitude of threats that necessitate military responses. According to this line of reasoning, widening the scope of security undercuts the ability to conduct traditional missions that counter explicitly military threats (Huntington 1957; Dunlap 1992-93). For example, some observers have objected to increasing the military's role in humanitarian missions, claiming the armed forces are not trained for these duties. The opportunity costs for executing these additional assignments are seen as full preparedness for what is perceived to be the military's primary mission: warfighting. The same logic is also applied to countering environmental threats. The conflictual basis of national security makes the instruments designed to safeguard the state inappropriate for addressing the many environmental problems that ignore national borders and therefore require cooperative approaches.

"Environmental Security Engages Mismatched Institutions"

A second case against linking environmental degradation and national security is based on perceived differences between national security and environmental threats, and challenges to the notion that environmental degradation leads to interstate violent conflict. Daniel Deudney (1990: 461) argues against the linkage based on three claims:

> First, it is analytically misleading to think of environmental degradation as a national security threat, because the traditional focus of national security—interstate violence—has little in common with either environmental problems or solutions. Second, the effort to harness the emotive power of nationalism to help mobilize environmental awareness and action may prove counterproductive by undermining globalist political sensibility. And third, environmental degradation is not very likely to cause interstate wars.

Deudney focuses on the conflictual nature of national security threats and responses among states. Efforts to advance national security are accompanied by high levels of secrecy and competition. Thus, the capabilities of the conflictual and secretive security structure are mismatched with the cooperative and transparent responses deemed most appropriate for addressing environmental threats (Finger 1991; Prins 1990).

Moreover, Finger (1991) and Pirages (1991) identify military activities and the conflictual security paradigm as significant causes of environmental degradation. Because of the deleterious effect of military operations and

war-fighting, Finger argues that the tangible and theoretical instruments of security should be excluded from playing a role in addressing environmental problems. The military should be viewed as part of the problem, not part of the solution.

For Deudney (1990: 469), the growing public awareness of environmental problems represents a "rich and emergent world view" that should not utilize the theory of national security to advance its worthy goals. Instead, this "'green' sensibility can make a strong claim to being the master metaphor for an emerging post-industrial civilization" (Deudney 1990: 469).

"Environmental Security is an Inappropriate Label"

Another critique of environmental security stems from concern about lumping national security concerns and environmental problems under the common heading of "threats." Under this line of reasoning, military security threats and environmental problems are fundamentally different. Both kill people, but grouping such phenomena as disease and natural disasters under the term security [as done by Ullman (1983) and Wijkman and Timberlake (1988)] is conceptually muddled (Deudney 1991). By adding threats and making security so boundless, the term is made meaningless (Le Prestre 1993).

Similarly, Bruyninckx (1993) finds little utility in the term environmental security because a single working definition has not been established and accepted. As outlined earlier, conceptions range from covering the negative environmental impact of military operations to outlining a framework of sustainable development. Thus defining the term so broadly as to encompass such a wide array of problems, or so abstractly as to leave its meaning unclear, severely undermines the value of this "umbrella concept."

"Environmental Security is a Bureaucratic Tactic"

Still others claim the true motives for trying to redefine security in environmental terms reside in the realm of parochial bureaucratic interests. For some environmentalists, environmental security represents an opportunity to wrest resources from military budgets for the purposes of environmental protection. The receptivity of the traditional security structures (Department of Defense, Department of Energy, the intelligence community), to new green missions represents, for some, a classic bureaucratic politics effort to retain comparable budgetary outlays for the security apparatus (Finger 1991; Le Prestre 1993). With these motives as its foundation, environmental security threatens to become divorced from any relevance to the environmental problematique.

Irrespective of the operating motivations, Conca (1994) cautions that one must distinguish among rhetorical endorsement of environmental security, institutional changes that reflect changing priorities, and value acceptance of fundamentally new conceptions of security. Changes in the rhetorical realm are often easier to make than changes in the other two and do not necessarily lead to corresponding transformations in the other two areas.

Recent U.S. history does indicate that the term national security has often been an honorific concept. Security labels have been effective for mobilizing resources for programs that do not typically fall under the rubric of national security. Despite being critical of this tactic, Simon Dalby (1992: 4) acknowledges that "security is a very useful term partly because it resonates with widely held personal desires to be unthreatened." Because security calls up fundamental issues of survival, the term has often been employed to create a sense of crisis and to engender a subsequent willingness to sacrifice for meeting all important challenges. President Dwight Eisenhower, for example, justified the interstate highway system as critical to national defense. Congress passed funding for education as the National Defense Education Act of 1958. This tactic does have potential drawbacks. For environmental security, the feared downside would come if the struggle to increase environmental awareness were tied too tightly to the rise and fall of popular opinion and government attention.

The cases made against redefining security to include environmental issues and/or accepting environmental stress as a cause of conflict differ markedly in terms of the sources of the critiques and the critiques themselves.

"Environmental Stress is not Likely to Cause Interstate War"

A final argument in the case against linking environment and security stems from doubts about whether environmental problems are likely to cause interstate war. The almost exclusive developing country focus of environmental conflict research poses case selection bias. Homer-Dixon (1994) acknowledges the purposeful selection of cases suspected to be most likely to establish links. Still others claim that even in the examples of environmentally-based conflict, the relationship between environmental scarcity and conflict is spurious. Antecedent political and economic variables, for these observers, represent the necessary and sufficient conditions that are truly responsible for the conflict (Lipschutz and Holdren 1990; Brock 1992).

Deudney (1990), a foremost spokesperson for this position, recognizes certain ties between the environment and war as in the cases of environmental degradation caused by the preparation for war and by war itself.

However, a dynamic and interdependent international trading system, coupled with technological substitutes, ameliorates acute conflict stemming from resource shortages according to his critique. Additionally, the declining utility of military force for securing natural resources and resolving confrontations over environmental degradation renders such conflicts much less likely. Thus, those who advocate treating environmental degradation as a security threat assign exaggerated levels of plausibility to the possible sources of these conflicts (internal strife, transboundary pollution).

Therefore, this group of skeptics typically concludes that national security thinking should not be appropriated for what is viewed as the necessary and critical effort to address environmental degradation (Deudney 1990; 1991; 1992; Finger 1991; Dalby 1992; 1994; Conca 1994). The conflictual and competitive nature of nationalism and militarism so commonly associated with aggressive state behavior does not hold the answer to environmental challenges. Merely making rhetorical endorsements of environmental security does not necessarily translate into resource transfers, changed institutional missions, and an underlying belief in cooperative response. Deudney in particular adds that linkage remains problematic on the basis of the ancillary claim that environmental degradation is not likely to cause interstate conflict. This lack of causal connection should therefore disqualify environmental degradation as a traditional security issue.

Different Means To Shared Ends

The fundamental issue in the debates between those who wish to redefine security to incorporate environmental issues and many of those who are skeptical of such efforts is primarily a question of means to achieve environmental goals. Most observers cited here ultimately share concerns about the importance of environmental change. The basic points of contention in these debates center more on the means to achieve common ends and the priority these goals are given, than on the ends themselves. In fact, most of the skeptics share many ultimate goals with those who argue for a redefinition of security or the recognition of an environmental security threat.

But how best to achieve a secure and sustainable future? Should the importance of environmental problems first gain wide-spread acceptance with new conceptions of security to follow along at a later time? From this perspective, a shared notion of global environmentalism might lead to the redefinition of threats in terms other than the state-based conflictual models. Such a definition would therefore be fundamentally different from traditional definitions of security. Or, concurrent with the efforts to spread the awareness of environmental problems, should the security field be progressively reshaped to include threats posed by environmental degradation? This redefinition might feedback to increase further environmental awareness and to move toward the shared goal of global environmentalism. Such questions presuppose that other highly relevant questions can be addressed satisfactorily. Can a concept like security be fundamentally transformed? By whom? For what purposes? What risks are assumed in trying?

The literature on environmental stress as a precipitating cause of violent conflict should be viewed as an intersecting subset of the environmental security debates and the still larger discussions of redefining security. The respective debates are proceeding concurrently, but intermixing the two lines of inquiry does not clarify the issues and can in fact unnecessarily make the development of one field dependent upon the other. All issues of environmental degradation should not be forced to fit into the matrix of security and conflict. The conception of security must instead be changed to reflect the new threats of environmental degradation.

On the other hand, it is not sufficient to dismiss a wider conception of comprehensive security simply because it has not been widely accepted by practitioners and scholars. Nor should the term security be rejected unconditionally merely because it has long been associated with negative conflictual connotations. Schrijver (1989: 115) points out that "...environmental or ecological security is an evolving concept; consequently an established definition does not yet exist." The fact that this evolution has not reached an accepted end is not a sufficient reason to completely dismiss the utility of emerging conceptions.

With this understanding in hand, Conca's (1994) distinctions among "redefining," "renegotiating" and "converting" a concept represent a valuable tool for analyzing the policy actions taken under the rubric of environmental security. His continuum ranges from rhetorically attributing a new meaning to a concept to "fundamentally transforming" associated institutions. This cautionary note must be kept in mind as academics try to understand how their writings are interpreted and employed by governmental and nongovernmental actors in the security and environmental communities.

Critical Issues and the Research Agenda

Many issues remain unresolved in the literature of environment and security. Is a concept of environmental security necessary for linking environmental degradation, or resource scarcity, to acute conflict? Conversely, can a theory of conflict be constructed that includes environmental stress as a precipitating variable without a concept of environmental security? The issues surrounding these two distinct questions are often commingled to the detriment of both. While clearly related, separation is especially important when considering the links between environmental scarcity and conflict as a prerequisite for redefining security.

One initial step for clarifying the relationship would be to explore a distinction between conflict as an objective event and security as a subjective goal of policy. Such an exercise would serve as an useful beginning for answering these questions. In some respects, this endeavor has already begun, but not in a conscious manner. As a starting point, Homer-Dixon (1991) drew several distinctions between potential conflict types associated with environmental changes. These conflict types in turn, may or may not be related to security goals as currently conceived.

Beyond the necessary task of conceptual clarification, much additional work remains. Despite anecdotal evidence, it has proven quite difficult to establish precise environmental origins of interstate conflict. In a more recent piece, Homer-Dixon, Boutwell and Rathjens (1993) acknowledge that in any well-developed theory of international conflict, the environment is but one variable, albeit an important underlying one.

At the same time, the evidence for linking environmental scarcity and internal conflict appears compelling (Homer-Dixon 1994). These findings hold particular significance for those who are concerned with the concept of environmental security. The strong connection between environmental stress and intrastate conflict makes critical the effort to fundamentally redefine security beyond the state level of analysis and the accompanying theories of realism.

As the efforts to redefine security push beyond the nation-state as the only significant actor in the international system, the distinction between intrastate and interstate conflict should continue to be called into question. For example, environmentally-induced migrations often ignore borders, presenting both a source of tension within and among states (El-Hinnawi 1985; Jacobson 1988; Myers 1993; Suhrke 1993; Homer-Dixon 1994). Honduran efforts to reverse the flow of Salvadorans crossing the common border in search of arable land helped precipitate the "Soccer War" in 1969 (Durham 1979; Myers 1989). Bangladeshis fleeing overcrowding and famines moved into the less populous Indian states of Assam and Tripura where they encountered both organized and spontaneous violence. The migrations and resulting violence were the source of great tensions between the two states (Hassan 1991). Severe soil erosion and near complete deforestation in Haiti have deprived much of the population a means of survival (World Commission 1987; Mathews 1989; Myers 1993). This catastrophic environmental degradation contributed to the economic and political hardships that led thousands to attempt the perilous boat ride to the United States. This migration helped create the tensions between the two states and among domestic constituencies in both countries that eventually resulted in the September 1994 U.S. military intervention.

These selected examples suggest that the nature and effects of environmental degradation often make it difficult to distinguish between internal and external threats to human well-being as well as to the state. Thus, the traditional hard and fast distinction between internal and external conflict found in realist literature represents a false dichotomy. Analysis of redefining security would suggest that in formulating the theories of conflict, internal and external conflict should be treated more as a continuum than a dichotomy.

These transboundary phenomena challenge the primacy of the sovereign state actor in safeguarding territory, populations and interests. What may be environmental hazards or resource shortages created entirely within one country, can dramatically affect neighboring states. Acid rain and water salinization represent two classic examples of these regional problems. International bodies and nongovernmental organizations deserve credit not only for bringing the issue to the foreground; their cooperative rather than conflictual *modus operandi* is key to addressing transboundary environmental threats.

Most observers cited here ultimately share concerns about the importance of environmental change. The basic points of contention inthese debates center more on the means to achieve common ends and the priority these goals are given, than on the ends themselves.

On a broader level, global environmental phenomena affect all states by varying degrees. Those states primarily responsible for the problems are often not the ones that must bear the brunt of the damage. Sea-level rise resulting from global warming will hold much higher and less affordable costs for low-lying developing countries than for the developed countries that are currently the majority contributors of greenhouse gases.

These global environmental problems also are likely to create new power dynamics between developed and developing countries. As part of efforts to industrialize, the South will likely burn large quantities of fossil fuel. The potential to release immense amounts of the greenhouse gas carbon dioxide provides developing countries with a significant bargaining chip to demand technology and resource transfers from the developed world in exchange for their essential participation in international environmental agreements (MacNeill *et al.* 1991). This power dynamic is not adequately explained by the principles of realism and represents another example of how critical environmental issues are neglected by statist theories.

These challenges to the state system strengthen the need to advance the fundamental redefinition of security. The effort, in many ways, goes beyond the purposely limited attempts to establish links between environmental stress and conflict. If environmental stress was considered exclusively a threat to stability because

it contributes to violent conflict, then the lessons drawn from the empirical conflict research would largely remain within the national conception of conflictual security.[7] Means for addressing this additional "threat" to stability, the *symptom* of environmental scarcity, would continue to be military force as organized by the traditional security institutions. This interpretation of linkage between environmental scarcity and acute conflict would very conceivably ascribe considerably less attention and priority to the root *causes* of the environmental scarcity. Such an interpretation would represent only an intermediate and partial step toward a broader conception of security.

This distinction is not made to diminish the value of attempts to demonstrate links between environmental degradation and conflict. The very process of trying to prove these links may act as a positive feedback to increasing global environmental awareness. If links are satisfactorily established, the recognition of environmental scarcity as a cause of conflict would represent additional evidence for the need to redefine security and address environmental problems.

By the same token, redefining security in terms of environmental issues encourages more research to focus on the relationships between environmental scarcity and acute conflict. But it is important to note that critiques of considering environmental degradation as a security issue commonly focus on *national* security rather than on security in a broader sense. While national security and security are often used interchangeably, the more narrow focus on national security makes the critique stronger. National security, with strategies for addressing the inevitable state power struggles described in realist theories, presents an easier target than broader conceptions of security that are not as state-centered. Global or comprehensive security formulations that are based on models of cooperation avoid some of the pitfalls associated with the competitive state strategies (Mathews 1989; 1991). This focus on national security to the exclusion of broader conceptions is in effect discounting the possibility that the term security can be fundamentally redefined.

Despite, and perhaps because of, a lack of consensus among scholars and practitioners on the definition of environmental security, discussions of its many conceptions are likely to continue in earnest. The variety of definitions and approaches should not be a cause of consternation at this early stage of research. This diversity in fact should foster a more developed and valuable literature.

Endnotes

1. See Daniel Deudney and Richard Matthew. Eds. 1995. *Contested Ground: Security and Conflict in the New Environmental Politics*. (Albany: SUNY Press) for many of the authors and arguments discussed in this article.

2. See Carson (1962), Meadows *et al.* (1972), Stockholm Declaration, (1972), Barney (1980), WCED (1987) and IPCC (1990) among others. Catastrophes occurred among other places at Chernobyl, Bhopal, Seveso, Prince William Sound and Sandoz.

3. Homer-Dixon (1994) defines environmental scarcity as includes three elements: quantitative or qualitative reduction in resources, population growth, and unequal resource distribution. Homer-Dixon (1994a) also recognizes scarcity as based in part on subjective beliefs, norms and values as well as absolute physical limits. Population and resource distribution were not explicitly included in the preliminary models (Homer-Dixon 1991).

4. Westing (1986: 204-210) identifies 12 conflicts in the twentieth century that he maintains did contain distinct resource components.

5. This military planning extends to ongoing courses and lectures on environmental security held at the Defense Intelligence Agency and the National War College. These examples are singled out based on the participation of the authors.

6. The 1991 National Security Strategy states:

> We must manage the earth's natural resources in ways that protect the potential for growth and opportunity for present and future generations... Global environmental concerns respect no international boundaries. The stress from these environmental challenges is already contributing to political conflict (NSS, 1991).

For excerpts from the 1994 and 1995 National Security Strategy documents see the section on official statements in this issue of the *Environmental Change and Security Project Report.*

7. This point is not meant to suggest that the researchers exploring the links between environmental scarcity and conflict necessarily adhere to this interpretation. Yet the conclusions of those who read these findings are not by definition the same as the authors'. Tracing the ways the policy community interprets and utilizes such significant academic contributions represents fertile ground for important future research.

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Environmental Security: Demystifying the Concept, Clarifying the Stakes

by Richard A. Matthew

ENVIRONMENT AND SECURITY ISSUES HAVE BECOME HOTLY DISPUTED TOPICS IN THE STUDY AND PRACTICE OF world politics. Does environmental change pose a security threat? If so, whose security does it threaten and how? Does the threat vary from case to case, region to region, or between North and South? What sort of response is appropriate—fundamental structural change, a new deployment of existing institutions and resources, or some long-term/short-term combination of the two? Should the military be involved in addressing this threat? The United Nations?

One important sub-set of this discussion involves the possible links between environmental change and political or violent conflict. Does environmental change exacerbate or cause conflict between or within states? Is this a new phenomenon? Are there conditions under which it promotes cooperation? What can we learn from recent case studies about the capacity of institutions to manage conflict or facilitate cooperation? What can we anticipate in the future? What should we do now?

When the environmentalist Lester Brown argued for a redefinition of national security in 1977, his work elicited little response among students of world politics. Six years later, Richard Ullman gave support to this initiative with a short article entitled "Redefining Security," in which he sought to broaden the concept of national security to include non-military threats to a state's range of policy options or the quality of life of its citizens (1983:133). Brown and Ullman inspired some environmentalists and a small number of international relationists who regarded the state, realpolitik and capitalism as constitutive of an unjust and violent international system and sought to harness the concept of security to a radically different conception of world order. But during this period, the perceived imperatives of the Cold War continued to dominate both theory and practice in the area of security affairs.

The past several years, however, have seen a dramatic ground swell of interest in environmental change as a potentially key variable in understanding security and conflict in the late twentieth century. Brown and Ullman have been cited extensively as the pioneers of a crucially important research agenda. In 1991, former President Bush added environmental issues to the "National Security Strategy of the United States." High level officials and academics now meet regularly to devise answers to the questions posed above.

The ground swell of interest has produced a number of important, although often controversial and inconclusive, empirical findings about environmental change as a source of insecurity and conflict. It has generated a lively exchange between those who view the redefinition of security as part of a general project to transform the international system, those who share this ambition but are skeptical of such an approach to realizing it, those who seek to incorporate the concept into existing institutions and practices, and those who regard the exercise as a passing fad related to the general confusion that has followed the sudden end of the Cold War. Above all, it has contributed to the expanding field of environmental politics and broadened our appreciation of the complexity of environmental problems.

This article summarizes the contents of a forthcoming volume, *Contested Ground: Security and*

Richard Matthew is Assistant Professor of environmental politics and international relations at the School of Foreign Service, Georgetown University. This article is adapted from the forthcoming volume: Daniel Deudney and Richard Matthew, eds., Contested Ground: Security and Conflict in the New Environmental Politics. *Albany: SUNY Press.*

Conflict in the New Environmental Politics, that will introduce students and practitioners to the theoretical debate and empirical evidence available today. It first provides general context for analysis by briefly presenting definitional moments in the history of the new environmental politics. It then sketches the early contours of the debates over environmental security and conflict, summarizes the main questions explored in *Contested Ground*, and concludes with a chapter-by-chapter review of the book.

The New Environmental Politics

Although conservation movements, concerns about the deleterious impact of industrial pollution and fears of scarcity-induced conflict and misery have received some attention for almost two hundred years, the emergence of environmental politics is a recent phenomenon.[1] It was during the turbulent decade of the 1960s that environmentalism began to assume its contemporary political form. Environmental activists, buttressed by scientific and popular research, channelled mounting anxiety about the environment into a political movement that quickly began to affect political agendas at the local, national and international levels.

The anxiety was catalyzed or disseminated by a number of popular books, the most influential of which was Rachel Carson's controversial bestseller, *Silent Spring (1962).* Carson's chilling account of the impact of pesticides on human health and her moral outrage at the arrogance that permitted such behavior anticipated a revolutionary change in the manner in which the relationship between nature and civilization would henceforth be perceived. No longer could nature be regarded as simply raw material to be endlessly transformed by human ingenuity and labor into commodities. The relationship was more complex and delicate than previously suspected. Starkly put, the environmental life support system upon which all life depended was being altered and degraded by human actions—at stake was the future of humankind.

By 1970, the groundwork was in place for Earth Day, "the largest environmental demonstration in history" (McCormick 1989:47). The social context that mobilized millions of Americans to participate in this event and supported the emergence of the new environmental politics has been described by John McCormick in terms of a general malaise about the broader implications and future of industrial affluence, the psychological stress of nuclearism, growing public alarm about environmental disasters, advances in scientific knowledge, and the compatibility of environmentalism with other anti-establishment movements such as the antiwar movement and feminism (1989:49-64).[2]

These and other themes were reflected in a generally foreboding literature that appeared at this time and underscored the global magnitude of the "environmental crisis." A vigorous debate erupted in public forums, nourished by the widely-read works of writers such as Paul Ehrlich (1968), Garret Hardin (1968), Barry Commoner (1971), Donella Meadows *et al.* (1972) and Lester Brown (1972). By drawing attention, respectively, to issues such as exponential population growth, the "tragedy of the commons," the negative externalities of production technologies, the potential limits to industrial growth and the complex global interdependencies of the late twentieth century, these authors provided the new environmental politics with a rich analytical and normative discourse that immediately engaged students and practitioners of world politics.[3]

Environmental issues were placed squarely on the agenda of world politics at the United Nations Conference on the Environment (1972) held in Stockholm. As Lynton Keith Caldwell notes, during the century prior to 1972, both governmental and nongovernmental members of the international community had met sporadically, and largely ineffectually, to discuss a range of environmental issues (1990:30-54). For example, the conservation and equitable distribution of resources was broached at the United Nations Scientific Conference on the Conservation and Utilization of Resources (1949). A number of recommendations related to research and education were issued from the Intergovernmental Conference of Experts on a Scientific Basis for a Rational Use and Conservation of the Resources of the Biosphere (1968).

But it was at Stockholm that the international importance of environmental issues was clearly and officially recognized and given an institutional setting through the creation of the United Nations Environment Programme (Caldwell 1990:71). Moreover, the centrality of North-South issues and the vital role of nongovernmental organizations (NGOs) in the new environmental politics were both clearly acknowledged at the Stockholm conference (McCormick 1989:105).

Building on the legacy of Stockholm, the past two decades have witnessed a flurry of activity at the international level. Over seventy multilateral conventions or regimes have been negotiated addressing issues such as sea pollution, the use of nuclear materials, the protection of flora and fauna, air pollution, the military use of environmental modification techniques and the transboundary movement of hazardous materials. Although many states have failed to sign these conventions and monitoring and enforcement remain imperfect, a corpus of international environmental law now exists to guide and regulate state actions.

Regional organizations as diverse as the Organization of African Unity, the European Union, the North Atlantic Treaty Organization, the Organization for Economic Cooperation and Development and Asia Pacific Economic Cooperation have all engaged in some level of environmental activity. The United Nations system, hampered by various organizational and political constraints, has acted to incorporate environmental issues

into many of its specialized agencies, including the United Nations Development Programme, the World Bank, the Food and Agricultural Organization, the International Labour Organization, the World Health Organization, the International Maritime Organization and the United Nations Education, Scientific and Cultural Organization.

Throughout the 1970s and 1980s, public concern about the immediate and cumulative effects of environmental change, backed by increasingly sophisticated scientific research on problems such as acid precipitation and deforestation, compelled state officials to take environmental issues seriously. A major step forward occurred in 1983 when the United Nations General Assembly established the World Commission on Environment and Development. Chaired by the former Prime Minister of Norway, Gro Harlem Brundtland, the Commission released its report, *Our Common Future*, in 1987. Focussing on the global and interlocking processes of population growth, food production, ecosystem protection, energy use, industrialization and urbanization, the report contained a wide range of proposals and recommendations woven together by the concept of sustainable development: development designed to "meet the needs of the present without compromising the ability of future generations to meet their own needs" (1987:8).

The concept of sustainable development, negotiated in an attempt to bridge the diverse interests of developed and developing states, was elaborated upon at the 1992 United Nations Conference on Environment and Development (UNCED) held in Rio de Janeiro and has been integral to discussions at other UN conferences on issues such as population and development (Cairo 1994). Thus, over a twenty year period, world environmental politics has evolved from the Stockholm generation's recognition of the seriousness of the problem to the Rio generation's comprehensive attempt through the *Agenda 21* document to design solutions.

Important developments have also transpired in the nongovernmental realm. NGOs such as Friends of the Earth (established 1969) and Greenpeace (established 1972) have become vital transnational forces, raising public awareness, engaging in political activism and scientific research, monitoring compliance with regimes, and participating in the NGO forums that take place alongside UN and other international conferences. Covering the entire political spectrum from reactionary to radical, ranging from highly specialized to broadly focussed, and—depending on how one defines them—numbering in the tens of thousands, NGOs have played a key role in shaping and supporting the new environmental politics of the late twentieth century.

Through these various activities, three broad and interconnected issue areas gradually have emerged that today tend to guide research, discussion, policy-making and activism: environmental ethics, sustainable development and environmental security. These are clearly associated with the traditional concerns of students and practitioners of world politics: human rights and world justice; international political economy; and national security, war and peace. In a field that became highly institutionalized during the Cold War era, it is not surprising that the predominant tendency has been to place environmental issues into familiar analytical and policy categories.

As a result of this tendency, environmental politics has become subject to the prevalent debates in the academic world—between the grand theories of realism, liberalism and Marxism; between structural and process explanations and prescriptions; between assessments of legal and market forms of regulation; between assessments of the utility of domestic and international institutions; and between the relative weight of different variables in promoting conflict and cooperation, wealth and poverty, or justice and inequity. Over the past two decades, excellent research has been conducted on environmental issues guided by the embedded logics of the discipline.

Not all scholars agree that such an approach is desirable. While many are encouraged by the fact that environmental issues have moved into the political mainstream and gained legitimacy in the academic world, others fear that in doing so they have been diluted, losing their revolutionary potential and enabling scholars and policymakers to proffer compromised, short-term solutions designed to protect the status quo at a time when fundamental change is required. Proponents of this position, such as Maria Mies (1986), Vandana Shiva (1989) and Carolyn Merchant (1992), tend to endorse radical systemic change and frequently support grassroots movements and variants of deep ecology activism.

A common criticism levelled at the new environmental politics is that it has been coopted by the mainstream interests of Northern industrial states and now is governed by an agenda that marginalizes the concerns of the developing world while exaggerating its contribution to the environmental crisis. Among environmental activists (a category that includes some academics), a similar division can be detected. Organizations such as Greenpeace have splintered as they have moved into a more central position in the political arena.

Finally, a small minority of thinkers, such as Julian Simian and Herman Kahn (1984), have challenged the very utility of any form of environmental politics on the grounds that its fundamental claim—that certain human activities affect the environment in adverse ways that threaten both the welfare of humankind and nature's complex evolutionary and recuperative processes—is misguided and alarmist. According to this critical perspective, environmental politics attracts resources away from productive enterprises in order to fatten already bloated bureaucracies and underwrite dubious academic ventures. Its appeal relies heavily on the fact that scien-

tific, demographic, economic and political studies are often inconclusive in relating human actions to environmental change, and environmental change to threats to human welfare.

The concepts of environmental security and conflict have elicited a particularly vibrant debate among academics and policymakers alike that displays much of the diversity described above. The following section reviews the early contours of this debate. I have kept my overview very brief as many parts of this debate are summarized and discussed in several of the subsequent chapters.

Environmental Security and Conflict: The Debate Unfolds

Simon and Kahn notwithstanding, after three decades of wide-ranging research and discussion, it is reasonable to assert that the expanding patterns of production, consumption, settlement and waste disposal developed by the human species to serve its material and aesthetic interests are adversely affecting the air, water and land upon which all forms of life depend. Although some activists and intellectuals have endorsed an uncompromising ecocentric position, environmental politics is principally concerned with what this means for the welfare, security and freedom of all or part of humankind.

As noted above, some early efforts to incorporate an environmental perspective into the theory and practice of world politics focussed on redefining the concept of national security. These early initiatives by Brown and Ullman stimulated a theoretical debate (and complementary research program) that has expanded and matured rapidly in a very short period of time.

The general contours of this debate have been shaped by two closely related clusters of questions. First, what does and should the concept of "environmental security" mean? Should the emphasis be on security of nation-states, of humankind, or of the environment itself? Is this old wine in a new bottle or a new phenomenon? Do threats to environmental security assume the familiar forms of violence and conflict, new forms such as a gradual deterioration of the quality of life, or both? Do disagreements on the meaning of environmental security reflect deeper disagreements between the North and the South, men and women, elites and non-elites or Western and non-Western cultures? In a world characterized by multiple forms of violence and innumerable sources of insecurity, where does environmental change rank?

Second, what are the risks involved in using a vocabulary that, in the arena of world politics, tends to evoke images of war and invite military participation? Are values such as peace and justice receiving adequate attention in this debate? To what extent has it been fuelled by post-Cold War concerns about cuts in defense spending? Can the military, with its vast resources, play a constructive role? How persuasive are the criticisms of those who fear that environmental politics is becoming a reactionary prop for entrenched interests instead of a revolutionary tool for change? Answers to these questions have evolved somewhat independently in the policy and academic communities.

Environmental concerns have a fairly recent and marginal, but not insignificant, status in the security policy community.[4] In the 1970s, the OPEC oil crises and "limits to growth" thesis stimulated concerns about how resource scarcity might jeopardize the economies of advanced industrial states and promote conflict. The concept of economic security emerged to address these concerns. Partially in response to this, the Carter Doctrine was announced, affirming the strategic value of the oil-rich Middle East. However, discussions of energy self-sufficiency as a national priority garnered little support. Proposals to reduce consumption were widely rejected; the philosophy of "shop 'til you drop" proved far more attractive in the "me decade." Throughout most of the 1980s, economic growth remained a domestic priority and security thinking focussed on the Cold War rivalry with the USSR.

The end of the Cold War created an opportunity to reconsider the concept of national security—and the potential threat posed by environmental change. Arguments developed within the policy community generally (1) underscore the immediate and prevalent nature of the threat, (2) relate it to U.S. interests, (3) contend that existing beliefs, institutions and practices are in some way inadequate, and (4) call for resources to be applied through new institutions or strategies to achieve specific objectives. The tone of these arguments is usually urgent and dramatic, designed to attract the support of officials concerned about the implications of institutional restructuring, and worried about climbing on a new bandwagon that might suddenly fall on its side.

The most articulate and influential arguments have been advanced by Jessica Tuchman Mathews. In her widely cited article, "Redefining Security," Mathews endorses "broadening [the] definition of national security to include resource, environmental and demographic issues" (1989:162). Pointing to the interrelated impact of population growth and resource scarcity, she imagines a bleak future of "[h]uman suffering and turmoil," conditions ripe for "authoritarian government," and "refugees... spreading the environmental stress that originally forced them from their homes" (1989:168). Turning to the planetary problems of climate change and ozone depletion she completes a "grim sketch of conditions in 2050," (1989:172) and concludes with a set of general policy recommendations, entailing significant institutional change and aimed at ensuring this grim sketch does not become reality: slow population growth, encourage sustainable development and promote multilateral cooperation. More immediately, she argues, the U.S.

should seek the elimination of CFCs, support the Tropical Forestry Action Plan, support family planning programs, and develop a green energy policy.

A 1994 *Atlantic Monthly* article by Robert Kaplan, entitled "The Coming Anarchy," drew an even grimmer portrait of human misery, population displacement, violence and conflict, related it to environmental degradation, and asserted that this was "the national security issue of the early twenty-first century" (1994:45). This, too, has prompted discussion within the policy community, where the principal concern is to identify threats to U.S. interests and the image of chaos in the Third World appears rich with menacing possibility.

Mathews and Kaplan, aware of current research on environmental change, sensitive to the sort of language that will attract policymakers and building on themes that acquired legitimacy in the 1970s, have served as vital but selective conduits between the academic and policy worlds. Mathews' commitment to an interdependent and global conception of environmental security and her strong endorsement of multilateral solutions serve to coax policymakers away from conventional realist positions based on protecting explicitly national interests with strong military capabilities. Kaplan's impact is more difficult to assess. His penchant for sensationalism may prove to be galvanizing or destructive of environmental politics. In any case, while these writers may have the greatest immediate impact on policy, it is in the academic world that the concept of environmental security has been explored in depth and from a wide range of perspectives that will have a long-term influence on policy.

While some scholars such as Gray and Rivkin (1991) have expressed skepticism about any relationship between environmental change and traditional national security interests, most of those who study this issue agree that environmental change threatens human welfare in some way. There is sharp disagreement, however, on how best to apply which resources to what ends. These disagreements reflect different levels of analysis, different interpretations of empirical evidence and causal chains, and different normative biases.

In large measure, these disagreements can be traced to the long-standing divide in world politics between those who seek to protect and refine a liberal world order of sovereign nation-states, markets and regimes, and those who seek to undermine the current international system on the grounds that states, markets and regimes embody fundamentally unjust or undesirable values and practices. Thus one dimension of the debate has been shaped by the confrontation between statists and globalists, reformists and radicals, liberals and their critics. While both sides agree that existing economic and political practices have caused the current environmental crisis, they part on the question of whether these practices need to be revised or replaced.

This reductionist template tends to shape much of the debate, but it is not the sole primary source of disagreement. Another fundamental—and crosscutting—divide is evident, although often cloaked in the shadows of academic discourse, in two markedly different images of what environmental security requires. Here a powerful technocratic-managerial image competes with an equally powerful, but less widely endorsed, democratic image. Thus, at the most general level, the debate over environmental security ranges from a position advocating the preservation of the status quo through the management of Northern elites to fundamental change inspired and governed by a global democratic politics. Between these extremes lie conceptions of the preservation of the status quo through some form of democratization and fundamental change guided and managed by elites. The small group of realist scholars who address environmental issues cut into this continuum in ways that try to preserve the centrality of the state in what, for them, remains essentially a self-help international system.

Since the clearest examples of these various positions are presented in subsequent chapters, it is perhaps appropriate to allow the reader to examine this debate first-hand and to turn to some of the more specific points of disagreement that have emerged in recent years. Following upon the early arguments by Brown and Ullman that environmental issues ought to be considered as security issues, a number of scholars have sought to clarify and substantiate this claim. One issue that has received considerable attention concerns the familiar problem of the relationship between resource scarcity and conflict.

In the broad view of world history, important events such as the "barbarian" invasions into the Roman Empire throughout the Middle Ages and the global expansion of Western Europe in the modern era strongly suggest a positive relation between resource scarcity and conflict. In light of this, scholars such as Michel Frederick (Chapter 7) argue that conflicts over oil, water and other scarce resources should be regarded as traditional national security issues. Others, however, contend that the recent escalation in the potential for such conflict and the incapacity of many states to address it, merit its redefinition as an environmental security problem requiring innovative responses (Gurr 1985; Westing 1986; Myers 1989 and 1993; Gleick 1989). Thomas Homer-Dixon, who directed a three year project exploring this relationship, is cautious in drawing conclusions from recent empirical work. Conflict, he suggests, results from the interaction of many variables. Resource scarcity is one of these, and needs to be addressed specifically because of its increasing presence in the causal chain that often erupts in civil and international violence (1991; 1994a).

Other scholars are unpersuaded by these arguments (Lipschutz 1989; Lipschutz and Holdren 1990; Deudney 1990). According to Daniel Deudney, "familiar scenarios of resource war are of diminishing plausibility for the

foreseeable future" because scarce resources can often be procured through trade, expansionist wars are extremely costly, and technology has made it possible to develop substitutes for many materials (1990:470).

In response to this, Homer-Dixon has argued that resource scarcity has three sources—an increase in demand due to population growth or a rise in per capita consumption, a decrease in stock due to environmental degradation, or a redistribution of access that has impoverished some fragment of a state or region (1994b:6). This position includes a second issue that has received considerable attention—the security and conflict implications of rapid population growth. A vast amount of literature, generated partly in response to the 1994 Cairo Conference, reflects a disagreement generally associated with the long-standing debate between Paul Ehrlich, who regards population growth as the principal problem facing humankind (1968; and Anne Ehrlich 1990), and Barry Commoner, who contends that the real problem lies in inefficient and unjust economic practices (1971; 1990). No one denies that more people mean more demands on the environment, although Julian Simon is somewhat alone in regarding population growth as an unqualified sign of the success of human behavior (1989). At issue is whether international environmental protection can best be achieved through reducing population growth or through developing more efficient production technologies, curtailing consumption in some areas, and redistributing access to resources and the product of human labor in order to reduce poverty. Underlying this debate are different perceptions of whether the most effective strategy lies in reforming the economic practices of Northern states or controlling population growth in the developing world.

A third widely debated topic, and a source of much confusion in the field, concerns the manner in which "environmental security" is defined. Different authors implicitly or explicitly associate the concept with "national security," "collective security" or "comprehensive security," vague terms that obscure as often as they clarify matters. First, some writers (Mische 1989; Deudney 1990; Dalby 1992a; 1992b; Conca 1993) are concerned about the inevitable overlap between environmental security and national security and thus uneasy about employing a vocabulary that lends itself to military involvement and the preservation of the status quo, and subtly marginalizes issues such as global justice and the need for fundamental institutional or systemic change. Deudney, Dalby and others suggest that the language of security may situate environmental problems in the wrong solution set. Second, and somewhat ironically, various security specialists have argued that environmental security risks diluting the concept of national security which must be kept narrowly focussed on military threats if it is to be usefully and effectively operationalized (Simon 1989; Gray and Rivkin 1991; Walt 1991).

Stemming from this disagreement, a fourth debate addresses the potential role of the military in providing for environmental security. Advocates of military involvement underscore the relationship between environmental change and conflict and point to the vast technological, management and human resources aggregated in the defense community and potentially available for a variety of missions (Worner 1991; Butts 1994). Some critics of this position stress the military's long history as a major polluter, its penchant for secrecy, its incapacity to manage missions that might come into conflict, and its willingness to shoot first and negotiate solutions later (Deudney 1990). Other critics are concerned that an emphasis on environmental protection will hinder military readiness or war-fighting capabilities.

The various debates over environmental security and conflict are part of the more general development of the new environmental politics. Linked to real world events and waged by policymakers, activists and academics, they reflect concerns ranging from the general and abstract to the specific and concrete. This rich discourse has played an important role in the ongoing effort to identify the contemporary needs of humankind and devise ways of meeting them. Today, several questions have emerged as central to these debates.

The Main Questions

Four main questions have been raised and addressed in *Contested Ground*:

1. What is new and compelling about contemporary perceptions of the relationship between the environment and politics? In the Western tradition of political thought, various conceptions of "nature" have played important roles in the theories of authors ranging from Aristotle to Augustine to Jean-Jacques Rousseau. Since the contemporary discipline of international politics has a remarkably ahistorical character, it is useful to situate the new environmental politics, and especially its environmental security component, in a larger historical context that might help us better understand contemporary perceptions of the threats posed by environmental change.

2. What are the various meanings ascribed to the concept of environmental security today, how significant are the differences, and what are the risks involved in accepting and building upon this term? Several answers to this question have been suggested above; these and others are developed more fully in subsequent chapters.

3. What is the relationship between environmental change and conflict or other forms of violence? In responding to this question, contributors to *Contested Ground* have sought not only to clarify the relationship,

but also to gauge its significance as a security threat and to consider the possibility that environmental change might, at least in some cases, be better characterized as a motivation for cooperation.

4. Can the discourse of environmental security be harnessed to the formulation and implementation of effective policies? Of particular significance is the current tension between defense conversion advocates and proponents of enlightened military strategy. A less explicit but perhaps more important tension exists between managerial—especially Northern and technocratic managerial—policy responses and more democratic and global initiatives. Beneath these policy preferences lie competing agendas for preserving the status quo and promoting fundamental change.

These are not the only questions addressed in *Contested Ground* and the authors were not asked to respond to them directly. Rather, these are the main questions that, in retrospect, provide continuity to the various chapters and underlie many of the disagreements evident between them.

Chapter by Chapter Review

Contested Ground is composed of three parts. **Part I: Historical Overview** consists of a single essay by Daniel Deudney entitled "Bringing Nature Back In: Concepts, Problems and Trends in Physiopolitical Theory from the Greeks to the Greenhouse." Deudney's perceptive analysis suggests that contemporary debates over environmental security and conflict are nourished by two much older traditions of thought—one focussed on nature as a cause of political outcomes, the other exploring conflict and cooperation from a geopolitical perspective. By describing the process through which these earlier traditions were modified and marginalized in the industrial era and have now resurfaced as innovations, Deudney hopes to recover insights that may be fruitful in understanding contemporary issues such as the rift between North and South.

Part II: Theoretical Positions includes six chapters by scholars closely associated with recent debates over environmental security and conflict. In "Environmental Scarcities and Violent Conflict," Thomas Homer-Dixon argues that violent conflicts throughout the developing world are being caused or exacerbated by resource scarcities. Reviewing the results of eight case studies conducted for the Project on Environmental Change and Acute Conflict, as well as evidence from other sources, Homer-Dixon suggests that this form of conflict is likely to increase as the pressures of environmental change overwhelm the capacity of institutions to adjust and respond, creating conditions for fragmentation or authoritarian government.

In responding to this analysis, Daniel Deudney has substantially revised earlier work calling into question both the utility of the concept of environmental security and the claim that environmental change tends to generate conflict. In "Environmental Degradation and National Security: Muddled Thinking, Flawed Strategy and Weak Links," he reiterates and expands upon three concerns. First, Deudney argues that environmental problems are conceptually unlike traditional security problems that focus on external aggression. While it is true that national security and environmentalism are linked insofar as military practices consume resources that could be applied to environmental rescue and often generate pollution, environmental degradation is unique in terms of the types of threat it poses, the sources of these threats, the extent to which these threats are intentional and the sorts of organizations that are best-suited to dealing with these threats. Second, it is dangerous, Deudney suggests, to try to harness the rhetorical and emotional allure of national security to environmentalism. The former is achieved through appeals to urgency, zero-sum thinking and a "we versus they" mentality. Environmental change, however, is a gradual and long-term threat that can best be addressed by building a sense of global solidarity based on shared interests and constructive engagement. Finally, the language of security implies the likelihood of interstate violence—its traditional baseline. But environmental change is not likely to manifest itself in this way—the gradual immiseration of people is a more likely scenario. Deudney concludes that environmental change is best perceived as a global problem that challenges conceptions of national security. Instead of trying to adapt the latter, we should act to move beyond it and forge conceptions of security in the international terms that best reflect the nature of the problem.

Simon Dalby provides an important complement to the work of Homer-Dixon and Deudney in "The Threat from the South?: Global Justice and Environmental Security." In this chapter, Dalby examines the concept of environmental security in terms of both differences in the interests, experiences and roles of Northern and Southern states, and tensions between managerial, status quo-oriented approaches and more equitable, reform-oriented strategies for addressing the environmental crisis. By examining several environmental security issues from the perspectives of North and South, Dalby discloses disturbing trends in the evolution of the concept. As Dalby demonstrates, at stake is whether the concept will be employed to sustain traditional geopolitical understandings of security that favor the developed states, or used to promote the protection of the global environment and all of its inhabitants.

In "Environmental Security: A Realist Perspective," Michel Frederick defines environmental security as the "absence of non-conventional threats against the environmental substratum essential to the well-being of [a state's] population and to the maintenance of its func-

tional integrity." Frederick defends this state-centric perspective by underscoring the continuing centrality of the state in world politics, and the greater capacity of state institutions to act effectively in comparison to international organizations. Moreover, he argues, while stressing the importance of the state, his definition clearly distinguishes between threats that require a military response and those that do not, and thus creates a viable basis for cooperative strategies.

Finally, in "The Case for U.S. Military Involvement in Environmental Security," Kent Butts presents a careful theoretical argument for involving military institutions in the process of maximizing environmental security. As Butts notes, environmental security is already a part of the mission of the U.S. military. The question, then, is whether this role should be nourished or suppressed and in what ways. Pointing to recent efforts by the military to change its status as a major polluter, and responding to many of the concerns raised by Deudney and others, Butts argues that the military has extensive resources and skills that can be effectively applied to both domestic and international environmental security issues without compromising its war-fighting capabilities. Moreover, the U.S. military has the potential to influence military establishments in other countries in ways beneficial to U.S. interests, global security and the environment.

The last section of book, **Part III: Case Studies**, contains six chapters that explore many of the issues raised above through focussed case analysis. These six case studies include examples from both the developed and developing worlds, and cover resource scarcity and conflict, demographic issues, and the role of the military.

In "Resource Scarcity and Protracted Conflict: Water in the Israeli-Palestinian Arena," Miriam Lowi presents a detailed case study of the complex nature of disputes over Jordan waters and their role in the Middle East peace process. Lowi argues that attempts by the U.S., guided by functionalist theory, to resolve the conflict over water as a step towards a more general settlement were unsuccessful. Decoupling economic issues from political ones is not possible, she concludes, if the latter are characterized by deeply entrenched conflict. Moreover, while resolving political conflict may create conditions for developing a cooperative solution to the problem of water scarcity, the need for changes in consumption practices will not be easily addressed. Lowi's study has important implications for addressing cases in which resource scarcity is one of several sources of conflict.

A complementary chapter by Arun Elhance, entitled "Geography and Hydropolitics," examines the implications of severe water scarcity in different parts of the world. Elhance suggests that water scarcity is likely to have a major impact on the welfare and development potential of many regions, especially in the Third World. But he questions arguments that suggest this will lead to interstate conflict. Global awareness of the interconnectedness of environmental issues, the expansion of economic interdependence, the involvement of international organizations, the potential of new technologies, and the evolution of international law in the field of transboundary water resources have created conditions amenable to cooperative strategies. Elhance discusses three cases: the Ganges-Brahmaputra-Barak Basin, the Nile Basin, and the Parana-La Plata Basin. He argues that while physical geography plays a key role in determining where and how scarcity will be experienced, economic and political factors serve to amplify or mitigate this impact. Moreover, the uniqueness of each case suggests that a single norm for hydrological cooperation is untenable. Nonetheless, in all cases, solutions are possible short of interstate war. Decisive in this regard will be the capacity of the international community to use its vast resources to promote equitable and sustainable water use practices.

The impact of population pressures on internal stability in China is explored by Jack Goldstone in "Imminent Political Conflicts Arising from China's Environmental Crises." In a discussion that supports many of the claims made by Homer-Dixon, Goldstone argues that the combination of population growth and over-burdened arable land has been a source of conflict in China for several hundred years. Goldstone contends that recent divisions within the ruling party and among elites, together with mounting difficulties in controlling Chinese society and appeasing discontented peasants and workers, has made the current regime extremely vulnerable. Add to this the fact that it will be very difficult to accommodate the needs of the tens of millions of Chinese who will be born in the next few decades, and the future appears bleak. Goldstone concludes that "[i]t seems unlikely that the collapse of communist China can be averted."

"Environmental Degradation and Population Flows," by Astri Suhrke, offers a more general analysis of the relationships between environmental change, population displacement and conflict. In her analysis, Suhrke emphasizes the gradual impact of environmental degradation and the distinction between environmental migrants and environmental refugees. The former, she argues, move to pursue better economic opportunities and are often welcomed as a valuable source of labor. The latter are displaced when their economic system has collapsed—but they are usually too poor and too weak to cause conflict. Suhrke concludes by considering different approaches to addressing what is likely to be a growing problem in world politics.

The role of the military in environmental security is examined by Ronald Deibert in "Out of Focus: U.S. Military Satellites and Environmental Rescue." Focussing on the possibility of using U.S. military satellites to support environmental protection and rescue projects, Deibert raises a number of concerns that reinforce and extend arguments made by Deudney and Dalby. Through

comparing military and civilian satellite systems, questioning the utility of declassifying military imagery, underscoring the military penchant for secrecy, and showing how during the Gulf War the military was able and willing to take over and censor civilian imagery, Deibert makes a forceful case for discouraging military involvement and encouraging the development of civilian capabilities.

The final chapter of the book is entitled "Military Activity and Environmental Security: The Case of Radioactivity in the Arctic." Authors Peter Gizewski and Alan Chong present a detailed study of the Cold War legacy of military pollution in the Arctic region, and assess current clean-up efforts and the growing pressures to find suitable dumping grounds for radioactive waste. They note that lingering U.S.-Russian rivalry and engrained patterns of secrecy have obstructed clean-up efforts to date, although NGOs have played a significant role in bringing the issue to the attention of the public and encouraging officials to act. Their analysis echoes more general concerns about the role of the military in providing for environmental security.

Conclusion

The essays in *Contested Ground* do not resolve the various debates surrounding the concepts of environmental security and conflict. They do, however, provide a clear map of the areas of consensus, the principal disagreements, the conclusions of recent empirical studies, and the concerns that need to be addressed in the years ahead. The environmental integrity of the planet and the welfare of humankind require tough choices between using resources and institutions that are at hand and forging new ones, reforming current practices and avoiding new stresses on the environment, and protecting the privileged position of industrial states and redistributing wealth and expertise. There is no clear path towards an environmentally secure future, but there are many routes likely to lead to conflict, violence and misery. Avoiding these will demand innovation, pragmatism and sacrifice. Students and practitioners of world politics must weigh different arguments carefully and act quickly and decisively in an era marked by skepticism and uncertainty, while remaining open to new ideas and information.

Endnotes

1. For useful discussions of the nineteenth and early twentieth century background to contemporary environmental politics see, among others, Lynton Keith Caldwell, *International Environmental Policy: Emergence and Dimensions,* Second Edition (Durham: Duke University Press, 1990); John McCormick, *Reclaiming Paradise: The Global Environmental Movement* (Bloomington: Indiana University Press, 1989); and Robert C. Paehlke, *Environmentalism and the Future of Progressive Politics* (New Haven: Yale University Press, 1989).
2. Similar forces have been at work in many other countries of the world, although the public response has varied considerably. In Western Europe, for example, where political behavior is often directed by parties, a number of Green parties have emerged and fought elections with mixed results.
3. Other writers focussed on the domestic implications of environmental change, leading to a more explicitly domestic form of environmental politics that I do not discuss here.
4. This claim is based on recent personal experience with policymakers concerned with environmental security through involvement in Wilson Center Discussion Group sessions. It reflects their perception that they still have to work hard to introduce environmental concerns into the policy process, rather than the conclusions of an empirical study of this process.

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World Population Growth and U.S. National Security

by Alex de Sherbinin

***Author's Note**: This paper is a revised and updated version of an issues summary entitled "Population Issues of Concern to the Foreign Policy Community" that was prepared for the Pew Charitable Trusts' Global Stewardship Initiative in October 1993. Since that date, there has been a lively debate in the print media and in the political arena about global population growth and its impact on U.S. interests. The International Conference on Population and Development raised the profile of global population issues, and addressed many approaches to reducing fertility that could, eventually, lead to population stabilization. The relatively new field of environmental security has given prominence to demographic trends as one of a number of factors that can lead to violent conflict and migration and refugee flows. Articles in the February and December 1994 issues of* The Atlantic Monthly *raised the specter of a rising tide of global anarchy and ever increasing levels of legal and undocumented migration, due in part to rapid population growth in developing countries. Implications of these trends for U.S. foreign policy were discussed in a series of rejoinders in* The Washington Post *and elsewhere. And finally, new questions have been raised by some Republican members of Congress about the importance of population growth and Third World development to U.S. foreign policy objectives. This updated issues summary will summarize relevant aspects of this debate, but its primary goal is the same as that of the earlier version: to examine the rationales that have been voiced by major actors in the foreign policy field for U.S. involvement in international population and family planning assistance.*

THE PURPOSE OF THIS LITERATURE REVIEW IS TO SUMMARIZE POPULATION ISSUES AS THEY ARE SEEN BY THE foreign policy community[1] in the United States. The implications of world population growth for U.S. national security are by no means straightforward. This review attempts to capture the complexity of the linkages as described by experts from this community. Furthermore, U.S. policy is not static, but rather changes with administrations and in response to the external stimuli of global processes and trends. Thus, this paper reflects some of the changing views over the past five years, and summarizes the recent policy positions of the Clinton Administration. Readers desiring an historical perspective of the U.S. response to international population trends may refer to the appendix on page 34.

The stated goals of U.S. foreign policy are to foster peace, democratic values, economic well-being, and stability throughout the world (*National Security Strategy of the United States 1993*). In a recent overview of U.S. foreign policy, Secretary of State Warren Christopher quoted President Harry Truman, who said "Circumstances change, but the great issues remain the same—prosperity, welfare, human rights, effective democracy, and above all, peace." In the same speech, Christopher outlined this Administration's guiding principles for U.S. foreign policy: "First, America must continue to engage and to lead. Second, we must maintain and strengthen our cooperative relationships with the world's most powerful nations. Third, it is essential that we adapt and build institutions that will promote economic security and cooperation. Fourth, we must continue to support democracy and human rights because it serves our interests and our ideals" (Christopher 1995).

In closing his speech, Christopher said

> I want to under-score that our foreign policy will continue to address a whole range of issues important to our interests, such as promoting stability and democracy in Asia, Latin America, and Africa; meeting humanitarian needs around the world; fighting environmen-

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Alex de Sherbinin is Population Geographer at the Population Reference Bureau, Inc. *The author gratefully acknowledges the contributions of Alene Gelbard, PRB's Director of International Programs, to the organization and substance of this paper.*

tal degradation and addressing rapid population growth.

In emphasizing this point, Christopher made oblique reference to an important element of U.S. foreign policy: foreign assistance. Following on the successful post-World War II Marshall Plan to reconstruct Europe, the U.S. foreign policy community has viewed aid to developing countries as an important means of achieving certain U.S. interests. Although these interests have changed somewhat in their specifics over time (such as the containment of communism during the 1950s and 1960s), the underlying rationales have remained the same. The U.S. Agency for International Development (A.I.D.), charged with administering most of U.S. official development assistance, states these rationales clearly: "[Foreign aid] is in the United States' own interest. It contributes to the growth of our economy. Americans continue to have a humanitarian desire to help the less fortunate. We must address problems that cross borders such as the environment, narcotics traffic, and AIDS. We have an interest in a peaceful, stable world" (A.I.D. 1992).

Almost from the outset of the foreign assistance program, a small amount of the overall aid budget has been earmarked for international population and family planning activities. Although population assistance has garnered consistent Congressional support and has featured prominently among A.I.D.'s activities, most foreign policy makers have tended to give relatively little thought to global or regional population trends. In mainstream foreign policy circles demographic variables are often perceived as background factors of marginal relevance. The main reason for this lack of attention to population is that demographic changes are slow-moving and difficult to observe until after they have taken place. This means that they do not always "fit" in a crisis-driven foreign policy agenda.

This is beginning to change. The Clinton Administration has given a greater priority to population than at any time since the 1970s. Clinton signaled this change through a number of high-level actions, including the reversal of the Mexico City policy (see Appendix), restoration of funding to the United Nations Population Fund (UNFPA) and the International Planned Parenthood Federation (IPPF), and the appointment of Timothy Wirth to the newly created position of Under Secretary of State for Global Affairs. Wirth has assumed a key role in articulating the Administration's new policies with regard to population.

The Administration's new stance is further reflected in the high priority assigned to population and sustainable development in foreign assistance; the "four pillars" of U.S. foreign assistance are now population and health assistance, environmental protection, economic growth, and support for democratic reform. A.I.D. is the only government agency that has consistently addressed international population issues over the past 30 years. Implemented through A.I.D.'s Office of Population, U.S. population assistance has three objectives: to promote the rights of couples and individuals to determine freely and responsibly the number and spacing of their children, to improve maternal and child health through birth spacing and reproductive health services, and to reduce population growth rates in developing countries by lowering birth rates. These objectives are pursued through financial, technical, and logistical support of public- and private-sector family planning programs in developing countries, contraceptive development and distribution, and assistance with population policy formulation. The two principal rationales for this population assistance are, on the one hand, an humanitarian desire to help poor nations, and on the other, self-interest (A.I.D. 1992 and 1989, Camp 1992, Donaldson 1990, Piotrow 1973, Hartmann 1991/92, IPA 1993). Although the humanitarian rationale is certainly important, and perhaps predominant, the focus of this paper is primarily on how population assistance addresses U.S. interests.

Figure 1 illustrates the links between population growth and U.S. national security inter-

FIGURE 1: Links between Population Growth and National Security as Identified by the U.S. Foreign Policy Community

POPULATION GROWTH — U.S. NATIONAL SECURITY

ests that have been identified by the foreign policy community. Many of the relationships between population and other variables are interactive. For example, economic conditions, widespread poverty, and lack of health and family planning infrastructure are known to affect population growth rates (UNICEF 1994). Thus, many of the arrows could be shown to operate in both directions. However, in the interest of simplifying an already complex diagram, the links are shown to operate in only one direction: from population variables on the left side, through the intermediate variables of developing country economic and political stability, and on to the U.S. interests on the right side.

The relatively new field of environmental security has given prominence to demographic trends as one of a number of factors that can lead to violent conflict and migration and refugee flows.

Overall, the diagram further helps to explain why population growth has received so little attention from the foreign policy community at large. Although the effects of developing-country population growth have been linked to U.S. national security interests in a number of ways, nearly all are indirect. The diagram groups four principal ways in which population variables are thought to affect U.S. interests:

1. Economic development, immigration, and trade. Rapid labor force growth coupled with economic stagnation in selected developing countries may produce high unemployment and pressures for increased migration to the United States. Economic stagnation also reduces the ability of developing countries to import U.S. products or engage in international trade.

2. Resources and the environment. Population is a contributing factor in the environmental degradation and resource depletion that can adversely affect the U.S. and world economy. Population-induced environmental degradation and resource scarcity can also lead to regional conflicts and population displacements, and can in some cases block U.S. access to strategic resources.

3. Developing-country political stability. Rapid growth in the younger age groups, and differential growth among various racial, ethnic, or religious subsets of a country's or region's population, can cause instability. Rapid population growth is also associated with high rates of rural-to-urban migration, and with migration between developing countries. These flows can be politically destabilizing to a country or region.

4. Western values and the unequal distribution of wealth. Population growth in developing countries may result in a decline in America's global influence, or diminish the salience of Western values such as human rights, democracy, liberal political culture, or free-market economics. Growth in the number of poor "have-nots" relative to the number of affluent "haves" may result in growing North-South conflicts over global equity.

This categorization of issues represents an attempt to impose order on an otherwise complex and highly interconnected set of concerns. It will become evident in the following sections that issues of migration, environmental degradation, instability, poverty, and inequality often overlap in significant and often mutually reinforcing ways.

Economic Development, Immigration, and Trade

The interconnections among population growth, economic development, immigration, and trade are complex. Population growth may hinder economic development efforts, but factors such as resource availability, economic policies, structural issues, the political environment, trade, debt burdens, and labor resources are generally thought to be more significant proximate determinants of a country's economic performance. While a complete review of population-development connections is beyond the scope of this paper, it is possible to summarize a few of the ways in which population growth affects economic growth. These include its influence on gross domestic savings per person; on the amount of capital invested per person; and on the efficiency with which the economy operates (World Bank 1984).

In the developing world, roughly 40 percent of the population is under age 15. Where the age structure of the population is young, there are a higher number of dependents for every working adult. This may have a number of adverse consequences. First, less money is available at the household and societal levels for savings and productive investments (Keyfitz 1991; Mathews 1989; Musgrove 1986). Second, high dependency ratios, particularly among low-income groups, may lead to skewed income distributions, in which the gap between high- and low-income groups widens. And third, a growing population means that resources that might otherwise be dedicated to productive investment must instead be devoted to provision of human services (Hayes 1986). Jessica Mathews of the Council on Foreign Relations addresses the problem of resource allocation:

> [Population growth in developing countries] comes at a time when technological advance requires higher levels of education and displaces more labor than ever before. For many developing countries, continued growth at current rates means that available capital is swallowed up in

> meeting the daily needs of people, rather than invested in resource conservation and job creation. Such policies inescapably lay the foundations for a bleak future (1993).

Stagnating economies in a context of rapid developing country population growth produce two issues of concern to the United States: high rates of immigration, and a possible decline in global trade.

Media images of Haitian boat people, Mexicans darting across the border at Tijuana, or Chinese leaping from freighters off Long Island have a powerful emotional impact and generate public concern about the effects of large-scale immigration on U.S. jobs and the domestic economy. Today, over 90 percent of the world's population growth is in developing countries. This rapid population growth results in young age distributions, creating a rapidly expanding labor force as these young people enter the job market. In the 1990s the labor force in developing countries is projected to grow by 38 million each year (UNFPA 1993). As mentioned above, developing countries frequently lack the capital to create employment opportunities for new labor force entrants—or even to accommodate those who are already in the labor force but unemployed (Hayes 1986). The problem of labor absorption is compounded as technological innovations actually reduce the number of workers required in some sectors of developing economies. These unemployed youth form a large pool of potential migrants to the U.S. and other developed countries (Kennedy 1993a, UNFPA 1993, DeWitt 1986, State Department 1992, Smith 1992).

It is the combination of population growth and declining economic prospects that drives international migration trends, according to Diaz-Briquets and Macisco:

> While rapid population growth may be a necessary condition for emigration to occur, it is not a sufficient condition. Just as crucial is the ability or inability of economic growth to keep pace with population increases (1986).

Migration is the result of a profound process of socioeconomic change, urbanization, rising material expectations (fueled in part by exposure to mass media), skewed income distribution, and lack of political freedom in developing countries. These constitute the "push" factors. Just as important, however, are the "pull" factors in industrialized countries. Slow labor force growth, population aging, and employers' desires for low-wage workers have all created an effective demand for immigrant labor. A perception of economic opportunities is probably the most common motivator for individual migrants and their families.

In terms of absolute numbers, the United States currently admits more immigrants for permanent settlement than any other country of the world, and possibly more than the whole world combined (Kramer 1993). During the 1980s immigrants and their offspring accounted for over half of U.S. population growth (Passel 1992, Fox and Mehlman 1992), and, if present trends continue, the proportion of the population that is foreign born will increase from 9 to 14 percent by 2040 (Edmonston and Passel 1992). Figure 2 charts the growth in legal immigration to the United States. In the 1980s average annual immigration was just below 600,000, but these numbers shot up to over one million by 1989, and close to two million by 1991, largely due to the 1986 Immigration Reform and Control Act (IRCA). Figures for illegal immigration are much more sketchy. The General Ac-

FIGURE 2: Annual Levels of Legal Immigration to the United States: 1970-1993

counting Office reported that as of 1990 approximately 3.4 million illegal immigrants resided in the United States (GAO 1993), and the Census Bureau has estimated that between 100,000 and 300,000 unauthorized aliens are added to the U.S. population annually (Day 1992).

In terms of its impact upon immigration, one of the United States' principal concerns has been the growth of the labor force in Latin America and, more specifically Mexico, where more than one million people enter the workforce annually. Owing to geographic proximity and changes in immigration law, since the 1960s Latin America has been the biggest source of legal immigrants to the United States. In an analysis of labor force growth trends in Central America and the Caribbean, one State Department policy analyst writes:

> Of all demographic indicators, perhaps the most significant for political analysis is the size of the labor force relative to available opportunities for employment in the national economy...The existence of a large idle labor pool can...become a major factor in political and social unrest and almost always results in significant migration—both internal and international (Smith 1992).

While warning against mechanistic reasoning that would correlate labor force growth with migration rates, the author nevertheless views excess labor force as the "raw material" of migration. He estimates that the labor force of Central America and the Caribbean will grow from 56 to 93 million between 1990 and 2010, and that approximately five million migrants will come to North America during this period. This emigration will reduce the total labor force of the region only marginally to 88 million—still a 58 percent increase from 1990.

It should be emphasized that this is a relatively new concern for the foreign policy community. The fact that many foreign policy decisions, such as the U.S. intervention in Central America, have the effect of increasing immigration has led some analysts to suggest that our foreign policy is often at odds with immigration concerns (Asencio 1992). Traditionally, immigration has been viewed as a domestic policy issue, outside the realm of foreign policy with its focus on intergovernmental contacts and politico-military security issues:

> Underlying assumptions concerning the fundamental nature of foreign policy and international politics have left migration matters outside the traditional focus of foreign policy analysis in much the same way that the foreign policy significance of energy, finance, and political terrorism issues long were underestimated (Miller and Papademetriou 1983).

However, with the number of migration-related interstate conflicts on the rise, international migration has become a foreign policy priority, particularly among European nations (M. Weiner 1993). In the United States, too, the foreign policy community recently has become involved at an unprecedented level with migration concerns. In 1993, high-level negotiations with the Mexican government led to the *refoulement* of Chinese undocumented migrants whose ship was interdicted in Mexican territorial waters. And in 1994, undocumented migration from Haiti figured into the U.S. decision to restore the Aristide government, and unusually high levels of illegal migration from Cuba led to high-level talks with the Castro government to stem the flow. At an institutional level there has also been an increased recognition of the importance of migration issues. In 1993 the U.S. Department of State created a new bureau cover population, migration and refugee issues. Previously migration was housed in the Bureau of Refugee Programs with a much smaller staff.

New questions have been raised by some Republican members of Congress about the importance of population growth and Third World development to U.S. foreign policy objectives.

The proposed solutions to large-scale immigration generally focus on job creation in labor sending areas, and only secondarily on efforts to lower population growth rates. Findings from the 1990 Congressional Commission for the Study of International Migration and Cooperative Economic Development identified economic growth and free trade as the single most important factor for the long-term reduction of illegal migration (Kramer 1993b). Given the limited potential scope of development assistance, and a domestic political environment hostile to foreign aid, trade is viewed as an attractive alternative. Thus, part of the rationale for the North American Free Trade Agreement (NAFTA) is to develop Mexico's economy and, in the long term, reduce migration (Hormats 1992). Nevertheless, recognizing that the short-term effect of economic development is actually to increase migration (Espenshade and Acevedo 1993), some observers argue that foreign aid (Meissner 1992) and, particularly, population assistance (Teitelbaum 1992/93), are also essential if the immigration issue is to be addressed in the long term.

Beyond immigration, economic development in the Third World is of interest to the U.S. because it both enhances political stability and contributes to healthy world trade and a growing international prosperity (A.I.D. 1992). Thirty percent of U.S. trade is with developing countries, and that proportion is rising (Mahbubani 1993). In fact, U.S. exports to developing and transition nations grew by $46 billion from 1991 to 1994 (Shelton 1994). This has led to a growing recognition of America's interdependence with the developing world. Donaldson

writes:

> At least since the time of the Draper Committee [see appendix], many of the architects of the United States' foreign policy have believed that an economic interdependence existed between the United States and the Third World. To preserve the Third World as a source of sales and raw materials was in America's interest, and this meant that America had to preserve order and, thus, control population growth (1990).

Population growth could ostensibly be viewed as a boon to U.S. trade, since it implies a greater number of consumers. However, the ability of all but a handful of developing country citizens to purchase U.S. products is greatly constricted by economic stagnation. The net effect of population growth, when combined with large foreign debts, low commodity prices and/or trade restrictions, and structural problems in developing country economies, is to reduce the ability of developing countries to purchase U.S. goods and to engage in international trade (A.I.D. 1992, Camp 1992).

A tension exists between the desire to assist the developing economies in developing countries in the hopes of generating greater trade, and the desire to protect American industries. Whereas the foreign policy community may be inclined to favor increased development assistance to developing countries in the hopes of enhanced global trade, domestic groups—particularly organized labor—fear the flight of industries to Latin America and Asia where the young age structure depresses wages. During the Reagan and Bush Administrations, A.I.D. promoted economic development efforts that fostered private enterprises under the slogan "trade, not aid." However, some American industries are unable to compete with the low wages and lax environmental regulations found in many developing countries. Indeed, many American and multinational firms are finding it more lucrative to open plants overseas than to maintain production in the United States (Robberson 1993). The concern over economic competition fuels protectionist sentiments at home. A controversy erupted during the 1992 U.S. Presidential campaign over the U.S. government's Caribbean Basin Initiative, which sought to enhance the region's ability to compete with Asian manufacturers. Under the initiative, products manufactured with American-made materials or parts, like cloth or electronic circuitry, can be reimported into the United States under preferential tariffs. Labor leaders cried foul when it was discovered that A.I.D. employees were enticing American textile industries to set up plants in El Salvador and Honduras, where factory workers are paid only 33 cents an hour (McManus 1992).

Though the perception that immigration poses a threat to the United States may or may not be grounded in reality, it is nonetheless an issue of tremendous domestic concern (American Assembly 1994; Pierce 1993; Miller and Papademetriou 1983). The recent spate of articles in the major media on illegal aliens, refugees and mass migrations, and the incapacity of the INS to handle its case load have heightened public concern about immigration and the United States' ability to act as a haven for the world's disenfranchised (T. Weiner 1993). A 1993 poll found that 65 percent of Americans favor lower levels of immigration, up from 49 percent in 1986 (Wattenberg 1993). Policymakers will increasingly be forced to address the difficult and sensitive issues surrounding immigration (Pierce 1993). Furthermore, without necessarily advocating for increased levels of immigration, some experts warn that should the outlet for surplus labor be closed off, it could generate political instability in labor-sending countries (Connelly and Kennedy 1994; Wiarda and Wiarda 1986). This is an issue that will be addressed in more detail in the section on political stability.

Resources and the Environment

U.S. concern for the effects of rapid population growth on resources and the environment revolves around three principal issues: (1) the overall health of the global environment and its impact on the U.S. economy; (2) resource depletion and U.S. access to strategic resources; and (3) the interconnections among population growth, environmental degradation, refugee flows, and violent conflict.

In recent years, and especially since the 1992 United Nations Conference on the Environment and Development (UNCED), there has been increased attention to international environmental issues and their importance to American interests. Many analysts agree that environmental issues can no longer be addressed solely within the confines of nation-states (Sedjo 1994a). Global warming, ozone depletion, biodiversity loss, air and water pollution, and deforestation are issues that cross national frontiers, and hence are of direct concern to the foreign policy and national security communities (Mathews 1993). Under Secretary of State Wirth spoke of these issues in speech to the National Press Club prior to the International Conference on Population and Development (ICPD):

> Simply put, the life support systems of the entire globe are being compromised at a rapid rate—illustrating our interdependence with nature and changing our relationship to the planet. Our security as Americans is inextricably linked to these trends. The security of our nation and our world hinges upon whether we can strike a sustainable, equitable balance between human numbers and the planet's capacity to support life (Wirth 1994).

This reflects the foreign policy community's fundamental concern that environmental change could seriously affect the U.S. and world economy by leading to a reduction in the raw materials—forest products, crop land, biodiversity, marine life, etc.—necessary for sustained economic activity. These concerns were given significant attention in the recent National Security Strategies of both the Bush and the Clinton Administrations.

Unlike some of his colleagues in the foreign policy community, Wirth acknowledges that the consumption patterns of industrialized countries are as much to blame for global environmental degradation as rapid population growth in the developing world. Most members of the foreign policy community have devoted relatively little attention to how changes in domestic resource consumption might enhance national security by reducing, for instance, U.S. dependence on oil supplies under foreign control. Instead, the focus has been on how to guarantee access to vital resources. Historically, population growth has been identified as one factor that could imperil that non-renewable resource supplies. In the 1970s, National Security Council (NSC) documents explicitly discussed access to strategic, non-renewable resources as a rationale for U.S. population assistance. Secretary of State and NSC Director Henry Kissinger signed off on the National Security Study Memorandum 200, which argued that rapid population growth could lead to unrest, which in turn might threaten U.S. access to developing country mineral resources and encourage expropriation of foreign investment (Collins 1992; Claxton personal communication). The memorandum suggested that the U.S. concentrate its population assistance efforts in the largest and fastest growing developing countries. Resource scarcity is no longer used as an explicit rationale for population programs, partly because technology has enabled conservation and substitution of some mineral resources, but the underlying concern remains.

U.S. access to strategic resources has in some cases been blocked by violent conflict partially attributable to population pressures. Sub-Saharan Africa and the Middle East are two resource-rich regions with rapid population growth rates (annual rates are 3.0 and 2.8 percent respectively). Both regions have experienced significant political instability and warfare, and both are home to strategic mineral resources, particularly oil. According to Kent Butts of the U.S. Army War College's Strategic Studies Institute, U.S. interests in Africa are related to a number of humanitarian (democracy and economic development) and strategic concerns (minerals, oil, and base access). Among the latter, Butts points out that African nations produce between 90 and 100 percent of four minerals vital to U.S. industry: platinum, manganese, chromium, and cobalt. In 1992, then Secretary of Defense Richard Cheney noted in his report to the President and the Congress:

> Failure by the Western nations to promote stability in Africa could result in disruption in the production or distribution of strategically important resources and could reduce access to facilities important to regional contingencies (Butts 1993).

This political stability, according to the Deputy Assistant Secretary of Defense for African Affairs, James Woods (personal communication 1993), is greatly jeopardized by high rates of population growth and stalled development.

Which leads us to the third area of concern under the environmental rubric: the belief that population growth and associated environmental degradation can lead to instability in the form of famine, refugee flows, and resource conflicts (Kaplan 1994; Homer-Dixon *et al;* 1993, Goldstone 1992; Hazarika 1993; Schwartzstein 1993a; Last 1993; Mathews 1989; DeWitt 1986; Musgrove 1986; Choucri 1983). The foreign policy community is concerned that population growth could result in resource scarcity, thereby provoking violent conflict, and that the growing number of environmental refugees worldwide could lead to regional destabilization.

Resource scarcity and violent conflict is being studied by the Environmental Change and Acute Conflict Project of the University of Toronto. Using the case studies of Mauritania, the Philippines, and Central America, project researchers have established links between the scarcity of renewable resources and violence. They conclude:

> Scarcities of renewable resources are already contributing to violent conflicts in many parts of the developing world. These conflicts may foreshadow a surge of similar violence in coming decades, particularly in poor countries where shortages of water, forests and, especially, fertile land, coupled with rapidly expanding populations, already cause great hardship (Homer-Dixon *et al.* 1993).

Further refinement of this work has led to the identification of three critical sources of environmental scarcity and conflict (Homer-Dixon 1994). The first is environmental degradation, in which the quality and quantity of renewable resources declines (i.e. the size of the resource "pie" shrinks). The second is population growth, in which resources are divided among more people. And the third is unequal resource access, in which economic and political elites claim a disproportionate share of a resource. The conclusions that the University of Toronto team reached are quite similar to those of a still-classified 1984 CIA study entitled "Population, Resources and Politics in the Third World." They both predict that in face of these resource pressures, countries are likely to evolve along one of two paths: the state will either become ungovernable and fragment, or the government

will become more authoritarian (Brown 1990). Neither result is desirable or in the U.S. geopolitical interest.

These recent analyses of population growth and resource conflict, especially as popularized by journalist Robert Kaplan in his February 1994 *The Atlantic Monthly* article, "The Coming Anarchy," have been cited at the highest levels of the current Administration to justify U.S. commitment to population and sustainable development initiatives (Clinton 1994; Wirth 1994). In fact, some officials have suggested that since the collapse of Communism, the chaos engendered by rapid population growth, environmental degradation, food insecurity, and unstable governments has become the number one threat to U.S. security. In the words of A.I.D. Administrator J. Brian Atwood:

> Bosnia. Haiti. Rwanda. These troubling and unique crises in disparate regions of the globe share a common thread. They are the dark manifestations of a strategic threat that increasingly defines America's foreign policy challenge. Disintegrating societies and failed states with their civil conflicts and destabilizing refugee flows have emerged as the greatest menace to global stability...The pyre of failed states is being fueled by common fuels: long-simmering ethnic, religious and territorial disputes; proliferating military stockpiles built dangerously high during the Cold War; endemic poverty; rapid population growth; food insecurity; environmental degradation; and unstable and undemocratic governments (1994).

Others have expressed concern, however, that these attempts to reframe U.S. national security priorities overstate the true scope of U.S. interests. While supportive of U.S. foreign assistance and population programs, Jeremy Rosner (1994) warns that "Congress and the public are deeply wary of overstatements of America's interests. If Administration officials forcefully argue that humanitarian concerns should be the central focus of our foreign policy, they are likely to raise public doubts about their judgments and priorities." In fact, the new Republican-controlled Congress has already threatened to slash foreign assistance in general, and population assistance in particular. According to Jo Bonner, spokesman for Rep. Callahan (R-AL), the chairman of the House Appropriations subcommittee on foreign operations, "It's hard to explain the need for foreign aid, let alone to explain why we are sending $580 million to other countries to expand family planning services" (Barber 1995).

Two fundamental population-resource issues that are likely to receive increasing attention from foreign policy analysts in the future concern food and water. According to the FAO, between 1981 and 1985 total cereals production in the developing world increased at an annual rate of 3.8 percent (Paarlberg 1991). During the second half of the decade, however, the production growth rate was down to just 1.6 percent—below the average rates of population growth. Given these trends, Paul Ehrlich suggests that nations should preserve their domestic food production systems, because to rely entirely on the principles of comparative advantage in food trade policy would leave countries vulnerable to fluctuations in world production. He also indicates that worldwide food surpluses are smaller than many people suppose, and that future increases in food production will be hampered by losses of farmland, limits to freshwater supplies, land degradation, yield limits, and pest control. It is worth noting that impending food crisis was one of the primary motivations for the early A.I.D. population program. Under the 1966 "War on Hunger," President Johnson called for new initiatives from A.I.D. "to assure that the host country has fulfilled its obligations to help itself increase food production and, where necessary, control population increases" (Piotrow 1973).

Conflict over water resources has become more severe in many parts of the world due to increased agricultural, industrial, and household demand created by population growth (Frederick 1994; Clarke 1993). Some analysts have predicted that the next conflict in the Middle East will be over water, and not oil (Cowell 1993). Paul Kennedy (1993b) predicts possible "resource wars" over the dwindling water supplies in the Central Asian Republics and the damming of the Euphrates River by Turkey, and increasing conflicts between Israel and its neighbors.

A last, but related issue of concern to the foreign policy community is that of environmental migrants and refugees. Resource scarcity and conflicts can in some cases give rise to migration and refugee movements, and in other cases the converse may be true: that is, refugee movements may lead to resource conflicts (Jacobsen and Wilkinson 1993; Suhrke 1993; Homer-Dixon *et al.* 1993). The potentially destabilizing effects of environmentally induced migration and refugee movements have been noted in Africa (Somalia, Sudan, Ethiopia, and Rwanda), India, and in nearby Haiti and Central America. Of these problems, Jessica Mathews writes:

> Wherever refugees settle, they flood the labor market, add to the local demand for food and put new burdens on the land, thus spreading the environmental stress that originally forced them from their homes. Resource mismanagement is not the only cause of these mass movements, of course. Religious and ethnic conflicts, political repression and other forces are at work. But the environmental causes are an essential factor (1993).

According to the Geneva Convention's 1967 Protocol, refugees are legally defined as individuals with a well-

founded fear of persecution in their home country who are outside their country of nationality (Leopold 1992). Over the past decade, the world's refugee population has more than doubled from 7.8 to close to 18 million. There is as yet no widespread agreement about what constitutes an environmental migrant or refugee (Martin 1992), and it may take the foreign policy community some time to evaluate the relevance of these types of population movements to U.S. security concerns. The impact of environmental migration and refugee flows on political stability is not uniform. In Africa, refugees are often found to have a destabilizing effect on the host country (Jacobson and Wilkinson 1993), but in other cases environmental migrant or refugee groups are more likely to suffer from exploitation in the destination area than to cause instability (Suhrke 1993).

Developing-Country Political Stability

Despite its relative geographic isolation, the U.S. has never been entirely immune from instability in other parts of the world. Modern technology and communications have made nations even more "porous," or susceptible to turbulence outside their borders (Roper 1992). America's desire for political stability in developing countries is an important motivation for foreign aid, including population assistance programs (Donaldson 1990, A.I.D. 1992). One potential source of instability, resource scarcity conflicts, was discussed in the previous section. This section addresses three other population-related sources of instability that have been identified by the foreign policy community. These include (1) the growing number of disenfranchised young people; (2) the increasing prevalence of inter-ethnic, racial, or religious disputes; and (3) rapid urbanization.

Just as the young age structure and unemployment problems in many developing countries create a large pool of potential migrants to the U.S., analysts argue that it also increases the likelihood of social or political unrest (*The Future Security Environment* 1988). One estimate shows that by 2025, the number of job seekers in Africa will triple to 14.7 million, resulting in personal tragedy and "a social and political time bomb ready to explode" (OPTIONS Project 1993). Paul Kennedy (1993b) suggests that revolutions and other political unrest have historically been more likely in countries with young age distributions, or a surfeit of "energetic, frustrated young men." He cites the example of North Africa, where many young people, disillusioned by what they perceive to be Western decadence, are turning to Islamic Fundamentalism. Egyptian fundamentalists are challenging the pro-Western Mubarak government, and have been implicated in terrorist strikes within the U.S. itself. In a 1993 interview, Wirth highlighted the Administration's concern for these issues: "We believe that population is absolutely at the root of destabilizing a lot of countries. If you have many people without any hope and without any chances for fulfilling themselves, that's a recipe for destabilization" (*Family Planning World* 1993).

There is consistent evidence from public opinion polls that Americans are concerned about how the population-related problems of resource scarcity, environmental degradation, and mass migrations will affect their quality of life.

Interethnic and religious conflicts also have an increased potential of igniting in contexts of high population growth or differential fertility. Michael Teitelbaum (1992/93) urges greater attention to the shifting demography among "competing racial, national or religious groups" that constitute important destabilizing forces in certain world regions. Clashes have occurred in India between Hindus and Moslems and Assamese and Bangladeshi; in Sri Lanka between Tamils and Sinhalese; in Azerbaijan between Azeris and Armenians; in Lebanon between Muslims and Christians; in Southeast Asia between Vietnamese and the Khmers; in South Africa between whites and blacks; in the Sahel between pastoralists (Moors and Tauregs) and black Africans. These conflicts result from deep-seated cultural differences and/or differential access to resources and power. In each of these countries or regions, demographic trends are thought to compound pre-existing historical/cultural differences (Eberstadt 1993). Kennedy (1992) warns that the continued flow of sophisticated, mass-destruction weapons into these regions will render these disputes even more threatening to industrialized countries' interests in the future.

Although studies linking urbanization and violence are inconclusive, rapid urbanization is still frequently cited as a potential source of instability (Gizewski 1994, Pinheiro 1993). High population growth rates, in combination with other development processes, often generate high rates of urbanization, as people move from rural areas to cities in search of employment and a better life (Zlotnik 1993). Urbanization rates of four percent or more are not uncommon in many developing countries, and many cities double in size every 15 to 20 years (United Nations 1994). Urban areas are often ill-equipped to cope with the large influxes. Insufficient housing produces crowding and squatter settlements, and schools and health facilities are often stretched to their limits. Without adequate health-care services, diseases such as AIDS spread rapidly, particularly in the worst affected African nations (Goliber 1989). In Surat, the locus of the pneumonic plague epidemic that gripped India last year, half of the city's two million residents live in shanty towns without sewerage or running water (Burns 1994).

Although the abysmal living conditions in many developing country urban agglomerations are of con-

cern from an humanitarian perspective, the principal issue for foreign policy makers is that these conditions may lead to urban unrest (Wiarda and Wiarda 1986, DeWitt 1986). A report to the Department of Defense Commission on Integrated Long-Term Strategy summarizes the problem:

> Political uncertainties are introduced where migration to large cities disrupts traditional social and family ties, juxtaposes diverse ethnic groups, and makes the poor more immediately aware of vast economic inequalities. Burgeoning populations of capital cities built for far smaller numbers of inhabitants may create major administrative and control problems (*The Future Security Environment* 1988).

Political leaders may find themselves beholden to—and fearful of—urban masses. Riots in most developing countries are almost exclusively an urban phenomenon. By attempting to appease urban dwellers with food subsidies and services, political leaders may unwittingly create the conditions for future growth by attracting more rural migrants. Furthermore, in trying to appease urban masses, political leaders have borrowed heavily, further exacerbating the debt crisis (Keyfitz 1991).

Western values and the unequal distribution of wealth

Just as differential population growth between ethnic groups in a country or region can contribute to political instability, some foreign policy specialists view population growth in developing countries as a potential threat to the dominance of American interests and orientations around the world (Donaldson 1990). The great differential in population growth trends between developing countries and industrialized countries has led some analysts to conclude that a diminution of the West's dominant role in world politics is inevitable (Huntington 1993; Kennedy 1993a; Eberstadt 1991). Further clashes between North and South (as witnessed at UNCED), or between differing "world views" or cultural traditions (e.g. the U.N. Conference on Human Rights), are also seen as likely.

In a 1991 paper presented to the U.S. Army Conference on Long Range Planning, Nicholas Eberstadt examines the deleterious impacts of differential fertility—both regionally and internationally. He lists a few regions, such as the Middle East (Lebanon and Israel) and the former Soviet Union where differential fertility has had, or will have, significant political repercussions. Looking at the global scene, he notes that differential fertility between industrialized countries and developing countries is leading to the emergence of a very different world:

> Such trends speak to the pressures for a systematically diminished role and status for today's industrial democracies...With a generalized and progressive industrialization of current low-income areas, the Western diminution would be all the more rapid. Thus, one can easily envision a world more unreceptive, and ultimately more threatening, to the interests of the United States and its allies (Eberstadt 1991).

Eberstadt suggests that these population and economic growth trends could result in an international environment "even more menacing to the security prospects of the Western alliance than was the Cold War for the past generation." Of particular concern is the decline of the proportion of the world's population that shares certain principles associated with Western democracies, including "respect for individual rights and private property; adherence to genuine rule of law; affirmation of the propriety of limited government and a belief in the universal relevance of these principles" (1991).

Echoing these sentiments, Samuel Huntington states that in the future the paramount axis in world politics will be between "the West and the Rest":

> With the end of the Cold War, international politics moves out of its Western phase, and its centerpiece becomes the interaction between the West and non-Western civilizations and among non-Western civilizations (1993).

He notes that relations between the West and the Arab world are complicated by demography, as demonstrated by Israeli concern over higher fertility rates among Palestinians, and by population growth in North Africa that has increased immigration levels in Europe. Eberstadt and Huntington present a vision of a world divided along cultural lines, in which fundamental beliefs—on everything from the relations between God and man to the relative importance of rights and responsibilities—become far more important than ideology or political regimes in defining people's allegiances.

Beyond the cultural divides, there is also the growing economic divide between the "haves" (industrialized countries) and "have-nots" (developing countries). Former National Security Advisor Zbigniew Brzezinski addresses some of these concerns, noting that the economic divide between the U.S. and the Third World—a problem exacerbated by population growth in developing countries—could lead to a growing sense of alienation among the poorer majority of the world's population:

> American society cannot be the model for the world—both morally and as a matter of practical economics—if a predominantly cornucopian ethic defines its essence, while a sizable but

> impoverished minority is simultaneously excluded from meaningful participation. Preoccupation with the satisfaction of material desires that are growing more and more out of control can only perpetuate and deepen the objective and subjective gulf that is already dividing mankind (1993).

This concern with weaknesses in the West's core value systems is echoed by Mahbubani (1993), who goes on to suggest that the Western desire to continue to assert its leadership and influence around the world, despite its small proportion of the world's population, is running head-long into political and economic aspirations of non-Western peoples.

Stewart Schwartzstein (personal communication) notes that as the absolute numbers of people in poverty increases, a larger proportion of them are becoming acutely aware through the spread of mass media—and increasingly satellite TV—of prosperity in other parts of the world. As developing country citizens become increasingly aware of the economic gulf that separates them from industrialized country living standards, it could have a number of adverse consequences for the United States. These include increased levels of migration (covered in the first section), a rise in political instability or authoritarianism, military conflicts, and increased economic competition. According to Brzezinski, the global inequality between the wealthy North and the poorer South may engender "ideological confusion and inchoate longings that find emotional satisfaction in ethnicity and irrationality", and may even spawn quasi-fascism. Kennedy (1992) warns that this combination of economic frustrations, antiwestern sentiments, ambitious regimes, and modern weaponry is potentially volatile. He suggests that, if nothing else does, this should motivate Western countries to "share the wealth." Although the potential for military conflict should not be underestimated, a more likely scenario is that stiff competition for jobs and resources will result in increased trade-related tensions that could affect U.S. economic interests. According to Peter Sutherland, General Director of the Global Agreement on Tariffs and Trade (GATT), "Now you have more than five billion people competing for their share of the pie, and that makes conflict all the more inevitable" (Drozdiak 1994).

Foreign policy experts differ over how best to deal with these growing rifts. Some propose greater promotion of Western values among non-European peoples and the support of international institutions (i.e. the U.N.) that reflect and legitimate Western interests (Eberstadt 1991; Huntington 1993). Others suggest that increasing political freedom and economic opportunity in developing countries will reduce animosity toward the West (Warren Christopher in Lippman 1993; Brzezinski 1993). Some foreign policy analysts also acknowledge the beneficial effects of slowing developing country population growth rates (Teitelbaum 1992/93; Camp 1993). Although policy makers disagree about the significance of these trends and how to address them, there is mounting evidence that they will not go away. Matthew Connelly and Kennedy put it succinctly:

> Tempting though it is to turn away from the world, too large a proportion of humankind is heading into the twenty-first century in too distressed a condition for any nation to imagine that it can avoid the larger consequences (1994).

Conclusion

The U.S. national security agenda has broadened considerably since the collapse of communism in the Soviet Union and the East Bloc. During the Cold War, U.S. national security objectives were defined in terms of containment of communism and regional insurgencies, and were pursued largely through armed intervention or the threat of military retaliation. In the post-Cold War era, foreign policy is much more complex, encompassing such diverse issues as international migration, economic development, environmental degradation, and religious fundamentalism. The new world order has caused the U.S. to reexamine its role in international security: "...global developments now suggest the need for...[a] broadening definition of national security to include resource, environmental, and demographic issues" (Mathews 1993). While the pursuit of U.S. national security objectives through military and intelligence is still dominant, these "new" issues can be expected to gain in importance.

In light of the global trends outlined in the previous four sections, some analysts have called for an increased allocation of funds for foreign assistance, and particularly population and sustainable development activities (Atwood 1994; Kaplan 1994; Connelly and Kennedy 1994; Camp 1993). Even if American foreign policy prioritizes population-related concerns, the problems are difficult, and the political resolve to address them is limited in light of the many domestic problems that compete for the public's attention. Atwood worries that Americans will lack the patience and willingness to invest money in the kinds of sustainable development initiatives that could avert humanitarian crises. However, despite the current anti-foreign aid sentiment on Capitol Hill, there is consistent evidence from public opinion polls that Americans are concerned about how the population-related problems of resource scarcity, environmental degradation, and mass migrations will affect their quality of life. The average American's interest in maintaining high standards of living has been a potent motivator for U.S. population policy from its earliest formation (Wilmoth and Ball 1992), and it is likely that this will continue for the foreseeable future.

Appendix

Brief history of the U.S. response to world population growth

During the 1950s, U.S. foreign policy on population issues was, for all practical purposes, nonexistent. There were early urgings by some prominent activists (notably John D. Rockefeller) and demographers (Dudley Kirk and Frank Notestein) to combine fertility reduction efforts with the broader public health measures already taking place in the developing world, but they went largely unheeded by policy makers (Teitelbaum 1992/93; Donaldson 1990). U.S. inaction could be ascribed to a number of factors, including a foreign policy dominated by the Cold War concern for the containment of communism, the sensitivity of population and family planning topics, and general disinterest in an issue that lacked urgency and any real constituency.

All the same, President Eisenhower's 1958 Committee to Study the United States Military Assistance Program, chaired by General William Draper, did address population issues (Piotrow 1973). This group of noted business, government, and military leaders was charged with expanding U.S. foreign assistance from military aid to include increased economic assistance. The Draper Committee, as it came to be called, took the matter of population growth very seriously, arguing that the U.S. government should engage itself in population programs in any country that might request its assistance.

By the early 1960s, discussion of family planning had become somewhat more politically acceptable, as a growing number of public health and religious groups endorsed birth control. The Johnson Administration initiated the first U.S. foreign policy initiatives on population, including the appointment of a full-time State Department population officer. Soon thereafter, in 1965, Johnson created the Population Office at the U.S. Agency for International Development (A.I.D.). And in 1969, the U.S. led a successful effort, in face of opposition from some Third World countries and the Eastern Bloc, to establish the U.N. Fund for Population Activities (UNFPA), to which it became the largest contributor.

The Nixon Administration continued this support for population activities, and sent a delegation of population activists to the 1974 U.N. global conference on population in Bucharest. Again, many Third World governments opposed the U.S. support for population programs, and argued that population growth would be slowed if only the Western nations would provide more financial support for development programs and establish more favorable terms of trade (as embodied in the "New International Economic Order"). The Ford and Carter Administrations pursued the policies inherited from their predecessors, though more cautiously. Under the Carter Administration, perceived programmatic and rhetorical excesses of earlier population assistance programs resulted in internal divisions over how such programs should best be carried out (Teitelbaum 1992/93).

By the 1980s domestic abortion politics greatly affected U.S. international population initiatives. "Right-to-life" activists and their supporters in the Reagan Administration succeeded in having "pro-life" former Senator James Buckley (R-NY) appointed as chairman of the U.S. delegation to the 1984 International Population Conference in Mexico City. Senator Buckley, who in his brief tenure as undersecretary of state for security assistance attempted to cut all U.S. population assistance, unveiled the Mexico City policy that pronounced population growth an essentially neutral force in economic development. According to Teitelbaum, the Reagan and Bush Administrations' adherence to the Mexico City policy "sent clear signals to U.S. foreign-policy makers that real career risks were attached to efforts at serious analysis of demographic trends and their implications." In addition, A.I.D. withdrew its funding for two of the largest multilateral agencies in the population field, UNFPA and the International Planned Parenthood Federation.

The Clinton Administration has given renewed prominence to population. Clinton took steps to restore funding to the UNFPA in the first days of his presidency, and appointed former Senator Timothy Wirth (D-CO) to the newly created position of Undersecretary of State for Global Affairs. This office is charged with coordinating State Department efforts in the areas of population, environment, refugees and migration, democracy, labor, terrorism, and drug enforcement. It also represents the kind of "central nervous system" on population that Teitelbaum (1992/93) and Sharpless (1993) argue is necessary to provide a broad and balanced perspective on population issues. The United States took a lead role at the International Conference on Population and Development (ICPD), and did much to promote new thinking on international population issues that recognizes the crucial role that women's empowerment and education in helping to reduce fertility. Wirth, speaking at the preparatory committee for the ICPD, described this new approach:

> [The United States] is committed to help promote international consensus around the goal of stabilizing world population growth through a comprehensive approach to the rights and needs of women, to the environment and to development (1993).

Endnotes

1. This community is comprised of those working directly on the design and implementation of foreign policy and those advising and/or observing the process. On the government side it includes the State Department, the Agency for International Development, the Depart-

ment of Defense, the National Security Council, the Central Intelligence Agency, and the foreign affairs committees of the House and Senate. It also includes scholars and analysts at major think tanks such as the Center for Strategic and International Studies, the Council on Foreign Relations, the Brookings Institute, the American Enterprise Institute, the Overseas Development Council, and the Society for International Development, among others.

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Environment and Security: The Challenges of Integration

An Address to the Woodrow Wilson Center's Environment and Security Discussion Group

by Eileen Claussen

I WANT TO BEGIN BY THANKING THE WILSON CENTER FOR THE OPPORTUNITY TO MEET WITH YOU TODAY TO discuss the environment and security.

Let me start off by admitting that I like the term "environmental security" – even with its broad reach and ambiguity. As far as I can tell, the linkages between environmental degradation and security are fairly explicit whether you think of security narrowly, in terms of protecting our physical safety, or more broadly, in terms of defending a nation's economic strength, values, and way of life.

And this linkage is neither surprising nor extraordinary. The interactions have long been clear between the environment and energy policy, between the environment and agriculture policy, between the environment and transportation, between the environment and health, and between the environment and trade. They should be no less clear between the environment and security.

So let me briefly sketch what I see might be some of the outlines of environmental security and then talk about some of the implications for U.S. policy. But before I do that, I'd like to thank Jessica Mathews, who was the pioneer in establishing the linkage between the environment and security, and Tad Homer-Dixon, who has done a great deal to clarify and expand this linkage, as well as many others, including some in this room, who have worked—and I hope will continue to work—in this policy area.

From my perspective, the environment and security relationship builds in part on important linkages between resource scarcity and conflict.

I would emphasize two points here. First, resource scarcities are not the only root cause of violent conflicts around the globe; they are, however, an important root cause, along with many others. And second, causation is not direct. Resource scarcities do not, by themselves, send angry mobs into the streets. Rather, such scarcities help to generate secondary effects such as poverty, ethnic tension, migration, and weak social and governmental institutions that make conflict more likely.

The four resources most likely to help produce conflict are cropland, water, fish, and forests. Around the globe, the growth in grain productivity has slowed dramatically, and the amount of food available per person has declined. This is due, in part, to increases in population. For people in many developing nations, access to productive cropland remains the key to survival and economic development.

Land scarcity is a recurrent theme in low-level and persistent conflicts around the world. Scarcity can result from land degradation, unequal distribution of land, overpopulation, or some combinations of these. The dynamic behind the ongoing insurgencies in both the Philippines and Peru looks remarkably similar: Lack of access to productive agricultural lands combines with population growth to encourage migration to steep hillsides. These hillsides are easily eroded, and after a few years fail to produce enough to support the migrants. The result is deepened poverty which then helps to fuel violence. In the Philippines, the New People's Army has found upland peasants most

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Eileen Claussen is Special Assistant to the President and Senior Director for Global Environment Affairs at the National Security Council. For related remarks by Ms. Claussen regarding issues connected to climate change, see "U.S. National Security and the Challenge of Climate Change," Keynote Address to the International Conference on Climate Change, Washington, D.C., 27 July 1994.

receptive to revolutionary ideology. In Peru, as well, areas of land scarcity and poverty are often Sendero Luminoso strongholds. To the extent that Peru's self-coup in 1992 was a response to deal with the insurgency, we can trace a fairly direct, if long, line in this instance from resource scarcity to threats to democratic governance.

Another resource that may cause conflict is water. This is in part because water shortages play a large role in constraining agricultural productivity. And, to state the obvious, water often moves from one country to another. Almost 50 countries have more than three-quarters of their land in international river basins; 214 river basins around the world are international. While many resource scarcities tend to threaten internal stability, water shortages in some regions threaten international conflict. The Jordan, the Ganges, the Nile and the Rio Grande have been at the center of dozens of international disputes. Other examples also exist:

In mid-1990 for example, Turkey threatened to restrict water flow to Syria to force it to withdraw from support for Kurdish rebels operating in Southern Turkey. Tension over water lingers. Cameroon and Nigeria as well as Burkina Faso and Mali have longstanding border frictions over the use of shared river systems.

And water scarcity leads to other effects with security implications. For example, recurrent droughts have driven large-scale migration in Africa. Large population movements—not just internationally but also within nations—have been a source of tension, instability, environmental degradation, and, at times, violence. There are an estimated 18 million cross-border environmental refugees today and another 20 million people internally displaced, living in temporary, refugee-like conditions.

These refugees are not always welcome, and tensions can lead to violence as they did in Senegal when hundreds of migrants were killed in the wake of the 1973 drought, or in India when 1,700 Bengalis were massacred in 1983.

Fish remain the most important source of animal protein in many developing countries, and yet all of the world's major fishing areas—all 17 of them— are close to reaching or have exceeded their natural limits. This has an impact on economic development and human health, and I believe the prospect for international conflict. Last month alone, a French fisherman was shot by a member of a rival Spanish fishing fleet; the Icelandic coast guard began protecting Icelandic travelers from Norwegian coast guards that were under orders to impound certain vessels; and Russia jailed three Japanese fisherman for 15 months for illegal fishing.

Finally, forests are linked with the other resources in a variety of ways. Deforestation accelerates erosion, changes local hydrological cycles and precipitation patterns, and decreases the land's ability to retain water during rainy periods. Resulting flash floods destroy irrigation systems and plug rivers and resources with silt. And when silted coastlines decimate fisheries, fishermen turn to agriculture; they join land-starved farmers in cutting down more forests, completing a vicious circle.

This is actually a good description of the situation in Haiti. With two percent of its forests left, 50 percent of the country is so affected by topsoil loss as to be unreclaimable for farming. Soil washed into the streets of Port-au-Prince has to be cleared with bulldozers in the rainy season.

In addition to these resource scarcities, there are, I think, a series of issues that both exacerbate and magnify such scarcities and are also serious problems in their own right.

The linkages between environmental degradation and security are fairly explicit whether you think of security narrowly, in terms of protecting our physical safety, or more broadly, in terms of defending our nation's economic strength, values, and way of life.

Population growth is, perhaps, the greatest concern. If every ten years we go on adding a billion human beings to the planet, we cannot avoid aggravating every resource scarcity problem. And at the same time, we will diminish our ability to make social, economic, and environmental progress in the developing world.

On a bright note, I believe the consensus hammered out at the Cairo Conference will be considered one of this administration's most important successes. The Cairo strategy is sound because it is an integrated approach; it recognizes the critical linkages among women's education and rights, reproductive health, population stabilization, the environment, and development.

A second critical issue, resource access, hasn't gotten as much attention as it deserves. If environmental degradation shrinks the resource pie, and population growth divides the pie into smaller pieces, then skewed resource access means that farmers will continue to clear forest as long as they lack clear title to a permanent plot. When land tenure is uncertain or disputed as it is throughout much of the developing world, those who work the land don't invest in it and don't conserve it, and soil is nowhere near as healthy or as productive as it could be.

Sustainable development can only work when individuals and communities—including indigenous communities—feel they have an investment in their soil, water, and forests. Donor countries have only gingerly prodded countries on issues of land use, tenure, and distribution, for example, because of lingering developing country sensitivities over the colonial legacy. But the population conference should embolden us. If we can talk about sex and religion, surely we can begin to talk about land.

The final critical issue is that of the global environment. Ozone depletion, climate change, and biodiversity loss have the potential to deepen every resource scarcity issue I've discussed. Climate change will affect food production and aggravate water scarcity. Ozone depletion will also effect food production—through increased UV-B exposure—and fisheries—through disturbances to the ocean's phytoplankton food chain. Loss of biological diversity has the potential to reduce crop yields and fish take as sources of wild germplasm disappear and marine ecosystems become damaged and degraded.

These global issues do more than just exacerbate local resource scarcities. I believe they have direct security implications for this country as well. For example, the Intergovernmental Panel on Climate Change predicts that under "business as usual," the buildup of greenhouse gases in the atmosphere will cause sea levels around the globe to rise by about six inches by 2030 and a foot-and-a-half by 2100. This rise in sea levels will result in land loss, increased vulnerability of coastal areas to storm surges and saltwater contamination of fresh water resources. Within the United States, vast areas in Louisiana, Florida and other states would be especially vulnerable, and protective or remedial measures could cost tens of billions of dollars. And in countries such as Bangladesh and Egypt, low-lying coastal areas are home to impoverished people who may be forced to migrate into already-overcrowded regions. Such developments increase the likelihood of civil strife or regional instability and fairly guarantee widespread human suffering.

But defining the problem, even with all of its complexity, is the easy part. Fashioning a response is, of course, the greater challenge.

Another potential impact of climate change during the next century is a greater frequency of catastrophic weather events, such as hurricanes, droughts and flooding. Here I note a statement from Franklin Nutter, the president of the Reinsurance Association of America, who has said that "Global warming could bankrupt the [insurance] industry." A study by The Traveler's Corporation, an insurance giant based in Hartford, Connecticut, found that even a modest 0.9 degree increase in average global temperatures could produce a 20-day extension of the hurricane season, a 33% jump in hurricane landfalls in the United States and a 30% rise in catastrophic losses from storms. No foreign army has done that much damage to our territory since the War of 1812.

Furthermore, we have long defined threats to the nation's economic well-being as security concerns. Retaining access to certain markets, protecting sea lanes, and ensuring access to economically important resources, have long been security priorities. Certainly climate change, ozone depletion, and biodiversity loss—with their attendant impacts on U.S. agriculture and other significant economic sectors—should be security priorities as well.

But defining the problem, even with all of its complexity, is the easy part. Fashioning a response is, of course, the greater challenge. Each of the problems seems to call for both new approaches to environment and development and for new or revamped global institutions to deal with them.

Bilaterally, we have worked hard to reorient our assistance programs toward a greater emphasis on population, sustainable development, and the global environment. But translating broad policy into specific programs and projects, and changing the culture of those involved in providing assistance is not an easy task. When coupled with decreases in overall assistance levels the difficult task becomes almost insurmountable.

Similarly, we have worked hard with the international financial institutions to make them more open, accountable, and environmentally sensitive. We have had some success as the policies of these institutions have shifted in a more appropriate direction. But many of their projects are still not sustainable, and a good deal remains to be done to implement the policies we've already agreed on.

United Nations organizations also represent a challenge—perhaps an even greater one. The UN oversees the major global environmental conventions for ozone protection, biodiversity, and climate change. It includes numerous organizations with the potential to make an impact in the area of environmental security—UNDP, UNEP, FAO, and CSD, among others, and has the potential to mobilize resources and programs in virtually all sectors, including cropland, water, fish, forests, and population. Does it perform? Barely. Can we influence it? The bottom line is we have to.

Finally, we must consider trade and investment as key strategies in this effort. The range of possibilities here is enormous from trade in environmental technologies to environmentally sustainable energy investments. We have only begun to tap these possibilities, and a far more sophisticated and concerned effort is necessary.

Some may hear what I have said today and assume that I am advocating that global environmental protection should become a pillar of our national strategy along with maintaining military readiness, advancing U.S. economic interests, and promoting democracy. I think this is really a red herring. While I am not convinced that this would be undesirable, I do know that global environmental protection is already a critical component of each of our national security pillars.

Economic growth abroad is important in part because it fuels growth in this country. And no country—especially a developing country highly dependent on natural resources—can long sustain growth without sustainable management of its resource base.

We also know that the actions the rest of the world takes—such as burning fossil fuels and cutting down forests—produce global environmental impacts that may slow or impede economic growth at home. So it is difficult—I would argue impossible—to discuss protecting our economic interests without also discussing protection of the environment.

Our efforts to promote democracy will be much less likely to succeed if democratic leaders must contend with the civil strife that resource scarcities and environmental degradation may cause. In societies still making the transition to democracy, such resource scarcities and environmental degradation will only make the transition more difficult.

Furthermore, democracy and the efforts of ordinary citizens to protect their environment are often intertwined. For example, *perestroika* gained momentum in part from the efforts of ordinary Russians to get basic information about Chernobyl. And many of the early mass demonstrations in the former Czechoslovakia were held to protest massive pollution in the country. the number of environmental nongovernmental organizations has exploded around the developing world and the former Soviet sphere both strengthening civil society and encouraging political participation.

Though the relationship is less direct, environmental protection is also related to the final pillar of our national security strategy—military readiness. As we have seen, environmental issues can fuel conflict around the globe. A world in which the environment is increasingly degraded, and resources are increasingly scarce, will be a world in which local and regional conflicts are increasingly likely. And as the recent U.S. experience in Somalia, Rwanda and Haiti demonstrates, the pressures on the U.S. to deploy military forces in these situations will often be considerable. Any realistic review of our ability to maintain military readiness over the long term should include a strategy for limiting the situations in which our troops will be called on to act. Such a strategy cannot be successful without attention to resource scarcities and the degradation of the global environment.

So when the President says as he did last week before the UN that our overriding purpose must be to expand and strengthen the world's community of market-based democracies, it's my job—and also many of your jobs—to figure out how to do that. Recognizing the intersections between the environment and security policy plays an important role.

Time for a Third Wave of Environment and Security Scholarship?

by Marc A. Levy

As the reviews in this *Report* show, scholarship on environment and security links is thriving. This is an enormously positive development, and scholars in two formerly quite segregated communities are now reading each other's work and addressing common research questions. This was not always the case. The earliest environment-and-security writings in the 1980s were dominated by purple prose and bland bromides; articles were highly rhetorical, offering neither clear new definitions of security nor serious scholarship. Later, some writers made convincing arguments that a direct physical link exists between environment and U.S. security, asserting that certain global environmental threats such as ozone depletion and climate change could harm the health or well-being of American citizens. But even these writings, however compelling, were unsupported by rigorous analysis.[1]

From this initial rhetorical wave of argumentation emerged a second, more methodologically sophisticated wave that chose to focus research on whether environment could affect security by fueling violent conflicts. In spite of impressive achievements, however, the research program devoted to studying the links between environmental change and violent conflict is in danger of obsolescence if it does not correct some quite serious methodological flaws. The most important implication is a need to explore the causes of regional conflict as an important end in itself, and to abandon the current fad of merely demonstrating links to environmental deterioration.

The great progress in the research to date indicates that such a shift is possible. As Homer-Dixon argued quite persuasively, much of the first wave of research was ad hoc, anecdotal, and not specific enough to generate either reliable analytical conclusions or useful policy advice.[2] Homer-Dixon offered a sophisticated analytical framework for exploring with more rigor the links between environmental deterioration and violent conflict, and urged better research grounded in in-depth case studies. With better understanding would come the ability to "help identify key intervention points where policy makers might be able to alter the causal processes linking human activity, environmental degradation, and conflict."[3]

Since Homer-Dixon's timely plea, a large volume of in-depth research has been conducted, and it is therefore now possible to evaluate how well it delivers on the initial promise.[4] While the evidence clearly refutes the null hypothesis that environmental degradation is irrelevant to political conflict, it is less clear what more it shows. The three primary conclusions are that: (a) resource scarcity, per

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Marc A. Levy is Instructor of Politics and International Affairs at Princeton University. *This piece is based on research supported by the Project on the Changing Security Environment and American National Interests (CSEANI) of Harvard University's John M. Olin Institute for Strategic Studies. It draws heavily from a forthcoming article in International Security 20:2 (Fall 1995), which is based on "Global Environmental Degradation, National Security, and U.S. Foreign Policy" (CSEANI Working Paper No. 9, November 1994). The arguments in Mr. Levy's CSEANI working paper are rebutted in a just-issued working paper by Thomas F. Homer-Dixon, "Strategies for Studying Causation in Complex Ecological-Political Systems" (Occasional Paper of the "Project on Environment, Population, and Security" and the Peace and Conflict Studies Program, University of Toronto, March 1995.)*

se, does not promote much direct violence, though water may be a partial exception; (b) environmental degradation can lead to mass migration, which can spark ethnic conflict; and (c) environmental harm can bring about institutional decay and economic deprivation, leading to civil strife. When it comes to the "key intervention points" promised for helping to reduce violent conflict, Homer-Dixon and his collaborators conclude 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."[5]

Those results are rather disappointing. They are virtually identical to the conventional wisdom that prevailed before the research was carried out. How surprising is it that arid states get into conflicts over water, or that peasant unrest has some connection to agricultural productivity? And how useful is it to repeat slogans in the name of policy advice? The only significant departures from the conventional wisdom arise in cases where the evidence is the flimsiest, for example in the prediction that Chinese economic growth and political stability are unsustainable because of environmental degradation.[6]

These bland results are a direct consequence of a central flaw in the research program. 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 conflict either underway or imminent in order to most effectively falsify the null hypothesis that the two factors are not causally related.[7] The Swiss Peace Foundation studies released so far are identical in strategy. But it is difficult to imagine how conflict in any developing country could not involve renewable resources. Developing country elites fight over renewable resources for the same reason that Willy Sutton robbed banks—that's where the money is. The logical research strategy under the circumstances would have been to compare societies facing similar environmental problems but exhibiting different levels of violent conflict. That would have permitted 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 they and we knew before this work was undertaken.

Correcting this flaw ought to be the major focus of a new wave of research on environment and security. As long as researchers remain stuck in the quest to demonstrate that third world violence has some kind of connection to environmental degradation, progress will not be possible. This is so because environmental factors interact with a variety of other factors to spawn violent conflict—there are no interesting mechanisms that are purely and discretely environmental. By the time one arrives at the end of the chain (violent conflict), so many intervening variables have been added that it is difficult to see the independent contribution of environmental degradation. 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, if violent conflict in developing countries is really as serious as these scholars say it is (and surely they are right), attention ought to be on how the whole constellation of factors that promote or impede violence operates.

In spite of impressive achievements, however, the research program devoted to studying the links between environmental change and violent conflict is in danger of obsolescence if it does not correct some quite serious methodological flaws.

This is no call for complacency. To reframe the point in this way is to shed light on a major shortcoming of contemporary security studies; specifically, we have been seriously neglecting the study of regional military conflict for over a decade.[8] Therefore, in a rather indirect way, even if the addition of environmental degradation adds nothing new *conceptually* to our understanding of conflict, it has done a great service by reminding us that we need to retool in the post-Cold War era, in order to be able to offer useful judgments on how regional and internal military conflicts emerge and how they can be prevented. 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 a narrow environmental lens, if the goal is to better prevent and manage such conflict.

Proof that such a shift in emphasis has promise can be found in recent scholarship on ethnic conflict conducted by Ted Gurr and his colleagues.[9] Gurr finds that although "ecological and demographic stress" is partially responsible for some conflict, this factor is declining in significance and is overshadowed by more fundamental factors such as contention for state power. His policy recommendations focus on strategies for clarifying group rights, resolving inter-group conflicts, and developing an early warning system to permit effective international action.[10] Because it is based on a comparative study that included cases ranging from extreme to quite mild violence, and because it derives from a study that sought to explain patterns of violence rather than to isolate one particular cause, Gurr's advice is more likely to succeed at limiting harm than anything that has been

proposed by the environment and security research.

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 have succeeded at showing that the environment matters in processes of political conflict. Most sophisticated scholars of political conflict already knew that, but now even more do. The effect of the first and second waves of environment and security scholarship can be likened to that of scholars earlier 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 about the causes of war and of strategies for peace. Such a rethinking required abandoning the most zealous claims, however, and focusing more on the phenomenon of war and less on the single cause of economic conflict. Now is the time for similar shift in the debate about environment and conflict.

Notes

1. These arguments are spelled out in more detail in a forthcoming article in *International Security* 20:2 (Fall 1995), which is based on "Global Environment Degradation, National Security, and U.S. Foreign Policy" (Harvard CSEANI Working Paper No. 9, November 1994).
2. Thomas F. Homer-Dixon, "On the Threshold: Environmental Changes as Causes of Acute Conflict," *International Security* 16, 2 (Fall 1991), 76-116.
3. *Ibid*, p. 88.
4. This assessment is based largely on the products of two major collaborative research projects, the Environmental Change and Acute Conflict Project based at the University of Toronto and American Academy of Sciences, and the Environment and Conflicts Project based at the Swiss Peace Foundation. Results from the former are summarized in Thomas F. Homer-Dixon, Jeffrey H. Boutwell and George W. Rathjens, "Environmental Scarcity and Violent Conflict," *Scientific American* (February 1993), 38-45 and in Thomas F. Homer-Dixon, "Environmental Scarcities and Violent Conflict: Evidence from Cases," *International Security* 19, 1 (Summer 1994) 5-40; the Swiss Peace Foundation has released a number of working papers, including 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.
5. Homer-Dixon, Boutwell, and Rathjens, "Environmental Scarcity," p. 45.
6. 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.
7. "Environmental Scarcities," p. 7.
8. Stephen M. Walt, in an essay surveying "The Renaissance of Security Studies," *International Security* 35, 2 (June 1991) 211-239 scarcely touches on the topic.
9. See Ted Robert Gurr, *Minorities at Risk: A Global View of Ethnopolitical Conflicts*, Washington, D.C.: United States Institute of Peace, 1993, and Gurr, "Peoples Against States: Ethnopolitical Conflict and the Changing World System," *International Studies Quarterly* 38, 3 (September 1994) 347-378.
10. Gurr, "Peoples Against States," pp. 367-368. The early warning idea is elaborated in Gurr, "The State Failure Project: Early Warning Research for International Policy Planning," Paper presented at annual meeting of International Studies Association, Chicago, 21-25 February 1995.

Official Statements and Documents

Below are excerpts from various public officials' statements and public documents in 1994-1995 that relate explicitly or implicitly to environment as a security issue . The Report *invites public officials and private citizens to submit additional excerpts for future issues.*

1994 AND 1995 U.S. NATIONAL SECURITY STRATEGY DOCUMENTS

National Security Strategy of Engagement and Enlargement
The White House, July 1994 and February 1995 versions:

Note: All excerpts printed in normal type appear in both the 1994 and 1995 versions of the National Security Strategy: the excerpts printed in bold type are additions or changes which appear only in the February, 1995 version. Page numbers are given for both versions, with the pages from the 1995 version in bold.

Preface

Protecting our nation's security—our people, our territory and our way of life—is my Administration's foremost mission and constitutional duty. The end of the Cold War fundamentally changed America's security imperatives. The central security challenge of the past half century—the threat of communist expansion—is gone. The dangers we face today are more diverse. Ethnic conflict is spreading and rogue states pose a serious danger to regional stability in many corners of the globe. The proliferation of weapons of mass destruction represents a major challenge to our security. Large scale environmental degradation, exacerbated by rapid population growth, threatens to undermine political stability in many countries and regions...

Introduction

...Not all security risks are military in nature. Transnational phenomena such as terrorism, narcotics trafficking, environmental degradation, rapid population growth and refugee flows also have security implications for both present and long term American policy. In addition, an emerging class of transnational environmental issues are increasingly affecting international stability and consequently will present new challenges to U.S. strategy... p.1, p.1

... In October 1994, President Clinton submitted the United Nations Convention on the Law of the Sea to the Senate for ratification. This was the culmination of years of negotiations to ensure an equitable balance between the rights of coastal states to control activities in adjacent offshore areas to protect their economic, security and environmental interests, and the rights of maritime state to free and unimpeded navigation and overflight of the oceans of the world. This included an acceptable regime to administer the resources of the deep seabed, thereby protecting U.S. interests... p. 4

...Through its [NAFTA's] environmental and labor side agreements, we are working actively to protect the rights of workers and to reduce air and water pollution that crosses national boundaries. p.2**p.4**

...We have committed the United States to reduce its greenhouse gas emissions to 1990 levels by the year 2000, and we have developed a National Climate Plan to achieve that goal. The United States

has also taken a leading role at the international level towards phasing out the production of the most ozone-depleting substances. Under the Montreal Protocol for the protection of the ozone layer, the U.S. is contributing to developing countries' efforts to reduce their emissions of ozone-depleting chemicals. In June 1993, the U.S. signed the Biodiversity Treaty. **[and one year later, the Desertification Convention].** p.3, **p.5**

The Administration has asserted world leadership on population issues, focusing in the context of the upcoming Conference on Population and Development on a plan to promote family planning, primary health and related development strategies that allow families to choose the number and spacing of their children. p.3 **[In 1995 version, this now reads: "The administration has asserted world leadership on population issues. We played a key role during the Cairo Conference on Population and Development in developing a consensus Program of Action, including increased availability of voluntary family planning and reproductive health services, sustainable economic development, strengthening of family ties, the empowerment of women including enhanced educational opportunities, and a reduction in infant and child mortality through immunizations and other programs. " p.5]**

At the Summit of the Americas, the 34 democratic nations of the hemisphere agreed to a detailed plan of cooperative action in such diverse fields as health education, counter-narcotics, environmental protection, information infrastructure, and the strengthening and safeguarding of democratic institutions, in addition to mutual prosperity and sustainable development. The Summit ushered in a new era of hemispheric cooperation that would not have been possible without U.S. leadership and commitment... p.5

Advancing our Interests Through Engagement and Enlargement

...Our engagement must be selective, focusing on the challenges that are most relevant to our own interests and focusing our resources where we can make the most difference. We must also use the right tools—being willing to act unilaterally when our direct national interests are most at stake in alliance when our direct national interests are shared by others; and multilaterally when our interests are more general and the problems are best addressed by the international community. In all cases, the nature of our response must depend on what best serves our own long-term national interests. Those interests are ultimately defined by out security requirements. Such requirements start with our physical defense and economic well-being. They also include environmental security as well as the security of values achieved through the expansion of the community of democratic nations...p.5, p.7

...Because deficit reduction is also central to the long-term health and competitiveness of the American economy, we are striving for the most efficient and environmentally sound use of our resources. We have already begun the difficult process of making these adjustments by undertaking a fundamental review of our national defense requirements and of the means for promoting democracy... p.6

...We also face security risks that are not military in nature. Transnational phenomena such as terrorism, narcotics trafficking, and refugee flows also have security implications both for present and long-term American policy. An emerging class of transnational environmental issues are increasingly affecting international stability and consequently will present new challenges to U.S. strategy... p. 6, p.8

...U.S. military forces and assets are frequently called upon to provide assistance to victims of floods, storms, drought and other disasters. Both at home and abroad, U.S. forces provide emergency food, shelter, medical care and security to those in need... p.9, p.11

...Finally, to enhance the study and support of worldwide environmental, humanitarian and disaster relief activities, technical intelligence assets (principally imagery) must be directed to a greater degree towards collection of data on these subjects... p.14, p.17

The Environment

The Environment and Sustainable Development

The more clearly we understand the complex interrelationships between the different parts of our world's environment, the better we can understand the regional and even global effects of local changes to the environment. Increasing competition to the dwindling reserves of uncontaminated air, arable land, fisheries and other food sources, and water, once considered "free" goods, is already a very real risk to regional stability around the world. The range of environmental risks serious enough to jeopardize international stability extends to massive population flight form man-made or natural catastrophes, such as Chernobyl or East African drought, and to large-scale ecosystem damage caused by industrial pollution, deforestation, loss of biodiversity, ozone depletion, **desertification, ocean pollution,** and ultimately, climate change. Strategies dealing with environmental issues of this magnitude will require partnerships between governments and nongovernmental organizations, cooperation between nations and regions, and a commitment to a strategically focused, long-term policy for emerging environmental risks.

The decisions we make today regarding military force structures typically influence our ability to respond to threats 20 to 30 years in the future. Similarly, our current decisions regarding the environment will affect the magnitude of its security risks over at least a comparable period of time, if not longer. The measure of our difficulties in the future will be settled by the steps we take in the present.

As a priority, the U.S. will press the global community at the September Cairo Conference and in other fora, to address the continuous climb in global population. [**in 1995 version, previous sentence is reworded to read, "As a priority initiative, the U.S. successfully led efforts at the September Cairo Conference to develop a consensus Program of Action to address the continuous climb in global population, including increased availability of family planning and reproductive health services, sustainable economic development, the empowerment of women to include enhanced educational opportunities and a reduction in infant and child mortality."]** Rapid population growth in the developing world and unsustainable consumption patterns in industrialized nations are the root of both present and potentially even greater forms of environmental degradation and resource depletion. A conservative estimate of the globe's population projects 8.5 billion people on the planet by the year 2025. Even when making the most generous allowances for advances in science and technology, one cannot help but conclude that population growth and environmental pressures will feed into immense social unrest and make the world substantially more vulnerable to serious international frictions. (p. 15, **p. 18-19**)

Providing for Energy Security

... These facts show the need for continued and extended reliance on energy efficiency and conservation and development of alternative energy sources. Conservation measures notwithstanding, the U.S. has a vital interest in unrestricted access to this critical resource. (p. 17, p. **21)**

Promoting Sustainable Development Abroad

Broad-based economic development not only improves the prospects for democratic development in developing countries, but also expands the demands for U.S. exports. Economic growth abroad can alleviate pressure on the global environment, reduce the attraction of illegal narcotics trade and improve the health and economic productivity of global populations.

The environmental aspects of ill-designed economic growth are clear. Environmental damage will ultimately block economic growth. Rapid urbanization is outstripping the ability of nations to provide jobs, education, and other services to new citizens. The continuing poverty of a quarter of the world's people leads to hunger, malnutrition, economic migration, and political unrest. Widespread illiteracy and lack of technical skills hinder employment opportunities and drive entire populations to support themselves on increasingly fragile and damaged resource bases. New diseases and epidemics, often spread through environmental degradation, threaten to overwhelm the health facilities of developing countries, disrupt societies, and stop economic growth. These realities must be addressed by sustainable development programs which offer viable alternatives. U.S. leadership is of the essence. If alternatives are not developed, the consequences for the planet's future will be grave indeed.

Domestically, the U.S. must work hard to halt local and cross-border environmental degradation. In addition, the U.S. should foster environmental technology targeting pollution prevention, control, and cleanup. Companies that invest in energy efficiency, clean manufacturing, and environmental services today will create the high-quality, high-wage jobs of tomorrow. By providing access to these types of technologies, our exports can also provide the means for other nations to achieve environmentally sustainable economic growth. At the same time, we are taking ambitious steps at home to better manage our natural resources and reduce energy consumption, decrease waste generation, and increase our recycling efforts.

Internationally, the Administration's foreign assistance program focuses on four key elements of sustainable development: broad-based economic growth; the environment; population and health; and democracy. We will continue to advocate environmentally sound private investment and responsible approaches by international lenders. At our urging, the Multilateral Development Banks (MDB's) are now placing increased emphasis upon sustainable development in their funding decisions, to include a commitment to perform environmental assessments on projects for both internal and public scrutiny. In particular, the Global Environmental Facility (GEF), established this year, will provide a source of financial assistance to the developing world for climate change, biodiversity, and oceans initiatives.

The U.S. is taking specific steps now in all of these areas:

* In June 1993, the United States signed the Convention on Biological Diversity, which aims to protect and utilize the world's genetic inheritance. The Interior Department has been directed to create a national biological survey to help protect species and to help the agricultural and biotechnical industries identify new sources of food, fiber and medications.
* New policies are being implemented to ensure the sustainable management of U.S. forests by the year 2000, as pledged internationally. In addition, U.S. bilateral

forest assistance programs are being expanded, and the United States is promoting sustainable management of tropical forests.

* In the wake of the 1992 United Nations Conference on Environment and Development, the United States has sought to reduce land-based sources of marine pollution, maintain populations of marine species at healthy and productive levels and protect endangered marine mammals.

* The United States has focused technical assistance and encouraged nongovernmental environmental groups to provide expertise to the republics of the Former Soviet Union and East European nations that have suffered the most acute environmental crises. The Agency for International Development, the Environmental Protection Agency and other U.S. agencies are engaged in technical cooperation with many countries around the world to advance these goals.

* The Administration is leading a renewed global effort to address population problems and promote international consensus for stabilizing world population growth. Our comprehensive approach will stress family planning and reproductive health care, maternal and child health, education, and improving the status of women. The International Conference on Population Development, to be held in September in Cairo, will endorse these approaches as important strategies in achieving our global population goals. (pp. 17-18, pp**. 21-22**) ...

Integrated Regional Approaches
(East Asia and the Pacific)

...We are also in the early stages of a dialogue with China on environmental and health challenges... p.29

(The Middle East, Southwest and South Asia)

...In both the Middle East and South Asia, the pressure of expanding populations on natural resources is enormous. Growing desertification in the Middle East has strained relations over arable land. Pollution of the coastal areas in the Eastern Mediterranean, the Red Sea, and the Gulf of Aqaba has degraded fish catches and hindered development. Water shortages stemming from overuse, contaminated water aquifers, and riparian disputes threaten regional relations. In South Asia, high population densities and rampant pollution have exacted a tremendous toll on forests, biodiversity and the local environment. (p. 26, p. **31)**

(Africa)

...In particular, we intend to focus on identifying and addressing **(we will seek to identify and address)** the root causes of conflicts and disasters before they erupt. (p. 26, p**. 31)**

[Note: The following also appeared in the 1994 version, but some minor changes were made for the newer version:] **Our humanitarian interventions, along with the international community, will address the grave circumstances in several nations on the continent. USAID's new "Greater Horn of Africa" initiative got ahead of the curve on a potential famine that threatened 25 million people, and moved beyond relief to support reconstruction and sustainable development. In Somalia, our forces broke through the chaos that prevented the introduction of relief supplies. U.S. forces prevented the death of hundreds of thousands of Somalis and then turned over the mission to the UN peace-keepers from over a score of nations. In Rwanda, Sudan, Angola and Liberia, we have taken an active role in providing humanitarian relief to those displaced by violence. (p. 32,** p. 26)

Statements By William J. Clinton
President of the United States

President Clinton's Remarks on Earth Day 1993
April 21, 1993

When I traveled the country last year, I saw and spoke of how much had been accomplished by the environmental movement since then and how much still remains to be done. For all that has been done to protect the air and water, we haven't halted the destruction of wetlands at home and the rain forests abroad. For all that has been learned, we still struggle to comprehend such dangers to our planet's delicate environment as the shroud of greenhouse gases and the dangerous thinning of the ozone layer. We haven't done nearly enough to protect our forest communities from the hazards, such as lead poisoning, which is believed to cause mental retardation, learning disabilities, and impaired growth.

Unless we act, and act now, we face a future where our planet will be home to nine billion people within our lifetime, but its capacity to support and sustain our lives will be very much diminished. Unless we act, we face the [extinction] of untold numbers of species that might support our livelihoods and provide medication to save our lives. Unless we act now, we face a future in which the sun may scorch us, not warm us; where the change of season may take on a dreadful new meaning; and where our children's children will inherit a planet far less hospitable than the world in which we came of age. I have a faith that we will act, not from fear, but from hope through vision...

...Second, we want to protect the environment at home and abroad. In an era of global economics, global epidemics and global environmental hazards, a central challenge of our time is to promote our national interest in the context of its connectedness with the rest of the world. We share our atmosphere, our planet, our destiny with all the peoples of this world. And the policies I outline today will protect all of us because that is the only way we can protect any of us...

President Clinton's Address to the 48th United Nations General Assembly
September 27, 1993

[A]s we marvel at this era's promise of new peace, we must also recognize the serious threats that remain. Bloody ethnic, religious and civil wars rage from Angola to the Caucasus to Kashmir. As weapons of mass destruction fall into more hands, even small conflicts can threaten to take on murderous proportions. Hunger and disease continue to take a tragic toll, especially among the world's children. The malignant neglect of our global environment threatens our children's health and their very security... (p. 3)

Let us work far more ambitiously to fulfill our obligations as custodians of this planet. Not only to improve the quality of life for our citizens and the quality of our air, water and the earth itself. But also because roots of conflict are so often entangled with the roots of environmental neglect and the calamities of famine and disease.

During the course of our campaign last year, Vice President Gore and I promised the American people major changes in our nation's policy toward the global environment. Those were promises to keep, and we are doing so. Today we are working with other nations to build on the promising work of the UN's Commission on Sustainable Development. We are working to make sure that all nations meet their commitments under the Global Climate Convention. We are seeking to complete negotiations on an accord to prevent the world's deserts from expanding. And we seek to strengthen the World Health Organization's efforts to combat the plague of AIDS, which is not only killing millions, but also exhausting the resources of nations that can least afford it ... (p. 16)

President Clinton's State of the Union Address
January 25, 1994

And of course there are still dangers in the world: ... severe environmental degradation the world over, ... As the world's greatest power, we must therefore maintain our defense and our responsibilities. We worked to promote environmentally sustainable economic growth.

President Clinton's Remarks on Earth Day 1994
April 21, 1994

Our fourth principle is that we have to understand the urgency and magnitude of this environmental issue as a global crisis. We have to work to stop famine and stabilize population growth and prevent further environmental degradation. If we fail, these problems will cause terrorism, tension and war. None of us can live without fear as long as so many people must live without hope. That's why we're working around the world to protect fresh water resources, to preserve forests, to protect endangered species, leading a fight for strong environmental protection in our global negotiations on trade.

We must never forget that we share the air and the planet and our destiny with all the people of the world. And we must help people in poorer countries to understand that they, too, can find better ways to make a living without destroying their forests and their other natural resources...

President Clinton's Remarks to the National Academy of Sciences
June 29, 1994

... [W]hen you look at the long-run trends that are going on around the world—you read articles like Robert Kaplan's article in *The Atlantic* a couple of months ago that some say it's too dour—... if you really look at what's going on, you could visualize a world in which a few million of us live in such opulence we could all be starring in nighttime soaps. And the rest of us look like we're in one of those Mel Gibson "Road Warrior" movies... I was so gripped by many things that were in that article, and by the more academic treatment of the same subject by Professor Homer-Dixon...

If you look at the landscape of the future and you say, we have to strengthen the families of the globe; we have to encourage equitable and strong growth; we have to provide basic health care; we have to stop AIDS from spreading; we have to develop water supplies and improve agricultural yields and stem the flow of refugees and protect the environment, and on and on and on—it gives you a headache. And of course, on that list, you have to say, if you look at the numbers, you must reduce the rate of population growth...

Tim [Wirth] was talking about Haiti. My daughter and I once were talking about Haiti a few months ago, and I was telling her how her mother and I had gone to Haiti once many years ago...and what sadness and hope I had seen there at the same time, and what had happened

since then. And she said to me, I know all that, Dad, because I've seen aerial photographs from in space. And if you look at the island, you can see where the Dominican Republic ends and where Haiti begins. And there couldn't be all that environmental destruction without all those other problems you talked about...It was a stunning thing from the perspective of an American schoolchild that sort of wraps all this up...

...We have to be disciplined in saying, well, all right, how much time and how much money and how much energy have we got; and we have to order our priorities. But we cannot be naive enough to think that it is so easy to isolate one of these issues as opposed to another, that there is some silver bullet that solves the future of the world. (p. 2)

...If you look at the rate at which natural resources are disappearing, and you look at the rate at which the gap between rich and poor is growing, if you look at the fact that the world's population has doubled since only 74 nations met in Rome 40 years ago, it is clear that we need a comprehensive approach to the world's future. We call it under the buzzword of sustainable development, I guess, but there is no way that we can approach tomorrow unless we at least are mindful of our common responsibilities in all these areas...

To bring about shared prosperity, as Professor Homer Dixon has written, the nations of the world simply must move forward on many fronts at one time. Reducing population growth without providing economic opportunity won't work. Without education, it's hard to imagine how basic health care will ever take hold. Ignored, these challenges will continue to divide people from one another. We simply have to solve these problems together; both the problems together, and together as the people of the world. (p. 3)

President Clinton's Address to the 49th United Nations General Assembly
September 26, 1994

The dangers we face are less stark and more diffuse than those of the Cold War, but they are still formidable—the ethnic conflicts that drive millions from their homes;...diseases like AIDS that threaten to decimate nations; the combined dangers of population explosion and economic decline which prompted the world community to reach the remarkable consensus at the Cairo Conference; global and local environmental threats that demand that sustainable development becomes a part of the lives of people all around the world;...These are the dangers we face today. (p. 2)

...And today, I am proposing a first step toward the eventual elimination of a less-visible, but still deadly threat: the world's 85 million antipersonnel land mines—one for every 50 people on the face of the Earth. I ask all nations to join with us and conclude an agreement to reduce the number and availability of those mines. Ridding the world of those often hidden weapons will help to save the lives of tens of thousands of men and women and innocent children in the years to come. (p. 5)

Statements By Al Gore
Vice President of the United States

Vice President Gore's Keynote Address to the Commission on Sustainable Development, United Nations
June 14, 1993

But we are united by a common premise: that human activities are needlessly causing grave and perhaps irreparable damage to the global environment.

The dangers are clear to all of us.

The earth's forests are being destroyed at the rate of one football field's worth every second. An enormous hole is opening in the ozone layer, reducing the earth's ability to protect life from deadly ultraviolet radiation. Living species die at such an unprecedented rate that more than half may disappear within our lifetimes. More and more chemical wastes seep down to poison ground water—and up to destroy the atmosphere's delicate balance. Degradation of land, forests and fresh water—individually and synergistically—play crucial roles in international instability. Huge quantities of carbon dioxide, methane, and other greenhouse gases dumped in the atmosphere trap heat, and raise global temperatures...

Vice President Gore's Remarks at the White House Conference on Climate Action
April 21, 1994

Our enemy is more subtle than a British fleet. Climate change is the most serious problem that our civilization faces, and it has caused enormous damage before in human history...

...The combined impact of burgeoning population, dramatically powerful new technologies, and a strange modern philosophy that leads many to abdicate responsibility for the future consequences of their present actions have all combined to cause a collision between the current course of global civilization and the ecological system of the earth, upon which the present climate balance depends and around the contours of which

civilization has configured itself.

Statements By Madeleine K. Albright
United States Permanent Representative to the United Nations

Ambassador Albright's Keynote Address to the 1994 Symposium for the Environmental Defense Fund on the Global Environment: International Issues and Institutions
April 21, 1994

... It's no secret that the Clinton Administration has a fundamentally different philosophy than its predecessors. We believe that America should be the world's environmental leader, not foot-dragger. We believe environmental awareness is a prerequisite to, not an obstacle to, economic growth. We believe that environmental degradation is not simply an irritation, but a real threat to our national security.

During the Cold War, we mobilized against the risk of nuclear Armageddon. The environmental risk is not as spectacular of as sudden. It does not focus the public's mind in quite the same way. But left unaddressed, it could become a kind of creeping Armageddon. It is both a product of, and a cause of, social disintegration. It is making uninhabitable increasing chunks of our planet. And it could, in time, threaten our very survival...

International cooperation on the environment is no longer and option; it is an imperative. The lines we draw on maps matter less and less. The forces that now shape our lives are global and inter-locking. That is why sustainable development is not an economic policy or and environmental policy or an education policy or a health policy—it is all of those things and more.

Statements By R. James Woolsey
Director of Central Intelligence Agency

R. James Woolsey's Address to the Executive Club of Chicago
"The Future of Intelligence on the Global Frontier"
November 19, 1993

Let me mention one interesting use of information derived from intelligence collection which has not been at the heart of our central mission in the past. Just as military forces designed for war are often nevertheless the organizations best equipped to deal with natural disasters such as floods, hurricanes, and earthquakes, so too we in the intelligence business may have much to contribute in protecting the environment.

At the urging of the Vice President, dating from his days in the Senate, we have established an Environmental Task Force to give distinguished scientists access to CIA data and imagery. They are helping us assess how to use environmental data, such as satellite imagery derived from intelligence collection, to study such phenomena as depletion of rain forests and global warming.

We have recently provided important disaster relief support to the domestic side of the federal government and to states and localities during the recent mid-western floods. We did this through quickly releasing detailed computer drawings of flooded areas from satellite imagery.

And, earlier this year in my meetings with Mr. Primakov, the head of the Russian Intelligence Service—formerly part of the KGB—I suggested to him that Russia and the United States could begin to help each other in tackling some environmental problems such as water pollution by swapping some photos. After all, going back many years, I have the best pictures of Lake Baikal and he has the best ones of the Great Lakes.

Statements By Willism J. Perry
Secretary of Defense

From "A New Security," *Today: America's Forces Protect the Environment* (Renew America: 1995)

DoD has an aggressive environemntal program because it is critical to the defense mission. Why? Because it protects the quality of life of our forces and their families from environment health and safety hazards where they live and work. Careful use of our lands and waters also preserves our access to these resources for training, which is key to military readiness. DoD's environment programs are an investment in the readiness and quality of life of our forces. Moreover, investment in sound environment practices and compliance now will save us much higher costs later for cleanup.

Statements By John M. Shalikashvili
Chairman of the Joint Chiefs

From "A Different Kind of Battle," *Today: America's Forces Protect the Environment* (Renew America: 1995)

As stewards of nearly 25 million areas of land in the United States, and with operations and activities that affect the quality of the nations air, water, soil, and cultural treasures, we have seized the mandate to treat natural resources responsibly. Each day the men and

women of our nation's Armed Forces integrate new environmental management techniques and procedures into our operations, protecting our most valuable asset—our people andtheir families. As stewards of the nation's well-being, we realize that ultimately the security, quality of life, and economic development of our citizenry depend on a healthy environment.

Statements By Timothy E. Wirth

Under Secretary of State for Global Affairs

Under Secretary Wirth's Address Before the National Press Club
"Sustainable Development: A Progress Report"
July 12, 1994

Five Biological systems—croplands, forests, grasslands, oceans and fresh waterways—support the world economy. [...They are] the bulk of the economy. That's the foundation for all economic activity and all the jobs... All economic activity is dependent on the environment and its underlying resource base. When the environment is finally forced to file for bankruptcy under Chapter 11 because its resource base has been polluted, degraded, dissipated, irretrievably compromised, then the economy goes down to bankruptcy with it. (p. 2)

Is this just a theoretical concept? Of course not. It happened in Central and Eastern Europe, whose profound environmental destruction we are only now uncovering and comprehending. It is, in fact, happening all over the world, even in many of today's headlined troublespots.

Resource scarcities are a root cause of the violent conflicts that have convulsed civil society in Rwanda, Haiti, and Chiapas. These conflicts could intensify and widen as ever-growing populations compete for an ever-dwindling supply of land, fuel, and water. Professor Tad Homer-Dixon, of the University of Toronto, warns that in coming decades, resource scarcities "will probably occur with a speed, complexity and magnitude unprecedented in history."

Current conflicts offer a grim foreshadowing of the anarchy that could engulf more and more nations if we fail to act.

* In Rwanda, the unspeakably brutal massacres of recent months have occurred against a backdrop of soaring population growth, environmental degradation, and unequal distribution of resources. Rwanda's fertility rate is among the highest in the world—over eight children per woman. The nation's once rich agricultural land is so severely depleted and degraded that between 1980 and 1990, during a time of unprecedented population growth, food production fell by 20 percent.
* In Chiapas State, Mexico, resource conflicts underlie the insurgency to the South. Unequal distribution of land and rapid population growth has forced poor peasants—mostly indigenous people—to eke out a meager living by farming environmentally fragile uplands. But these lands are quickly degraded, plunging the increasing population even more deeply into poverty. A similar cycle has been observed in places as diverse as the Philippines, the Himalayas, the Sahel, Indonesia, Brazil and El Salvador.
* In Haiti, dwindling resources are even more central to the social collapse that has overtaken an island nation that was once the crown jewel of the French Empire. Almost totally deforested, its poor croplands divided into smaller and less productive parcels with each generation, these problems are compounded by a predatory government that has drained the nations's scant resources and failed to invest in its people. Looming ominously over this environmental, economic and political collapse is the fact that Haiti's population of seven million—already unsustainable by every measure—is expected to double in the next 18 years.
* And in China—home to one in five of the earth's people—severe water shortages and soil erosion threaten that nation's ability to sustain its population. Between 1957 and 1990, China lost some 35 million hectares of cropland—an area the size of all the farms in France, Germany, Denmark and the Netherlands combined. This depletion is prompting an exodus from the impoverished interior to the booming coastal cites, which along with the demands of rapid industrialization, will combine into an environmental wall which the Chinese economy will soon hit full speed.

And it can happen to us, where our biological systems are under varying degrees of stress. As we continue to degrade them we are consuming our capital. In the process we erode living standards—it is a dangerous and slippery slope ... (pp. 3-4)

...We are learning that environmental capital cannot be measured simply by counting trees, stocks of fish, or ears of corn. It also encompasses complex ecological systems that filter wastes, regenerate soils, and replenish fresh water supplies...

Our deficit spending of environmental capital has a direct, measurable impact on human security. Simply put, the life support systems of the entire globe are being compromised at a rapid rate—illustrating our interdependence with nature and changing our relationship to the planet. Our security as Americans is inextricably linked to these trends. The security of our nation and our world hinges upon whether we can strike a sustainable, equitable balance between human numbers and the

planet's capacity to support life. (p. 4)

...Together, the momentum that is building in the Clinton Administration and the citizenry reflects an understanding that our nation's security depends on more than military might. It recognizes that our security is entwined with the well-being of our neighbors. Political boundaries are porous; environmental devastation and disease do not stop at national borders. And the increasingly globalized economy has drawn more tightly the bonds that connect us.

In the newly configured world, national security is closely linked to human security. Human security is built on a foundation of peace and political stability, physical health, and economic well-being. The primary threats to human security may not be as easy to recognize as, say, the enemy's nuclear arsenal, but they are no less deadly.

These are the threats posed by abject poverty in which one billion of the world's people live; the hunger that stalks 800 million men, women, and children; the spread of HIV / AIDS, which will infect 30-40 million people by the year 2000; and the combination of violence, poverty and environmental degradation that have forced 20 million people from their homes.

Here in the United States and around the globe we are coming to understand the close connections between poverty, the environment, the economy and security. This historic transformation demands that we now liberate ourselves—from outworn policies, from old assumptions, from fixed views that only yesterday seemed to be the dividing and defining lines of our politics.

Crisis prevention and the challenge of sustainable development are among the great challenges for the remainder of this and into the next Century. It is time to retool our approach to national security—recognizing that our economic and environmental futures are one in the same. And it is these challenges which will determine the future we leave to our children and grandchildren... (p. 9)

Statements By Sherri Wasserman Goodman

Deputy Under Secretary of Defense for Environmental Security

Deputy Under Secretary Goodman's Remarks to the Society of American Military Engineers' National Meeting in Nashville, Tennessee
June 1, 1994

The mission of Environmental Security is to integrate environmental concerns into our national defense policies—from ensuring responsible performance in our operations at home—to deterring regional conflicts caused by scarcity or denial of resources—to mitigating threats such as ozone depletion or loss of biodiversity that can lead to international instability and global degradation.

Statements By Kathleen A. McGinty

Chair, Council on Environmental Quality, Executive Office of the President

The Honorable Kathleen McGinty's Address to the Dacor Bacon Foundation
October 7, 1994
Note: The following is the full text of the speech, delivered when Ms. McGinty was the Director of the former White House Office on Environmental Policy.

Talk about strange bedfellows: Environment / Security? How is it that these twain now meet? We have, of course, and the Green Berets, and the Army have always looked stylish in its green fatigues, but, somehow I suspect, there was something different going on there. Could it now be that there is a green agenda that is properly the subject of national security concern?

Does the environment now merit a seat at the table now occupied by nuclear proliferation, terrorism, [and espionage]? An imposing crowd. I want to paint for you why I believe there are strong connections between the environment and security. But, I look to you to help think the issues through and to define a strategy.

Let me say, yes, I believe it does. I believe the interlinkages here are strong, in fact, it is imperative that our national security lease be broadened to focus on environmental trends as well.

The lease, however, is still quite cloudy. What are the exact dimensions of this problem and exactly how should we rise to this challenge? Will our traditional national security tools be useful to us? It is because of these questions that I am particularly pleased to join you today. Many of you have devoted your careers to identifying and then moving forward on these things that are of vital interest to the national security—the peace and prosperity of this great nation. How exciting that you come together today to look forward—to perceive the challenges of the coming century. How encouraging that you already perceive the connections with the environment; how fortunate for us all that you will here to dedicate your energies, your considerable talent and [your] expertise to helping us now re-focus the lens and see the challenges that loom ahead. It is truly my honor to join you, and I want to thank my friend Bob Hannesmeyer for his leadership and his kind invitation to me.

Let's step back for a moment. How is it that environmental problems have come to loom so large that they

now properly become part of a national security agenda. Are these problems really of that magnitude? Let me suggest three reasons:

First, rapid population growth. The fact here is that it took more than 10,000 generations to reach 2 [b]illion people of earth. But now—in the course of one lifetime—the lifetime of those who were born just after WWII—we have more than doubled the population—from 2 to 5.5 billion. And if those same folks live out their expected lifetime, they will see the population nearly double again—9 of 10 billion by 2030. In this decade, the world's population will grow at the fastest rate ever—adding another 100 million people every year. And in the time I will speak to you today, 11,000 more people will join us here on planet Earth. 11,000! Clearly, this is a dramatic change, and it is dramatically changing our relationship with the earth's environment.

Second, powerful technologies. We are only just beginning to come to grips with the fantastic new powers we have as a result of the scientific and technological revolution. At the dawn of the nuclear age, Albert Einstein said: "Everything has changed, except our way of thinking." What I want to suggest here is that, with regard to our civilian technologies, the power of these technologies means everything has changed. It is incumbent upon us now to appreciate their impact and change our thinking about them, too. For example, when just one family—of the many thousands—of chemicals we use can tear a hole in the ozone layer that protects ALL life on Earth, then the time has come to understand the power of our technologies.

When mechanized logging enables us every year to deforest an area of the planet equal in size to the entire country of Belgium, plus Switzerland, plus Iceland—three countries worth per year—then it is time for us to better understand the impact of our tools. When destructive agricultural practices cause 1.2 billion hectares of land—a chunk of the globe equal in size to India and China—to become barren desert—then we know it is time to reassess our technologies.

Third, and finally, our way of thinking about our relationship to the Earth has changed. Somehow, we have come to think of ourselves as separate and apart from, rather than a part of, the Earth's environment.

But have we really begun to see the impacts of these changes? Are these problems that really need concern us now? And as a matter of national security? I believe that they are. How is that the case? Let us ask ourselves. What are some of the essentials of ensuring national security here at home and in countries the world over[?] Clearly, there are many, but let us focus on two: Economic growth and prosperity[and] a healthy and vibrant population[.] These are essential if a country is to be peaceful, prosperous and secure. But, these elements are missing in many places in this world today. And the culprit? Environmental degradation. We don't have to look far for evidence: We've made a lot of environmental progress over the last 25 years in this country. The fact is that we have far to go.

Today the promise of many of our children is compromised by exposure to lead and other toxins. Today, 1/4 of us have toxic dumps in our neighborhoods. Today, still, 74 million Americans breath unhealthy air[...] Clearly, we can; we must do better.

Economic growth and prosperity? Here whole communities in our country have been thrown into chaos and crisis—their economies have collapsed, specifically—because of severe environmental degradation. We don't usually think of our country in this way. Maybe the Third World, but . . . not us . . . But we are, in fact, facing these kind of instabilities. I've been experiencing first hand the pain of towns in the Pacific Northwest. Towns that depend on logging. Towns that were told that the resource was endless, [not] told that their livelihoods were ending because the resource had been so degraded. An isolated instance? Unfortunately, no.

This year we were also forced to close down fishing on both the East and West Coasts of our country. Pollution, over-fishing, and climate change caused dramatic declines in fish stocks. It was as if a terrible turning point had been reached beyond which the fish could not recover. They just disappeared. The reaction? Fear, crisis, pain—and anger. In fact, we had a Boston Tea Party of sorts: Fishermen from up and down the Northeast Coast formed a flotilla and blocked Boston Harbor. The fishermen rose up. Fearing tomorrow, they were trying desperately to cling to yesterday when those fish could support and provide for their families.

Again tragic, but a national security concern? You bet. As unrest grew on the East Coast, salmon fisheries—suffering similar declines—crashed on the West Coast. Still another region of the country left reeling and insecure. And, as we experienced domestic turmoil, the crash led to an international clash: competing for the same dwindling stocks, Canada turned her gun boats on US fishermen and actually seized US vessels and imprisoned our citizens.

So, the impacts are real and they are present. They shake our confidence and cohesion as a nation, and because we are then weakened, they impair our ability to hold firm and fast against aggressors. But let me suggest to you that we are the lucky ones. I have talked about the population explosion. We need to realize that 95% of that growth is going to happen in the coming years in developing countries. 95%! That amounts to tremendously increased pressures on the natural resource base in those countries—those with the fewest, if any, resources. Countries that are least able to respond; least able to provide meaningful alternatives to their citizens. We indeed are the lucky ones. President Clinton is committed to the people of the Pacific Northwest and the people of New England; to find new opportunity, new hope. So we may be okay domestically. But we are not immune to the pressures felt in the developing world. What happens

when the economic basis of these countries—the essential ingredients—like clean air, clean arable land—disappears? What happens when parents see their children die from pollution? When, in fact, some 47,000 children under the age of 5 die every day from things like dirty water? What happens when parents witness that?

What happens, I would guess, is that anger builds. There is resentment. Resentment builds to aggression; and possibly to war. And then there are waves of refugees. Are we seeing this today? I believe so. Though, I would not want to suggest direct causality. It is striking to note that it is in Rwanda and Somalia, that we have seen the most rapid population densities in the world, and it is in Haiti that we have seen the most dramatic destruction of the forests and degradation of the seas. And these trends are global. They affect us. The United Nations reports that ALL of the world's major fishing areas—all 17 of them—have either reached or exceeded their natural limits.

And grain production? In both the developed and developing world, we have seen a dramatic slowdown in the rise in grain productivity. So much so that since 1984, we have seen a steady decline in the amount of food available per person on this planet.

And water scarcity is equally severe, with many countries—including our own—experiencing crises in freshwater availability. So, I believe that the environmental imperative is real, and that our challenges are great. However, I want to point to another aspect of this environment/security dynamic. I also believe that our opportunities—in terms of promoting our national security priorities—are equally great. There is a powerful dynamic between the state of the environment and the existence of free and open democratic societies.

What are the interconnections? How do these things relate?

We know that racism and sexism, exploitation and oppression are enemies of freedom. But there is another effect too. Everywhere we look in the world today, wherever the human spirit is crushed; wherever individuals feel powerless and live their lives in fear that they have no meaning or purpose, there too, we find the most severe environmental devastation.

From Eastern Europe and the nations of the former Soviet Union, to Ethiopia and to Tibet, to Haiti and to South Central Los Angeles—wherever human suffering is the worst—there we see the erosion of the soil, and the cutting down of the forest, and the poisoning of the water and the air.

So, denial of democracy can destroy the environment. But in a curious kind of symbiosis, we know that destruction of the environment can, in fact, give birth to democracy. People feel attached to the land and the water. People understand the importance of a healthy environment to their children's health. Environmental devastation can rip at people's hearts. When they see the land they loved in ruins; when they realize with horror that their children's lives will be ugly—they become filled with passion. And they must speak.

And so it was that *perestroika* happened on the heels of an increasingly determined effort of the people to know of the fallout of Chernobyl. And so it was that the early mass demonstrations in the former Czechoslovakia were held in protest to the pollution of Northern Bohemia.

The groups that led these efforts learned to use their voices—to organize; to shake others into action and into a belief that change was possible. That they could effect changes. The fall of the Berlin Wall is in no small part a consequence of these early, courageous efforts to protect the environment.

The agenda for moving forward: President Clinton sees clearly the powerful connections between environmental security and ensuring our national security. And he is pursuing a comprehensive strategy based on these connections.

First, we are working to:

-- promote democracy by sustaining these NGOs throughout the world.

-- **Work in Russia**: In each partnership we are undertaking with the Russians, we are insisting that not only the Moscow bureaucracy, but local citizens groups, be involved.

-- **[Multilateral Development Banks]**: Here we're insisting that information be provided to the communities that will be impacted by projects and that they have an opportunity to participate in the process.

-- **Population Stabilization**: In his very first days in office, President Clinton reversed the policy of previous administrations and put forward a comprehensive plan to work toward population stability. We're committed to ensuring that all couples have access to family planning services. We're committed to improving the health of children throughout the world so their parents will have confidence that they will survive and will choose to have smaller families. And we're committed to enhancing the literacy of women—empowering them and offering them other economic alternatives.

-- **Free trade and open markets**: President Clinton is committed to promoting strong and sustainable economic growth in the world. We know that poverty can be the greatest cause of environmental destruction. Sustainable economic growth then is part of the solution to environmental degradation. With open and free markets, we can provide opportunities for U.S. companies to make available the kind of clean, new technologies that can fuel economic growth around the world—without environmental destruction. That's what NAFTA is all about. We know the opportunities here are large—200 to 300 billion. President Clinton wants US. companies to take the lead.

As might be apparent from the initiatives I have mentioned, there is something striking in this agenda that I want to take note of here. To call environmental

degradation a threat to national security does not necessarily imply that traditional tools can effectively be used to address this threat. It seems that a different approach is needed. In fact, it seems that the traditional security tools that are typically hierarchical, centralized, and secretive may be at a distinct disadvantage in confronting environmental problems which often require openness, decentralization, and participation. We think we're moving in the right direction, but much thought needs to be given to defining the proper approaches to this new challenge. Working with many of you, I hope that we can gain some of the many insights that we need. Thank you for your time and attention[, and I] look forward to dialogue.

Bill Proposed By Benjamin Gilman in the House Of Representatives: H.R. 575
To establish the National Committee on the Environment and National Security

103rd Congress, 1st Session
January 26, 1993

Mr. [Benjamin] Gilman [R-NY] introduced the following bill; which was referred jointly to the Committees on Foreign Affairs, Armed Services, and Merchant Marine and Fisheries.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SECTION 1. SHORT TITLE
This Act may be cited as the "National Commission on the Environment and National Security Act".

SECTION 2. FINDINGS
The Congress finds that—

(1) new threats to the global environment, including to the earth's climate system, the ozone layer, biological diversity, soils, oceans, and fresh-water resources, have arisen in recent years;

(2) such threats to the global environment may adversely affect the health, livelihoods, and physical well-being of Americans, the stability of many societies, and international peace;

(3) in recent years, the definition of national security of the United States has been broadened, both in official White House documents and in legislation, to include economic security as well as environmental security;

(4) with the end of the Cold War, the dramatic reduction of the military threat to United States interests, and the new recognition in world politics of the urgency of reversing global environmental degradation recognized at the Earth Summit in Rio in June 1992, the global environment has taken on even greater importance to the Untied States;

(5) the extent and significance of such threats to United States security has not been fully evaluated by the Congress or the executive branch, and responses to global environmental threats have not yet been fully integrated into United States national security policy; and

(6) the United States Government currently lacks a focal point for assessing the importance of such new environmental threat [sic] to the national security of the United States and their implications for United States global security policy.

SECTION 3. ESTABLISHMENT
There is established a commission to be known as the National Commission on the Environment and National Security (hereinafter in the Act referred to as the "Commission").

SECTION 4. DUTIES OF COMMISSION

(a) STUDY.—The Commission shall study the role in United States national security of security against global environmental threats, in light of recent global political changes and the rise of new environmental threats to the earth's natural resources and vital life support systems, including such threats referred to in section 2.

(b) REPORT.—The Commission shall submit a preliminary and final report pursuant to section 8, each of which shall contain—

(1) a detailed statement of the findings and conclusions of the Commission on the matters described in subsection (1); and

2) specific recommendation with respect to—

(A) ways in which the United States might integrate concerns about global environmental threats into its national security and foreign policy;

(B) priority international action to respond to global environmental threats and likely resource commitments required to support them; and

(C) possible institutional changes in the executive and legislative branches of the United States Government that may be needed to ensure that such new environmental threats receive adequate priority in the national security policies and budgetary allocations of the United States.

[The proposed bill goes on to address membership and other issues.]

Editor's Note: Mr. Gilman is currently the Chairman of the House Committee on International Relations

Book Reviews

ULTIMATE SECURITY: The Environmental Basis of Political Stability
By Norman Myers
W.W. Norton & Company, 1993. 308 pp.

For most Americans born after World War II, the ostensibly generic term "national security" carries specific connotations of the military containment of communism. In *Ultimate Security: The Environmental Basis of Political Stability*, Norman Myers takes advantage of the end of the Cold War to suggest a new definition of national security to encompass the concept of a safe planetary habitat. Environmental issues such as the loss of arable land and access to fresh water and fisheries resources have already helped trigger civil disorders, insurgencies, and military eruptions in sub-Saharan Africa and the Middle East, and are likely to play an increasing role in conflicts around the world. Myers argues that security is no longer primarily about fighting forces and weaponry, but that it "relates increasingly to watersheds, croplands, forests, genetic resources, climate . . ." (p.21). He suggests that only by protecting the global environment and promoting sustainable development can we assure a secure economic and political foundation and maintain stability in international relations. Although Myers' approach can be overly dramatic, *Ultimate Security* is an important work that will introduce many people to the emerging area of environmental security.

In building his case, Myers begins with a description of his personal involvement with global environmental issues. He follows this with a preemptive defense against a straw-man critic he calls "The Realpolitik Skeptic" who refuses to see that environmental degradation or political instability in the developing world can have any effect on the lives of those in the developed countries. Together, these introductory sections serve to coax the reader who has not already switched out of the traditional mind-set into accepting Myers' assertion that there is a "growing connection between environment and conflict." (p.23).

Myers illustrates his theory of environmental security with two types of case studies. The first type examines environmental causes of instability in seven sub-continental regions, including the Middle East, sub-Saharan Africa, India, and Mexico. For example, Myers recounts how soil erosion in the highlands of Ethiopia during the 1960s, caused primarily by deforestation, resulted in a "decline in farmland fertility and a hefty falloff in agriculture, followed by food shortages and spiraling prices. It all culminated in riots in Ethiopia's cities, eventually precipitating the overthrow of Emperor Haile Selassie in 1974. This was the first time a government had been ousted for primarily environmental reasons." (p.60). While somewhat impressionistic, these geographic case studies are the moral center of the book. Myers is at his best when recounting what he has seen first hand in these areas through an historical lens that takes environmental pressures into account.

Myers next chapter discusses what he calls "global case studies." Unlike the regional studies, these examples are issue-defined; the various sections evaluate the world-wide security implications of population growth, ozone depletion and climate changes, loss of biodiversity, and the phenomenon of environmental refugees. These global changes may turn out to be the greatest threats to security, and Myers passionately describes their potentially devastating effects. The apocalyptic scale of these problems, however, makes them harder to analyze in terms of political and economic stability. The final sections present a discussion of tradeoffs and policy implications. Here, Myers anticipates and attacks the argument that, while these environmental concerns are clearly important, we cannot afford to do anything about them. By comparing the huge sums spent annually on armaments with the much smaller amounts of money that would increase global stability by addressing ecological and health problems, Myers convincingly justifies, and perhaps answers, the question, "Are we getting our money's worth?" (p.271).

Myers, an environmental scientist and author of several books, including *The Primary Source: Tropical Forests and Our Future* and *Gaia: An Atlas of Planet Management,* writes with a free- flowing and even chatty style; he is as comfortable quoting the pop music group Dire Straits as he is quoting

U.S. Senator Sam Nunn or Norwegian Prime Minister Gro Harlem Brundtland. As a result, Myers comes across as much less formal than some of the other pioneering academics and practitioners who have worked on the issue of environmental security, including Thomas Homer-Dixon at the University of Toronto and Jessica Mathews at the Council on Foreign Relations. Unfortunately, this style is sometimes undermined by a lack of analytical rigor. Myers never truly articulates a new definition of security; furthermore, he focuses exclusively on the links between conflict and environmental degradation without discussing the specific impacts these links might have on U.S. national security, the security of our allies, the stability of the international economic system, or on global "human" security.

Myers begins *Ultimate Security* with "A Personal Odyssey" and ends it with "A Personal Reflection." His attempt to develop a theory of environmental security between these two framing references invites comparisons to Vice President Al Gore's *Earth in the Balance*,[1] which Myers cites liberally. In fact, both *Ultimate Security* and *Earth in the Balance* are firmly rooted in the Brundtland Commission's seminal work, *Our Common Future*. Since the publication of *Our Common Future*,[2] a critical mass of political, academic and popular attention has begun to form around the notion of environmental security.[3] Against this backdrop, Myers has produced a very readable book that builds on earlier works in making a passionate case for our global environmental well-being.

—by Daniel P. Blank

Daniel P. Blank, previously Associate Director for International Trade and Development at the former White House Office on Environmental Policy, is currently at Stanford Law School.

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ENDNOTES

1. Al Gore, Jr., *Earth In the Balance: Ecology and the Human Spirit* (1992).
2. Brundtland Commission, *Our Common Future* (1987).
3. See, e.g., the new Global Environmental Affairs Directorate on the Clinton Administration's National Security Council and the Woodrow Wilson Center's innovative Environmental Change and Security Project; see also Robert Kaplan, "The Coming Anarchy," *The Atlantic Monthly*, Feb. 1994, at 44.

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ECOLOGICAL DISASTER: Cleaning Up the Hidden Legacy of the Soviet Regime

By Murray Feshbach

The Twentieth Century Press, 1995. 157 pp.

While it is widely accepted that environmental degradation poses a threat to human security and welfare, the nature, scope and urgency of this threat are hotly disputed. Scientific uncertainty about the causes and effects of environmental change and the countervailing efforts of diverse political coalitions competing for scarce resources have tended to weaken national and international commitments to environmental rescue strategies. The end of the Cold War, once heralded as the beginning of an era of global democracy, human rights, peace and environmentalism, appears to many observers to have triggered a shift to traditional domestic agendas—protecting jobs, controlling immigration, maximizing wealth and pursuing various short-term national interests.

This shift is not surprising. The absence of a clearly defined enemy and an entrenched state of war, no matter how cold, have cast political leaders, especially those of the great powers, adrift. Deprived of a clear and distinct baseline for foreign policy, they are confronted with a world posing problems—such as environmental change—that are gradual and long-term, difficult to resolve, and/or subject to intense disagreement. A retreat to the bread and butter issues of politics is, perhaps, inevitable.

But failing to address global environmental issues, may prove to be a terrible mistake. For example, the environmental crisis in the former Soviet Union, as described by Murray Feshbach in *Ecological Disaster*, has far-reaching implications that strongly encourage aggressive action today on the part of the world community.

In 1992, Feshbach, a research professor of demography at Georgetown University, co-authored a widely read study of the environmental legacy of communism and the Cold War in the former Soviet Union (*Ecocide in the USSR* with Alfred Friendly, Jr.). *Ecological Disaster* introduces a wealth of new information and concludes with a concise and pragmatic set of policy recommendations. It is essential reading for Sovietologists, environmentalists, and foreign policy makers.

While much of the data in *Ecological Disaster* is anecdotal, fragmentary, and inconclusive, Feshbach weaves it together in a cautious but compelling manner. Drawing upon interviews, press releases, and recent studies, the book is remarkably up to date. In successive chapters, Feshbach examines the environmental issues "of the highest priority": Russia's nuclear situation; the Chernobyl incident; pollution in the Arctic Ocean and Japan and Baltic Seas; the condition of Russian lakes, rivers and inland seas; the largely undocumented legacy of chemical and biological warfare centers; and air and land pollution (p. ix). The finished portrait is grim and

terrifying.

For example, Chapter 1, "A Nuclear Plague," deftly guides the reader through information that has recently surfaced about the extent of nuclear-related pollution and the growing potential for Chernobyl-type disasters. The former Soviet Union "is awash with nuclear materials" (p. 19). Radioactive waste litters the landscape, poorly protected stockpiles of highly enriched uranium and plutonium grow, the sarcophagus built to contain 64,000 tons of radioactive materials at Chernobyl is cracking, and a persistent criminal element strives to gain access to weapons grade materials. Chapter 2, "Chernobyl: What Happened?" describes a nightmare of inadequate safety procedures, faulty engineering, human error, and slow response time, and points out that at least fifteen other reactors are susceptible to similar catastrophes.

To make matters worse, as Chapters 3 to 6 demonstrate, the reckless handling of industrial, agricultural, and other wastes has contaminated air, water, and land from Russia to Canada, causing massive health problems, lowering productivity, and pushing the absorption capacity of the environment beyond its limit. Vast quantities of chemical and biological weapons sit in faulty storage units. Competing demands on scarce resources, widespread corruption, low morale, and uncertainty about how to proceed suggest a very bleak future.

The Communist party and Soviet government created the current ecological and health crisis over a period of seventy-four years. It will take a good amount of time for the successor governments to stop fully the momentum and to reverse the ongoing destruction of air, land, and water. Available estimates predict that the corrective procedures will take decades to achieve and will consume unprecedented, perhaps unattainable, amounts of monetary and physical resources (p. 79).

Feshbach acknowledges that this situation, which affects people well beyond the borders of the former Soviet Union, is worsening and may be irreversible. But actions can be taken to avoid the worst case scenario, and *Ecological Disaster* concludes with a thoughtful and practical set of policy recommendations. First, both within and outside Russia, steps must be taken to address environmental issues on a long-term basis. Feshbach advocates developing a Western aid strategy, targeting the most pressing problems (avoiding another Chernobyl, controlling waste disposal and protecting Russia's declining forests), greening the Red Army, improving the quality of data, and building Russia's capacity to manage its forests.

Second, specific efforts must be made to address the health crisis. These might include an international immunization initiative, the provisioning of rural health clinics, the establishment of regional diagnostic and training centers, and the construction of water purification systems at medical facilities. Finally, Feshbach recommends that attention be paid to building health and ecological alliances within Russia so that existing capabilities are deployed to maximum effect.

Whether these initiatives will prove possible or sufficient is still unknown. What is clear is that the former Soviet Union's legacy of environmental degradation poses a far-reaching threat to human security and welfare. The potential for multiple catastrophes—ranging from further Chernobyls to the illegal diversion of nuclear materials to the ultimate destruction of entire ecological systems—is high. To act will be costly; not to act, however, is likely to be even costlier.

—by Richard Matthew

Richard Matthew is Assistant Professor of Environmental Politics at The School of Foreign Service, Georgetown University.

Editor's Note: Another related volume, edited by Murray Feshbach was just released: The Environmental and Health Atlas of Russia *(available in English and Russian), which contains over 300 previously unpublished maps and tables, plus extensive commentary and analysis on issues such as the distribution of radioactivity and the causes of death linked to environmental degradation. To order, contact The Center for Post-Soviet Studies at 301-652-8181.*

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THE HOT ZONE
By Richard Preston.
Random House, 1994. 300 pp.

THE COMING PLAGUE:
Newly Emerging Diseases in A World Out of Balance.
By Laurie Garrett.
Farrar, Straus, 1994. 750 pp.

In 1993, Stephen King spooked American television audiences with *The Stand*—an eerie, seemingly implausible story about a deadly virus that quickly annihilates most of the human species. A year later, King described the nonfictional *Hot Zone* as "one of the most horrifying things I've ever read." The central drama in *The Hot Zone* occurs in 1989 in a "monkey house" in Reston, Virginia (19 miles from Washington, D.C.), where imported animals under quarantine began to die of a mysterious illness. By the time scientists from the U.S. Army Medical Research Institute for Infectious Disease realized that the monkey deaths were due to a previously unknown strain of the lethal *Ebola* virus, some humans were already infected. Fortunately, life is not (or not always) a Stephen King movie, and this airborne strain proved to

be the single variety of *Ebola* that does not harm humans. *The Hot Zone*, written by *New Yorker* contributor Preston, has topped the best-seller lists and inspired the hit movie *Outbreak*.

And deservedly so. Preston's short book reads like a popular fiction novel, offering a thoroughly entertaining, nail-biting journey from African rainforests to biohazard rooms in U.S. military research labs. *Ebola*, a viral menace that causes the fast and gruesome death of its victims, is the main character, with supporting roles played by victims, doctors, public health and military officials, and the pioneering scientists who identified the virus and tried to locate its natural habitat. While *The Hot Zone* is not an authoritative work on *Ebola* or other diseases, even critics who dismiss it as simply a nonfiction thriller acknowledge that it is noteworthy for drawing widespread attention to the "newly emerging" microbes that are changing our very understanding of the modern world.

Plagues and pandemics were, quite simply, not supposed to happen in the hygienic late 20th century. During the early 1960s, scientists proclaimed that they had all but won the war against infectious diseases. Research biologists tended to focus on what was happening under their microscopes and ignored what was changing in their own human world. In *The Coming Plague*, medical journalist Garrett connects *Ebola* and other diseases such as AIDS, Lassa fever, and the "flesh-eating" streptococcus bacteria that killed Muppet creator Jim Henson to the larger political, social, and ecological landscape that promotes their spread. Late-20th-century humankind, she argues, lives in a habitat unlike that of any of our ancestors. Air travel allows viruses from Africa (such as HIV) to "jump" to other continents in a matter of hours. In Third World cities, malnutrition combines with wretched sanitation to turn urban citizens into human petri dishes. Efforts to control or eradicate disease with new drugs or chemicals can backfire, because microorganisms can deftly perform evolutionary acrobatics and become more threatening in different forms. And the effects of the destruction of ecosystems are felt not only in tropical rain forests, but much closer to home, too. In Connecticut, for example, deforestation has resulted in a greatly increased incidence of Lyme disease by driving tick-bearing feral animals into the suburbs.

At mid-century, during the heyday of medical conceit, one lone dissenter wrote, "Everybody knows that pestilences have a way of recurring in the world." The dissenting voice was Albert Camus's, in his novel *The Plague* (1948). Almost 50 years later, many people now wonder how close the world is to the "coming plague"—such as an airborne version of HIV. No one, including Garrett, can say, but she presents a frightening scenario of world health professionals ill prepared to identify and control diseases that nimbly spread, evolve, and become resistant to drugs. Garrett reminds her readers how the early reluctance of governments to grapple quickly with AIDS contributed to its rapid spread. While the U.S. Centers for Disease Control recently created a model "emerging infections program," Garrett wonders whether any one country's efforts can enable it to "stave off or survive the next plague." She argues that any hope in doing so rests on humanity's ability to change its "perspective on its place in the Earth's ecology." During the 1960s, people such as Marshall McLuhan predicted that the world would soon be one big village. For viruses, at least, the prediction has come true.

—by P.J. Simmons

P.J. Simmons is Coordinator of the Environmental Change and Security Project, Woodrow Wilson International Center for Scholars.

Excerpts from this review appeared in the Spring 1995 issue of *The Wilson Quarterly*.

Meetings - Discussion Group

In November 1994, the Wilson Center inaugurated a series of monthly luncheon meetings of the "Environment and Security Discussion Group," consisting of experts from academia, Congress, various government institutions (including AID, CIA, DIA, DOD, DOE, DOI, EPA, NOAA, NSC, OMB, OSTP, and State), the military, non-governmental organizations, and other communities. In the first several months, the Group explored general environment and security issues, including the range of conceptions in the field, the pros and cons of linking environment and security, the status of research on environment and conflict, and the ways that government might organize to address these issues. In the months ahead, the Group will begin to explore more specific problems and issues. Below are detailed summaries from four of the sessions. Comments from participants (except for moderators, group leaders and presenters) are not attributed to individuals.

DATE:	3 November 1994
TOPIC:	Critical Review of Various Conceptions of Environment and Security
PRESENTER:	Ken Conca, Assistant Professor, Department of Government and Politics, University of Maryland, College Park
COMMENTATOR:	Alton Frye, Senior Vice President, National Director and Senior Fellow, Council on Foreign Relations

Presenter (Conca): The aim of this talk is to explore critical questions that apply to perspectives about environment and security (ES) links; it will not provide a comprehensive review of the different clusters of thinking about ES. There are at least two main questions for ES discussions which—although often blurred in the literature and in discussions—should be viewed as distinct: (1) environment as a potential source of conflict; (2) broader views about how environment might affect security in other ways besides creating conflicts. This distinction is important, since conflict does not always manifest itself in ways that threaten security, and security can be affected by many other things besides violent conflicts.

First, comments related to analysis to date on the possible links between environment and conflict. It seems obvious that increased scarcities in a world that is more populous, resource scarce, and ecologically stressed will be a more conflictual place; this basic observation has long been recognized by people like Harrison Brown, Fairfield Osbourne and Andrei Sakharov.

We now have an increasingly large body of carefully developed, empirical case material that shows that environmental degradation and resource scarcities can trigger, exacerbate, or structure forms of violent conflict. Professor Thomas Homer-Dixon (University of Toronto) has put together a series of case studies that illustrate this.

Currently, we are looking at cases where things "may happen" and trying to identify where there may be problems; to move forward in our understanding, we must move to the next stage of analysis in which we more systematically address under what circumstances environmental change leads to violent conflict and under what circumstances it does not. In other words, we must move beyond anecdotal analysis into more systematic methods of analysis that are comparative across individual cases. Such research would focus on less-asked questions such as why conflict sometimes does not occur when regions/nations are faced with similar ecological scarcity problems with conflict potential. For every one environment-conflict case study presented, we can probably find several other global examples where situations with ecologically similar conditions did not result in conflict. The key question for scholarly, policy, and funding attention, then, is what is preventing conflict from happening in such cases. The answer to that probably has something to do with differences in the resiliency of social institutions. A lot of good work on management of environmental cooperation and institution building is being done, but that work is often separate from environment and conflict discussions and needs to be incorporated.

Such systematic and comparative analyses, however, are extraordinarily difficult because they must contend with age-old question such as: (1) Why do social systems and relations sometimes lead to conflict and sometimes do not? [For example, some colonial, oppressive systems have produced violent reactions, others have not; some scholars have tried to explain these differences by talking about "deprivation" and "relative deprivation" with numerical indicators, but there are no definitive conclusions.]; (2) Are the causes of war "triggered" or "structural?" [For example, would WWI have occurred were it not for the assassination of Archduke Franz Ferdinand, or was that assassination simply one of a thousand triggers that would have led to the same outcome because of underlying conditions?] These questions have been

around much longer than those related to environmental change as a contributor to conflicts; the fact that they are still unresolved demonstrates how difficult it will be to move on to systematic and comparative analyses of environment-conflict links.

Much of what we are talking about has to do with changing peoples' access to natural resources. Their access can clearly be changed by environmental degradation, but can also be changed (as Homer-Dixon points out) by changes in social institutions and rules. They can also be changed by environmental protection, which itself can be a source of violent conflict since it too affects peoples' access to resources. The literature tends to stress the ecological circumstances that produce conflict (i.e. stress, degradation, population growth, soil erosion and deforestation); it should also address things like property rights, rules and enforcement procedures. The current environment-conflict literature needs to be connected to a wealth of literature on local, and social institutions and whether they provide durable foundations for collective management and cooperation. Connections between these various disciplines are essential to moving this field of inquiry forward.

Second, observations about the growth of interest in the relationship between environment and security (ES). The growth in interest in ES coincides with two major trends: (1) defense budgets are up for grabs and reorientation, (2) structural unemployment in the peace movement and the national security sector is rising. These are not necessarily full explanations for all the interest in ES, but help provide some context. Environmentalists have harnessed the term "environmental security" because the word "security" gets attention. One should carefully consider the potential costs, however, associated with the increased attention that comes from dubbing certain ecological issues as "security" issues.

One potential pitfall is the possible militarization of our conceptions of the environment, rather than a greening of our conceptions of security. While there may be some role for security institutions in environmental matters, the kinds of solutions and character of responses offered by security institutions (often conflictual in nature or connotation) may be inappropriate when addressing environmental problems (which require more cooperative solutions).

This debate is proceeding in the context of a larger debate about "redefining" security, in which some are urging the incorporation of fundamentally different threats. However, one cannot talk simply about definitions of "security" without invoking the deep metaphorical and institutional levels of meaning that the term "security" encompasses. "If we associate the problem of environment with the problem of security, we had better be sure that the way we work with security—both as a metaphor and a set of institutions—makes sense for the nature of the [environmental] problem."

Another potential pitfall has to do with the North-South dynamic. Given the importance of the North-South dimension and the "tremendous" need to bridge the divide through trust-building measures, Conca believes it may do more good than harm to raise the security profile of these issues; the benefits accrued at the national level might be offset by heavy costs of negative feelings of suspicion and mistrust in international dialogue. This is because there is a deep structural divide between North and South—still evident at UNCED—that raises concerns about how the South will conceive the North's interest in environment and security.

In many countries, the pattern of natural resource exploitation that has led to environmental destruction, predates the state itself. Activities like timber harvesting started with colonialism and [in many cases] were the very basis for the state and society in many cases. In addition, these states rest on social bargains which are premised fundamentally on those patterns of forest destruction. Since halting or changing those activities would interfere with these social bargains, environmental protection, or conservation, is often seen by elites as more of a security threat to the state than destruction of resources.

There is a need to redefine security and to reorient more budgets and attention to environmental issues; but combining these issues may be taking two hard problems and creating one impossible problem.

Commentator (Frye): The element of surprise lingers now more than ever in the international system; the challenge is to anticipate where and when surprises will come, and how to develop constructive responses. The murky threats of the post-Cold War world require us to continue making scientific discoveries, developing a new vocabulary, and bridging the political and the physical universes.

Conca's "provocations" were "extremely well framed," and Eileen Claussen's 11/6/94 comments at the Wilson Center were "extraordinarily thoughtful" and a promising beginning for this continuing dialogue.

The dynamics associated with the cluster of problems under the ES rubric are multi-directional. In addition, some interventions in the interest of environmental protection may have perverse and unanticipated consequences.

The excesses of security policy and military operations continuing into the post-Cold War period have already generated environmental blight of huge proportions [for example, in the Black Triangle of Central Europe, Kuwait burning oil fields, U.S. sites from weapons building]. Relatively speaking, these immediate problems are very minor components of the comprehensive set of issues that we are addressing here. It is noteworthy that the U.S. has adjusted its security policy and ambitions when confronted with fears of environmental threats (such as nuclear fallout): most notably, the 1963 Partial Test-Ban Treaty, the 1977 Environmental Modification Convention, the 1972 Biological Weapons Convention, the impending Chemical Weapons Convention, and the agreements not to place weapons of mass destruction on the sea bed or in outer space. These are examples of linking environment and security concerns, and using institutions in a productive way; but they were all narrow arrangements, and do not constitute viable precedents for issues we're grappling with now.

It is notable also that security institutions, like NATO (through the North Atlantic Cooperation Council), are trying to deal with cross-border environmental problems, and the restoration of military lands. There are also ongoing

discussions dealing with the serious problems of remaining land mines scattered across the globe. These are also examples of useful confluence of environment and security goals and institutions.

When trying to identify governing case examples of the physical-political interface, we can expect the physical sciences to perform better than the social sciences at diminishing the number of cases of interest/concern. The social sciences will have a harder time since they must contend with multiple plausibilities (i.e. behavioral changes).

As Conca stated, one should be extremely cautious in using war metaphors for environmental concerns, since there is, at best, a partial fit between the kinds of military concepts, strategies, and institutions on the one hand and environmental problems on the other. There are, however, real environmental problems with which security institutions must contend, and it is only appropriate that some resources be devoted to it. I am especially concerned that raising the security focus of the environment debate at the global level may be detrimental to the North-South divide.

Comment: Security should no longer be traditionally defined as enemy threats to our militaries or our nation-states; rather, we should expand our views of security to include threats to people and to humankind. Similarly, we should not view the relationship between environment and security solely in terms of how the environment may cause conflict. There are many non-conflictual environmental issues that pose grave threats to individuals' and nations' security (including global warming, ozone depletion, pollution). For example, the "ecological security" threats [note: the speaker preferred "ecological" to "environmental" security] that will have the greatest impact on each of us are health related, such as viruses and plagues. If we think only in terms of conflicts, we are likely to become preoccupied with military responses that are inappropriate for solving environmental problems in need of collective/cooperative responses.

Comment: Before 1945, the term "security" never had a clear definition or specific meaning—only with the advent of the Cold War did "security" become identified mainly with *military* security. Still, various U.S. administrations throughout the Cold War used the term "security" in myriad ways to justify and drive certain priorities such as science and technology policy, the highway program, and energy policy (in the wake of the 1973 oil crisis).

Comment: It is clear that "military" security is only one narrow component of "national" security. In a broad sense, security is really about making a nations' citizens *feel* secure. This idea was suggested in 1983 by Professor Richard Ullman (Princeton University), who argued that security involved improving living standards and guarding against problems that threatened to limit the flexibility of citizens and their governments to make choices (including threats that limit access to energy or natural resources). In Conca's example of Brazil perceiving environmental protection as a security threat, we are really talking about a threat to *Brazil's leadership,* which is less concerned about its citizens than its self-preservation. One can therefore argue that even if environmental protection threatens some nations' leaders, it is as much a protector of that nation's long-term security as is democracy, since it tries to insure the well-being of the state's individuals.

Comment: The U.S. has a habit of lumping so much under the "security" umbrella that the term risks losing all meaning. The word, "security," adds little to our understanding of environmental problems, and it is undeniably associated with the military and the use of force. It is therefore questionable to use this evocative word when military responses to these problems are inappropriate and peaceful solutions to environmental problems are already working quite well.

Comment: Just as definitions of "security" are changing, so too are definitions of military security in the face of widespread ecological destruction and other changes. The military will increasingly be put into situations that are not simple cases of one country invading another. Maintaining "global" security will require U.S. movement into stickier situations that require detailed knowledge and policy planning. Haiti, for example, is a place where the combination of political, economic and ecological problems led to an unstable situation which threatened "global" security.

Comment: It is virtually impossible to obtain a consensus on the term "security." Recognizing this, it is extremely important for each of us to choose words carefully and be clear about what precisely we are trying to "secure" (and what our interests are) when we discuss security. Are we trying to "secure" the interests of the nation-state (meaning our borders or survival), individuals, the economy/prosperity, our natural resources, or something else?

Comment: The term "environmental security" is obviously problematic, and finding a common definition may be an elusive goal. In addition to other problems, security and sustainability issues are contemplated with entirely different time horizons: while we usually think of security in immediate terms, we must consider sustainability issues decades ahead of when problems begin to manifest themselves. If using the ES rubric does not help us address issues beyond those already addressed through the concept of sustainability, why not drop the term to avoid the accompanying baggage?

Conca: The term and concept of "environmental security" has been put on the table by environmentalists—not by the military—such as Norman Myers and Lester Brown in certain seminal articles. This is due to a desire to capture public attention and win additional resources for these problems. As problematic as it may be, however, it is even less vague than the term, "sustainable development," which has an even greater number associated meanings and agendas. I am not convinced that we should prematurely throw away the term, "environmental security"; but I am concerned that when we talk about security, we invoke conflictual instead of cooperative ideas, and that we risk

alienating and creating misunderstandings among both states and individuals in developing countries. [A group member then argued that developing countries will be suspicious or resentful of our environmental assistance/advocacy efforts and actions regardless of whether we label them as "environmental protection" or "security" oriented.]

Comment: In studying environment and conflict links, it is correct to focus on political and social institutions as the mediating factor for determining certain outcomes. We should turn our research attention to the impact of environmental change on political institutions, and how those impacts affect stability/instability in countries where there are U.S. interests. Professor Homer-Dixon's (University of Toronto) work shows that environmental change can sometimes be so intense that it overwhelms existing institutions that normally could cope with the problems, thereby resulting in instability and conflict. This area of inquiry deserves more attention than worrying about semantics and different definitions of security.

Comment: There is no significant movement in the intelligence or military communities to get involved in these issues. Most do not see the environment-security relationship as a serious enough problem to warrant attention.

Comment: While the military may not be concerned with (or foresee potential involvement in) sustainable development issues in general, the military can play a useful role in alleviating suffering and instability caused by famine, migration, starvation, and conflicts due to local resource scarcities. Regional environmental changes are occurring at such a staggering pace that we do not have the time to debate whether or not environment/security links can be proven; institutional responses are required of us today. Militaries around the world are important to this discussion, since they can not only be great assets in addressing environmental problems, but can also be great detractors.

Comment: This type of ES discourse is being driven not by concerns in the military over environment/conflict links or the search for new missions. It is taking place in the context of a larger discussion that is being driven by the money allocated to DOD and DOE for clean-up issues—allocations that dwarf the clean-up budgets of the private sector and EPA. There needs to be a strategy to distinguish these discussions from those about clean-up issues, some of which are aimed at enhancing bureaucratic interests.

Frye: Might I suggest a useful distinction here—one group is trying to fix old problems, while the other is trying to address future problems.

Comment: If we do not redefine security to include environmental concerns, the U.S. will have serious problems in meeting future threats.

Conca: Because U.S. security institutions have produced serious environmental problems in the past, they now have an obvious role in addressing them. It is not clear, however, what their role should be in anticipating, preventing, or responding to newly emerging or future challenges. Similarly, it is not clear which institutions should be given with primary responsibility in these areas, since all institutions—political, military, or other—are becoming increasingly poorly adapted to meeting new challenges.

Many disputes in this area are driven by different interpretations of the same scientific base. One place where it might be possible to invoke both notions of security/conflict and institution building/cooperation is around the notion of confidence building. There is a tremendous opportunity to make the concept of confidence building central in these discussions, in a way that brings together issues involving science, North-South relations, and policy responses. We need to hear from developing countries in order to make these discussions productive.

Frye: We have ventured into some serious and important issues—much beyond simply questions of semantics. We cannot emphasize enough that a key distinction in this discussion is between the larger array of emerging environmentally-related concerns that require non-military solutions, and the smaller array of problems that are amenable to classical military responses.

One possible way to categorize these issues is in terms of chronic (and long-term) versus acute (and short-term) environmental problems. While chronic problems will probably require cooperative solutions that do not involve the military, military responses may be appropriate when dealing with some acute environmental problems.

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DATE:	29 November 1994
TOPIC:	Assessment of Research to Date on Links between Environmental Change and Conflict
PRESENTER:	Thomas Homer-Dixon, Department of Peace and Conflict Studies, University of Toronto
COMMENTATOR:	Richard Matthew, School of Foreign Service, Georgetown University

Presenter (Homer-Dixon): Homer-Dixon reviewed nine key findings of the work of his international research team:

1) Climate change and ozone depletion are not and will not be major sources of social turmoil probably for several decades; they have received undue attention by Northern countries. The focus on environment in Southern countries is on more traditional regional problems, such as cropland, forests, water and fish stocks. Climate change and ozone depletion will have security implications in the long run by interacting with existing resource problems that already undermine the governing capacity of some developing nations.

2) Resource scarcities of land, forests, water, and fish stocks are not always "supply-induced" scarcities gener-

ated by degradation or depletion. They can also be "demand-induced" (if, for example, growth in population or per capita consumption creates greater demands on the same resource base). Resource scarcities can also be "structural" scarcities, due to the unequal distribution of resources within a society. These scarcities interact in different ways and often have their most pernicious effects when they do.

3) These three kinds of scarcities (supply-induced, demand-induced and structural) interact in powerful ways. Two of the most important are: (a) "resource capture" situations in which degradation of a resource combines with population growth to stimulate powerful groups within the political and economic system to alter the distribution of resources in their favor; (b) situations in which inadequate distribution of resources combines with rapid population growth and prompts populations to migrate from cropland-rich areas to ecologically marginal areas such as upland hillsides—areas at risk of desertification and tropical forests. As population increases in those areas, there is more land degradation, removal of forests, and depletion of renewable resources. This is occurring with strength and frequency all over the globe, and is affecting hundreds of millions in Central America, Indonesia, the Sahel, Brazil and elsewhere.

4) Scarcity doesn't necessarily lead to human hardship and conflict. Many would argue (and I would largely agree) that entrepreneurship, creativity, and production of wealth is often stimulated by scarcity. However, I doubt all societies will be able to respond positively to scarcities, due to various nations' lack of capacity to provide "ingenuity" in response to scarcities. There are two kinds of "ingenuity": (1) new technologies that help us respond to scarcity (hybrid grains, water irrigation technologies, fuelwood conservation technologies); (2) "social" ingenuity, meaning the social adaptations in form of social institutions (like efficient markets, clear property rights, financial institutions that can provide sufficient capital to entrepreneurs trying to respond to scarcities). For much of the world, the requirement for ingenuity to maintain social well-being will increase. But it remains unclear whether there will always be supply.

5) In those places where adaptation is impossible because of a lack of ingenuity, there will be various kinds of secondary social effects or disruptions. Three kinds are particularly important: (1) large scale migrations, (2) increased regional poverty, and (3) increased weakening of governments (something that is the focus of the "State Capacity" project—how renewable resource scarcities will lead to declining capacity of governments to manage those scarcities, and how that might lead to civil violence).

States could be weakened in the following ways: (1) resource scarcities increase demands upon governments to create infrastructure to respond to scarcities (build dams, start reforestation programs, etc.), (2) scarcities also encourage migrations from rural areas to cities, where they add to demand for jobs, housing, sewage disposal, water supply and other services, thus imposing additional burdens on state. Scarcities may also undermine the capacity of states to actually meet increasing demands; there is abundant evidence now that resource scarcities undermine economic productivity and decrease the wealth production of societies, which in turn can affect tax revenues and the well-being of societies. Scarcities also allow for rent-seekers, or monopolistic interests, which can result in decreased tax revenues for the state. The gap between increasing demands and the government's ability to provide for its citizenry can eventually undermine the legitimacy of states and possibly lead to civil violence.

(6) These three social effects (migration, increased poverty, and weakening of states) can produce specific kinds of conflict: (1) ethnic clashes can result from people moving from one area to another, (2) deprivation conflicts can result from increased poverty in economically marginalized areas, (3) coups d'état can result from weakened states elite interests (perhaps military interests) taking advantage of the weakened state. What is important about these conflicts is that they are sub-national, diffuse, and chronic in nature—precisely the kinds of conflicts we see in places like Somalia, Haiti, and Rwanda. We have a great deal of difficulty in responding to these conflicts with our military capabilities.

7) Even though these are internal conflicts, they may have repercussions on international security (or national security for adjacent countries). There may be significant spillover effects from internal conflicts into the external system. There are two kinds of paths for societies undergoing these kinds of demographic and environmental stresses—one is fragmentation, where the state increasingly loses control over peripheral territories, allowing those territories to come under the control of powerful interests such as warlords. In this situation, the threat to international security could be large-scale outward migration from affected areas. In addition, the state may be increasingly unable to participate in international negotiations, on everything from international environmental protection to international trade and collective security matters; even if they do participate, they may be unable to implement the agreements. Another possible path is that the ruling government may become a hard regime in response to these internal pressures; the international ramifications of this could be increased human rights violations, and an inclination to launch attacks against neighbors to divert attention from internal problems.

8) Some skeptics might say that resource scarcities are endogenous factors (internal to the system) that are fully determined. They maintain that we should focus on the economic and political policy factors that are the ultimate causes of conflict and poverty. While there is much to be said for this argument, I would offer three adjustments: (1) While political and economic factors often do create scarcities, the scarcities can produce "feedback" or "reciprocal causation" effects on the political and economic factors. "Resource capture" (mentioned earlier) is a clear example

of a reciprocal causation. (2) Ecosystem vulnerability, (for example, the depth of upland soils in the Philippines, or the vulnerability of Israeli aquifers to salinization), fundamentally determines when and how scarcities will occur. Ecosystem vulnerability is a physical factor that is entirely exogenous to the political and economic systems. (3) In those circumstances a society faces irreversible degradation (such as irreversible loss of soils)—and the political and economic system can no longer affect the degradation—these scarcities become an exogenous, permanent burden on the system. This development impinges upon the society's ability to pursue social and economic development plans.

Skeptics may also say that even if environmental factors are partially exogenous, they are never major causes of conflict and are at best aggravators or triggers of conflict. While this is sometimes the case, there are important additional cases where scarcity creates underlying, "tectonic" stress on societies that gradually builds up; eventually, it is random political or social developments that actually trigger a social breakdown. The environmental factors may not be determinate, but interacting with other variables they can be extremely powerful.

Future research is needed—especially in the area of state capacity. When we examine the precursors to widespread civil violence, we must consistently examine the variables associated with state capacity. Since the weakening of the state is a widespread pre-cursor to civil violence, we have begun a "State Capacity Project" to examine the ways that environmental degradation can weaken the state.

Future research must also address adaptation issues (i.e., the determinants of institutional reform, the capacity of societies to reform institutions in response to scarcities). To describe these determinants, I use the phrase, "supply of social and technological ingenuity," and tend to focus on social ingenuity since institutional reforms are usually precursors to technological ingenuity.

In addition, we must more closely analyze the causal role of environmental and population factors. How do we deal with the difficult issue of "relative weights" of factors versus those "material" factors pertaining to ecological change or population pressures? How do we understand the highly complex interactive systems in which material factors operate in great distance from the ultimate conflict? We need to look back not only at case studies but also at the causation.

Commentator (Matthew): In its contemporary form, environmentalism emerged in the 1960s and '70s and tended to take a critical stance vis-à-vis the status quo. Drawing upon evidence of rapid population growth and environmental disasters, fears of the effects of a nuclear war, concerns about the long-term implications of industrial affluence, and anti-war sentiments, early environmentalists suggested that the ways in which we were pursuing security and welfare might be backfiring.

Environmentalists advocated expanding our attention beyond traditional concerns with war and other direct forms of violence to include non-military threats to individual security and the various ways in which environmental changes could adversely affect human lives. This strain of environmentalism, that questions the utility of institutions designed to make us "secure," remains very powerful. It constitutes a direct challenge to the practices, institutions, values, and beliefs that characterize contemporary industrial society.

It is not the only strain and today there is a clear divide in the environmental field between (1) those who think that the international system—composed of sovereign nation-states that cut across ecosystems, jealously guard their territorial integrity and are geared largely towards war-making and economic growth—is out of step with environmental imperatives and human needs and thus needs to be changed fundamentally, and (2) those who are skeptical about the possibilities of radical change, (or who are content with the basic structure of the international system), and who seek to incorporate environmental concerns into existing practices and institutions.

The significance of this division manifests itself clearly in discussions of environmental security and conflict. For example, the first group tends to regard the relationship between resource scarcity, security and conflict as a conventional concern, rooted in the problems inherent in our political and economic systems. To solve the symptoms we must address the deep causes which requires recognizing the interdependencies both between societies and between civilization and nature and the need for structural change. The second group often seeks to address the symptoms through existing institutions—by promoting democracy, strengthening international regimes, pursuing sustainable economic growth, reforming the military, and so on. Some argue for a middle ground position that calls for using existing structures in the short-term while gradually working on deeper changes through education and similar strategies.

The differences between these two strains of environmentalism suggest why there are different approaches to and definitions of "environmental security." In simple terms, some emphasize the security of the environment and seek to reconcile civilization to the imperatives of nature; others stress the potential environmental changes have to affect human security.

In the policy realm, it is probably most fruitful to focus attention on how existing institutions might alleviate the dangers environmental change poses to human welfare and the ways in which it might produce conflict, while continuing to explore the need for structural changes and our capacity to work towards a satisfactory relationship between society and nature.

With this in mind, one concern is that we adopt a realistic approach to the capacity of existing institutions, while acknowledging that the implications of environmental change are unclear. In particular, we should be wary about using the U.S., with its vast resources, as a reference point. First, advanced industrial countries such as the U.S. are already experiencing certain stresses on their institutional competence and are experimenting with new approaches to maximizing security and welfare. The E.U. is a good example. Second, the capacity of many countries to emulate the U.S. is questionable. In other words, the most successful states in the world are feeling the limitations of

the state model and to suggest that less successful states (and here I am using Western criteria of success) should regard the liberal democratic sovereign state as an ideal political form poses certain problems. This model has worked well in the Western world in many ways. Whether it will continue to work well, and whether it is appropriate from an environmental perspective, is subject to debate.

Thus a dogmatic endorsement of policies promoting the creation of liberal democratic states should be considered very carefully if one's concern is environmental security. This might be an appropriate step towards environmental rescue; it may be an obstacle to it.

We need to consider the limitations of the traditional nation-state in an era of multiple interdependencies, invasive technologies, mobile populations and so on, and think about what sort of institutions might be most appropriate from an environmental perspective. Clearly this raises a number of questions. International law is largely predicated on the sovereign state. Powerful states are reluctant to strengthen institutions such as the U.N. that might weaken their privileged positions. But not all states can be powerful. A world of weak and ineffective states, and this may be what we have, is not a very enticing prospect. Perhaps some revised version of the state, an entity responsive to local demands but enmeshed in global concerns and subject to multilateral imperatives, is the sort of arrangement that will prove most effective in the future.

Clearly, the contemporary international system is characterized by diversity and experimentation. New states are emerging and making appeals to international law which provides formal equality, territorial integrity and so on. But states are also constructing new forms—the E.U. is one example, NAFTA may be another. These are forms that recognize interdependencies, seek to harmonize policies and even, in the case of the E.U., establish supernational authority.

The bottom line is that the concept of the sovereign state seeking to maximize national interests in a competitive and hostile international environment continues to resonate positively with real world experiences and inform some policy initiatives, but it is being challenged in important ways. There are limits on the capacity of many states, perhaps all states, insofar as the provision of security and welfare is concerned. Environmental change underscores these limits. Policymakers may find that the policies that are most beneficial to humankind are those that seek to integrate local or national demands with global ones. If this is true, then a sort of conditionality should shape our policy initiatives. We should be encouraging those state forms that are receptive to the need for some type of harmonization, of commitment, at the global level.

In conclusion, I'm not suggesting that it is possible—or even desirable—to argue that we share a global environment, its health should be our major concern, and anything that privileges local conditions or other values should be resisted. But this line of thinking ought to be taken seriously and we need to recognize that a world of sovereign states poses problems from an environmental perspective. Environmental issues limit the capacity of many, if not all, states to provide for security and welfare. To deal with this, we need to encourage political arrangements that are comfortable with multilateral cooperation.

All I'm trying to suggest is that environmental issues cut across national frontiers and we have to be receptive to this and take seriously the possibility that our long-term interests depend upon finding a balance between local and global demands. A real balance requires an adjustment to the concept of the sovereign state—at least in practice. The nature and extent of this adjustment require careful consideration. From a strict nation-state perspective, our goal is to maximize our environmental health in a hostile world. From a strong globalist perspective we have to reconcile—and perhaps sacrifice—social institutions to planetary environmental imperatives. Somewhere between these two extremes lies a viable solution.

Comment: When a state begins to lose its ability to control its internal situation and the state fragments into smaller parts seeking self-determination, will that make it more difficult to tackle resource scarcities?

Homer-Dixon: If more groups are seeking self-determination, it will be more difficult for the state to address resource problems. Many of the problems the state faces may not be effectively managed within small administrative units. There are indeed limits to the logic of self-determination if every group goes its own way.

Matthew: I agree entirely. Nationalism is a way of socializing people into a state to help the state govern more effectively.

Comment: The assertion that the nation-state is failing and that the U.S. is the only viable nation-state is breathtaking, and at odds with our experiences this century. Indeed, the trend has been the reverse over the last ten years, as many nations tried to become nation-states.

Comment: First, how much effect do these regional scarcities have on international security? Are we talking mainly about political and economic effects or national security effects? Second, while Homer-Dixon has cited the possibility that states adversely affected by scarcities will be less able to participate in international agreements, most of those kinds of states are irrelevant to the international security system.

Homer-Dixon: The world should be concerned about some local crises and events even when they do not directly affect international security. The world is too interdependent, and there are strong moral reasons for engagement. However, there are many ways in which local incidents can affect international security. For example, the rise of Hindu fundamentalism is partly a result of internal population pressures and the radicalization of certain segments of society (particularly the lower socio-economic stratum); if the BJP were to come to power in India as a result (in part) of those population pressures, that would have security implications in Southeast Asia, since the BJP is committed to a massive build-up in nuclear forces and delivery systems.

Similarly, resource and population pressures in China are widely acknowledged to be contributing to large migrations of tens of millions that are challenging the capacity of the state. If these changes affect the stability of China, there are obvious international security ramifications. With regard to states which are unable to participate or abide by international agreements: if only one of these countries that cannot fulfill its obligations is a large nation, it could be a very significant foreign policy issue.

Comment: Homer-Dixon's work has focused on scarcities (of cropland, fisheries, etc.) in rural areas. Given the fact that there are almost 400 cities of 1 million or more residents and dozens of "megacities" with over 10 million, shouldn't we focus more attention on cities themselves and the urban environment?

Homer-Dixon: Our Fast Track Project has just finished a paper on urbanization and violence. The literature says that cities are indeed growing fast, but that there are still 2 billion people on subsistence agriculture, who use fuelwood as their principal energy supply. In places like India, Pakistan, Bangladesh and China, the majority of people live in rural areas and are suffering consequences from resource degradation. The research on cities to date has focused on the developed world in the 1960s and 1970s, so it is unclear how much relevance it has to developing country issues. That research has shown no strong link between urbanization and violence. People moving into cities often find their quality of life improving; people who have lived in cities for generations and do not remember what life in rural areas is like are more prone to feel deprivation and are more susceptible to violence. However, the future may not resemble the past for many reasons—especially since manycities experience economic decline which could make urban areas even more volatile.

Comment: A national security planner should be concerned with environmentally-related threats that may not produce conflict but are still security concerns. For example, we are seeing transnational phenomena (pandemics, movements of toxic and nuclear waste) that are direct consequences of environmental problems. We must look at physical threats to the health and well-being of the body politic—disease, toxic influence and climate change.

Comment: In Somalia, warlords have sold rights to European firms to dump toxic waste; in a sense, one could consider this toxic warfare.

Comment: When fish stocks decline, they can affect many nations and be examples of environmental effects that cause physical effects on humans—especially in countries where fish are vital sources of protein and central to quality of life.

Homer-Dixon: Environmental and demographic stresses can produce second-order social effects (like economic hardship) which in turn produce conflict. Some nations, like Canada, can buffer that effect, and other intervening variables may determine whether conflict ultimately arises. But indeed, these kinds of environmental stresses and pressures that create second-order problems are often quite serious.

Comment: Migration is already occurring in the former Soviet Union due to environmental degradation, and it is likely to worsen. There are many migrants who have been pushed from their homelands by a variety of causes, including loss of forests, inadequate fish stocks, water scarcity, etc. There is potential for many environment & security case studies to play out in the FSU, such as: Tajikistan and Uzbekistan conflicts over water, cases of improper disposal of nuclear waste, etc. Approximately 2-3 million of the refugees in the FSU could be attributed to environmental problems (not even including nuclear power plant problems like Chernobyl). 30,000 people are leaving the Aral Sea area annually.

Comment: To what extent do you think transboundary issues (pollution, nuclear waste) do not fall within the model of "scarcity" for environment and security issues?

Homer-Dixon: For simplicity issues, I treat all these issues as scarcity issues; pollution becomes scarcity of clean air; but you're right, transboundary pollution problems don't fit neatly into these kinds of analyses—since they probably won't lead to bigger conflicts, but instead usually lead to diplomatic stress.

Comment: But isn't that because our historical examples of this are cases between states that have for other reasons been unwilling to resort to force or who have been comparable in their ability to resort to force?

Homer-Dixon: As a previous speaker noted, if pollution worsens and people become poorer, they often resort to outward migration.

Comment: The way we view these scarcity issues (and often their very existence) is due to our compartmentalization of the Earth into artificial nation-states that cut across ecosystems.

Homer-Dixon: Yes. Africa should easily be able to feed and provide water for itself were it not for the crazy patchwork of nations. Instead, it is expected to have a food shortfall of 50 million tons by 2000 and 250 million tons by 2020.

Comment: Regarding transboundary pollution, EPA is now grappling with problems associated with a shipment contaminated with steel dust exported as fertilizer from the U.S. to Bangladesh. Four thousand metric tons are sitting in a Bangladeshi port, safe only for the moment until a bad cyclone hits or children break into the storage building. Some farmers who already used the "fertilizer" before it was confiscated are now demanding reparations from the United States. EPA is trying to get the shipment back, but this example is illustrative of these problems.

Comment: If the companies were from Pakistan and shipped

the fertilizer to India, the issue probably would not have been so peacefully resolved.

Comment: What are the most promising institutions to deal with conflicts arising from environmental degradation? Do you think these existing institutions can adapt to deal with these challenges, or are new institutions necessary?

Homer-Dixon: The obvious candidates are U.N. organizations, but the United Nations' credibility and legitimacy has been hurt by recent failures in Bosnia. The challenges in the coming decades will be far worse than those we are currently experiencing, so we will certainly need more confidence in international institutions.

Comment: What kinds of U.S. policy responses and resource allocations would you recommend? Some analysts see the long-term solutions in freer trade; but won't free trade reduce the resources available for consumption in some countries?

Matthew: We should support multilateral experiments and think of new ways to address the problems of the coming decades. Nation-state arrangements—while still preferred by the international system—have not been consistently effective in helping states provide for both human security and economic growth. There are many obstacles to progress inherent in the status quo: the United Nations system has numerous constraints on action (as demonstrated in recent African events), and international environmental politics lack basic principles around which to organize and measure progress.

Homer-Dixon: There is no "magic bullet." We must do several things at once to ensure positive, synergistic results. The U.S. population policy leading up to Cairo is an example of this. In order to deliver "ingenuity" (to help build local capacity to address problems), funding must be maintained for critical research institutions. It is important to build technical capacity in developing countries by sharing expertise in engineering, hydrologics, soil science, forestry, etc. This requires not only training of foreigners in the United States, but actually creating well-financed educational and research institutions in developing countries that will attract students back to their home countries when their studies abroad are completed. We must also recognize and promote the important work of NGOs, and help them to improve inter-NGO communication (by providing them with computers, E-mail, etc.). There has been a tendency for us to focus on large scale, capital intensive projects, but we need instead the high returns of small projects.

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DATE: 15 February 1995
TOPIC: Environment and Security: To What End?
MODERATOR: Kenneth Thomas, State Department, Office of the Under Secretary for Global Affairs

Moderator (Thomas): Earlier sessions were spent debating the meaning and content of Environmental Security. While the debate is hardly resolved, we should now consider the end goals of various participants in these discussions. What are the consequences of this debate and what actions and changes in policy do we wish to see? Do participants wish, for example, to elevate the role of the U.S. military and foreign policy establishment in environmental issues, to reorient funding from traditional security institutions towards sustainable development priorities, to raise public and congressional interest in certain environmental concerns, to win more funding for sustainable development-related initiatives, or do they have other goals?

Comment: Not only is there no clear definition of environmental security, there isn't even an accepted definition of environmental problems. Furthermore, natural disasters, which are often worsened because of human habitation in already hazardous areas, should not be excluded from the definition of environmental problems.

Comment: Regarding the differences between natural disasters and environmental problems: environmental degradation can be altered by policy and human action, while only the consequences of natural disasters, rather than the root causes, can be resolved.

Comment: Adding natural disasters to the mix is an unnecessarily taxing step. Not only are environmental problems and security very difficult to define, they are also always changing based on national interest. There is an entire spectrum of environmental incidents or phenomena, and what will vary along that spectrum is the United States' interest in preventing or mitigating them and the amount of resources we can allocate.

Comment: While definitions may vary based on individual opinions, the general consensus—that the environment is important and that these issues are relevant—allows us to move past the definition stage and look at problems on an issue by issue basis. I would offer a distinction between those institutions that address the causes, and those which respond to the symptoms of environmental problems. For example, in seeking to prevent pollution, the EPA addresses the causes, whereas the traditional security institutions have been called upon only to deal with the symptoms. However, is it possible that these walls between institutions need to be broken down?

Comment: We are approaching the issue of environmental security from the wrong angle because we are entrenched in the status quo in terms of policies, procedures and bureaucracy. Instead, we need to identify what the threats are to us as individuals, and then move on to the means of addressing those problems. Furthermore, the current bureaucracy was designed before these problems arose; thus, we need to take a fresh look at these policies and reassign authority to those who have the appropriate abilities to address the problems.

Moderator: Are these environmental concerns relevant in the context of national security or the national interest? Are there particular environmental issues which are vital to our national *security*, and others which are more accurately described as constituting a significant national *interest?* Some argue for a paradigm shift in terms of what actually defines security, maintaining that security must be redefined to include environmental problems such as ozone depletion, potential climate change, transboundary effects of changes in the earth's support functions, as well as more direct effects of climate change such as interstate conflict.

Comment: In terms of redefining security, the inclusion of economic issues in our definition of national security is a relatively new phenomenon. Economic competition, however defined, has become a part of our national security. Considering the environment, we must not ignore the fact that both in terms of problems and solutions there are very real economic costs. Economics and the environment interact and economic and military activity is often affected by whether a nation is environmentally conscious.

Comment: The current global economic situation is becoming more and more unsustainable on ecological grounds. For example, the fossil fuel supply is completely unsustainable and, as indicated by the Gulf War, is something over which we are prepared to go to war. It is critical for us to think about what sustainable development is and to recognize that unsustainable development can lead to environmental degradation, and thus could lead to security risks as outlined by the Homer-Dixon model. Furthermore, the question was again raised as to whether or not current mechanisms are in place to explore and deal with these problems.

Comment: The intelligence community can and does find out, often by means unavailable to other institutions, whether certain countries are complying with international environmental standards which are deemed crucial to our national security or are mandated by treaty.

Comment: Not everyone agrees that this very traditional intelligence role is the role which the intelligence community should play within environmental security. We need to develop long-term solutions and cannot expect to be able to make "quick fixes" in the affected countries. If we could, we would have already done so. Concerning the monitoring of compliance to environmental treaties, the intelligence community, as it is currently organized, is not the best suited institution to deal with this issue. This needs to be a role of non-governmental organizations within the countries involved. Cross-boundary, cooperative efforts through NGO's could be one way to broaden the means of gathering information.

Comment: Indeed, in the case of the Komi oil spill, Greenpeace workers were able to videotape and broadcast (via CNN) the devastating results of the spill at the same time that Moscow was denying the reports.

Comment: On the other hand, the intelligence community considers information from many different sources.

Comment: This debate need not be an "either or" situation. It may be possible to form a collaboration of partnership between federal and non-governmental organizations to deal more effectively with these problems.

Moderator: In keeping focused on today's theme, let us concentrate on the various end goals of the participants in the environment and security debates, and wait until the next session to address the "means." Can we talk about the possible effects of using terms such as "environmental security" and their impact on public and Congressional opinion?

Comment: As someone who has studied public opinion closely in this regard, I can say that in general, environment and security don't hold together well in the public's mind. Furthermore, even within the environmental sector, there is tremendous splitting along issue lines. For example, not everyone sees the proposed links between population and degradation and global warming. There are so many connecting variables between the environmental issue and the traditional security area which it may affect, that it is difficult for the public to follow the linkages.

Comment: Is this not, however, indicative of foreign policy issues in general?

Comment: In recent studies which asked Americans what issues constituted a national security concern, nuclear proliferation and several environmental and population problems were near the top of the list; therefore, these issues *are* on the minds of many Americans in the context of security.

Comment: The public responds more to a single catastrophic event than to an overall degradation in safety because it is much more difficult to recognize a slowly evolving threat. This was the case with health care problems. Both issues illustrate the fact that although there may be a high level of recognition and support for certain goals or concepts, building coalitions to formulate and implement solutions is extremely difficult. Between groups, there may be a strong sense of agreement on some issues and opposition on others; but "getting them into the same boat" is very difficult. Another problem is the tendency to emphasize certain aspects of environmental issues, such as population growth and violent conflict, instead of such things as consumption, production and energy, in order to generate support for the linkage to security. This may be distorting the nature of environmentalism and what it means.

Comment: Once again, we need to distinguish between prediction and prevention on the one hand and definition of goals on the other. Promoting sustainable development is a preventative measure that is also very cost efficient. For example, if we had understood what sustainable was, in the

context of such events as Somalia, we could have possibly invested much less money in the problem. Also, drawing from the experience of the Gulf War, if we spend a small amount of money supporting alternative energy sources to fossil fuels, we would have a much lower incentive to intervene in the future to protect oil resources in the Middle East.

Comment: In terms of traditional security outlook, there is a huge gap between maintaining military readiness and preventing all conflicts. It is certainly not possible to prevent all conflicts.

Comment: This is indicative of a military point of view, as is the tendency to look at environmental problems only as they affect military operations. Instead, we must also look at how the environment may influence such stated national security concerns as maintaining developing democracies. Right now many of our national security concerns are not military, but instead involve economics and political stabilization.

Comment: While of course there are differences in outlooks, we should concentrate on the common idea that sustaining the earth is a positive goal to which we all subscribe. Furthermore, we should encourage the collaboration of the military with other institutions and organizations that share these common interests. There are numerous departments that all have contributions to make.

Moderator: How should we develop and assess our priorities regularly? Should there be an emphasis in our assistance efforts on those regions where we think the environment will be a destabilizing force, or should we continue to think globally and in terms of ecosystems? What are the criteria for finding national interests in the context of environmental issues?

Comment: There is currently a trend, especially in Congress, to consider environmental issues as outside of our national security interests. Therefore, it is possible that if we focus too narrowly on the idea that these issues affect our national security, it may actually detract from the environmental security cause—since the premise on which it is based is not accepted. Instead, it is very important to recognize that currently we face a very adverse domestic political environment and we should make the case more broadly in terms of political stability and the implications for political stability. Also, we should more seriously examine urbanization issues, since urbanization contributes to environmental degradation and has very real consequences for U.S. interests.

Comment: Another thing to consider is that the environmental movement is beginning to use the security label at a time when the term "security" is rapidly losing its significance because of the end of the Cold War.

Comment: All of this illustrates the historic problem that the United States has had with formulating long-term solutions. Many environmental projects have easily discernible costs with no obvious or short-term benefits. The question then arises, how do you convince Congress to invest hundreds of millions of dollars in a specific area where, as far as much of the public is concerned, there is no obvious result? Portraying and maintaining successes is a major problem with a long-term strategy which involves many government agencies.

Comment: There is a huge gap between allocations for the military and allocations for sustainable development. So much more can be done with a small amount of money within a sustainable development program; however, it is increasingly difficult to make any additions to the budget. The priorities are so skewed. There is more wasted in a single year in the defense budget then is spent on sustainable development.

Comment: There are some clear examples of places where security and environment intersect. However, in places where this linkage is not so obvious, environment and security may indeed be two separate issues; we must acknowledge this separation in order to insure the credibility of both the defense and environment communities.

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DATE: 21 March 1995
TOPIC: Environment and Security: By What Means?
MODERATOR: Larry K. Smith, Counselor to the Secretary of Defense and Wilson Center Fellow

Background

As evidenced by the diversity of opinions in writings, government activities and previous Discussion Group sessions, there is no consensus about how environmental issues affect security. There is, however, near unanimous agreement that the kinds of issues being considered as "environmental security" issues—regardless of the descriptive terminology used—are indeed serious enough to merit greater attention from the public and policymakers. This session allowed participants to consider how *generally* the United States should anticipate and respond to these issues through existing and/or new institutions. In the months ahead, the Group will consider the potential role and capabilities of specific sets of institutions (beginning with the military community in May and the intelligence community in June).

Questions Given to Participants in Advance

1) How can government and non-governmental institutions better anticipate how, where and when international environmental challenges may affect security? Are additional means of coordination/cooperation necessary? Are new institutions and/or are new missions within existing institutions necessary? Who should play the leading roles?

2) Who should evaluate and determine which environment and security issues should be the highest priorities for policy actions and budgets? What criteria should be used?

3) How can government and non-government institutions act now and develop long-term strategies to plan for and address the causes of the environmental problems? Are long-term strategies realistic, given existing political and institutional constraints?

4) How can government and non-government institutions plan for and respond to the symptoms of international environmental challenges when they materialize into security threats?

Respondents were asked to relate their answers to specific categories of environment and security issues, such as (but not limited to) the ones listed below:

a. Transboundary pollution that threatens U.S. and other nations' security through negative political or economic effects or through harmful effects on health and quality of life (including air and water pollution, improper chemical and nuclear waste disposal, etc.);

b. Global environmental issues (such as ozone depletion, global warming, deforestation, etc.) that threaten U.S. and other nations' security through harmful health, economic, quality of life or other effects;

c. Regional environmental issues that may trigger political or economic instability (such as Mexican-U.S. border issues, unauthorized fishing within exclusive economic zones or disputed territories, or resource scarcities that deepen poverty and encourage citizens to support regimes unfriendly to U.S. interests);

d. Regional resource scarcities that may help fuel violent conflicts (or migration leading to conflict) within or between other nations and thereby threaten international security/stability;

e. Other specific environmental or environmentally-related problems that threaten U.S. or other nations' security (such as conditions that promote the spread of emerging viruses/diseases; the development or use of eco-terrorism; effects of war/preparations for war).

Moderator (Smith):

Once concepts have been widely accepted and articulated, it is difficult to imagine our not having those concepts as part of our working tool kit. I have noted how hard this group has struggled with the notion of environmental security because we do not yet have a shared concept. Perhaps the group is even struggling with whether these issues can even be mapped by a concept or a set of concepts.

Referring to the categories of environmental issues listed in the handouts (see questions above), these problems have at least two common qualities. One is that environmental problems are beyond our own borders. Secondly, those problems either directly or indirectly can threaten American lives and their physical well-being. That set of problems arguably requires actions by our government in concert with other governments. Let's begin to explore question #4 first: how can government and non-government institutions plan for and respond to the *symptoms* of international environmental challenges when they materialize into security threats? Can we respond to these symptoms, and do we have the right instruments in place?

Comment: I suggest that beyond looking at symptoms, we should focus on preventative measures (Question #3). I think that is really the key in terms of keeping many of these issues from materializing.

Comment: If we are focusing on symptoms and operating under the assumption that we are looking at environment and security from the Thomas Homer-Dixon perspective (the environment as the cause of conflict) then we are bringing in military and intelligence institutions that are accustomed to reacting to threats to stability and energy resources. This conception of environmental security is still very close to our more traditional conceptions of security. Therefore, some of those same institutions that have been used under the traditional concepts may apply. But we may also move to a conception of environment and security that is perhaps not so focused on the nation-state, that is more concerned with health issues and problems regarding individuals, population and societies. If we move to the level of addressing causes, then we are bringing in institutions that have focused on prevention and mitigation of the causes of environmental change. Therefore, the institutions most appropriate for addressing the problems depends on whether the symptoms or causes are the focus of attention.

Moderator: I am talking about environmental symptoms, not war as a symptom. I'm talking about transboundary pollution, global environmental issues, such as ozone depletion, regional environmental issues, resource scarcities, environmentally-related problems, such as viruses and diseases. Do we have the capabilities as a country and the right institutions and organizations in place to deal with those symptoms? Furthermore, does the government have the perspective to participate internationally to take multilateral action?

Comment: That gets back to the question of how we define security. Our traditional security concerns have been essentially the territorial integrity of the United States, the ability to conduct commerce, the ability to have a freedom of navigation, to have an autonomy of affairs. We have structured our institutions around these concerns. And one has to look at how these particular issues challenge our power structure and interests. Our traditional security institutions do not consider environmental degradation issues to be even in the same ballpark as other issues. But there may be different issues not within the general or traditional security parameters that would fall into another institutional jurisdiction. These problems may be consid-

ered traditional diplomatic and foreign policy problems, not national security problems. So how do we define security and do these environmental problems threaten that idea of security?

Comment: The Defense Department is particularly suitable for those instruments which require coercion and the application of force in order to accomplish goals. For addressing all the problems listed here (see questions above), one of the purposes/aims of the U.S. government should be to promote peaceful conflict-resolution mechanisms of all of these. None of the problems listed is particularly suited for resolution through use of force, hence the instruments of the Defense Department are inappropriate. To the extent to which the word security brings to mind those instruments, that mechanism, it is the wrong term to use in this context.

Comment: All these global environmental problems have elements that are addressed by a whole range of institutions. We have lacked an effective interagency mechanism. It might be a mechanism chaired by the NSC or the State Department because the issues are global and require a global perspective. At least from an institutional point of view, they do not have the same kind of biases that an environmental regulatory agency or an energy agency might have. Some group must bring these issues together, and it should be either the State Department or an interagency group.

Comment: The State Department does play a coordinating/referee role on many issues within existing interagency operations. Not all of them are as acute as some of the ones mentioned earlier, but they do deal with longer run issues. Therefore, the government does have some framework already.

Comment: The issue of the interagency coordination is parallel to the situation we are facing with more traditional security challenges: proliferation of weapons of mass destruction, terrorism, narcotics. These problems have all required much more interagency involvement, more than what was necessary in the traditional bipolar world when the Defense Department only needed intelligence support. These new challenges are disparate, they are not focused geographically or they are on a global scale. They come from many sources and require more international cooperation. They do not lend themselves to unilateral, or sometimes even bilateral, responses.

Comment: There are real inadequacies with the mechanisms needed to deal with the problems we face. These areas include the information base, knowledge base, and analytical base. How do we use the term, "symptom?" Given a particular phenomenon that is described as a symptom, is it indicative of "a, b, c" (see questions above) or a number of factors acting together? I am not sure we have the right analytical base and/or the information-gathering mechanism for handling these problems.

Comment: The bottom line is whether we have the proper instruments. I believe we have them, but are we using them right? Are we coordinating them right? Environmental health is an issue that thousands of bureaucrats work on; there are thousands of bureaucrats who think about global warming, and the same is true for every issue we have covered. The trick is looking at the issues with the right perspective, and so far we have not had the ability to pool all our resources together.

Moderator: Does the entire room agree that if we have all instruments we need, and if they were simply knitted together in some exclusive interagency team they would be suitable? Is there any kind of work that could not be done because the proper institutions or coordination has not yet been established?

Comment: I think we're asking the wrong questions; the answer is that the government shouldn't be doing most of this. The government is poor at doing the kinds of scientific research necessary to identify these issues, poor in spreading information about these problems, poor at informing people as to what are problems we should really be concerned about and very poor in carrying out the steps that are necessary to resolve these issues. Therefore, the interagency coordinating mechanism we need is one that would explore how to get the government, as much as possible, out of this realm. This will enable the non-governmental agencies and market mechanisms to address the problems as much as possible.

Comment: I unequivocally take the opposite view. What we have here is an emerging threat that we can't define. Even as a group of very elite people, who have been working in the field for many years, we are unable to define it in a larger context or framework. We tend to force fit terms like security around the concept. The do not quite fit. We ought to address an emerging threat as a different threat. It is not a territorial threat, but it is a threat to well-being and the livelihood and the health of the environment, the biosphere, and the population of the world. We all can agree on that because of various facts and sources. These facts require the government to marshal the forces by means of vision and leadership to bring the general population up to steps so that we can develop the necessary consensus for dealing with this in a political, economic, and international way. Governments need more leadership to develop a base. Now, this can't be done without the NGOs, academics, experts and everybody else. But I cannot see any NGO, academic or any other type of institution capable of marshaling the leadership, resources and political backing necessary to deal with these problems.

Comment: Isn't it somewhat premature to judge that the government is not doing well at these things when the government has not tried to address many of them yet? Who should do it or should we do it at all? It seems that in many of our institutions that we represent there is no inclination, currently, to do this at all. And many of us, quite frankly, are at this table simply out of our own initiative rather than direction from the leadership of these agencies.

Comment: It seems to me that we come back to the discussion of an either/or situation: it's *either* the U.S. government *or* it's somebody that's separate from the government. Why can't it be a combination? From the perspective of one out of government, we have a problem with the way the combination works now. These issues of environmental security, environmental health are so far being addressed very spasmodically and separately. They do need to be integrated. There was a proposal by Dick Benedick of the State Department which suggested a National Institute of Environment; that actually has very little to do with environmental security and more to deal with environmental resources. I think we know a lot but much more needs to be done.

Comment: I don't think it's just an issue of whether it should be the U.S. government or NGOs or both. I really think we need to be focusing on international institutions because we're dealing, of course, with global issues. My view is that the real weakness is the lack of a strong UN environmental agency or at least a barely functional one which is needed to spur the international cooperation necessary for effective response to the problems at hand. So I hope that we can focus on how we can rectify that situation as well.

Moderator: Are there models that we have used to deal with other problems that might be interesting models for a private-public partnership or for an international partnership?

Comment: The only way forward into the 21st century is dealing with *all* entities—private sector, NGOs and government. If the government did not perform the Global Change Research Program (GCRP), who would have? And in the international sphere, who would be taking up the mantle of responsibility if we had to put through the Montreal Protocol? It wouldn't have been private industry. We do have many tools in the areas where much work is done, but there are plenty of areas where there are not sufficient tools in place to address the problems. We have to organize our tools, refine the process (which is a multi-variant process which includes governments, NGOs, and the private sector). Above all, leadership should come from government.

Comment: It is premature to talk about potential institutional effectiveness before much has been done. We don't actually know what we're striving towards. In the field of environmentalism the spectrum of possible ends is huge. It ranges from fundamentally restructuring the way we interact with nature and provide for ourselves to essentially letting market mechanisms decide a better allocation of resources.

Moderator: Can you give us an example of a problem where your point is particularly clear? There is a confusion or lack of clarity about what we are trying to achieve. Therefore, it inhibits us from organizing ourselves for effective action.

Comment: Global warming, ozone depletion, deforestation. In all of these cases we are not exactly sure what we are trying to achieve ultimately. We do not know all the causes of global warming. We know that the impact is likely to be unequal throughout the world. We also know that the sorts of actions required to solve it are actions many countries of the world are not interested in taking. In addition, we have huge scientific uncertainties, whether it's a natural or human-induced problem to begin with and whether it is actually going to be that bad. So with this great uncertainty it becomes very difficult to quantify positive impacts and the best solutions.

Comment: We do need a globalizing/ mobilizing imagery which is very different and which has not yet been formed. The Cold War was very good in the sense that it provided a baseline for different agencies, groups, countries, the public and the private sectors to share a sense of purpose. They could measure something very clear as stopping the spread of Communism. It is difficult to achieve this common sense of purpose with these environmental problems because they are long-term, cumulative, and the impacts are unequally distributed among countries. What is good for some people is not good for others. Maybe the solution is to set some priorities and focus on solving them. Once some institutional structure is working, perhaps we will be able to expand to other issues.

Comment: We need an integrated team of public and private sector experts and responsible parties. We need to prioritize. We need to look at what is possible, and ask, what are the priorities and then how does a strategy/tactic develop? What could embolden concerns would be the fear of the nuclear disaster. It seizes peoples' attention and instills a certain amount of fear. You could get public consensus around political support, both in this country and abroad.

Moderator: Are you making this suggestion because you think this is the highest priority real problem or because it is the most opportune issue to use to galvanize the public to deal with the whole set of issues at hand?

Comment: The single most important national security threat has to be the dismantling of the former Soviet Union's stockpile and disposing of associated nuclear toxic waste. Even though we all agree on global warming and many of these other issues, it's going to be difficult to communicate the consequences of that and develop the political consensus in a short period of time.

Comment: We have already witnessed a nuclear threat: Chernobyl. We are just reacting to all these problems. Maybe global warming is not a problem now, but in 50 years it could be a very pressing problem. We need to play a role in forecasting and long-term planning, which the United States traditionally does not include in its national policy-making. Many of these issues are not going to attract people until the problem is found in their backyards.

Comment: The discussion so far has assumed that we are at an earlier stage of development of the idea of environmental security than, in fact, we really are in this country. The Clinton administration has adopted environmental security as an official part of its national security doctrine, and more importantly, the President himself has talked on more than one occasion about the importance of the environment to U.S. security. Although he has not invoked the term national security in his remarks, he has said we need to be more disciplined about figuring out what are priorities in terms of poverty, environmental degradation and worldwide disparities. We need to figure out which resources are needed for these problems and develop a solution. So what are we going to do about environmental security? The NSC needs to address this question of how do you operationalize that notion of environmental security in U.S. policy. One of the things that can be done is to have a Presidential Decision Directive that in fact instructs his administration to devote the necessary resources, research and staffing to these problems. The most important thing of all is precisely to make sure the actions have long-term time horizons to address these long-term problems. This has never been done before. We never have had 50-60-70 year planning horizons for any issue—even for atomic weapons and sophisticated weaponry. That requires a totally new way of operating the government.

Moderator: How do we anticipate the problems that are not currently as clear or as present? Do we concentrate first on the issues that are clear and present?

Comment: The Global Change Research Program (GCRP) may be a model for addressing the nuclear issue. It is an interagency multi-disciplinary group with many flaws, but it is a model for various successes and for numerous lessons learned. There are other models, including the Interagency Arctic Research Policy Committee (or council). It's a U.S. based, multi-disciplinary, interagency group that played a leading role internationally in the development of the Arctic environment protection strategy. The GCRP was established through the Executive Office. It is developing a cross-cutting budget strategy through the Office of Management and Budget (OMB) and has a budget in the administration's budget proposals and it is comprised of a group of close to 20 agencies across the board that are carrying on research programs dealing with global change issues. They propose a research plan bi-annually, and it is a place where agencies come together and meet regularly and discuss various agencies' activities dealing with a particular issue. The plan then goes to OMB and then the budget is put into the President's budget submission. It is leadership by investing in the research community, and it has led to the involvement of a private sector program as well. One of GCRP's failings is that it did not engage the private sector initially.

Comment: In the late 1970s and early 1980s, a million-and-a-half refugees fled from Laos and Cambodia. The resulting government/ private-sector cooperation might be thought of as the model. From that crisis sprung up U.S. government responses, UN responses (primarily from UNHCR), and a host of NGO responses.

Comment: Another possible model may be the Intergovernmental Panel on Climate Change (IPCC). The IPCC was set up by the UN on a temporary basis. It was set up for a short duration and then has been re-authorized for another few years. It is a collaboration among governments and government scientists, academics, and NGOs throughout the world to come up with the best science to inform the treaty negotiation process on climate change. Most funding is governmental. The actual funding of the IPCC is quite small. The panel is advisory for the purposes of scientific assessment. It does not have the authority or capacity to take action.

Comment: The environmental degradation problem will always require scientific information to enable mobilization. In the case of depletion of the ozone layer, we demonstrated the problem scientifically, and people understood that it was manifested in the form of higher skin cancer rates. Once established scientifically, you can muster the force domestically and internationally to negotiate a protocol. You can begin to move forward through a process which then agrees to correct the problem as quickly as possible. You've created, through the private sector, a whole new range of products to go about solving the problem. Tools are critical—but you can't get the proper ones and the attention of leadership until you can demonstrate problems scientifically.

Comment: Another issue to consider is that the international community will not act of its own accord, and the United States must demonstrate leadership. Second, resources in the budget environment of the 1994-1995 Congress are not going to be allocated with any sort of magnitude unless a threat can demonstrated. Therefore, I propose a model based on the operation center at State or DOD. Such a command center could focus on different areas, regions, state or transboundary regions to predict potential environmental crises that will culminate in five years, ten years or 20 years. The focus should not be exclusively the environment but also other political and security factors such as ethnic conflict. Other organizations (governmental and non-governmental) would be called upon to perform specific functions for the sake of prevention at as early a stage as possible.

Comment: In addressing transboundary pollution, one of the tools is enforcement of a country's national legislation regarding the export of wastes, banned chemicals, unregistered pesticides, and an enforcement of international agreements and treaties. The EPA is now working with the intelligence community to address the worldwide smuggling of CFCs. Enforcement is an area where the necessary instruments are not in place and international cooperation is missing.

Comment: The Cairo Population Conference may be a model, even as a conference aimed at a specific problem.

The negotiation process that led up to the conference effectively factored in the views of an extraordinary range of participants: national governments, agencies within different governments, NGOs, international organizations, religious groups and more. NGOs brought to the table a lot of information on specific issues that helped governments at the negotiating table. NGOs also brought the critical element of energy that kept the process moving forward. The conference managed to reach a basic consensus and respectable action program for the most complicated topics anyone had ever dealt with. Even though it is not self-enforcing, they laid this agreement out in a document that will make it easier for governments to take action. There are many things relating to environmental deterioration that do not relate to population, and many links are unclear and uncertain. Yet many governments and NGOs are willing to go forward with action based on circumstantial evidence, assuming it is better to act now rather than wait until it is too late.

Moderator: I count five nominees for potential models that might meld together private and public and international instruments.

Comment: Another model comes from how the United States deals with natural technological disasters, and natural technological disasters are an important component of environmental security. The program, a "blue-book program," brings the various agencies (DOD, Intelligence, etc.) and NGOs together. Everybody knows exactly what steps they must take ahead of time. The model is robust, action-oriented and it works. There is no analogous model for the international response for the same disasters, including U.S. forces deploying overseas to mitigate the effects of all kinds of disasters.

Comment: Enforcement is not a major problem. It may be in the security interests of the U.S. to ensure that as the North American Free Trade Agreement expands, we continue to use the opportunity to gain some leverage over the enforcement of domestic environmental policy.

Moderator: Line these seven models up and evaluate them against the criteria and tasks (see criteria listed in questions above) to see if they can make an effective set of instruments. Can you actually do something? Can you anticipate a problem? Can you develop an actual strategic plan that includes diagnosis and ultimately action? Can you prioritize? There may be more criteria. For example, would it include (as part of the action and effective enforcement methods) the ability to draw upon diverse scientific inquires in order to diagnose the problem and build some confidence that we really understood the end goals? What is the optimum mix of private and public, and international and national partnerships?

Comment: Who short of the President is responsible in these models? The process immediately returns to the interagency process, which is a recipe for failure unless the chair is a prime mover with clout, authority, and some control over resources. Many of the wars on drugs and poverty have been lost because of confusion over responsibility. Efforts during the Cold War and the battle to get into space were reasonably successful because the authority and resources for the missions were concentrated very narrowly. Therefore authority is the key criteria for success.

Moderator: One of the most consequentially missing parts in government work is that tasks are not always well thought through by the officials with clout. A busy and committed senior officer will often say, "sure, let's do it," and if you don't have a blueprint in place you've really missed a golden opportunity.

Comment: When implementing a design, incentives for action must be created to ensure success. The design for disposal of the Soviet nuclear stockpile provides an example of how mutual interest was considered and success was achieved.

Comment: In response to an earlier comment: the dismantling of the former Soviet Union's nuclear infrastructures has been described as not being an immediate security concern, but it has a very strong traditional security contingent as opposed to many of the issues discussed earlier. With regard to the models, we must devise a means to gauge success and a means to prioritize these issues. If they are cast as national security issues, they are immediately catapulted to the top of any priority list. However, subsequent prioritization may require that these issues drop down a little bit, thereby weakening the claims of environmental security. The issues of enforcement and compliance with our treaty partners are also going to be very difficult.

Comment: Most of the models have a limited scope in terms of the issues to be addressed. We need an institutional infrastructure to set priorities among these issues. Second, a number of the models deemed successful had some kind of limited time element. The need for long-range planning is not well-addressed with these models.

Moderator: So, we must be cognizant of tensions among the criteria we employ to test individual models.

Comment: Most of the problems we have discussed are "chronic" as opposed to "acute." This country has been most successful dealing with threats that are acute. Most of our nuclear threats are of the acute variety. The chronic nature of environmental problems creates mobilization difficulties because governments do not plan within the necessary time frame. The Montreal Protocol represents one model where chronic threats have been successfully addressed. As discussed earlier, scientific consensus and technological alternatives helped mobilize governments to action. Science and technology therefore may be key for competing with the acute threats for governmental attention.

Non-Governmental Activities

Foundations

The John D. and Catherine T. MacArthur Foundation, Program on Peace and International Cooperation
The program seeks to enhance prospects for peace and international security through grants for public education, policy studies, publications for specialized and general audiences, and interactions with the press, policy-makers and legislators. It seeks to foster the global exchange of ideas by bringing together people with different national, institutional, professional, and cultural perspectives on peace and security. For information, contact: The John D. and Catherine T. MacArthur Foundation Program on Peace and International Cooperation, 140 South Dearborn Street, Chicago, IL 60603. Tel: 312-726-8000; Fax: 312-917-0334.

The Pew Charitable Trusts' Global Stewardship Initiative
The Global Stewardship Initiative is an interdisciplinary grant-making program founded in 1992 by the Pew Charitable Trusts in association with the Aspen Institute. It supports efforts to "restore the United States to a position of international leadership in solving the interrelated problems associated with rapid population growth and the unsustainable consumption of resources." Through its own activities (such as convening round-tables, seminars and developing media-based public education strategies) and through grants to other organizations, the Initiative aims to: build a stronger conceptual base for global stewardship; to forge consensus among diverse constituencies working on population and consumption issues; to encourage new constituencies to share and enlarge this common ground; to foster interdisciplinary approaches to population and consumption challenges; to inform and improve relevant U.S. and multilateral policies and programs; and to increase public understanding of these challenges. For information, contact Susan Sechler, Director: The Pew Global Stewardship Initiative, 1333 New Hampshire Avenue NW, Suite 1070, Washington D.C. 20036. Tel: 202-736-5815; Fax: 202-775-2622.

The Rockefeller Brothers Fund, Programs on "One World: Sustainable Resource Use" and "One World: World Security"
Recognizing that world peace is threatened "also by frustration and aggression arising from inequities in the sharing of the food, energy, goods, and services the world economy produces," these programs support projects that "improve political, security, and economic relations among nations," "analyze the connections between global resource management and global security," and "foster environmental stewardship which is ecologically based, economically sound, culturally appropriate, and sensitive to questions of intergenerational equity." The Fund's three geographic areas of grant activity are the United States, East Central Europe and East Asia. For information, contact: Rockefeller Brothers Fund, Inc., 1290 Avenue of the Americas, New York, NY 10104-0233. Tel: 212-373-4200; Fax: 212-315-0996; E-mail: rbf@mcimail.com.

W. Alton Jones Foundation, Inc., Sustainable Society Program
The Foundation's mission is to "protect the Earth's life-support systems from environmental harm and to eliminate the possibility of nuclear war." It supports a number of initiatives that might be considered as relating to environment and security. For information, contact: W. Alton Jones Foundation, Inc., 232 East High Street, Charlottesville, VA 22902-5178. Tel: 804-295-2134; Fax: 804-295-1648.

Non-Governmental Organizations

American Meteorological Society (AMS)
The American Meteorological Society is a professional organization serving the atmospheric and related oceanic and hydrologic sciences. It sponsors over a dozen major scientific conferences each year and publishes seven technical journals. In addition, the AMS publishes the *Bulletin of the American Meteorological Society*, which occasionally includes statements and reports on policy issues such as the free and open exchange of global weather data. The AMS recently published a policy brief on "Weather and Climate and the Nation's Well Being." For information, contact: AMS, 45 Beacon Street, Boston, Mass. 02108-3693. Tel: 617-227-2425; Fax: 617-742-8718.

The Center for Strategic and International Studies (CSIS)
CSIS is examining the links between population, foreign policy and security through its project (funded by the Pew Global Stewardship Initiative) on "Population and U.S. National Interests." One of its major projects is a case study on Haiti, led by Ambassador Ernest H. Preeg—which is exploring connections between

population, environmental degradation, economic development and political stability. For information, contact David Wendt, Director of International Economic and Social Development: CSIS, 1800 K Street, NW, Suite 400, Washington, DC 20006. Tel: 202-887-0200; Fax: 202-775-3199.

The Climate Institute

The Climate Institute has an ongoing Environmental Refugees Program that seeks to assess and respond to likely changes across the globe concerning people displaced from their homes due to land degradation, drought, desertification, deforestation and other environmental problems. The Program, whose Principal Investigator is Norman Myers, has already produced a report entitled, "Environmental Exodus: An Emergent Crisis in the Global Arena." According to that report, there are at least 25 million "environmental refugees" today—a figure that may double by the year 2010. The Program's next phase will include work with national and international government bodies to generate a consensus on response strategies to these critical issues. For information, contact Scott Stefanski: The Climate Institute, 324 4th Street, NE, Washington, DC 20002-5821. Tel: 202-547-0104; Fax: 202-547-0111.

Consortium for International Earth Science Information Network (CIESIN)

CIESIN is a private, nonprofit consortium of leading universities and non-government research organizations dedicated to advancing understanding of the human dimensions of global environmental change, sustainable development, and natural disaster research and reduction. It is agency-neutral, specializing in the access and integration of physical, natural, and socioeconomic information across agency missions and scientific disciplines. CIESIN's efforts are directed toward making the data collected by U.S. government agencies, the scientific community, NGOs, and international governmental organizations available for widespread use in scientific research, public policy making, and education. Its Information Cooperative provides a mechanism for obtaining data from about 50 major archives and resource centers worldwide. CIESIN is currently involved with a number of projects relating to environment and security issues—foremost among which is ongoing work with Vice President Gore's Task Force on State Failure (see box on "Task Force on State Failure"). It also has implemented a project in the Strategic Environmental Research and Development Program (SERDP) designed to disseminate recently declassified and civilian data involved in global environmental and population research. All CIESIN information and papers can be accessed via the internet through their World Wide Web home page. For information, contact Thomas M. Parris or Robert C. Worrest: CIESIN, 1747 Pennsylvania Av. NW Suite 200, Washington, D.C. 20006. Tel: 202-775-6600; Fax: 202-775-6622; Email: mailftp@ciesin.org; World Wide Web Home Page: HTTP://www.ciesin.org.

Environment and Conflicts Project (ENCOP), Swiss Peace Foundation (Berne)/ Zurich Center for Security Studies at the Swiss Federal Institute of Technology

This international project, in its final year, is investigating the relationship between environmental problems and actual or possible violent conflicts, as well as means to peaceful conflict resolution. The Project has partner institutions in Germany, England, Nigeria and Bangladesh. It has published twelve Occasional Papers to date, which are cited individually in the bibliography in this *Report* (see "Center for Security Studies" under section D). For information, contact Kurt R. Spillman: Center for Security Studies and Conflict Research, Swiss Federal Institute of Technology, ETH Zentrum, 8092 Zürich, Switzerland. Tel: 41.1.632.40.25; Fax: 41.1.363.91.96. Or contact Günther Bächler: Swiss Peace Foundation, Wasserwerkgasse 7, P.O. Box 43, 3000 Bern 13, Switzerland. Tel: 41.31.311.55.82; Fax: 41.31.311.55.83.

Environmental and Energy Studies Institute (EESI)

In 1992, EESI organized a series of roundtable discussions between members of Congress and experts in various fields interested in environment and security. The program, entitled "Environment, Economy, and Security in the Post Cold War World," produced nine commissioned papers. EESI's current efforts in this area focus on how development assistance might be retooled to address environment and security problems and prevent state failure. The May 1995 issue of *Current History*, which focuses on global security, will feature an article entitled "Environmental Security as a National Security Issue" by Gareth Porter of EESI. For information, contact Gareth Porter, EESI, 122 C St., NW, Suite 700, Washington, D.C. 20001-2109. Tel: 202-628-

Task Force on State Failure

In fall 1994, the Clinton Administration organized the State Failure project to address the historical conditions that have been most closely associated with "state failures." The answer is being sought through a methodologically rigorous examination of the correlates of state failures during the last 40 years. The research is examining the effects of a large number of possible independent variables (including environmental and demographic variables) on the occurrence, magnitude, and duration of state failures. The project design, selection of variables and interpretation of results is mainly the responsibility of three teams of academic consultants led by Jack Goldstone (sociologist, U.C. Davis), Daniel C. Esty (economist, Yale University), and Ted Robert Gurr (political scientist, U. of Maryland). The task of developing a global 40-year dataset that integrates all variables is being undertaken by a team led by Robert Chen at the Consortium for International Earth Science Information Network (CIESIN). A detailed summary of the Project's mission and methodology was presented by Professor Gurr at the 1995 Annual Meeting of the International Studies Association (Chicago); the unpublished paper is titled, "The State Failure Project: Early Warning Research for International Policy Planning." For information, contact Thomas M. Parris: CIESIN, 1747 Pennsylvania Av. NW Suite 200, Washington, D.C. 20006. Tel: 202-775-6600; Fax: 202-775-6622; Email: mailftp@ciesin.org.

1400; Fax: 202-628-1825.

Global Green USA's Legacy Project/ Green Cross International
The Legacy Project aims to "accelerate the clean-up of Cold War military toxics" by facilitating cooperation between the military, environment, business, science and other communities, educating the general public, providing information through a global computer network, and hosting a major multilateral conference on military toxics in Geneva in 1996. For information, contact: Global Green USA, 4223 Glenco Avenue, Suite B 103, Marina del Rey, CA 90292. Tel: 310-577-1885; Fax: 310-827-7416; E-mail: ggusawest@aol.com.

Harvard Center for Population and Development Studies
The Common Security Forum, under the auspices of the Harvard Center for Population and Development Studies, is an independent association of scholars and policy-makers. It was established "in the conviction that genuine security must address a wider set of challenges than the traditional concerns of military security among states." As part of the forum's research agenda, a five year program (1993-1997) has been initiated to examine "environmental security and social transition." For information, contact: Harvard Center for Population and Development Studies, Roger and Ellen Revelle Building, 9 Bow Street, Cambridge, MA 02138. Tel: 617-495-0417; Fax: 617-496-3227.

Institute for Research and Information on Peace and Security (GRIP) [Institut de Recherche et d'Information sur la Paix et la Sécurité]
This Belgian Institute has researched the relationship between environmental change and conflict and the effects of the military on the environment. It produced a 1992 report (in French) entitled, "Green Conflicts: the Deterioration of the Environment, a Source of Serious Tensions," and issued a wall-chart, "The Green Conflicts that will Threaten us in the Year 2000." For information, contact: GRIP, 33 Rue Van Hoorde, B-1030 Brussels, Belgium. Tel: 32.2.241.8420; Fax: 32.2.245.1933.

International Clearinghouse on the Military and the Environment (ICME)
The ICME collects and disseminates a wide variety of data on the relationship between the military and the environment and the effects of war (and preparations for war) on the environment. For information, contact John M. Miller, Coordinator: ICME/ ARC, P.O. Box 150753, Brooklyn, NY 11215. Tel: 718-788-6071; E-mail: fbp@igc.org.

Military Toxics Project
The Project unites activists, organizations and communities in the struggle to clean up military pollution, safe-guard the transportation of hazardous materials, and to advance the development and implementation of preventative solutions to the toxic and radioactive pollution caused by military activities. It provides information and resources to the public, and publishes the newsletter, "Touching Bases." For information, contact: Military Toxics Project, PO Box 845, Sabattus, ME 04280. Tel: 207-268-4071; Fax: 207-268-9258.

International Consortium for the Study of Environmental Security (ICSE)
The ICSE's was created in response "to a need for theoretical analysis and empirical research about the notion of environmental security. Its primary function is thus essentially scientific, that is, to collate data and to apply it to different methodologies. Its approach leads it to analyze policies, their objectives and constraints and thus to evaluate them in light of criteria drawn from both the natural and social sciences." ICSE produces newsletters and sponsors conferences with strong international participation; it will soon begin publishing a new journal entitled *Environment & Security*, co-edited by Simon Dalby and Paul Painchaud. For information, contact: Laval University, Groupe d'Études et de Recherches sur les Politiques Environmentales (GERPE), Jean-Durand Building, Laval University, Québec, Canada G1K 7P4. Tel: 418-656-2316; Fax: 418-656-7908.

National Resources Defense Council (NRDC)
NRDC is a non-profit environmental protection organization which has long had an active program related to environment and security. It has undertaken research, analysis, and advocacy on the environmental impacts of nuclear weapons production in the United States and the former Soviet Union. NRDC has encouraged the U.S. government to address global commons problems and environmental challenges in developing countries, which may adversely affect our own nation's security. Since the 1992 Earth Summit, NRDC has worked to establish mechanisms to hold governments accountable for the commitments they have made to move toward "sustainable development." For information, contact S. Jacob Scherr, Senior Attorney: NRDC, 1350 New York Avenue, NW, Washington, DC 20005, Tel: 202-783-7800; Fax: 202-783-5917.

National Wildlife Federation (NWF)
To ensure that Environmental Security issues are given appropriate attention in the long term, the NWF International Program is lobbying members of Congress to reform foreign aid and security budgets, advocating increased allocations for international sustainable development and population stabilization programs. NWF is developing recommendations for how to change the National Security Act to institutionalize environmental issues within new, post-Cold War security policy. For information, contact Stewart Hudson, Senior Legislative Representative, National Wildlife Federation / International

Affairs Department, 1400 16th St., NW, Washington, D.C. 20036. Tel: 202-797-6600; Fax: 202-797-5486.

The Project on Environment, Population and Security of the University of Toronto/ American Association for the Advancement of Science

This Project, under the direction of Thomas Homer-Dixon, is a cooperative effort of the University of Toronto, the American Association for the Advancement of Science, and the Canadian Centre for Global Security in Ottawa. Funded by the Pew Charitable Trusts' Global Stewardship Initiative, the Project was created to gather, evaluate and integrate, and present data on the causal linkages between population growth, renewable resource scarcities, migrations, and violent conflict. It is building on findings of a previous research project on "Environmental Change and Acute Conflict" (co-sponsored by the University of Toronto and the American Academy of Arts and Sciences), which found that renewable resource scarcities—including croplands, forests, water and fish—are contributing to violent conflicts in many parts of the developing world, even though those conflicts often appear to be caused solely by political, ethnic or ideological factors. It also concluded that these conflicts probably foreshadow a surge of similar violence in coming decades as environmental scarcities worsen.

The Project's results, to be published throughout 1995, will provide guidance and detailed context for further research, and will help policy-makers better understand where to intervene to improve social outcomes. The research team has already produced a series of short, thematic reports on data sources, methodology, urbanization and violence, as well as a regional report on Rwanda (see the entries for Homer-Dixon, Gizewski, Percival in section D of this *Report's* bibliography for titles). In addition, it has designed a computerized database that includes quantitative data and abstracts of published and gray literature on demographic change, environmental scarcity, population movements, economic deprivation, and violence. Its new electronic document distribution system can be accessed by sending an e-mail message to: majordomo@aaas.org and typing the following in the body of the message: subscribe envsec_d "your e-mail address". For more information, contact Thomas Homer-Dixon: University of Toronto, Peace & Conflict Studies, University College, 15 King's College Circle, Toronto, Canada M5S 1A1. Tel: 416-978-8148; Fax: 416-978-8416. Or contact Brian Smith: AAAS, 1333 H St., NW, Washington, D.C. 20005, Tel: 202-326-6652; Fax: 202-371-0970; E-mail: psis@aaas.org.

Pacific Institute for Studies in Development, Environment, and Security

The Institute has been a leader in research on how water issues may fuel instability and conflict, publishing several studies authored by Peter Gleick, Director of the Global Environment Program. It is currently examining U.S.-Mexican border water issues, including potential for conflict. For information, contact: The Pacific Institute for Studies in Development, Environment and Security, 1204 Preservation Park Way, Oakland, CA 94612. Tel: 510-251-1600; Fax: 510-251-2203; E-mail: PIstaff@pacinst.org.

Population Action International (PAI)

PAI's Population and Environment Program is an ongoing effort to promote policy changes that foster a balance between human needs and the Earth's resources. The project has produced a number of publications, including *Sustaining Waters: Population and the Future of Renewable Water Supplies,* which addresses the links between water scarcity and instability, and a just-released publication, *Conserving Land: Population and Sustainable Food Production*, which examines environmental challenges associated with arable land scarcity and connections with instability. For information, contact Robert Engelman, Director of Population and Environment Program, PAI, 1120 19th St. NW, Suite 550, Washington, D.C. 20036. Tel: 202-659-1833; Fax: 202-293-1795.

Population Reference Bureau (PRB)

The PRB provides ongoing technical assistance on demographic matters to numerous organizations engaged in the study of links between environment and security. For information on its research activities, contact Alex de Sherbinin, Population Geographer: PRB, 1875 Connecticut Ave. NW, Suite 520, Washington, D.C. 20009-5728. Tel: 202-483-1100; Fax: 202-328-3937.

The Project on Environmental Scarcities, State Capacity, and Civil Violence of the American Academy of Arts and Sciences (AAAS)/ University of Toronto

This two-year project, initiated in 1994 and supported by the Rockefeller Foundation and the Pew Global Stewardship Initiative, seeks to determine if scarcities of cropland, forests, water and other renewable resources are decreasing the capabilities of governments in the developing world, and, if so, whether this raises the probability of widespread civil violence such as riots, ethnic clashes, insurgency, and revolution. The Project will study and compare the cases of China, India and Indonesia. Thomas Homer-Dixon (University of Toronto) is the Principal Investigator, and Jeffrey Boutwell (American Academy) and George Rathjens (Massachusetts Institute of Technology) are project Co-directors. For information, contact Annette Bourne: AAAS, Norton's Woods, 136 Irving Street, Cambridge, MA 02138-1996. Tel: 617-576-5000; Fax: 617-576-5050; or contact Thomas Homer-Dixon: University of Toronto, Peace & Conflict Studies, University College, 15 King's College Circle, Toronto, Canada M5S 1A1. Tel: 416-978-8148; Fax: 416-978-8416.

Worldwatch Institute

WorldWatch has a long-standing interest in how environmental issues relate to security; Worldwatch president Lester Brown wrote some of the earliest articles on environment and security issues. Worldwatch recently published, *Full House: Reassessing the Earth's Population Carrying Capacity* (written by Lester Brown and Hal Kane) which addresses the effects of food scarcity on global and regional political stability. For information, contact: Worldwatch Institute, 1776 Massachusetts Ave., NW, Washington, D.C. 20036. Tel: 202-452-1999; Fax: 202-296-7365.

Governmental Activities

The following information is based primarily on presentations by the government agency representatives listed below at the 17 January 1995 meeting of the Wilson Center's Environment and Security Discussion Group on "Environment & Security from Various Agencies' Perspectives: An Information Exchange about Current and Planned Initiatives." Additional information obtained from other sources is noted with an Editor's Note in italics.

Department of Commerce/ National Oceanic and Atmospheric Administration (NOAA)/ Office of Global Programs
Editor's Note: This information was furnished by the Office of Global Programs after the 17 January meeting.

NOAA's Office of Global Programs coordinates and funds the NOAA Climate and Global Change Program, which contributes to the U.S. Global Change Research Program (USGCRP). To enhance the security and physical well-being of citizens of the United States and other nations affected by climate variability, NOAA hopes to set up an International Research Institute for the Seasonal to Interannual Climate Prediction Program (IRI/SCPP). The SCPP is intended to assemble participants from around the world to achieve a task no single country could accomplish on its own: to forecast the behavior of the El Niño-Southern Oscillation (ENSO) cycle—known to be central to short-term variability in the earth's climate system—a year in advance, and then distribute the relevant information internationally [see box on El Niño]. NOAA published a call to universities for proposals to set up the IRI in the 19 March 1995 issue of the Federal Register. It expects to be reviewing proposals within six months, and to set up four pilot application centers in El-Niño-affected countries within the next two years. For information, contact Joshua Foster: NOAA/OGP, 1100 Wayne Avenue, Silver Spring, MD 20910. Tel: 301-427-2089 (ext. 67); Fax: 301-427-2082.

The El Niño-Southern Oscillation (ENSO) Cycle
According to James Baker, NOAA Administrator and Under Secretary of Commerce for Oceans and Atmosphere, "El Niño conditions in 1991-92 were a principal contributing factor to severe drought and associated reduction in agricultural yields throughout southern Africa, Indonesia and northeastern Australia, to the drought in Northeastern Brazil and to localized flooding in southwestern South America. Early research efforts to better understand the impact of El Niño climate trends are also uncovering associations between patterns of floods and droughts and the creation of environmental conditions hospitable to the emergence and spread of vector-borne diseases and the recent outbreak of cholera in South America." ("When the Rains Come, *The Washington Post*, 25 January 1995, A25). Some scientists suspect El Niño as the culprit for such U.S. natural disasters as the 1988 drought in the Midwestern United States and the recent floods in California.

Department of Defense/ Environmental Security
Gary D. Vest, Principal Assistant Deputy Under Secretary
DOD's view of Environmental Security is comprised of the following: (1) ensuring environmentally responsible action by military units wherever they may be; (2) ensuring adequate access to land air and water to conduct a defense mission; (3) protecting DOD's war-fighting assets (people, equipment, and facilities); (4) understanding where environmental conditions contribute to instability, and where the environment fits into the war and peace equation; (5) bringing defense-related environmental concerns to the development of national security; (6) studying how defense components can be used as instruments of U.S. global environmental policy.

Globally, the military figures prominently in environmental issues, both because of its past and potential effects on the environment and its ability to protect the environment. DOD has been a leader in such environmental efforts as: (1) implementing the Montreal Protocol and bringing defense environmental leadership to NATO's Committee for Challenges to a Modern Society; (2) sending teams to the former USSR and Warsaw Pact countries to help those nations address environmental problems through the U.S. European Command's "Military-to-Military" program; (3) helping to link environmental policy to the democratization of Eastern Europe in developing an Environmental Security curriculum for the Marshall School; (4) co–sponsoring an upcoming conference with the intelligence community on the relationship between environmental security, national security, and intelligence; (5) holding conferences in the Nordic/Baltic countries, the Pacific, and Germany to discuss environmental links to defense; (6) launching a trilateral defense environmental initiative with Canada and Australia; (7) conducting war-gaming exercises on questions such as, "To what extent should the U.S. pay for Cold War environmental clean–up in Russia?"

Department of Energy/ Energy Programs
Joseph J. Romm, Special Assistant to the Deputy Secretary
DOE engages in a variety of activities that could be considered as "environmental security" activities. For example, over one third of the DOE budget is spent on addressing the legacy of environmental mistakes in the manufacture of nuclear weapons. In addition, DOE engages in activities to help reduce U.S. dependence on imports of oil. But DOE's technology

development and other programs devoted to sustainable use of resources and implications for national and global quality of life are perhaps of most interest to this group, since sustainability of the resource base and the global ecosystem are at the heart of the environmental security issues (in a non-military sense).

Since sustainability is at the heart of environmental security, DOE promotes sustainable use of resources and the global ecosystem through many other activities, and engages in technology development. Some major activities in the environment and security area include:

1. Climate Change Action Plan: This technology development and employment effort will help minimize the production of carbon dioxide and other greenhouse gases. It focuses on promoting changes on the supply-side by promoting renewable energy sources (such as solar, wind, geothermal and biofuels) since renewable energy technologies are quickly becoming more affordable. DOE is also putting in more research and development into natural gas.
2. Clean Car Initiative: This joint public-private R&D venture will produce automobiles that produce fewer emissions and have three times the fuel efficiency of today's automobiles. This will help reduce the oil-intensity of the economy and will benefit the global environment by reducing emissions.
3. Industries of the Future: DOE is working with the most polluting and resource-intensive industries (including the pulp and paper industry, petroleum refining, steel & aluminum, chemicals, glass and foundries). It seeks to develop a vision of an extremely efficient, very low-emitting and productive industry.
4. Trade missions to other countries: DOE seeks to reduce current and future carbon dioxide emissions by promoting cleaner or renewable energy use in the rapidly expanding economies of China, India and Pakistan. In Ukraine, DOE is helping to replace the more dangerous nuclear plants with other energy sources to enhance European security against another Chernobyl event.

In the long term the issues around climate change are the most likely to intersect between traditional security and non-military security. While no one can be absolutely certain about climate change, it has the potential to be utterly devastating from both the quality of life and a security point of view to many countries—including the United States.

Department of State/ Office of Under Secretary for Global Affairs
Kenneth Thomas, Environment Science and Technology Officer, U.S. Foreign Service
It is fascinating that EPA and DIA / DCI and DOE have each articulated three very different views of environmental security. The State Department has recognized for over two decades the relevance of environmental issues in foreign policy. In the past, environmental issues (air pollution with Canada, the Tijuana situation, and others) were issues that could present opportunities for either cooperation or friction between countries. State Department officials have become experts on environmental issues in response to this reality. Environment is now becoming an important pillar of foreign policy, often enjoying the same attention as other trade, commercial or security issues. Clearly, many environmental issues can be considered as relating to the U.S. national interest; whether they relate to U.S. national security is still unclear. The State Department will consider environmental problems as security issues as long as other nations do. The growing consideration of environmental issues as national interests is best exemplified by the institutional changes that have occurred: the creation of a Global Environmental Affairs Directorate at the National Security Council, the creation of an Under-Secretariatship for Global Affairs at State, creation of the Global & Multilateral Issues office at the National Intelligence Council, the creation of Under Secretary Goodman's office for Environmental Security at Defense.

Editor's Note: A question was raised at the 17 January Discussion Group Session about the relative ranking of personnel addressing environment and security issues in non–Washington State Department posts; another participant asked how i ntegrated such functions are with the other functions in U.S. embassies. Mr. Thomas and other agency representatives responded that the State Department usually has an environment, science and technology counselor at each post; if not, the economic section may handle environmental issues as they arise. A third of all overseas posts have an officer who addresses environmental technology issues at least part-time. There is an ongoing reform in analysis and reporting structure to react to environmental changes.

Department of State/ Bureau of Intelligence & Research
William Wood, Geographer and Director, Office of the Geographer and Global Issues
The Bureau of Intelligence and Research (INR) at the State Department has a small division working on environment and security issues. We feel that resource scarcity is much more of an immediate security threat than climate change. Resource degradation tends to be local and will increase ethnic tensions (mostly at a sub-national level) between people competing for jobs and land. This view lends itself to our focus on sustainability issues.

INR's Office of the Geographer and Global Issues (GGI) deals with the following: (1) UN and humanitarian concerns; (2) territorial conflicts and cartography; and (3) environment and sustainable development. It publishes a classified newsletter, "Environment and Sustainable Development Update." INR believes most international issues can be best analyzed from open sources and should not be absorbed casually as another new intelligence problem.

Two INR/GGI initiatives might be of interest to this group: (1) ReliefNet is a joint effort with the Bureau of International Organizations to set up an Internet-based information network for humanitarian crises; (2) Earth Map, which seeks to enhance the international use of GIS technology and remote sensing imagery to help local resource managers improve their decisionmaking.

ENVIRONMENTAL PROTECTION AGENCY/OFFICE OF INTERNATIONAL ACTIVITIES

Wendy Grieder, U.S. Coordinator, NATO Committee on Challenges to a Modern Society

The definition of "environmental security" within EPA ranges from resource scarcity/conflict issues to transfrontier movement of hazardous waste, pesticides and pollution. The following are some projects underway that could be construed as relating to environment and security: (1) activities with the Economic Commission of Europe (ECE) to address long-range transboundary air pollution (LRTAP) in Europe, since if a country lacks clean air it can easily affect economic and possibly political stability; (2) a joint project with AID to create a regional information and training center in Asia and the Mid-Pacific (to be opened in about a year) which will focus on environmental health problems, safe drinking water and other problems associated with rapid urbanization in the region; (3) the "Russian Far East Project," which seeks to minimize instability and migration in the region by addressing the damage from changes to watersheds, forests and fish stocks; (4) projects on the U.S.-Mexico border area, where sewage and other pollution problems can create politically volatile situations within Mexico and between the U.S. and Mexico; (5) a range of highly successful activities in the Middle East peace process to address water scarcity with the various actors involved; (6) pollution prevention centers in the Czech Republic, Ukraine, Poland, Russia and China to address pollution prevention and other issues; (7) the NATO Committee for Challenges to a Modern Society (CCMS) Program (for which I am the U.S. coordinator) which is training a new class of environmental professionals in the region and sponsoring many meetings and case studies.

OFFICE OF DIRECTOR OF CENTRAL INTELLIGENCE/DEFENSE INTELLIGENCE AGENCY

G. Theodore Constantine, Exceptional Intelligence Analyst Program

There is no dedicated effort at DIA to the kind of analysis which this Discussion Group is doing—namely, to the study of links between environmental degradation (broadly defined) to instability, conflict and other security issues. DIA, however, does look at environmental issues that fall into two broad categories: (1) the effects of environment on military operations; (2) the environmental contamination which results from disposal from military and industrial activities. The DIA activities related to these two categories can be grouped into 5 areas:

1. Public Health in Environmental Conditions: Most of this work is done by DIA's Armed Forces Medical Intelligence Center in Frederick, MD. The Center concentrates on supporting military operations. It examines, for example, how environmental conditions in countries where U.S. military operations are being conducted may affect operations. The Center also gathers background information about what things may have contributed/led to various conflicts that prompted U.S. military involvement. Another group that focuses on the study of environmental conditions is DIA's Military Geography Branch, meant to support military operations. This branch maintains databases, produces analyses on how environmental factors may effect operations, and how environmental factors may lead to instability. The environmental work of the Military Geography Branch is perhaps most relevant to the kinds of issues examined in this Discussion Group—but it is not the branch's core mission. The branch is, however, getting more questions about environment and security as this issue come to the fore.

2. Natural & Technological Disasters: This area of DIA activities can also be referred to as "Environmental Defense Intelligence" (ED&I), which means examining environmental developments related to natural and technological disasters. Since the U.S. military is sometimes called in to mitigate the destabilizing effects of disasters like Bhopal, Chernobyl or hurricanes in Bangladesh, DIA tries to produce products and provide indications that give warning about where disasters may happen. Once they do happen, DIA tries to produce easy-reference background information for those en route to disasters to help them understand the nature of the problem, how it originated, and relevant information about geography and infrastructures.

3. Ecological Contamination: The intelligence community and DIA have always has been interested in the effects of biological and chemical warfare and industrial production. Now they focus on the environmental consequences of production activities: if, for example, a particular industrial plant in Eastern Europe or the Former Soviet Union has contributed significantly to environmental degradation, DIA usually has databases to help its consumers understand the origins of the problems.

4. Nuclear Disposal: DIA examines all aspects of nuclear disposal, particularly in the former Soviet Union. It studies what practices take place, where dumping occurs, whether it violates an international treaty, and whether it is harmful to fisheries and other resources.

CIA Declassifies Satellite Imagery

On 24 February 1995, Vice President Gore announced at the CIA headquarters that the Clinton Administration would begin declassifying the first set of 860,000 spy-satellite photographs to assist environmental researchers and scientists. Gore said that the photographs, taken from 1960-1972, will "help us to better understand and analyze our global environment." Their release, he said, is "a common sense way to address new threats to global and regional security," including ozone loss, deforestation, and global warming. The National Reconnaissance Office reports that the photos will be available within 18 months, and will be distributed through the National Archives and the U.S. Geological Survey's data center in Sioux Falls, South Dakota; they will also be available free on the Internet at http://edcwww.cr.usgs.gov/dclass/dclass.html.

"The effort to declassify information gathered by the military and intelligence agencies during the Cold War for civilian applications was first proposed by Vice President Al Gore when he was a member of the U.S. Senate. Then-Senator Gore and Sen. Sam Nunn, D-GA, introduced legislation in 1990 titled the Strategic Environmental Research Program, which proposed shifting substantial Defense Department and intelligence resources to address ecological problems. In 1992, at the request of then-Senator Gore and the former Director of the CIA, Robert Gates, an Environmental Task Force was convened to examine the usefulness of historic imagery archives for scientific studies. [This declassification] follows recommendations made to the White House by the CIA's Classification Review Task Force led by the Central Imagery Office and Environmental Task Force." (White House Press Release, 24 February 1995, Office of the Vice President).

5. Environmental Technologies: DIA has made some effort to understand other nations' capabilities to produce, buy, or trade environmental technologies, and how these technologies affect relations within and between countries.

In addition to these 5 areas, DIA performs tasks in other issue areas that might be related to environmental security:
(1) DIA sits on the Director of Central Intelligence's Environmental Task Force, an effort initiated by Al Gore. The ETF is a joint project of the intelligence and scientific communities, aimed at determining whether any of the vast amounts of intelligence community's information and imagery can be declassified for the larger scientific community.
(2) DIA sits with many other intelligence community members on the DCI Scientific and Technology Intelligence Committee's Environmental and Life Sciences Working Group, which discusses environmental issues and tries to steer the intelligence community in directions that satisfy various consumer needs related to the environment.
(3) DIA sits on the DCI Task Force on State Failure, recently formed at Al Gore's initiative, which is examining the causes of instability and state failure—including environmental degradation in a broad sense—and trying to develop models to predict when these things are going to happen. [See the Update section on Non-Governmental Activities].

Office of Science & Technology Policy/National Security & International Affairs

Christopher F. Chyba, Senior Policy Analyst

Editor's Note: This summary has been updated since Mr. Chyba's 17 January presentation.

The White House Office of Science & Technology Policy (OSTP)'s Division of National Security and International Affairs is directed by Jane Wales, who is also the Senior Director for Science and Technology at the National Security Council. One of the OSTP activities most relevant to this group was the organization of the 29-31 March 1995 "Forum on International Science, Engineering and Technology: Enhancing Global Stability." The Forum was organized by the National Science & Technology Council (NSTC), which was formed to drive interagency consensus on science and technology policy. The two NSTC committees that were most important to organizing the March Forum are the NSTC Committee on National Security (co-chaired by John Deutch from DOD and Jane Wales from OSTP) and the Committee on International Science Engineering and Technology (CISET) (co-chaired by Tim Wirth from the State Department and Jane Wales from OSTP). On a related note, CISET is now running an interagency process on epidemic disease.

The March Forum was held at the National Academy of Sciences and included approximately 600 invited participants from within and outside of government. Its purpose was to: (1) forge a better common understanding of the importance, purpose, and role of international science and technology cooperation; (2) promote a more knowledgeable private sector for international science and technology cooperation; and (3) develop a clear articulation of how international science and technology policies relate to broad national security and economic objectives—which is perhaps most directly relevant to environment and security issues. The opening panels on "Science, Technology, Sustainable Development and Preventive Diplomacy" were led by Jessica Tuchman Mathews (Council on Foreign Relations) and Adele Simmons (MacArthur Foundation), and featured Brian Atwood (AID Administrator), David Hamburg (Carnegie Corporation), and Timothy Wirth (Under Secretary of State for Global Affairs). The remaining panels featured top officials from the public and private sectors, and were held on the following topics: "Social and Economic Integration: Building Capacity in Emerging Markets;" "Using Science and Technology to Meet New Defense and Arms Control Needs;" and "Technology Leadership to Strengthen Economic and National Security." Vice President Gore delivered closing remarks.

Academic and Professional Meetings

5-8 March 1993: Tufts University, EPIIC Program
"International Security: the Environmental Dimension"
One of the first major conferences to address environment and security issues directly, this symposium brought together numerous leading experts to speak on the environmental legacy of military security and war, the range of perspectives about how environment affects security, energy security, and the links between environmental degradation and conflict. For information and a copy of the reading materials, contact Sherman Teichman, Director of EPIIC, or Susan Rogers Strand, Inquiry Director: EPIIC, Miner Hall, Tufts University, Medford, MA 02155. Tel: 617-627-3314; Fax: 617-627-3940.

6-9 January 1993: International Consortium for the Study of Environmental Security (ICSE)
"Geopolitics of the Environment and the New World Order: Limits, Conflicts, Insecurity?"
This was the first conference sponsored by the ICSE, organized in collaboration with the CNRS research group, Societies and Scientific and Technological Risks. For information on other ICSE conferences, contact: Laval University, Groupe d'Études et de Recherches sur les Politiques Environmentales (GERPE), Jean-Durand Building, Laval University, Québec, Canada G1K 7P4. Tel: 418-656-2316; Fax: 418-656-7908.

31 May-4 June 1994: International Consortium for the Study of Environmental Security (ICSE) and Tufts University Fletcher School of Law and Diplomacy
"The Population/Environment Equation: Implications for Future Security"
This conference explored links between population, environment and security, and made recommendations about future research topics. The conferees worked from the starting point that "environmental insecurity refers to the sense of fear, anxiety, danger from violence, and social and economic injustice arising from environmental decline." For information on past and future conferences sponsored by the ICSE, contact: Laval University, Groupe d'Études et de Recherches sur les Politiques Environmentales (GERPE), Jean-Durand Building, Laval University, Québec, Canada G1K 7P4. Tel: 418-656-2316; Fax: 418-656-7908.

19 July 1994: Institute for National Strategic Studies
"Workshop on Population, Resources, and Conflict"
Participants examined the potential for conflicts among nations or within states over population, resources, and environmental matters, as part of a project for the Joint Chiefs of Staff on the strategic situation facing the United States in the next twenty years. For information, contact Patrick Clawson at: INSS, Room 209E, Marshall Hall (Bldg. 62), Fort Lesley J. McNair, Washington D.C. 20319-6000. Tel: 202-287-9210; Fax: 202-287-9239.

16-18 September 1994: Yale University School of Forestry
"Workshop on Environment and Security"
This workshop focused on the links between environment and violent conflict, and participants divided into working groups that explored how certain natural resource issues (air, energy resources, freshwater, oceans, biodiversity) and related problems (pollution/waste, population/migration) could lead to conflicts. For information, contact Dr. Stephen Kellert: Yale School of Forestry, Sage Hall, 205 Prospect Street, New Haven, CT 06511. Tel: 203-432-5114; Fax: 203-432-5942.

27 September 1994: Oxford University: North–East Africa Seminar
"The State of the Environment: Conflict and Degradation in North–East Africa"
This workshop brought together a group of experts, mainly from universities and NGO's in the U.K. and Africa, who focused on the "next steps" in the development of a research agenda for environment–conflict linkages in Africa. A collection of papers may be published. For information, contact Dr. Patricia O. Daley: School of Geography, Mansfield Road, Oxford OX1 3TB, England, U.K. Tel: 44.865.271.919; Fax: 44.865.271.929.

28 September 1994: University of Maryland
"Environmental Disputes in Post-Conflict Middle East"
Sociologist Avi Gottlieb of Tel Aviv University spoke at this meeting, co-sponsored by the College Park Center for International Development and Conflict Management, the School of Public Affairs and

Environmental Policy Programs, and the Harrison Program on the Future Global Agenda. For more information contact: Mark Sagoff, Director of the Institute for Philosophy and Public Policy, Room 31111, Van Munching Hall, College Park, MD 20742. Tel: 301-405-4753; Fax: 301-314-9346.

10-13 November 1994: Columbia University, The American Assembly
"Threatened Peoples, Threatened Borders: World Migration and U.S. Policy"
This conference considered the causes of migration, effects of migration on international stability and security, and debated key policy choices for the United States. The results will be published in spring 1995 in a volume edited by Michael Teitelbaum and Myron Weiner, available for $25.00 from W.W. Norton & Co. (1-800-233-4830).

30 November-1 December 1994: U.S. Institute of Peace
"Managing Chaos"
Over 1200 people attended USIP's tenth anniversary conference, which included sessions focusing on sources of international conflict (including environmental degradation) in the coming century and featured keynote addresses by Les Aspin, Ted Koppel, and Henry Kissinger. The opening panel on the character of 21st century conflict included Robert Kaplan, Paul Wolfowitz and Samuel Huntington; another panel on key sources of global and local conflicts included Jessica Mathews, who argued that population growth, food shortages, and natural resource scarcities will lead to massive political instability. For more information or to order videos from the conference contact Kenneth M. Jensen: Director of Special Programs, USIP, 1550 M St. NW Suite 700, Washington, D.C. 20005-1708. Tel: 202-457-1700 Fax: 202-429-6063; E-mail: usip_requests@usip.org.

16-18 January 1995: International Development Conference
"Achieving Global Human Security"
Numerous panels were held on the topics of environment, population, peacebuilding and conflict resolution, including a panel on "Military Conflict, Militarism and the Environment." For information, contact the International Development Conference: 1875 Connecticut Ave. NW Suite 1020, Washington, DC 20009. Tel: 202-884-8580; Fax: 202-884-8499.

21-25 February 1995: International Studies Association Annual Convention
"Beyond Sovereignty: Challenges and Response in an Interdependent World"
This conference, held in Chicago, Illinois, had several sessions in which presenters discussed the environment's relationship to security, conflict and migration. For information, contact the International Studies Association: 216 Herald R. Clark Building, Brigham Young University, Provo, UT 84602.

1-6 March 1995: Tufts University, EPIIC Program
"20/20 Visions of the Future: Anticipating the Year 2020"
This conference was the tenth anniversary symposium of theTufts' Education for Public Inquiry and International Citizenship (EPIIC) program of the Experimental College. It brought together a diverse group of leading experts to hold sessions on population dilemmas, ecological interdependencies, future environmental trends, and microbial threats. For information, contact Sherman Teichman, Director of EPIIC, or Susan Rogers Strand, Inquiry Director: EPIIC, Miner Hall, Tufts University, Medford, MA 02155. Tel: 617-627-3314; Fax: 617-627-3940.

7 April 1995: Global Green USA, Legacy Project
"The State of the Military-Toxic Cleanup: Challenges and Opportunities"
This meeting at the Army-Navy Club in Washington, DC brought together specialists from the military, government, business, NGO, scientific and public citizen communities to discuss the status of clean-up initiatives. For information, contact Mathew Petersen, Executive Director: Global Green, 4223 Glenco Avenue, Suite B 103, Marina del Rey, CA 90292. Tel: 310-577-1885; Fax: 310-827-7416.

24-28 April 1995: Kazakhstan Ministry of Health and Russian Ministry of Higher Education and Technology Policy
"Third Universal Health Conference and Exhibition"
This conference in Almaty, Kazakhstan will explore the structure and delivery of health services, and will include a session on "The Environment & Its Impact on Health and Non-Infectious Chronic Diseases. For information, contact the Universal Health Conference: 1525 E. 53rd Street, #1004, Chicago, IL 60615. Tel: 312-752-2650; Fax: 312-752-7620.

18-20 May 1995: Athens University of Economics and Business
"The United Nations: Peace, Security, and Development beyond the Year 2000"
Athens University's Department of International and European Economic Studies will hold this conference, under the auspices of Greece's Ministry of Foreign Affairs, in Delphi, Greece. For information, contact Eleftheria Apostolidou: Athens University of Economics and Business, 76 Patission Street, Athens 104-34, GREECE.

1-3 June 1995: Duke University
"First Open Meeting of the Human Dimension of Global Environmental Change Community"
This meeting will be held in Durham, North Carolina, and will address issues related to environment and security. For information, contact the Global Environmental Change Program: Social Science Research Council, 605 Third Avenue, New York, NY 10158.

3-5 June 1995: Russian Government
"All-Russian Congress on Environment and Sustainable Development"
Russian government and non-governmental agencies are currently drafting a declaration and a plan of action for this Moscow conference on Russia's environmental restoration and sustainable development. Included among the topics to be addressed are: "Federal and Regional Problems of Environmental Security" and "Military Conversion and the Environment." For information, contact Jacob Scherr or Diahanna Lynch: Natural Resources Defense Council, 1350 New York Ave. N.W. Washington, D.C. 20005. Tel: 202-783-7800; Fax: 202-783-5917.

14-17 June 1995: Hampshire College, Program in Peace and World Security Studies
"New Wars, New Peace? Conflict Dynamics and International Peacemaking in a Changing World"
This workshop will examine the new class of ethnic, inter-communal conflicts of the post– Cold War era in the historical context of changes in the international system. It is intended for college and university faculty in the fields of political science, international relations, peace and conflict studies, and related subjects. For information contact Yogesh Chandrani: PAWSS, Hampshire College, Amherst, MA 01002. Tel: 413-582–5367 Fax: 413-582–5620.

29 June-2 July 1995: Estonian Institute of International and Social Studies and International Peace Research Institute, Oslo
"Peace and Security in the Nordic-Baltic Region"
This meeting, the Thirteenth Nordic (and First Baltic) Peace Research Conference, will include sessions on "environment and security" in addition to other Nordic-Baltic topics. For information, contact Dan Smith, Director of the International Peace Research Institute, Oslo (PRIO): Fugleauggata 11, 0260 Oslo, Norway. Phone: 47.22.55.71.50; Fax: 47.22.55.84.22; E-mail: dan@prio.no.

2-4 November 1995: University of Maryland
"Engagement/Disengagement: The Role of the United States in the New Global Politics"
This conference, sponsored by the Harrison Program on the Future Global Agenda and the International Studies Department, will feature panels and roundtables that address new policy challenges in the realm of the environment, security, economics and culture. For information, contact Dennis Pirages: University of Maryland, Department of Government and Politics, Tydings Hall, College Park, MD 20742. Fax: 301-314-7619.

Official Meetings

12-13 May 1994	Science-Technology Committee of the Gore-Chernomyrdin Commission (Washington)
25-26 May 1994	Commission on Sustainable Development High Level Session (New York)
6-17 June 1994	Negotiations on the Convention to Combat Desertification (Paris)
20 June -1 July 1994	Inter-governmental Committee on Biodiversity Meeting (Nairobi)
21-23 June 1994	Gore-Chernomyrdin Commission (Washington)
26-30 June 1994	Arctic Emergency Preparedness Meeting (Anchorage)
17-23 July 1994	1994 World Meteorological Organization/ United Nations Environment Programme (UNEP) Meeting for Ozone Assessment (Switzerland)
7-12 August 1994	Tenth International Conference on AIDS (Yokohama, Japan)
15-26 August 1994	UN Conference on Straddling and Highly Migratory Fish Stocks (New York)
22 August-2 Sept 1994	Tenth Session of the Intergovernmental Negotiating Committee, Framework Convention on Climate Change (Geneva)
5-14 September 1994	International Conference on Population and Development (Cairo)
3-7 October 1994	17th Consultative Meeting of the Contracting Parties to the London Convention of 1972 (London)
14-15 October 1994	Signing of the Convention to Combat Desertification (Paris)
24-28 October 1994	OECD Waste Management Meeting (Paris)
25-27 October 1994	Global Fisheries Enforcement Conference (Washington)
2-4 November 1994	OECD Pollution Prevention Meeting (Paris)
10-12 November 1994	World Meteorological Organization/ UN Environment Programme (WMO/UNEP) Inter-governmental Panel on Climate Change, Tenth Session (Nairobi)
1 December 1994	Fourth Meeting of the Gore-Chernomyrdin Commission (Moscow)
5-9 December 1994	International Maritime Organization Maritime Safety Committee (London)
6-9 December 1994	International Conference on Climate Change Research (Maastricht, The Netherlands)
6-9 December 1994	Sixth Session OECD Environmental Policy Committee, High Level Session (Paris)
January 1995	U.S.-Colombia Workshop on Alternatives to the Use of Dangerous Substances (Washington)
9-29 January 1995	Intergovernmental Negotiating Committee to the Elaboration of an International Convention to Combat Desertification (New York)
6-17 February 1995	Eleventh Session of the Intergovernmental Negotiating Committee, Framework Convention on Climate Change (New York)
15-16 March 1995	South Pacific Fisheries Treaty: Annual Meeting of the Parties (Nadi, Fiji)
15-20 March 1995	Fourth Meeting of the Signatories to the Transboundary Environmental Impact Convention (Espoo) (Geneva)

27 March-12 April 1995	UN Conference on Straddling and Highly Migratory Fish Stocks (New York)
28 March-7 April 1995	First Meeting of the Conference of Parties on the Framework Convention on Climate Change (Berlin)
11-28 April 1995	Third Session of the UN Commission on Sustainable Development (New York)
April 1995 (TBD)	Fourth Meeting of the Gore-Chernomyrdin Science and Technology Committee (Moscow)
May 1995 (TBD)	London Convention on Dumping: Amendment Negotiation (London)
15-19 May 1995	Meeting of States Parties, Law of the Sea Convention (New York)
22 May-2 June 1995	47th Annual Meeting of the International Whaling Commission (Ireland)
15-26 May 1995	UN Environment Programme (UNEP), Eighteenth Session on the Governing Council (Nairobi)
30 May-21 June 1995	World Meteorological Organization Congress, Twelfth Session (Geneva)
29-30 June 1995	Fifth Meeting of the Gore-Chernomyrdin Commission (Moscow)
18-21 July 1995	Global Environment Facility Council, Fifth Meeting (Washington)
24 July-4 August 1995	UN Conference on Straddling and Highly Migratory Fish Stocks (New York)
7-18 August 1995	Intergovernmental Negotiation Committee for the Elaboration of an International Convention to Combat Desertification (Nairobi)
21-28 August 1995	Meeting of States Parties: Law of the Sea Convention (New York)
Fall 1995 (TBD)	OECD/ECE Ministerial on the Environment in Central and Eastern Europe (Sofia)
18-22 September 1995	Basel Convention Conference (Madrid)
30 October-9 Nov 1995	Conference on Land-Based Sources of Marine Pollution (Washington)
6-17 November 1995	Second Conference of Parties for the Convention on Biodiversity (Indonesia)
28 Nov-7 Dec 1995	Montreal Protocol: Preparatory Committee and Seventh Conference of the Parties (Vienna)

Bibliographic Guide to the Literature

The following list was compiled by the Environmental Change and Security Project. It includes a wide range of publications, organized by theme, which relate to the various known conceptions about environment and security. The Project will continue to update this bibliography and publish revisions in forthcoming issues of the Report*; we welcome suggestions regarding the organization and content of the bibliography. Entries are formatted according to Kate L. Turabian's* Manual for Writers of Term Papers, Theses and Dissertations.

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Woodrow Wilson International Center for Scholars
1000 Jefferson Drive, SW
Washington, DC 20560
USA

Tel: 202-357-2063
Fax: 202-357-4439
E-mail: wwcem131@sivm.si.edu