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ENVIRONMENT AND SECURITY: THE CLEAR CONNECTIONS

By PETER H. GLEICK

Environmental threats are real, and the human ability to manipulate the global environment will cause international tension.

We live in an unusual period in history, as traditional military tensions and conflicts are becoming increasingly intertwined with new global challenges: widespread underdevelopment and poverty and large-scale environmental problems that threaten human health, economic equality, and international security. In many ways, the Persian Gulf war reflects these new issues. The early weeks of the war brought massive oil spills in the Gulf, bombing attacks on nuclear facilities and energy plants, burning oil fields spreading clouds of black soot throughout the region, and the threat to shut off the flow of the Euphrates River to Iraq.

Never before has the environment been used on such a scale as an intentional military target or tool. Nor has the disparity in resource wealth between combatants been as important a political factor as it is today. It is no accident that Saddam Hussein has attempted to cloak his actions in the mantle of a poor developing nation threatened by the economic and military might of the rich. This may prove to be an effective new gambit in the game of international politics and conflict.

New awareness of these problems has spurred interest in "environmental" or "ecological" security, but there is still confusion about how these terms should be defined, and disagreement about how these problems should be analyzed.

What is required is not a redefinition of international or national security, as some have called for, but a better understanding of the nature of certain threats to security, specifically the links between environmental and resource problems and international behavior. And if these problems are a legitimate cause for concern, we must ask whether traditional means and institutions for resolving international political conflicts are adequate to address them.

The political and ideological questions that now dominate international discourse will not become less important in the future; rather, they will become more tightly woven with other variables that loomed less large in the past, such as population growth, transnational pollution, widespread poverty, and inequitable social systems. National energy policies will come to depend not only on the price and supply of fossil fuels, but also on the global environmental consequences of certain forms of energy use. Migrating populations in search of more benevolent environmental and social conditions may undermine regional peace and security. Rapidly growing populations, greater irrigation demands, and future climatic changes may increase international tensions over shared fresh water resources.

In the classical formulation of strategic thinking, nineteenth century military writer Karl von Clausewitz described war as a continuation of

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Environment as target: U.S. planes spraying defoliant in Vietnam, July 1970.

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Guard at Ataturk Dam, Turkey. In 1990, to fill reservoir, for a month Turkey diverted the Euphrates River's flow to Iraq and Syria.

politics by other means. Put simply, in his view the goal of a nation-state is to enhance its power vis-à-vis other states, and the principal tools for this are military forces and political alliances. In this formulation, what one gains another loses, and power is the only resource used to pursue state objectives.

The many models developed since that time to explain international behavior have not considered access to resources and the degradation of global environmental services a central problem of international politics and security. Political scientist Stephen Krasner summarized the conventional meaning of security as "the defense of territorial and political integrity, which was understood as the fundamental, the immutable, objective of states in the international system. International relations before the last part of the twentieth century was, indeed, primarily concerned with security in this narrow sense and millions died in the first half of the twentieth century in pursuit of this goal. Economic questions were secondary. Environmental issues barely appeared on the international agenda."[1]

But some analysts, such as Jessica Tuchman Mathews, now argue that the traditional "realist" approaches to international relations distort, misunderstand, and ignore important aspects of global environmental problems, which do not conform with territorial or political boundaries. Because of this, many are coming to see conventional geopolitics as inadequate for managing increasingly complex international situations.

The response to this proposition is divided. Some theorists, such as Daniel Deudney [see the following article], believe there is a danger in broadly defining security to include nonmilitary threats to national interests, and that no substantial change in international security concepts is required to account for environmental and resource issues. But there is a growing clamor from other academics, politicians, and activists to raise environmental problems to the level of "high politics," and these theorists use the term "environmental security" to challenge the monopoly that political and military security analysts have exercised on interstate politics.

Both extreme positions present problems. In the first case, a narrow definition of security fails to address broader and quite real environmental threats to the security of individuals, nations, alliances, and regions. The current conflict in the Persian Gulf over oil and "our very lifestyle," as President Bush has described it, has its roots in resources and the environment. The recent threats to withhold fresh water from Iraq by cutting off the waters of the Tigris and Euphrates rivers is yet another demonstration of the links between environment and security.[2] Yet not every environmental problem can be considered a threat to national or international security, and there is indeed a risk that claiming so will trivialize the problem.

Between these extremes, it is apparent that certain regional and global environmental deficiencies are producing conditions that render conflict more likely. Because of these problems a nation or region bent on protecting its "security" in the future will have to concern itself as much with the flows of the planet's geophysical capital as it does today with the flows of economic capital; as much with the balance of atmospheric trace gases as with the balance of military power; as much with monitoring the earth's vital signs as with monitoring the arsenals of destruction.

Resource and environmental threats to security may be loosely grouped into four categories:

■ **Resources as strategic goals.** The history of tensions and conflicts over access to nonrenewable mineral and energy resources is long. Thucydides describes the struggle more than 2,400 years ago between the Thasians and the Athenians over control of mineral resources. Others have named the drive for access to scarce resources as a major motive underlying more recent conflicts—ostensibly because such resources are essential to economic prosperity, their distribution varies so greatly, and their trade is threatened by intentional constraints and embargoes.[3]

Some analysts, such as Ronnie Lipschutz and John Holdren, argue that this past link between access to resources and international conflict is weakening as the world trade system grows stronger and nations become less dependent on, and find substitutes for, nonrenewable resources.[4] While there are trends in this direction, there are also disturbing implications that certain resources, particularly energy and water, are becoming more, not less, important in the international arena—as the Persian Gulf war suggests.

Analysts have recently shifted their attention away from the links between direct access to resources and international conflict toward the less well understood consequences of resource inequities. Two issues appear likely to exacerbate tensions between "haves" and "have nots": the growing gap between rich and poor nations, characterized by enormous per-capita differences in resource consumption; and the growing global environmental degradation caused by industrialized nations but felt most severely by poorer countries. Developing countries are not only less responsible for global environmental problems, but they are more vulnerable to them and less able to adapt economically or to prevent the worst impacts.

Energy use typifies this disparity. Industrialized nations use energy at nearly 10 times the rate, per person, of developing countries. Poor countries are unlikely to escape from poverty unless this gap is diminished.[5] But the industrialized nations' massive use of fossil fuels is primarily responsible for a wide range of global environmental problems, particularly the greenhouse effect. If all of the world's 5.3 billion people used as much energy as do inhabitants of industrialized countries, the result would be intolerable environmental costs and possibly ecological catastrophe. The stage is thus set for continuing misery, despair, and frustration for billions of people—and, inevitably, social and political unrest.

■ **Attacks on resources.** Certain strategic resources, such as power plants and energy distribution facilities, have always been considered legitimate targets for attack in the event of war. Nuclear plants and research reactors may be particularly tempting targets because of their importance for electricity grids, their links to nuclear weapons production, and the multiplied damage caused when radioactive core materials are released in an explosion. The Israelis destroyed the Osirak nuclear plant outside of Baghdad in a June 1981 air raid, in an attempt to stop a suspected Iraqi nuclear weapons program, and Iraqi nuclear facilities were among the first targets attacked in January of this year. Large dams were regularly attacked in World War II and the Korean War. Israel destroyed Syria's geographically concentrated oil installations and two main power stations early and rapidly in the 1967 Six Day War. Various plans have circulated in the U.S. government since the late 1940s to destroy the oil production facilities in the Middle East in the event of a Soviet invasion—now presumably updated to include other threats to Western oil supplies.[6] In the opening days of the Gulf war, Iraq attacked Saudi oil facilities and deliberately destroyed energy infrastructures in occupied Kuwait.

■ **Resources as military tools.** Increasingly, nonmilitary tools such as economic and trade embargoes are being used to achieve military ends. In extreme situations, direct manipulation of resources or environmental services can be used either as political threats or for actual military advantage. The apparently deliberate oil spill in the Gulf is a striking example of ecological warfare.

Water has also been used in this way. While fresh water resources are renewable, in practice they are finite, unevenly distributed, and often subject to national or regional control. In the future it is as conceivable that a country could go to war over access to water as over access to oil or cobalt. Referring to Ethiopia's proposed construction of dams in the headwaters of the Blue Nile, Egypt's President Anwar Sadat said in 1978: "We depend upon the Nile 100 percent in our life, so if anyone, at any moment, thinks to deprive us of our life we shall never hesitate [to

The conflict over some resources has lessened with increasing international trade, but energy and water resources have been used to wage ecological warfare.

go to war] because it is a matter of life or death." Egypt's minister of foreign affairs was quoted in 1985 as saying, "The next war in our region will be over the waters of the Nile, not politics." At one point the president of Turkey indicated that his country would use the Ataturk dam to restrict the flow of the Euphrates to pressure Syria to withdraw its support for Kurdish separatists in eastern Turkey. While he later reversed himself, Syrian officials argue that Turkey is using its power over the Euphrates headwaters for political goals.[7]

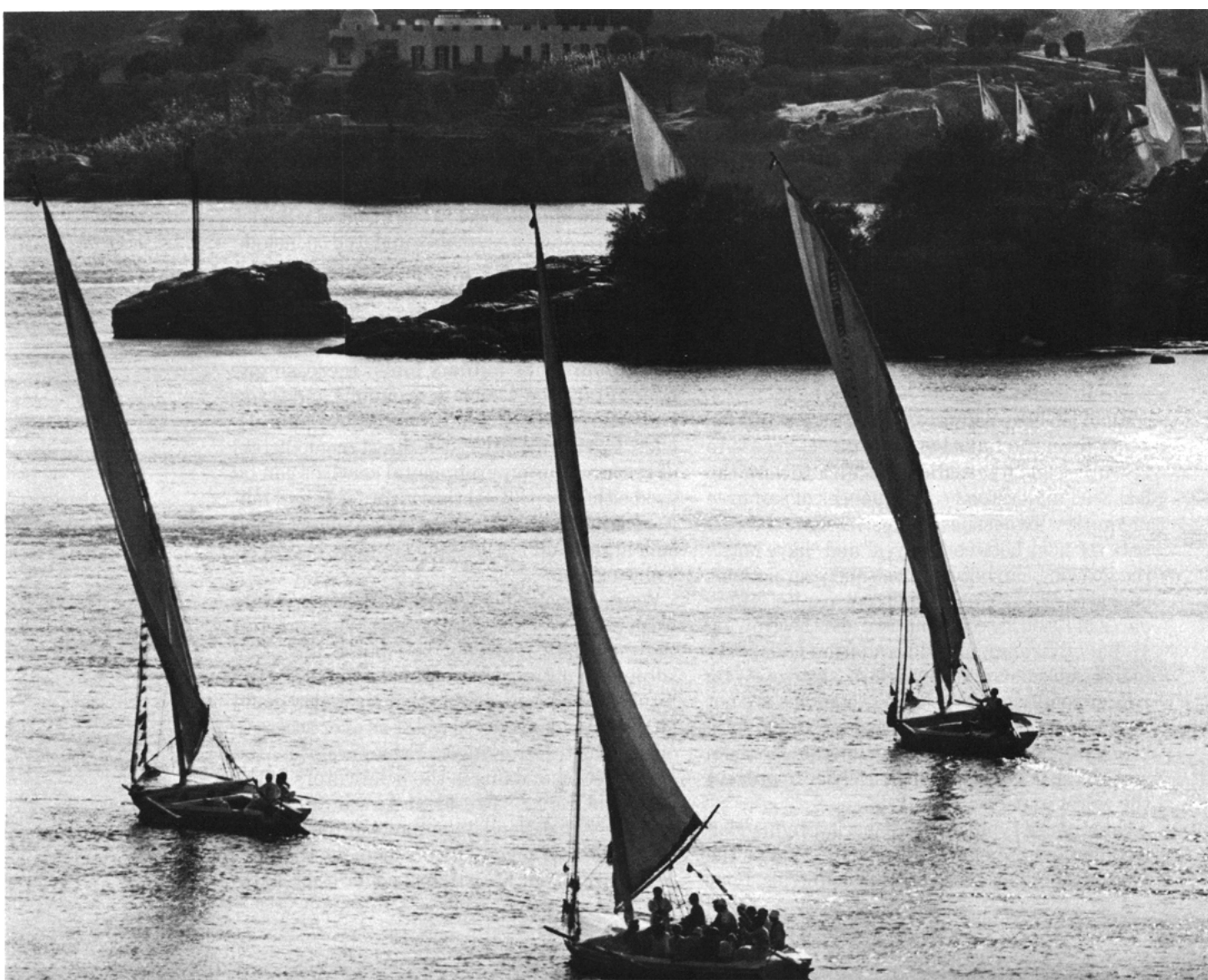
■ **Disruptions to environmental services.** The first three categories address primarily the stocks and flows of natural resources. But another class of environmental processes—services provided by the environment such as the benefits of clean air and water and the waste-absorbing capabilities of natural ecosystems—is increasingly at risk. Disrupting them can threaten human well-being.

Most such disruptions will not affect international security. But a growing set of pervasive environmental problems involves fundamental alterations of biological and geophysical conditions and processes on a regional and global scale, and could lead to widespread economic decline, societal disruptions, and even conflict. Two problems merit special attention: a nation's overexploitation, with international consequences, of its own resources—deforestation contributing to global climatic changes is an example—and the abuse, with regional and global consequences, of the global commons. These include the abuse or overuse of shared fresh water resources, creation of acid precipitation and transborder pollution, and degradation of the atmosphere.

For the first time, human ability to manipulate the global environment is introducing international tension and causing a realignment of international interests. Even under the old, narrow definition of international security, these environmental threats are real.

Among global environmental threats, climatic changes are most likely to affect international politics, especially between the industrialized North and the developing South. The industrialized countries, with only 25 percent of the world's population, are responsible for over 80 percent of all greenhouse gas production, yet the consequences of climatic changes will be felt by all. And developing countries have far fewer technical and economic resources at their dispos-

In 1978 Anwar Sadat, pointing to Egypt's total dependence on the Nile, threatened war over its diversion "because it is a matter of life or death."



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al for adapting to such changes.[8] The tensions are already evident in the growing split between rich and poor countries in the international negotiations over a framework convention on climate change.

The end of the twentieth century is witness to two momentous developments—the apparent end of the Cold War between the nuclear superpowers, and a growing threat to the global environment from population growth, inequitable and wasteful use of natural resources, and the degradation of critical environmental services. For the first time in history the interactions between the geopolitical and geophysical realms are reaching global proportions.

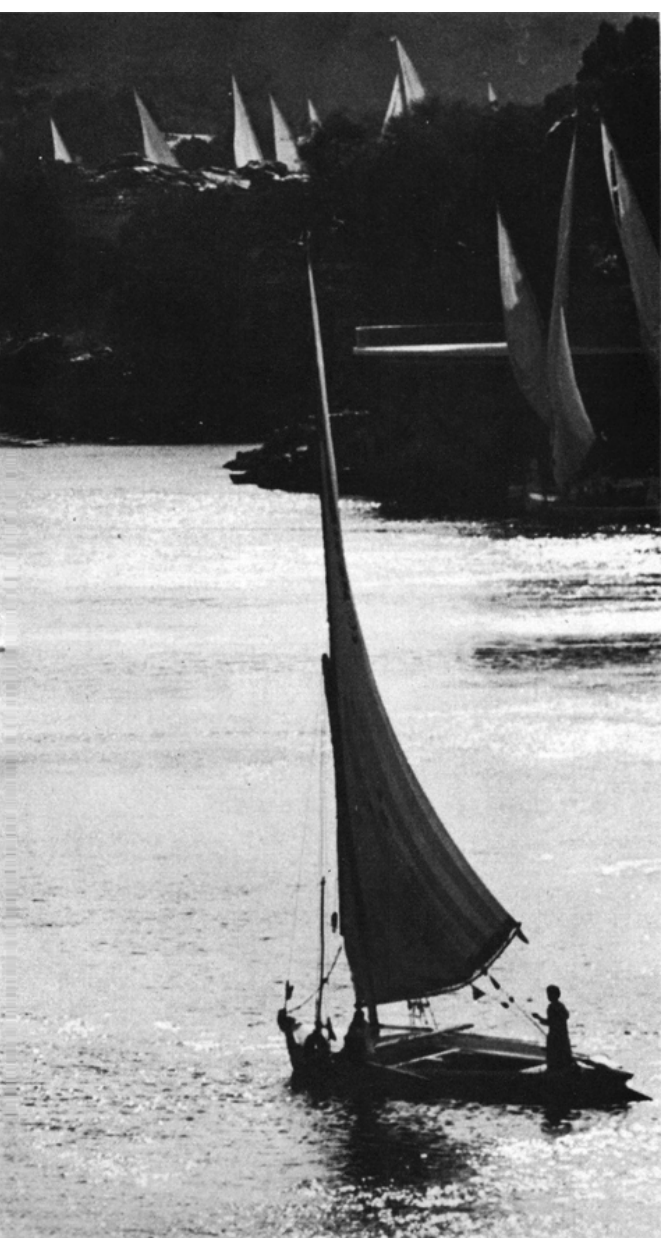
The debate about whether there is an environmental component to international security is, in many ways, a chimera. Resources have been used in the past, and will be used in the future, as tools or targets of war and as strategic goals to be fought for. The growing interest in these connections, however, reflects more than an academic broadening of the field of international relations: it shows the fundamental change in the nature of global threats to human well-being and the relationships among nations.

These new global environmental problems will have particular impact on North-South relations. As the Iraqi invasion of Kuwait attests, the ability of the major powers of the North to control or even predict what happens in the South is steadily declining, and Third World arms capabilities are impressive and growing. When this development is combined with the increasing economic gap between rich and poor and the growing environmental problems rooted in the North, the threat to peace and security becomes apparent.

Reducing the risk of environmental and resource conflicts will require addressing several problems simultaneously. Environmental problems cannot be isolated from underlying social, economic, and political causes. Population growth must be restrained to reduce pressures on both renewable and nonrenewable resources. Money must be transferred from the military sector to the human sector to help close the gap between rich and poor and to reduce the dangers of military confrontation. The North must increase the efficiency with which it uses resources, and it must transfer large amounts of technology and assistance to developing countries, to reduce this gap and to reduce pressures over access to limited resources.

Many of these problems are global in scope and will require greater cooperation at the international level. Without such cooperation, the era of the Cold War may soon be replaced by the era of environmental conflict. ■

Tension is already evident in the split between rich and poor countries over a framework convention on climate change.



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8. See Peter H. Gleick, "Climate Change and International Politics: Problems Facing Developing Countries," *Ambio*, vol. 18, no. 6 (1989), pp. 333–39; Peter H. Gleick, "The Implications of Global Climatic Changes for International Security, *Climatic Change 15*, no. 1/2 (1989), pp. 309–25.