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Environment, Violence, and Political Change

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ENVIRONMENT, VIOLENCE, AND POLITICAL CHANGE

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I. THE RESEARCH PUZZLE

Traditionally, the analysis of violent conflicts has been a rather straightforward task. Unitary State actors have confronted each other over divisible spoils concerning territory, natural resources, or the seat of political power. If diplomacy failed to resolve the crisis, economic and military coercion was used to settle the scores and decide the outcome between the adversaries. In most cases, a victor emerged from the ensuing contest of the political will and material capabilities between States. This image on the dominance of the inter-state war in world history is, to some extent, a caricature; yet, it taps some key features of the "old" international system that is now gradually giving way to the "new" one.

On the other hand, this picture of the inter-state system is still true in the sense that the world continues to be organized into national containers of territorial and material power that keeps, despite the tendencies of economic and cultural globalization, international interdependence limited and partial in nature. Governments continue to have an option to go to war,

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even though it invariably produces extensive human suffering and material destruction. Indeed, so far it has been possible to think in terms of military-political victory and material gains from war. While still possible today, such a prospect for a gainful inter-state war is more and more remote to the international political reality. This is especially true of wars of aggression, against which the UN Charter confers to States the right of self-defense, which right most States would act upon even if it would engender extensive costs.

Domestic polarization between social classes has created a somewhat similar situation within nations; if tensions have erupted into a civil war, the political divisions and loyalties have been in most cases quite clear. In principle, such conflicts could be resolved peacefully by following the Dahrendorfian model of conflict resolution, which would prescribe the organization of the parties, the recognition of their legitimacy, the specification of the contesting agendas, and the subsequent search of the common ground through a compromise. The isolation of intra-national conflicts within national borders increased the destructiveness of civil wars, but made them at the same time somewhat organized and predictable. The nature of conflict was altered, of course, if an external intervention, legally or illegally, took place. Such an intervention could both constrain and escalate violence.

Today, the nature of conflict is quite different. This does not concern only violent clashes between new types of actors, but also disputes over new kinds of issues, such as environment, human rights, and culture. A main reason for the changing nature and context of violent conflicts is the gradual thinning of the state layer between global and local levels which interact now much more closely than in the past. The emergence of new global-local linkages has been facilitated by the liberalization of national economies and the ensuing globalization of the world economy, which have opened up new transnational spaces. In terms of definition, globalization means the expansion and deepening of transnational market relations, which, as a result, penetrate into local societies and have a variety of political, social, and cultural consequences.

The interconnected processes of globalization and localization have had three main consequences for conflict formations. First, the possibility of major inter-state wars has been waning; save for a couple of world regions, such as South Asia and the Middle East, such a war is very unlikely today. Second, in the 1990's, civil war has replaced inter-state war as the dominant form of collective violence. In 1989-98, out of a total 108 wars, only seven were inter-state wars, while in nine intra-state wars, a

foreign intervention had taken place; all the rest were domestic wars. It seems, however, that the number of civil wars is now declining after their number peaked in 1991-92, with a possibility that a new upward trend has started in the very late 1990's.[1]

Thus, it is not implausible that civil war is, together with inter-state war, a receding form of violent conflict. One can also suggest that international intervention in civil wars is declining as its costs have become higher, due to the more complex and fragmented nature of these wars. If such an intervention happens, it is more likely to be multilateral than unilateral in nature as its legitimization would be somewhat easier in that way. Recent hectic debates about the legal and political acceptability of humanitarian intervention shows, though, that there is no global consensus on the matter.[2]

Against this backdrop, one can suggest that civil wars are gradually replaced by new forms of violence that are fragmented and decentralized in nature. Such violence can be used by small groups, often terrorist ones, to pursue specific political goals. Even more often, this "microviolence" is used by organized gangs and warlords to obtain material gains and political power. Such "infrapolitical" violence becomes integrated in social structures and cannot be separated easily from their daily functioning. Instead of being an exception, an abnormality, violence becomes a routine, a daily event, especially in the expanding and polarized urban centers of developing countries. As a consequence, the borderline between political violence, organized crime, and shadow economies becomes blurred.[3]

My argument is, thus, that infrapolitical violence is an emerging form of conflict organized around the global-local linkage. It is fueled by economic and social dislocations due to globalization and the local responses to them. To be sure, not all responses to globalization are violent, but they often include muted and indirect forms of resistance, which surprisingly often have an environmental aspect. This may be due to the fact that

1. *See generally* Peter Wallensteen & Margaretta Sollenberg, *Armed Conflict: 1989-98*, 36 J. PEACE RES. 593 (1999). For a largely similar conclusion on the frequency of ethnic conflicts, see Ted Robert Gurr, *Ethnic Warfare on the Wane*, 79 FOREIGN AFF., June 2000, at 52.

2. For a good overview of these debates, see DANISH INST. OF INT'L REL., HUMANITARIAN INTERVENTION: LEGAL AND POLITICAL ASPECTS (1999).

3. *See generally* HANS MAGNUS ENZENSBERGER, CIVIL WARS FROM L.A. TO BOSNIA (1992); DAVID KEEN, THE ECONOMIC FUNCTIONS OF VIOLENCE AND CIVIL WARS (Int'l Inst. of Strategic Studies, Adelphi Paper No. 320, 1998); Michel Wieviorka, *Le nouveau paradigme de la violence*, *in* UN NOUVEAU PARADIGME DE LA VIOLENCE? (Michel Wieviorka ed., 1998).

environmental issues provide multiple (and often depoliticized) sites and strategies to resist or adopt the processes of globalization. In other words, "the environment may then be understood as political space, a critical venue where civil society is voicing its concerns."[4]

It is obvious that new types of violent conflicts cannot be managed and resolved by the old means (and this difficulty may even be evident in the remaining inter-state conflicts). Parties to present civil wars and urban violence are not organized as centrally as in the past, but they consist of loosely operating factions whose professional military training, political experience, and economic resources are limited. The factions are headed by warlords or urban gang leaders who do not necessarily pursue any larger political goals beyond self-enrichment and the control of the political turf required for it.

Therefore, one cannot speak of well-structured political agendas in conflicts that would be amenable to bargaining and compromises. As a result, conflicts cannot be resolved by simply "splitting the difference" in order to "get to yes." Instead, the abolition of violence calls for the social and political transformation of the conflict structure. To some extent, this transformation can be due to environmental changes, as they may lead to shifts of power between various actors and prompt the rise of new actors, such as environmental movements.[5]

II. ENVIRONMENT AND RESOURCES

Departing from the analysis of the changing nature of violence and its connections with economic globalization, this paper considers the role of natural resources and environmental factors in the outbreak and transformation of deadly conflicts. The distinction made here between natural resources and environment is deliberate; renewable and non-renewable resources are considered tangible, material assets, while environment refers to the ecological context in which social systems operate. As natural resources—such as oil, minerals, forests, and cropland—are usually divisible, they easily become objects of conflicts between the parties. Disputes over resources and their control, as a form of

4. James H. Mittelman, *Resisting Globalization: Environmental Politics in Eastern Asia, in* GLOBALIZATION AND THE ASIA-PACIFIC: CONTESTED TERRITORIES (Kris Olds et al. eds., 1999).

5. For a more detailed analysis, see Raimo Väyrynen, *From Conflict Resolution to Conflict Transformation: A Critical Review, in* THE NEW AGENDA FOR PEACE RESEARCH 135 (Ho-Won Jeong ed., 1999).

territorial conflict, have, especially in the absence of economic interdependence, a tendency to become a zero-sum game.

A. *Environment*

"Environment" cannot be sliced up in the same way between the parties because of its contextual and historical elements. True, resources can also be considered contextual as is the case of the commons, or the resources in the sea, including the seabed minerals. The commons can be defined as the common heritage of the people when their resources are expected to be exploited by an international body that is commonly managed and in which various principles of equity apply. In reality, the pooled use of resources has turned out to be difficult to arrange and, as a result, their exploitation has been usually privatized and marketized in one way or another.

In the case of environment in the ecological sense, the contextual element is different; it is due to the indivisible aspects of the biosphere mediated on the human and natural systems by climatic variations and other changes that can have extensive and enduring effects. As an example, one may mention the historical cycles of El Niño that have caused the rise and global spread of natural disasters. Such disasters have, in turn, toppled empires and paved the way for the rise of new power centers. These cycles are almost completely outside the influence of human actors.[6]

In other words, the global ecosystem is a closed system in which human societies both prosper and suffer. One of the critical questions is to what extent and in what way the economy and society can internalize the environmental changes. It is sometimes asserted that the rise of environmental movements has been prompted by increasing environmental stress due to the process of economic globalization or the spread of postmaterial values. It is more plausible, though, that the politics of resistance and conflicts are connected with the distributive effects of the economy-environment nexus. In other words, the conflict potential related to environment is due to the inability of the economy to internalize the ecological consequences of its productive activities. Thus, the causes of environmental conflicts are real problems that people face in their everyday lives.[7]

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6. *See generally* BRIAN FAGAN, FLOODS, FAMINES AND EMPERORS: EL NINO AND THE FATE OF CIVILIZATIONS (1999).

7. *See* Joan Martinez-Alier, *Environmental Justice as a Force for Sustainability, in* GLOBAL FUTURES: SHAPING GLOBALIZATION 148 (Jan Nederveen Pierterse ed., 2000).

Various actors may have common economic interests in the utilization of natural resources, although they often also compete for them. However, due to the indivisibility and non-excludability of many ecological factors, the interests of relevant actors are even stronger in the common control and use of the environment, and in the prevention of its deterioration. The common interests in the use of resources, on the one hand, and environment, on the other, are due to different factors; cooperative utilization of resources is based on the agential division of labor, such as market exchanges or formal agreements, while ecological cooperation arises from the need of the actors to cope with the natural system that they cannot modify, at least over a short term.

The distinction between resources and environment can also be formulated in terms of the "dilemma of common interest" versus the "dilemma of common aversion."[8] The dilemma of common interest arises when independent decisions lead to Pareto-deficient outcomes that can be achieved only if all actors eschew their dominant strategy.

This dilemma is most frequent in the competitive exploitation of natural resources that may, as a result, be depleted, leading to economic and political problems. In such a situation, the actors would gain most from multilateral cooperation, which may be, however, difficult to arrange if the substitutability of resources is low for both parties. A set of case studies on fisheries management indicates that in such a situation, States have a tendency to resort to unilateral actions.[9]

The dilemma of common aversion arises, on the other hand, when actors have a common interest in avoiding a particular outcome, such as the large-scale deterioration of the natural environment. These kinds of situations are often characterized by multiple equilibria of which actors may be in agreement on one, but in disagreement on others. Thus, they may agree on the general need to protect the environment, but are at odds on how to best accomplish that general aim. An obvious solution is to establish a coordination regime that embodies rules and conventions that permit the actors' expectations to converge on the proper strategies to protect the environment and generate funds for their implementation.[10]

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8. *See* ARTHUR A. STEIN, WHY NATIONS COOPERATE: CIRCUMSTANCE AND CHOICE IN INTERNATIONAL RELATIONS 32–38 (1990).

9. *See generally* J. Samuel Barkin & Elizabeth R. DeSombre, *Unilateralism and Multilateralism in International Fisheries Management*, 6 GLOBAL GOVERNANCE 339 (2000).

10. *See* STEIN, *supra* note 8, at 36.

In the last decade, examples of environmental/ecological conventions and regimes abound. They have been established to control climate change, prevent air and marine pollution, control international toxic waste trade, and protect biodiversity and endangered species.[11] Environmental regimes come in various shapes and sizes, but they also face some common problems, including those of compliance, and its monitoring and enforcement. These problems are accentuated by the diversity and multiplicity of actors involved in the formation and operation of environmental regimes; they range from governments to transnational organizations and non-governmental organizations (NGOs). For instance, transnational corporations (TNCs) can have quite different attitudes toward environmental agreements depending on the sector of their activity and the distribution of the benefits and costs of protection.[12]

Another way to illustrate the distinction between resources and environment as conflict issues is to note that the former tend to be private goods, while the latter has a strong aspect of public goods. Marvin Soroos, among others, has pursued this line of analysis in the study of environmental security. He distinguishes unilateral and collective responses to milieu problems that manifest themselves, in turn, either as threats or vulnerabilities. In other words, States can focus on the prevention and mitigation of either threats or vulnerabilities, and address both of them either by unilateral or collective means. This approach leads to four different types of protective responses by States aiming, respectively, at self-prevention, collective prevention, self-defense, or collective defense.[13]

Collective measures recognize the public-goods character of environmental threats and vulnerabilities, while unilateral measures deal with resource problems mostly as private, divisible goods; egoistic interests prompt unilateral actions at the expense of the other actors. In sum, environmental/ecological problems tend to lead to dilemmas of common aversion rather than to those of common interest. However, this does not guarantee that the responses of actors to environmental challenges are necessarily collaborative as there are usually several competing solutions. Despite their predominantly contextual nature, environmental problems also have private aspects that elicit com-

11. *See* GARETH PORTER & JANET WALSH BROWN, GLOBAL ENVIRONMENTAL POLITICS 67–106 (2d ed. 1996).

12. *See generally* Aseem Prakash et al., *Multinational Corporations and International Environmental Policy*, 8 BUS. & CONTEMP. WORLD 119 (1997).

13. *See generally* Marvin Soroos, *Global Change, Environmental Security, and the Prisoner's Dilemma*, 31 J. PEACE RES. 317 (1994).

petitive responses and, therefore, need coordination and conflict resolution.

B. *Resources*

The study of resource conflicts can rely on two different assumptions. The source of conflict can be construed to be either the *scarcity* or the *abundance* of resources. The emphasis on scarcity departs often from simple economic models of conflict; if there are not enough resources for everyone, a rivalry for them emerges driving up the price and leading, ultimately, to a fight over their control. In more complex formulations, one should consider, among other things, substitution effects between different types of resources and various possibilities of price controls and production quotas. There is some evidence on the regulation of fisheries indicating that appropriate private mechanisms may be more effective in sustaining the catch than the setting of formal quotas.

1. Resource Scarcity

According to Thomas Homer-Dixon, the environmental scarcity of a renewable resource can be due to the depletion of such a resource, from increased demand for it (due, for instance, to population growth) or from unequal distribution of and, therefore, access to it.[14] Deforestation is a typical example of environmental scarcity due to the depletion of a resource, while demographic pressure augments the demand for resources and their privatization hampers access to it. Homer-Dixon suggests that environmental scarcity can lead to conflicts, for instance, by displacing people and bringing migrants into harmful contact with other identity groups. Environmental scarcity may also be a source of economic decline, which can lead, through weakened political institutions and social fragmentation, to internal violence. The causal link between resource scarcity and violent conflict is seldom direct, but it is mediated by various institutional and cultural factors.[15] Similar views can be found from the early works concerning the impact of fertile and infertile land on the resort to military force and defense against it.[16]

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14. *See* THOMAS F. HOMER-DIXON, ENVIRONMENT, SCARCITY, AND VIOLENCE 133–68 (1999).

15. *See id.*; *see also* MICHAEL RENNER, FIGHTING FOR SURVIVAL: ENVIRONMENTAL DECLINE, SOCIAL CONFLICT, AND THE NEW AGE OF INSECURITY (1996).

16. *See* Daniel H. Deudney, *Bringing Nature Back In: Geopolitical Theory from the Greeks to the Global Era, in* CONTESTED GROUNDS: SECURITY AND CONFLICT IN THE NEW ENVIRONMENTAL POLITICS 36–40 (Daniel H. Deudney & Richard A Matthew eds., 1999) [hereinafter CONTESTED GROUNDS].

Homer-Dixon and his associates tested the relationship between resource scarcity and violence with case studies and found a positive relationship between them. Pakistan is considered a case in which both rural and urban violence has roots in the increasing scarcity of land and other resources.[17] Similarly, the scarcity of land and water in the Ferghana Valley in Central Asia has exacerbated social problems associated with the economic decline, environmental crisis, and unemployment. They have contributed to growing social and political tensions, which have not yet, however, broken out into major violence.[18]

Along the same lines, a modeling exercise suggests that the per capita resource scarcity increases violence and further destruction of resources, which may ultimately lead to the collapse of the political and economic system. In fact, there is a bidirectional relationship between violent conflict and scarcity of resources.[19] Finally, a systematic statistical study has discovered an empirical relationship between environmental scarcity (especially land degradation) and civil conflict. The authors note, however, that economic factors provide better explanations of violence than environmental ones. The latter factors are more capable to account for small rather than large wars. Thus, while resource scarcities are present in many civil conflicts, they do not necessarily cause them, but rather interact with poverty and inequality to produce a conflict-prone society. Moreover, at least so far, environmental scarcities have contributed to social frictions rather than to major violence.[20]

In sum, there seems to be a positive relationship between environmental scarcity and violence. This relationship, however,

17. *See* Peter Gizewski & Thomas Homer-Dixon, *The Case of Pakistan, in* ECOVIOLENCE: LINKS AMONG ENVIRONMENT, POPULATION, AND SECURITY 147 (Thomas Homer-Dixon & Jessica Blitt eds., 1998) [hereinafter ECOVIOLENCE].

18. *See* CTR. FOR PREVENTIVE ACTION, CALMING THE FERGHANA VALLEY: DEVELOPMENT AND DIALOGUE IN THE HEART OF CENTRAL ASIA 60–68 (1999).

19. *See generally* John W. Maxwell & Rafael Reuveny, *Resource Scarcity and Conflict in Developing Countries*, 37 J. PEACE RES. 301 (2000).

20. *See generally* Wenche Hauge & Tanja Ellingsen, *Beyond Environmental Scarcity: Causal Pathways to Conflict*, 35 J. PEACE RES. 314 (1998). Günther Bächler concludes that of 51 wars underway in 1993, serious environmental degradation could be observed in 22 of them. The pattern was most visible in Africa and somewhat less pronounced, but yet real in Asia and Central America. *See generally* Günther Bächler, *Welche Rolle spielt Ökologie als Ursache und Medium von (zukunftigen) Gewaltkonfikte im internationalen System, in* TREIBEN UMWELTPROBLEME IN GEWALTKONFLIKTE? ÖKOLOGISCHE KONFLIKTE IM INTERNATIONALEN SYSTEM UND MOGLICHKEITEN IHERER FRIEDLICHE BEARBEITUNG (Jörg Callies ed., 1994); Günther Bächler, *The Anthropogenic Transformation of the Environment: A Source of War?, in* ENVIRONMENTAL CRISIS: REGIONAL CONFLICTS AND WAYS OF COOPERATION (Kurt Spillman & Günther Bächler eds., 1995).

is usually partial and indirect. It hinges on the definition of the independent and dependent variables, and varies by the level of analysis.[21]

Causality between environment and conflict can also be reversed. As the Vietnam War proved in the most extreme way, violence often results also in the destruction of environment in addition to its human toll. Further evidence on extensive ecological destruction caused by bombing campaigns and other military operations can be obtained from Kuwait and Iraq in 1990-91 and Kosovo in 1999.

In many crisis areas, including West Africa and Southeast Asia, logging of forests has been an important way to finance war, and maintain a corrupt government and its client list support networks. In addition to contributing to deforestation, military conflict discourages generally long-term investment in production, and steers money either abroad or to activities, often extralegal in nature, in which economic gains are immediate. War economies are run by cash transactions and short-term gains and not by long-term productive investment—because by the next day participants may be dead and money does not matter to them any longer.[22]

Resource and demographic factors may, through lateral pressures, also have an influence on the propensity to wage interstate wars. Countries with a high population growth are more prone to become involved in wars with other countries, although they do not necessarily initiate these wars. However, it seems that high population density contributes to war only if the country is highly militarized.[23] Conflicts over resources are often thought to manifest themselves mostly as border clashes. In a study of

21. *See* Günther Baechler, *Environmental Degradation and Violent Conflict: Hypotheses, Research Agendas and Theory-Building, in* ECOLOGY, POLITICS, AND VIOLENT CONFLICT 11–27 (Mohammed Suliman ed., 1999) [hereinafter ECOLOGY]. *See also* Nils Peter Gleditsch, *Armed Conflict and the Environment: A Critique of the Literature,* 35 J. PEACE RES. 381 (1998); GUNTHER BÄCHLER, VIOLENCE THROUGH ENVIRONMENTAL DISCRIMINATION: CAUSES, RWANDA ARENA, AND CONFLICT MODEL (1999) [hereinafter BÄCHLER, VIOLENCE].

22. *See* Robert T. Deacon, *Deforestation, Investment, and Political Stability, in* THE POLITICAL ECONOMY OF CONFLICT AND APPROPRIATION 131 (Michelle R. Garfinkel & Stergios Skaperdas eds., 1996). *See also* Paul Collier & Willem Cunning, *War, Peace and Private Portfolios,* 23 WORLD DEV. 233 (1995); Paul Richards, *The Sierra-Leone Liberia Boundary Wilderness: Rain Forests, Diamonds and War, in* AFRICAN BOUNDARIES: BARRIERS, CONDUITS AND OPPORTUNITIES (Paul Nugent & A.I. Asiwaju eds., 1996).

23. *See* Jaroslav Tir & Paul F. Diehl, *Demographic Pressure and Interstate Conflict: Linking Population Growth and Density to Militarized Disputes and Wars 1930-1989,* 35 J. PEACE RES. 319, 323–24 (1998).

fourteen intergovernmental agreements on boundary conflicts in the post World War II period, it turned out that in eight cases the parties had mutual rivalry over natural resources in the common border area.[24]

The finding that land degradation has the strongest relationship with civil conflict is supported by the observation that arid lowlands are, in particular social conditions, prone to violent conflicts.[25] These findings indicate that there is a group of countries in which the demographic pressure, degradation and scarcity of land, and the overall decline of the public institutions and of the economy create a society from which people either try to exit or in which they violently confront each other.

Burundi, Chiapas, Haiti, and Rwanda have been mentioned as cases where the pressure on land has become so pervasive that it has set off a spiral of political and ethnic violence.[26] One has to keep in mind, on the other hand, that references to natural and demographic conditions as causes of conflict and misery may be used as a justification for political and economic actions rather than being a valid description of reality.[27]

The Rwandan case indicates that while land scarcity and the deterioration of its quality can be closely linked with domestic violence, it cannot be seen in separation of other factors. In Rwanda, the combination of the clan organization and social stratification created a volatile situation, which could be easily "ethnicized" for political purposes. This trend was further reinforced by the transition from the traditional social hierarchy to national politics where new ethnic fault lines were created. The colonial rule contributed to the institutionalization of these differences.

Neither ethnic divisions nor resource scarcity were the key reasons for the 1994 genocide and other violence in Rwanda. However, the increasing scarcity of fertile land and demographic pressures, together with the collapse of the country's model of economic development, largely underwritten by foreign aid,

24. *See generally* KJELL-ÅKE NORDQUIST, PEACE AFTER WAR: ON THE CONDITIONS FOR DURABLE INTER-STATE BOUNDARY AGREEMENTS (1992).

25. *See* BÄCHLER, VIOLENCE, *supra* note 21, at 64–71.

26. *See* Valerie Percival & Thomas Homer-Dixon, *The Case of Rwanda, in* ECOVIOLENCE, *supra* note 17, at 201 (discussing the land pressures in Rwanda); Philip Howard & Thomas Homer-Dixon, *The Case of Chiapas, Mexico, in* ECOVIOLENCE *supra* note 17, at 19 (discussing land pressures in Chiapas). *See also* Ana Esther Cecena & Andres Barreda, *Chiapas and the Global Restructuring of Capital, in* ZAPATISTA! REINVENTING REVOLUTION IN MEXICO (John Holloway & Eloina Pelaez eds., 1998) (discussing land pressures in Chiapas).

27. *See* ALEX DE WAAL, FAMINE CRIMES: POLITICS & THE DISASTER RELIEF INDUSTRY IN AFRICA 126–27 (1997).

made the situation even tenser. The scarcity of natural capital became even more of a political factor as a consequence of the discrimination against small rural producers. Thus, "the crucial point in Rwanda is that the rural-urban gap was overarched by clear-cut ethnopolitical segregation used by the ruling elite to exclude the other group almost completely from any resource."[28]

Often the scarcity and degradation of soil interact with the political or ethnic claims for land rights, mobilizing peasant movements to fight with each other or landowners. In several cases, such as Kenya and Senegal, the struggle for land pits the farmers and herdsmen against each other. Similarly, as a case study of India shows, the interests of various stakeholders in the use of forests often diverge and lead, under the influence of unclear property rights and political interference, to conflicts.[29]

Zimbabwe provides additional recent evidence on how the government can manipulate the struggle for land to strengthen its own faltering position. There, deforestation, siltation, overgrazing, and other environmental problems have contributed to the eruption of the land crisis. However, even more potent and direct causes of land conflict than the environmental factors are the misguided intervention of the State in agriculture and the economic decline of the country, partly due to its intervention in the war in Congo. Moreover, the Mugabe government has used land invasions as much to fight its own domestic opposition as help its own supporters to acquire land from the white owners.[30] In general, these developments reflect the fact that in Africa an increasing number of people are landless because of the interactions between poverty, privatization of land rights, the scarcity of land, and politics.[31] Water is another resource that threatens to become scarce and, thus, fuels conflicts over its control and use. There are well-known cases of water conflicts related either to the scarcity of water (e.g. Central Asia or the Sahel) or the competition for water resources in shared rivers. The Middle East, South Asia, and the Nile region provide examples of conflicts in

28. *See* BÄCHLER, VIOLENCE, *supra* note 21, at 113–66. *See generally* PETER UVIN, AIDING VIOLENCE: THE DEVELOPMENT ENTERPRISE IN RWANDA (1998).

29. *See generally* INDRA DE SOYSA & NILS PETTER GLEDITCH, TO CULTIVATE PEACE: AGRICULTURE IN A WORLD CONFLICT (Int'l Peace Res. Inst., Report No. 1, 1999).

30. *See* Tapera Knox Chitiyo, *Land Violence and Compensation: Reconceptualising Zimbabwe's Land and War Veterans' Debate*, TRACK TWO, May 2000, at 2.

31. *See* William B. Morgan, *Poverty, Vulnerability, and Rural Development, in* SUSTAINING THE FUTURE: ECONOMIC, SOCIAL, AND ENVIRONMENTAL CHANGE IN SUB-SAHARAN AFRICA 17, 36–38 (George Benneh et al. eds., 1996).

which the distribution of water resources and the political-territorial divisions have clashed with each other.[32]

The Colorado and Rio Grande river basins provide another telling example. The 1944 treaty between Mexico and the United States obliges them to share water in the Rio Grande reservoirs. Texan farmers argue, however, that Mexicans are hoarding water upstream depriving them of adequate irrigation, and expanding their own agricultural exports to the U.S. market under the NAFTA agreement. Mexicans refer, on the other hand, to extraordinary circumstances, primarily draught, as the reason for their actions. In general, the conflict potential is due, in addition to the increasing scarcity of water, to the rapid *maquiladora* industrialization of the border region.[33]

As a general rule, the riparian States should avoid the asymmetric utilization of water resources that would benefit one actor at the expense of the others. The simplest case is when the upstream State interrupts or reduces the flow of the river and the downstream States suffer, as a result, from water shortages. The dilemma of common interest becomes even more pronounced if the previous international overlay, such as dependence on great powers, disappears, and the local actors have to decide on their own the use and share available resources.

Yet, one should not jump, as some authors have done, too easily to the conclusion that the future wars will be increasingly over water. True, in several places, water is either overused compared with the existing resources or badly wasted. China is a case in point, where the growing scarcity of water is already creating new social tensions and threatens both the human security and economic growth of the country. The essence of its water problem is that the country has over twenty percent of the world population, but only seven percent of its freshwater resources. Also, other populous countries—such as India, Pakistan, Mexico, and even the United States—have severely mismanaged their groundwater resources and face a real resource crisis in this regard.[34]

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32. *See* Ashok Swain, *Water Scarcity as a Source of Crises, in* WAR, HUNGER, AND DISPLACEMENT: THE ORIGINS OF HUMANITARIAN EMERGENCIES 179 (E. Wayne Nafziger et al. eds., 2000) (providing an overview) [hereinafter WAR, HUNGER, AND DISPLACEMENT]; *see also* MASAHIRO MURAKAMI, MANAGING WATER FOR PEACE IN THE MIDDLE EAST: ALTERNATIVE STRATEGIES (1995) (regarding the Middle East).

33. *See* Dan McGraw, *A Boiling Tex-Mex Water War*, U.S. NEWS AND WORLD REP., May 1, 2000, at 24; BÄCHLER, VIOLENCE, *supra* note 21, at 203–04.

34. *See* Jacques Leslie, *Running Dry: What Happens When the World No Longer Has Enough Freshwater*, HARPER'S MAG., July 2000, at 37.

On the other hand, while the scarcity of groundwater is becoming a major political issue, predictions about "water wars" over shared rivers seem to be overblown. According to Gleditsch and Hamner,[35] more than 250 river systems are shared between two or more countries. In an empirical study of these rivers, they find that water scarcity only has a limited tendency to foster conflicts. Moreover, if scarcity is coupled with a shared river, the probability of cooperation, rather than conflict, between countries increases significantly. A common resource problem can also prompt closer cooperation.

This is evidenced, for instance, by the move towards cooperation in the utilization of the water resources of the Nile. The main change has been the increasing willingness of Egypt to cooperate with Ethiopia and Sudan, which concluded in an agreement on the use of Blue Nile waters in 1991. The new phase of cooperation is managed by the Nile Basin Initiative (N.B.I.), which is a formal organization set up by the riparian States, and with the support of the World Bank, to implement the 1996 Nile River Basin Action plan on the preservation and distribution of the river water.[36]

Water conflicts usually involve multiple and diverse actors, including transnational corporations. For instance, the dispute over the use of water in the Thika River and Ndanaini Dam in Kenya is primarily between Nairobi City Council and Del Monte Kenya Ltd., which has large pineapple plantations in the country.[37] Water scarcity is also spreading from regions, such as Middle East, Central Asia, and Southern Africa, which have been suffering from it for decades, to areas that we often believe to have too much water, including Pacific Asia.[38]

In Central Asia, the Soviet era was disastrous for the water resources of the region. The Soviet legacy there includes, in

35. *See* Nils Petter Gleditsch & Jesse Hamner, Shared Rivers, Conflict, and Cooperation, Paper presented to the 42nd Annual Convention of the International Studies Association (Feb. 21-24, 2001).

36. Bram Posthumus, *Nile Basin Nations Move Towards Cooperation*, CONFLICT PREVENTION NEWSL. (The African Center for the Constructive Resolution of Disputes (A.C.C.O.R.D.)), Feb. 2000, at 4. The rules to manage the equitable use of water in shared rivers are regulated by the Helsinki Rules on the Uses of the Waters of International Rivers. International Law Commission (I.L.C.) has been also active in devising rules for the use of river water in the Nile and other places. *See id.* at 5–6.

37. *See* John Rao Nyaoro, *Case Study on Kenya River Watershed Management and Arising Conflicts*, *in* COOPERATION OR CONFLICT: WAYS OF MANAGING SCARCE NATURAL RESOURCES IN AFRICA 63 (Anne Palm ed., 1999).

38. ALAN DUPONT, THE ENVIRONMENT AND SECURITY IN PACIFIC ASIA (Int'l Inst. of Strategic Studies, Adelphi Paper No. 319, 1998).

addition to problems related to nuclear waste, the growing scarcity of water and cultivable land. On the other hand, the newly independent States in Central Asia have only limited experience and means to deal with these resource problems. Instead of Moscow, decisions must now be made in the local capitals under conditions in which territorial sovereignty and resource interdependence do not match each other. In addition to the competing territorial claims in the Ferghana Valley, Kyrgyztan and Uzbekistan have a bilateral conflict over water resources and energy production in the Syr Darya.[39]

In general, it has been asserted that in post-communist societies, neither bureaucrats nor companies are well accustomed to deal with environmental problems and conflicting claims concerning them, in an effective and pragmatic manner. This has led to efforts to mislead the public by denying or falsifying information and, thus, mismanage environmental and resource conflicts.[40]

2. Resource Abundance

Another perspective on resource conflicts emphasizes, instead of their scarcity, the *abundance* of resources as a cause of violence. This is especially the case if resources are easily tradable and generate major economic value. Such tradable commodities include oil, some mineral resources, diamonds, drugs, and tropical hardwood. Obviously, in a competitive situation, resource scarcity and wealth cannot be strictly separated from each other as one's control of wealth usually means scarcity for others. Thus, for instance in Central Asia, the scarcity of land and water coexist with drug trafficking, organized crime, and corruption that create an abundant, but skewed informal economy. These factors are intermingled and cannot easily be distinguished from each other in the explanation of conflicts.[41]

Yet, it is argued that the emphasis on resource wealth and the ways it is distributed in society offers a more rewarding approach to the explanation and understanding of resource-

39. *See* BÄCHLER, VIOLENCE, *supra* note 21, at 201–203. *See also* Erika Weinthal, *Making Waves: Third Parties and International Mediation in the Aral Sea Basin, in* WORDS OVER WAR: MEDIATION AND ARBITRATION TO PREVENT DEADLY CONFLICT 263 (Melanie C. Greenberg et al. eds., 2000); Nikita F. Glazovsky, *The Aral Sea Basin, in* REGIONS AT RISK: COMPARISONS OF THREATENED ENVIRONMENTS 92 (Jeanne X. Kasperson et al. eds., 1995).

40. *See* Maria Csutora, *The Mismanagement of Environmental Conflicts,* ANNALS AM. ACAD. POL. & SOC. SCI., July 1997, at 52.

41. *See* James Fairhead, *The Conflict Over Natural and Environmental Resources, in* WAR, HUNGER, AND DISPLACEMENT, *supra* note 32, at 147.

related conflicts than the focus on scarcity. The underlying reason for this choice appears to be that people are more easily pushed to action by the prospect for major material gain than the suffering from inadequate availability of, and access to, resources.[42]

Angola (oil and diamonds) and Columbia (drugs) provide additional examples on how resource abundance and its unscrupulous exploitation for political gain has led to relative scarcities manifested in large-scale poverty. In Angola, both M.P.L.A. and U.N.I.T.A. have developed their own war economies fueled by the trade in oil and diamonds, respectively. Oil and diamond companies, especially Gulf Oil and *De Beers*, have served as intermediaries between the warring parties and the global market.[43] It is also a well-known fact that the mining and marketing of diamonds have been sponsored and have sustained factional warfare in Sierra Leone.[44]

Conflicts due to scarcity and wealth are distributive in nature; thus, both of them are relative phenomena. One difference between them is, however, that the absolute amount of resources is bigger in an abundant society where, as a consequence, the struggle for profits derived from the control of resources becomes fiercer. This is indicated by the intensity of factional fighting in such resource-abundant countries as Angola, Zaire/Congo, and Liberia. On the other hand, in a scarce society the human consequences of warfare are, due to the lack of economic cushion, always devastating, as the case of Afghanistan shows. In the case of scarcity, those excluded from the use of resources, especially food and water, often perish or, at least, they have to escape and become environmental refugees. This may be also the case in resource-rich countries, but in them there are more alternatives.

The distributive and relative nature of scarcity means that it is not necessarily a natural condition, but it is often "socially generated" and "deliberately manufactured." Certainly, scarcity can be innate due to the domestic system of power that maintains inequities and limits access to resources. On the other hand, it can also be "manufactured" by external agents, such international financial institutions, that can impose on a country's poli-

42. *See id.*

43. *See* PHILIPPE DE LEBILLON, A LAND CURSED BY ITS WEALTH? ANGOLA'S WAR ECONOMY 1975-99 (World Inst. for Dev. Econ. Res., Research in Progress Series, 1999); INST. FOR SEC. STUD., ANGOLA'S WAR ECONOMY: THE ROLE OF OIL AND DIAMONDS (Jackie Cilliers & Christian Dietrich eds., 2000).

44. *See generally* JOHN L. HIRSCH, SIERRA LEONE: DIAMONDS AND THE STRUGGLE FOR DEMOCRACY (2001).

cies of economic austerity and retrenchment.[45] In the extreme case of intentionally produced scarcity and suffering, we can speak of a predatory State in which resources are exploited, more or less exclusively, by the ruling elite for its own benefit.

This pessimistic view has been reinforced by recent research showing that even absolute scarcity does not prevent warlords and commercial middlemen from exploiting the people and, thus, enriching themselves. In fact, there is an emerging strand of research providing extensive documentation that even in civil wars and famines there are political and military factions that grow richer and more powerful at the expense of the suffering masses. As the cases of Tajikistan, Sudan, and former Yugoslavia clearly show, many civil wars have become a shadow industry, and, in a sense, a form of organized crime. In such wars, economic motives play a major role and contribute to the prolongation of fighting and suffering.[46]

If the absolute amount of resources in a society is high, the average risk of death is usually smaller. However, if the resources are valuable and tradable, the leading political and military elite is able to exploit them and create an independent economic base for the undemocratic exercise of their power. Resource-rich societies have a tendency to be "cursed" and become politically polarized and corrupted. Resources generate rents that the elite can use to establish a client list and centralized system of power. In such a case, non-representative political systems are maintained by the resource rents. In extreme cases, such as Iraq and Zaire, autocratic rulers can create a system in which people suffer even from absolute economic deprivation and are, moreover, subjected to political repression and physical violence.[47]

In sum, in resource conflicts, there are two main routes to violence: either (a) scarcity creates a competitive situation that forces people to fight each other for the control of land, water, and other resources; or (b) a rent-seeking society develops a vertical pattern of economic deprivation, political exclusion, and physical repression. In both cases, the key issue is how and by whom resources are divided in society. The present theory and practice of conflict resolution does not have much to say about

45. Nicholas Hildyard, *Blood, Babies and the Social Roots of Conflict, in* ECOLOGY, *supra* note 21, at 3, 13–14.

46. *See generally* DE WAAL, *supra* note 27; KEEN, *supra* note 3; WILLIAM RENO, WARLORD POLITICS AND AFRICAN STATES (1998); ECONOMIE DES GUERRES CIVILES, (François Jean & Jean-Christophe Rufin eds., 1996); GREED AND GRIEVANCE: ECONOMIC AGENDAS IN CIVIL WARS (Mats Berdal & David M. Malone eds., 2000).

47. *See generally* Väyrynen, *supra* note 5.

the resolution of resource conflicts; neither do external pressures and incentives provide any easy remedies to deep-seated structural problems in society. In many cases, the only solution seems to be the redistribution of power by a social revolution—informed increasingly by religious and ethnic identities rather than by traditional political ideologies.

Conflict can also be horizontal when resource-rich regions and their people are excluded by other power centers from enjoying the benefits of their assets.[48] If the income from the exploitation of natural resources benefits primarily the center and its ruling elite, the situation obviously fuels resentment and even secessionism in relation to the central government. The Niger delta region in Nigeria is an example of such an exploited, resource-rich region where people rebel against the government.[49] In addition to human misery, the biodiversity and water supply of the delta have been suffering from the oil production. Bougainville provides another and rather extreme example of how the environmental destruction by strip mining has mobilized political and cultural resistance to the lopsided exploitation of abundant natural resources.[50]

On the other hand, resource-rich regions have a tendency to demand a greater control of the profits derived from the exploitation of their resources. This obviously undermines the position of the central government and its capability to keep its country together. This development can be observed, for instance, in Russia and Indonesia. In the latter, much of the mineral wealth is concentrated in four of its provinces among which at least Aceh and Irian Jaya are demanding greater political autonomy or even independence.

III. Environmental Security

A. *A Classification of Threats*

Much of the recent literature on environmental conflicts has focused on the concept of environmental security. The discussion has dealt with different components of the concept and, in particular, the problem of its scope. Both narrow and comprehensive definitions of security, the latter including the environmental dimensions, have their advocates. In addition, there are methodological disputes on how to best approach the concept of

48. *See* Völker Böge, *Mining, Environmental Degradation and War: The Bougainville Case, in* Ecology, *supra* note 21, at 211.

49. *See id.*

50. *See generally* Böge, *supra* note 48.

environmental security.[51] The purpose of this article is not, however, to delve into these issues, but to approach the concept from a somewhat different angle.

The security aspects of resource and environmental conflicts are quite different. Resources are conventionally divided into renewable or non-renewable ones. Despite the difference in their renewal, resources are, in most cases, divisible between the parties. In social terms, the main difference between these two types of resources concerns the inter-generational equity. The struggle for non-renewable resources, their overuse, and division between the parties reduce the opportunities of the coming generations to consume them. However, this "shadow of the future," due to scarcity and inequity, is not usually strong enough to discourage the parties from continuing and even escalating the resource conflict.

International environmental threats can be divided into three main categories: competitive, contaminating, and contextual threats.[52] Competitive threats are due to the rivalries over divisible resources among States and other relevant actors. Contaminating threats result from cross-border pollution, whether carried by air or water. Contextual threats concern all of humankind and cannot be easily divided between its individual or collective members. Global warming and the thinning of the ozone layer are the best-known examples of such contextual threats. Competitive threats concern the use of resources, while contaminating and contextual threats are environmental in the economic sense of the word.

In the taxonomic effort below, I have tried to characterize the types of environmental threats by the following criteria: divisibility of resources concerned, the political intentionality of action producing the threat, the probability of the environmental risk, the extent of its putative impact in terms of human costs, and the time span during which the risk usually materializes. The result is summarized in the following table:[53]

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51. *See* BARRY BUZAN ET AL., SECURITY: A NEW FRAMEWORK FOR ANALYSIS, 71–93 (1998); Daniel Deudney, *Bringing Nature Back In: Geopolitical Theory from the Greeks to the Global Era*, *in* CONTESTED GROUNDS, *supra* note 16, at 25; Eric Stern, *The Case for Comprehensive Security*, *in* CONTESTED GROUNDS, *supra* note 16, at 127.

52. *See* Raimo Väyrynen, *Environmental Security in a Conflict Zone: The Case of the Korean Peninsula*, *in* PEACE STUD. IN THE COLD WAR ERA 11 (Korean Nat'l Comm'n for UNESCO, 1999).

53. *See id.* at 15–16.

TYPES OF ENVIRONMENTAL THREATS TO HUMAN SECURITY

THREATS	CONTEXTUAL	CONTAMINATING	COMPETITIVE
Divisibility	Indivisible	Divisible	Divisible
Intentionality	Unintended	Unintended	Intended
Time span	Long	Medium	Short
Probability	Low	High	Medium
Impact	Major	Medium	Medium
Example	Ozone layer	Acid rain	Resource conflict

It is clear that almost all the suggestions in this table can be challenged by various counter-arguments. For instance, the divisibility of the burdens of pollution and of resource rivalry among actors is a relative rather than an absolute issue. The uneven structure of national and international societies means that costs and benefits of all "goods" and "bads" can, to some extent, be divided among the participants. In fact, it has been rightly observed that contemporary environmental problems and their human impact can be understood only if they are placed in the context of the highly unequal global division of labor.[54]

Often, though not always, stronger actors get a better deal in distributive struggles. On the other hand, there are multiple examples, ranging from free trade to environmental cooperation, of how weaker actors are free riding and, thus, benefiting from the public goods that stronger actors provide. In fact, what is needed is a variant of the center-periphery model to account for the costs of both the degradation and protection of the environment. The task would then be to estimate the distribution of costs and benefits of various practices and strategies between the center and the periphery.

It is also difficult to assess the issue of the political *intentionality* behind economic and other policies producing environmental threats. If diseases are included as part of the environment, they can be used as an example of intentionality. In recent years, there has been quite some concern about "bioinvasion," the spread of fatal new diseases either among humans (e.g., AIDS and ebola) or animals (mad cow disease) with a potential impact on humans. These diseases have fostered a global feeling of insecurity and created doubts about the capability of public health

54. *See* Michael Redclift & Colin Sage, *Resources, Environmental Degradation, and Inequality, in* INEQUALITY, GLOBALIZATION, AND WORLD POLITICS 122–49 (Andrew Hurrell & Ngaire Woods eds., 1999).

systems to deal with them effectively.[55] Despite widespread concern, it is very rare to argue that the diseases are spread intentionally by some groups or individuals.

On the other hand, "environmental terrorism" clearly embodies the notion of intentionality as all terrorist acts are supposed to be conducted with a political motivation in mind. Thus, one can speak of environmental terrorism when a group uses ecological violence to instill fear in a larger population. Environmental terrorism also may occur when a group's actions clearly break national and international laws banning the use of weapons of mass destruction, harm human life by destroying the environment, and damaging the ecosphere itself.[56]

Yet, the concept of environmental terrorism remains vague (but you will recognize it when you see it). No doubt, the explosion of a dam and flooding the downstream to instill fear in or otherwise harm an adversary is an act of environmental terrorism. Recently, there has been an increasing emphasis in public debates on the risk of using chemical and biological weapons for terrorist purposes. It has been noted that societies are almost defenseless against such health and environmental risks due to potential terrorist acts. On the other hand, it has been pointed out that such looming security threats are easily exaggerated and various defensive remedies to potential terrorist actions could be an expensive and misguided cure.[57]

To my mind, intentionality is a central issue in the definition of environmental security and threats to it. In most explorations, intentionality is either neglected or interpreted very broadly. In the latter case, one possibility is to focus on the consequences of environmental problems, and conclude that all threats that jeopardize the security of the earth and reduce human welfare should be "securitized." In other words, threats to environmental security should be assessed by the consequences of an action irrespective of the singular or collective intentions behind it.

As Radoslav Dimitrov points out, this view leads to the omnipresent, existential interpretation of environmental security.[58]

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55. *See* Janet Ginsburg, *Bioinvasion*, BUS. WK., Sept. 11, 2000, at 70–78; Laurie Garrett, BETRAYAL OF TRUST: THE COLLAPSE OF THE GLOBAL PUBLIC HEALTH 50–120 (2000).

56. *See generally* Daniel M. Schwartz, *Environmental Terrorism: Analyzing the Concept*, 35 J. PEACE RES. 483 (1998).

57. *See* Andrew J. Bacevic, *Bad Medicine for Biological Terror*, 44 ORBIS 221, 233 (2000); *see also* Henry Sokolski, *Rethinking Bio-Chemical Dangers*, 44 ORBIS 207 (2000).

58. *See* Radoslav Dimitrov, The Concept of Environmental Security: Multiple Meanings and Dissimilar Implications 16 (March 15, 2000) (conference

This perspective has been adopted, however, by Marc A. Levy, who notes that "environmental degradation constitutes a direct physical threat to U.S. security interests when environmental damage results directly in the significant loss of life or welfare of U.S. citizens, or otherwise impairs our most important national values."[59] Environmental risks are defined and assessed in this approach by their impact on society, and national security becomes thus equated with individual human security.[60]

I am inclined to define environmental security in more narrow terms by requiring a direct link between the intention and the outcome. In so doing, many environmental risks, short of direct political connections, are left out of the definition. Therefore, while damage done to the ecosystem and human well being by negligence and mismanagement no doubt creates adverse consequences, I would be cautious to "securitize" such threats.[61] The existence of "genuine" security risks requires that someone has an intention to inflict harm upon others and sufficient means to do so. By linking the intention and effect, I am suggesting that the existence of security threats implies almost a criminal motive for which an individual or collective actor can be held accountable.

Otherwise, one has to convert the study of security into the investigation of "system effects" which are due to the indirect, delayed, non-linear, and complex consequences of social action.[62] My purpose is not to deny the complexity and multidimensionality of security problems, but rather to emphasize that they should be studied as results of intentional and, thus, accountable actions. Then, the analysis remains actor-centric, instead of being system-centric, and explores the causal relations between environmental factors and violence.[63]

Finally, the time span, likelihood, and the human impact of different types of environmental threats are also difficult to estimate. The recognition of the fact that environmental risks may

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paper, on file with author); *see also* Simon Dalby, *Contesting an Essential Complex: Reading the Dilemmas in Contemporary Security Discourse, in* CRITICAL SECURITY STUDIES: CONCEPTS AND CASES 3, 15–18 (Keith Krause & Michael C. Williams eds., 1997).

59. Marc A. Levy, *Is Environment a National Security Issue?*, 20 INT'L SECURITY 35, 46 (1996).

60. *See generally* BUZAN ET AL., *supra* note 51, at 23–46 (describing "securitization" and the method of using it in the study of security).

61. *Id.* (describing the idea of "securitization" and the method of using it in the study of the concept and problem of security).

62. ROBERT JERVIS, SYSTEM EFFECTS: COMPLEXITY IN POLITICAL AND SOCIAL LIFE 27–37 (1997).

63. *Cf.* BÄCHLER, VIOLENCE, *supra* note 21, at 44-49.

have a long gestation period and their likelihood and impact varies helps to modify the earlier emphasis on their directed and intentional nature. In other words, the effort to trace the intentionality and accountability of threats to security may require a laborious effort to get to their root causes over time and space.

B. *Resource Conflicts and Security*

The framework developed above is easy to apply to resource conflicts as they are usually due to intentional actions by the parties over divisible assets. The parties to a conflict struggle for the access to natural resources to derive financial and political benefits from the control or sale of these assets. Resource conflicts have almost always had a territorial dimension, and thus, they have implications for national sovereignty. The role of natural resources varies obviously from one conflict to another and are hardly ever the sole cause of war, but a part of the larger pattern of causes.

Thus, neither the Ecuadorian-Peruvian nor the Ethiopian-Eritrean border war was fought for the control of resources, but they have been motivated more by historical reasons and the elite definitions of national prestige. On the other hand, the conflict in the South China Sea can hardly be understood without considering the resource factor, including oil and fisheries. As a result, military tensions in the area can be fully contained only if a joint and effective regional regime is developed to share and manage resources.[64]

Analyses of resource wars have become more abundant in recent years. Serious research refuses, however, to attribute a central role to resources as a cause and trigger of collective violence.[65] Yet, resource factors are today a more potent cause of violent conflicts than environmental/ecological factors more broadly understood. This is largely due to the fact that the implications of resource disputes for national and economic security are more immediate, direct, and tangible. Any number of authors has exaggerated the role of environmental problems as security threats. In reality, they have given rise to only limited security problems—one does not simply go to war because of the acid rain or river pollution that your neighbor engenders.

If we move from the national, actor-centric interpretation of security to the concept of human security, which is more compre-

64. *See generally* Francisco A. Mango, *Environmental Security in the South China Sea*, 28 SECURITY DIALOGUE 97 (1997); DUPONT, *supra* note 38.

65. Often equivocating on this point, see THOMAS F. HOMER-DIXON, ENVIRONMENT, SCARCITY, AND VIOLENCE (1998).

hensive in scope, we probably have to admit the growing relevance of environmental threats. Although such threats do not jeopardize national security, they may well be damaging to individuals because of the skin cancer or dioxin in water. However, the tracing of environmental threats is a difficult and time-consuming task. Such risks tend to sneak into the human body and have hidden and delayed effects rather than use the front door for a direct attack. The individualization of security risks has its drawbacks, however, not least for the reason that individual responses (e.g., to avoid sun or not to drink contaminated water) do not match collective intentionality. In the end, individual intentionality can only be derived from collective intentionality.[66]

CONCLUSION

The resolution of environmental conflicts cannot be discussed in isolation of their origins, character, and development. This article has suggested that the key difference in the ecological conflict sphere lies between resource conflicts and environmental conflicts. They are distinguished from each other, among other things, by the nature and divisibility of the values involved. Resource conflicts amount to a disagreement on the distribution of a positive asset, which usually has a market value; the more valuable and tradable the commodity, the bigger is its pecuniary significance for the parties involved. As a result, they want to control the resource, its market, and its price in order to benefit from it.

The main method used to control marketable resources is their privatization, often irrespective of the costs engendered to other participants. The exploitation of a natural resource invariably produces externalities which can be either positive (e.g., value-added derived from their processing) or negative (e.g., pollution), and either unidirectional or mutual in nature. Positive externalities are, as a rule, divided between the actors in the market, while the management of negative externalities engender a burden-sharing problem as a part of the general collective action problem for the community concerned. Such management also calls to draw up rules and regulations concerning the production and distribution of negative externalities.[67] Conflicts over natural resources can be either "macro-political" or "micro-political."

66. JOHN R. SEARLE, CONSTRUCTION OF SOCIAL REALITY 24–25 (1995).

67. For a more detailed analysis of externalities, see TODD SANDLER, GLOBAL CHALLENGES: AN APPROACH TO ENVIRONMENTAL, POLITICAL, AND ECONOMIC PROBLEMS (1997).

By macro-political resource conflicts, I refer to major wars between States or within States between the government and opposition on the control of an important source of resource. The oil factor behind both the Iraqi occupation of Kuwait and the response of the U.S.-led coalition clearly make it a macro-political resource conflict. On the other hand, the fight of parties to a civil war over the control of a diamond mine (Sierra Leone and Angola), drug-producing region (Columbia and Burma), or a strategic factory (Tajikistan and Bosnia) refers to a micro-political resource conflict in which the source of war finances is at stake.

Environmental factors are different in that they usually cannot be privatized because they are not divisible and/or they do not have a standard market value. Instead, they are natural parts of the ecosystem to which human beings also belong. Often environmental problems result as an externality from the utilization of divisible natural resources by public authorities or market actors. As companies, and autocratic States for that matter, have only individual rationality, they will not take collective responsibility for the consequences of their actions unless the community decides about appropriate rules and enforces them.

The governance of negative environmental externalities is a major domestic and international issue, which creates a conflict over burden sharing. One of the key problems is how burden sharing can be linked up with profit sharing in the exploitation of a resource that has created environmental externalities in the first place. In other words, how those who benefit from the exploitation of resources contribute to the management of negative environmental externalities. This problem can be approached both by means of State intervention to set up environmental conventions and also through market-like arrangements, such as tradable pollution permits.[68]

The resource and environmental conflicts are fundamentally different, yet deeply interrelated. The market conflicts over resources are solved, in part, by means of commercial competition and, in part, by means of State intervention. The commercial conflict is supposed to be settled where it happens, *viz.* in the market. If the intervention of the State by means of protectionism, subsidies, and discriminatory legislation becomes excessive, then the standard methods to solve international economic con-

68. *See* Geoffrey Heal, *New Strategies for the Provision of Global Public Goods: Learning from International Environmental Challenges*, *in* GLOBAL PUBLIC GOODS: INTERNATIONAL COOPERATION IN THE 21ST CENTURY 220 (Inge Kaul et al. eds., 1999).

flicts are used. They include, for instance, the application of the regional competition policy, which is well developed especially in the European Union, or they resort to the dispute settlement mechanism of the World Trade Organization. In fact, there are several mechanisms and methods to solve market-related disputes between the parties.[69]

The mechanisms to resolve environmental conflicts are quite different when compared with resource conflicts, especially if they concern the distribution of the environmental protection costs. In the absence of any supreme international political or legal authority, governments must come to an agreement through voluntary negotiations. The bargaining process obviously uses all standard techniques of influence ranging from persuasion to blackmailing and even coercion.

Negotiations about international environmental agreements and burden sharing of the costs of their implementation and enforcement are not, however, primarily about power politics. Recently, it has been increasingly stressed that a facilitative and supportive approach, including capacity building, is more effective in ensuring compliance with the environmental and other international norms.[70] On the other hand, it has been noted that this "transformational" approach has not generated very effective normative and institutional systems of governance as shown by the allegedly limited accomplishments of various international environmental treaties. Using additional evidence, a group of authors suggest that non-transformational agreements may produce deeper cooperation and more effective enforcement practices.[71]

In sum, the conflict over the burden sharing of the protection costs of the ecosystem against pollution and contamination has to take place through appropriate regimes. Sometimes, it is assumed that these regimes will emerge through a "benign" political process for which the "epistemic communities" have laid the groundwork. In reality, however, environmental regimes are often results of hard bargaining between governments, non-gov-

69. *See* Beth V. Yarborough & Robert M. Yarborough, *Dispute Settlement in International Trade: Regionalism and Procedural Coordination, in* THE POLITICAL ECONOMY OF REGIONALISM 134 (Edward D. Mansfield & Helen V. Milner eds., 1997).

70. *See generally* ABRAM CHAYES & ANTONIA HANDLER CHAYES, THE NEW SOVEREIGNTY: COMPLIANCE WITH INTERNATIONAL REGULATORY AGREEMENTS (1995).

71. *See generally* George W. Downs et al., *The Transformational Model of International Regime Design: Triumph of Hope or Experience*, 38 COLUM. J. TRANSNAT'L L. 465 (2000).

ernmental organizations, and transnational corporations. Moreover, the field of environmental problems is so complex that there is no simple regime solution to all of them. Each specific environmental problem, and conflict associated with it, requires its own solution[72]

In the beginning of this paper, attention was paid to the changing nature of violence in the international system. Interstate wars and perhaps even civil wars are becoming more rare, and a new type of fragmented "infrapolitical" violence is emerging. Obviously, resource conflicts are more closely related to this kind of decentralized violence than environmental conflicts. The armies of warlords and urban gangs need financial resources to be able to grab local power and its material spoils. These assets may be natural resources, such as diamonds and hardwood, but often they are not thought of as a resource. Drugs and parts of endangered species, such as ivory, are "new" types of resources that are used to finance warfare. Traditional techniques of conflict resolution are seldom helpful in the efforts to mitigate and resolve these kinds of micro-political resource conflicts.[73]

Against this backdrop, environmental conflicts are different. They are more structured, and the contested issues are more clearly defined. Key actors are governments, non-governmental organizations, and corporations rather than criminal gangs and ethnic clans. Therefore, standard conflict resolution techniques may be more appropriate in their case. A main problem is that the costs of protecting the environment against deterioration are so huge and affect the entire society so deeply that compromises on the standards and methods of protection are difficult to come by. For this reason, financial burden sharing is politically difficult to agree on, although various analytical approaches exist to solve the conflict.

In the resource conflict, the ultimate issue is "who gets what, how much, and by what means," while in the environmental conflict the query is "who pays, how much, and to whom?" As a rule, winners in resource conflicts are reluctant to contribute to the burden sharing of managing the consequences of even their own actions. However, in the end, the rules of the exploitation of the

72. *See generally* Matthijs Hisschemöller & Joyeeta Gupta, *Problem-Solving through International Environmental Agreement: The Issue of Regime Effectiveness*, 20 INT'L POL. SCI. REV. 151 (1999).

73. *See* Raimo Väyrynen, *Weak States and Humanitarian Emergencies: Failure, Predation, and Rent-Seeking*, *in* 2 WEAK STATES AND VULNERABLE ECONOMIES: HUMANITARIAN EMERGENCIES IN DEVELOPING COUNTRIES 437 (E. Wayne Natziger et al. eds., 2000).

global resource endowment cannot be delinked from the management of the global environmental problems as they stand in a cause-effect relationship, albeit complex and indirect, to each other.