Environmental Scarcity and Violent Conflict: The Case of Rwanda

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On April 6, 1994, President Juvenal Habyarimana's plane exploded in the skies above the Kigali region of Rwanda. Violence gripped the country. Between April and August of 1994, as many as 1 million people were killed and more than 2 million people became refugees. Until this recent violence, Rwanda had a population of 7.5 million, a population growth rate estimated at about 3%, and a population density among the highest in Africa. Ninety-five percent of the population resided in the countryside, and 90% relied on agriculture to sustain themselves. Land scarcity and degradation threatened the ability of food production to keep pace with population growth. Rwanda can be described as a country with severe demographic stress, relying for subsistence on a limited resource base. Although environmental factors were significant development issues, environmental scarcity had at most a limited, aggravating role in the recent conflict.

Introduction

As renewable resources, such as arable cropland, fish stocks, fuel wood, and potable water supplies, become ever more scarce, attention has focused on the potential relationship between these scarcities and the outbreak of civil strife. A number of articles in scholarly journals and the popular press have asserted provocatively that there are general links between environmental stress and violence.[1] Studies of civil strife in El Salvador, Haiti, Peru, the Philippines, and the West Bank[2] indicate a strong link among renewable resource scarcities, escalating grievances, and the outbreak of violence.

When Rwanda exploded into genocidal anarchy in April of 1994, some commentators claimed that environmental and demographic factors were powerful forces behind this violence (Gibbs, 1994; also "From Rwanda to Cairo", 1994; Brown & Kane, 1994). On first impression, the

1. See, for example, Brown (1990), Gleick (1989), Homer-Dixon (1991, 1994), Kaplan (1994), Mathews (1989), or Ullman (1983).

2. For the case of El Salvador, see Durham (1979). For Haiti, see Abbot (1991). For Peru, see McClintock (1984, 1989). For the Philippines, see Porter and Ganapin (1988). For the Middle East, see Berschorer (1992) and Lowi (1992).

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recent genocide in Rwanda appears to be a clear case of environment and population pressures producing social stress, which in turn resulted in violent conflict. Rwanda is predominantly a rural-based society that relies on agriculture to sustain its economy and consequently is vulnerable to the effects of environmental stress.[3] Environmental degradation and population growth are critical issues in Rwanda; before the recent violence, they clearly threatened the welfare of the general population.

Closer study reveals, however, that environmental factors do not provide an adequate explanation of the genocide in Rwanda. Environmental degradation and high population levels contributed to migrations, declining agricultural productivity, and the weakening of the legitimacy of President Juvenal Habyarimana's regime. Still, a correlation between the scarcities of renewable resources and the outbreak of violence is not adequate proof that the violence was caused primarily by resource scarcity. Analysts must trace carefully how environmental factors contribute to the forces that produce violence. Although environmental scarcities have proven to be powerful factors in other cases,[4] careful analysis demonstrates that environmental scarcities had at most a limited, aggravating role in the civil strife within Rwanda.

This article begins with an overview of the theoretical relationship between environmental scarcity and violent conflict. A description of the Rwandan political and social context with an overview of the factors leading to the genocide is followed by a discussion of the scarcities of environmental resources within Rwanda and the social effects of this scarcity. Three hypotheses outlining some possible links between scarcity and conflict in the Rwandan context are presented, and we explain why these hypotheses cannot fully explain the events following the assassination of the president. The conclusion then offers a fourth explanation that identifies a more limited role for environmental scarcity and places it in the context of the many other factors that led to the genocide.

Environmental Scarcity: A Theoretical Overview

The environmental effects of human activity are a function of two factors: the vulnerability of the ecosystem and the product of the total population and that population's physical activity per capita in the region (Homer-Dixon, 1991, p. 85). Homer-Dixon uses the term

3. Although agricultural production accounted for approximately 40% of the gross national product, most of Rwanda's foreign-exchange export earnings came from coffee (Geographic Research Paper, 1994, p. 2).

4. See the case studies listed in note 2. Other cases that demonstrate a strong relationship between environmental scarcity and violence include Gizewski and Homer-Dixon (1996), Howard and Homer-Dixon (1996), Kelly and Homer-Dixon (1996), and Percival and Homer-Dixon (1995).

"environmental scarcity" to refer to scarcity of renewable resources, and he identifies scarcities of agricultural land, forests, water, and fish as the environmental problems that contribute most to violence (Homer-Dixon, 1994, p. 7). These scarcities, however, contribute to violence only under certain circumstances; there is no inevitable or deterministic connection between these variables. The nature of the ecosystem, the social relations within society, and the opportunities for organized violence all affect causal linkages.

Environmental scarcity arises in three ways: Demand-induced scarcity is a result of population growth in a region, supply-induced scarcity arises from the degradation of resources, and structural scarcity occurs because of the unequal social distribution of these resources. These three types of scarcity are not mutually exclusive: They often occur simultaneously and interact with one another (Homer-Dixon, 1994, pp. 8-11).

Environmental scarcity produces four principal social effects: decreased agricultural potential, regional economic decline, population displacement, and the disruption of legitimized and authoritative institutions and social relations (Homer-Dixon, 1991, p. 91). These social effects, either singly or in combination, can produce and exacerbate conflict between groups. Most such conflict is subnational, diffuse, and persistent (Homer-Dixon, 1994, p. 6). For conflict to break out, the societal balance of power must provide the opportunity for grievances to be expressed as challenges to authority. When grievances are articulated by groups organized around clear social cleavages, such as ethnicity or religion, the probability of civil violence is higher (Homer-Dixon, 1994, p. 27). Under situations of environmental scarcity, in which group affiliation aids survival, intergroup competition on the basis of relative gains is likely to increase. "As different ethnic and cultural groups are propelled together under circumstances of deprivation and stress, we should expect inter-group hostilities, in which a group would emphasize its own identity while denigrating, discriminating against, and attacking outsiders" (Homer-Dixon, 1991, p. 108).

Overview of the Rwandan Case

ETHNIC CLEAVAGES IN RWANDA

The recent violence in Rwanda has been described as a tribal war between Hutu and Tutsi, rooted in centuries-long competition for control of land and power. A close examination of Rwanda's history, however, shows that the terms "Hutu" and "Tutsi" were largely constructed social categories representing differing socioeconomic positions within Rwandan society rather than objective biological or cultural differences (Newbury, 1988). The Hutu-Tutsi distinction derives from a precolonial

social structure that distinguished between cultivators and pastoralists (Gaffney, 1994, p. 1). Before the growth of central power and colonial domination, the boundaries between the Hutu and Tutsi were fluid. A variety of criteria determined ethnic affiliation: birth, wealth, culture, place of origin, physical attributes, and social and marriage ties (Newbury, 1988, p. 51). Perhaps the greatest determinant of ethnicity was the possession of cattle: Those who possessed cattle were Tutsi, and those who did not were Hutu.

With the growth of precolonial state power, Tutsi and Hutu became important political categories. With the establishment of colonialism, the boundaries of ethnic categories were thickened. It became increasingly difficult to alter one's social status or ethnic grouping. The disadvantages of being Hutu and the advantages of being Tutsi were sharpened under first German and then Belgian colonial rule (Newbury, 1988, p. 52). Virtually all the chiefs appointed during this period were Tutsi, and their power grew with the imposition of colonial institutions. These shifts created the popular view that being Tutsi was synonymous with having wealth and power, whereas being Hutu was synonymous with subordination (Newbury, 1988, p. 179). Political consciousness and discontent developed among the Hutu. The Hutu leadership articulated and channeled this frustration, producing the Hutu uprisings of 1959 and eventually Rwandan independence in July, 1962 (Newbury, 1988, pp. 181, 196, 198). Political power remained in the hands of the Hutu majority. Independence was followed by heightened ethnic violence between Hutu and Tutsi, causing flows of Tutsi refugees from Rwanda to Uganda, Tanzania, Zaire, and Burundi.

The perception within Rwanda that independence was an ethnic struggle between Hutu and Tutsi for control of the state apparatus—a "Hutu revolution"—set the tone of politics up to the present. Ethnic categories were fostered and manipulated by the Hutu-dominated government to maintain power and popular support. Identity cards were issued; the high rate of intermarriage among Rwandans made it impossible to establish ethnic identity without them. Employment and education opportunities were limited for Tutsi because of an unofficial quota system introduced in 1973 (Grosse, 1994b, pp. 8-9).

CIVIL WAR: 1990-1992

The recent violence within Rwanda had its origins in the October, 1990, attack by the Rwandan Patriotic Front (RPF) from its bases in Uganda. Predominantly of Tutsi origin, many of the members of the RPF were refugees, or descendants of refugees, who fled Rwanda during the postcolonial establishment of a Hutu-dominated government in the early 1960s. The RPF proved to be a skilled fighting force. Its leadership and soldiers had gained valuable military experience fighting with

Yoweri Museveni's National Resistance Army in western Uganda. After the expatriates from Rwanda participated in the successful overthrow of Ugandan leader Milton Obote in 1985, they created the RPF. The Front's leaders timed an invasion of Rwanda from Uganda to exploit growing domestic opposition against President Habyarimana's regime (Gaffney, 1994, p. 2). After some initial setbacks, by 1992 the RPF had captured a significant portion of northern Rwanda (Watson, 1992, p. 53).

The RPF's invasion and the subsequent two years of civil war placed a great deal of stress on the Rwandan government and its citizens. At the same time, international lenders forced the government to implement a structural adjustment policy, which, coupled with a drought in the early 1990s, fueled domestic opposition to the Habyarimana regime. Therefore, the government simultaneously faced a threat from the RPF and growing pressure for democratization within Rwanda, spurred, in part, by the structural adjustment policy. It systematically arrested anyone suspected of antigovernment sentiments: More than 8,000 people were arrested immediately after the invasion. The slow movement toward multiparty democracy ended, and local authorities began to actively promote and lead attacks on Tutsi and all those who opposed the government (Jefferson, 1992, pp. 63-64). By 1992, the civil war had displaced one tenth of the population, and the RPF controlled key tea-, coffee-, and food-producing areas, greatly reducing government revenues (Watson, 1992, p. 55).

As the civil war continued in the north, opposition to the government increased in Kigali. International donors also placed Habyarimana under significant pressure to increase democratization measures and begin a dialogue with the RPF. Habyarimana responded in two ways. First, he introduced a multiparty system and a coalition government in April of 1992, juggling alliances to retain control of the state apparatus. Second, he conspired with the two political parties that he controlled, the National Republican Movement for Democracy and Development (MRND) and the Hutu-extremist Committee for the Defense of the Republic (CDR), to undermine the democratization and peace processes. Together, they formed militias known as the Interahamwe (those who attack together) and the Impuzamugambi (those who have the same goal). The militias received weapons from the army and killed hundreds of civilians suspected of antigovernment activities (Hilsum, 1994, p. 14).

NEGOTIATION AND THE ARUSHA ACCORDS, 1992-1994

On July 31, 1992, a precarious cease-fire came into effect, and negotiations between the RPF and the government began in earnest in Arusha, Tanzania (Watson, 1992, p. 52). These negotiations were concluded in August of 1993, and the agreement reached provided for the formation of a broad-based transitional government. The RPF and the Rwandan

army together would form a smaller, united national army (Hilsum, 1994, p. 14). Although Habyarimana would remain president during the transition period, specified ministerial positions were allocated to members of the RPF and other political parties. Elections were scheduled to be held 22 months after the transitional government took office (Hilsum, 1994, p. 15). Many members of the Habyarimana government, including the CDR, were unhappy with the Arusha Accords, which gave the RPF significant power: RPF members would control key ministries and would hold a great deal of influence in the army.

Habyarimana continued his two-track policy: He appeared to cooperate with international efforts to implement the Arusha Accords while simultaneously working to maintain his hold on power through the militias (Hilsum, 1994, p. 15). Habyarimana and the CDR used every possible opportunity to increase social cleavages to create animosity toward the RPF. Two events were exploited to their fullest to incite anti-RPF and anti-Tutsi sentiments. First, the October, 1993, massacres in Burundi were used to create and fuel fears of the RPF; the killings were to a large degree carried out by Burundi's Tutsi-dominated army. Second, on February 21, 1994, Felicien Gatabazi, the leader of Rwanda's Social Democratic Party, was killed by assassins. In retaliation, a senior CDR official in Gatabazi's hometown was murdered. The CDR quickly organized violence in Kigali. CDR members killed several hundred people, with the majority of those targeted Tutsi (Watson, 1994).

GENOCIDE: APRIL TO JULY, 1994

On April 6, 1994, Habyarimana's plane exploded in the skies above Kigali. Although those responsible for Habyarimana's death have not yet been identified, Belgian peacekeepers reported seeing two rockets fired toward his plane from the vicinity of a camp belonging to the Rwandan Presidential Guard and army commandos (Lorch, 1994a). Within hours of the plane crash, the Presidential Guard, the army, the Interahamwe, and the Impuzamugambi mounted roadblocks. They attempted to exploit the death of Habyarimana and to use it as a spark to ignite an anti-Tutsi backlash. The army and militias began a systematic sweep of the city, killing members of the transitional government and other civilians (Lorch, 1994a). The killings had three goals: to eliminate the opposition, to eradicate the country of all Tutsi, and to continue fighting the RPF (Newbury, 1994). The UN forces, present in Rwanda to monitor the implementation of the Arusha Accords, lacked the mandate to act decisively and were refused permission by the United Nations Security Council to intervene in the massacres. Forced to withdraw from the streets of Kigali, they could only provide shelter and food, but not necessarily protection, for Rwandans hiding from the government troops (Lorch, 1994b). Much of the United Nations' attention became

focused on establishing a cease-fire between the government forces and the RPF, rather than on stopping the massacre of civilians by the militias and their followers (Hilsum, 1994, p. 17).

From Kigali, the violence spread quickly throughout the country, planned, ordered, and encouraged by the army and Rwandan government officials (Bonner, 1994a). The RPF responded with an offensive from the north; by July, it had taken control of most of the country and established an interim government (Picard, 1994), which included many members of the transitional government initially established by the Arusha Accords (Bonner, 1994b). Members of the former Habyarimana government, the army, and the militias fled first to the zone established by French troops in the southwest of the country and then to the refugee camps in Zaire and Tanzania ("Tutsi forces," 1994).

Environmental Scarcity in Rwanda

THE DEVELOPMENT OF ENVIRONMENTAL SCARCITY IN RWANDA

Ecosystem Vulnerability

Rwanda's ecosystem is extremely diverse, which makes it difficult to generalize about its vulnerability to population pressures and resource degradation. Rwanda is part of the Great East African Plateau; from swamps and lakes along the Tanzanian border, the plateau rises toward the highlands in the northwest and southwest. The country has a moderate climate, with temperature varying according to altitude. Precipitation is sporadic in the east and more regular in the west (Geographic Research Paper, 1994, p. 10). The steep slopes of the western region are vulnerable to erosion, and some of Rwanda's worst environmental degradation is found in the southwest (Grosse, 1994a, p. 9). The central area of the country has been settled and cultivated for centuries, whereas the eastern portion of the country was traditionally the cattle-grazing area and has only recently been brought under cultivation. Because of the low precipitation in this area, agricultural production is unreliable (Grosse, 1994a, p. 9).

Population Size and Activity

Until the recent civil violence and mass refugee flows, Rwanda had a high population density and growth rate. In 1992, Rwanda's population was 7.5 million, with a growth rate estimated at 3.3% per year from 1985 to 1990 (United Nations Environment Program, 1993, p. 217). The population density was roughly 290 inhabitants per square kilometer, among the highest in Africa; the per hectare density was 3.2 people in 1993.[5] If

5. See Table 17.1, "Land Area and Use, 1979-91," in World Resources Institute (1994, p. 284).

lakes, national parks, and forest reserves are excluded from this calculation, the figure increases to 422 people per square kilometer (Waller, 1993, p. 18). The 1990 census determined that the birth rate was declining sharply. It dropped from 54.1 to 45.9 per thousand, as couples delayed marriage and decided to limit the number of their children. Poor and deteriorating economic circumstances resulting from worsening land shortages, few opportunities off the farm, and declining agricultural productivity influenced decisions to have fewer children. The decline in birthrates was most dramatic in the southwest and northwest (Olson, 1994, pp. 5-6).

Before the recent violence, most Rwandans relied almost exclusively on renewable resources, such as agricultural land, to sustain themselves. Ninety-five percent of the population lived in the countryside, and 90% of the labor force relied on agriculture as its primary means of livelihood (Waller, 1993, p. 18). Rural-urban migration was not significant; only 6% of Rwanda's population lived in urban areas in 1990, and the annual urban growth rate decreased from 5.6% during 1955-1960 to 4.9% in 1985-1990.[6]

EFFECTS OF ENVIRONMENTAL SCARCITY IN RWANDA

With a large and dense population dependent for its livelihood on extraction of natural resources from a deteriorating resource base, Rwanda clearly exhibited both demand- and supply-induced environmental scarcity; structural scarcity was not serious, primarily because land was evenly distributed throughout the population.[7] Supply-induced scarcity resulted from falling levels of soil fertility, degradation of watersheds, and depletion of forests. Demand-induced scarcity was caused by too many people relying on Rwanda's low supply of land, fuelwood, and water resources (Grosse, 1994a, p. 29).

Prior to the recent conflict, soil fertility had fallen sharply in some parts of Rwanda. Half of the farming in Rwanda occurred on hillsides with slopes of more than 10%; these areas were vulnerable to erosion, particularly under conditions of intense cultivation. On the steepest slopes, heavy rainfall eroded more than eleven tons of soil per hectare per year, with 12 million tons of soil washing into Rwanda's rivers every year (Waller, 1993, p. 23). Although erosion was serious in some parts of Rwanda, soil character in other parts of the country kept erosion moderate (Grosse, 1994a, p. 31). In general, overcultivation, as opposed to erosion, appears to have been the principal factor behind falling fertility. Scott Grosse notes that

6. See Table 4.4, "Trends in Urban Population Size and Average Annual Urban Growth Rate, 1950-90," in United Nations Environment Program (1993, p. 221).

7. The Gini coefficient of land distribution is 0.26 and is indicative of an egalitarian distribution (Grosse, 1994a, p. 41).

> the major perceived cause of decreasing soil fertility in Rwanda is depletion of soil nutrients by cultivation rather than erosion. Even in Ruhengeri, where erosion is the most severe, farmers mention soil exhaustion as a problem much more often than erosion. (Grosse, 1994a, p. 34)

Forest and water scarcity were also serious. Forests cover only 7% of the country. Although deforestation rates have decreased in recent years, in 1986 the Forestry Department estimated that Rwanda was annually using 2.3 million cubic meters of wood more than the amount its forests produced. Ninety-one percent of wood consumption was for domestic use (Waller, 1993, p. 43), and peasants substituted animal manure and crop wastes for scarce fuelwood (Grosse, 1994a, p. 29). Although the Rwandan government began a reforestation campaign, it usually planted eucalyptus trees, which consume large amounts of water and nutrients. Water resources were further constrained as watersheds and wetland areas were lost. These problems were compounded, especially in the southern regions of the country, by several droughts in the 1980s and early 1990s (May, 1995, p. 323). Although the impact of water scarcity on agriculture was harshest in arid regions, in other areas water shortages also became critical for personal, domestic, and industrial needs (Grosse, 1994a, p. 29).

These environmental scarcities began to cause the social effects Homer-Dixon identifies: Agricultural production started to decrease, migrations out of areas of intense environmental stress were commonplace, and the state began to lose legitimacy.[8]

Declining Agricultural Production

By the late 1980s, environmental scarcity caught up with Rwandan agriculture. Supply- and demand-induced scarcity gravely stressed the ability of food production to keep pace with population growth. The agricultural frontier had closed. There was little land available for agricultural expansion, and the number of people placing demands on existing cropland increased. Farmers, forced to increase the intensity of agriculture, began to cultivate their fields two to three times per year (Geographic Research Paper, 1994, p. 2).

In terms of per capita food production, Rwanda was transformed from one of sub-Saharan Africa's top three performers in the early 1980s to one of its worst in the late 1980s (Grosse, 1994a, p. 19). Food output had risen 4.7% annually from 1966 to 1982, outpacing the average population growth rate of 3.4% (Geographic Research Paper, 1994, p. 4), but much of this rise resulted from an expansion of cropland area and a reduction in fallow periods, not from an increase in technical inputs, such as

8. Economic decline is the fourth factor that is an indicator or social effect of environmental stress. Although the Rwandan economy was suffering, the effect of environmental stress on the Rwandan economy is difficult to isolate from the effect of falling coffee prices, structural adjustment policies, and the disruption of the civil war.

fertilizer and improved seeds (Olson, 1994, pp. 2-3; Grosse, 1994b, p. 11). These trends continued in the 1980s: Rwanda's cropland area increased by 12.9% between 1981 and 1991, and fertilizer use remained negligible.[9] By the late 1980s, however, most available land was under cultivation, as rural migrations had established a relatively even distribution of population across the countryside (Campbell, 1994, pp. 19-20). As the agricultural frontier closed and the population continued to grow, per capita agricultural output began to drop (Grosse, 1994a, p. 21). Although total output increased by 10% from the early 1980s to the early 1990s, per capita output fell nearly 20%[10]

As a result, there was not enough food in the southern and western parts of the country. In 1989, 300,000 people, predominantly southerners, needed food aid because of crop failure. In 1994, analysts anticipated another food crisis:

> The US Embassy estimated in early April that 1994 production would fall 9 to 17 percent below the 1990-93 average of 4.38 million metric tons because of drought and that the total 1994 food crop shortfall could run to 150,000 to 320,000 metric tons. Output of bananas was estimated at 8 to 15 percent below average. According to the Embassy, the drought has been hardest on crops normally planted in the September through January growing period and worse in the southern prefectures, including Cyangugu, Gikongoro, Butare, southern Kibuye, and western Giatarama. USAID officials calculated in late April that more than 500,000 people were already receiving food aid, primarily beans and corn, from relief organizations. (Geographic Research Paper, 1994, p. 5)

It is important to incorporate the regional nature of agricultural production into any analysis of environment-conflict links in Rwanda. Farmers in the northwest were able to maintain higher productivity and to grow higher-value produce, such as white potatoes. They also received favorable development investment because of the regional bias of the central government (President Habyarimana's home region was the northwest). Consequently, the situation in the northwest was less critical than that in the southern portion of the country (Olson, 1995, pp. 4-5).

9. See Table 17.1, "Land Area and Use 1979-91," in World Resources Institute (1994, p. 284). Grosse (1994a, p. 23) reports that this figure could be inaccurate:

> One researcher who has worked at DSA [Data Survey Analysis] reports that the sample frame used for the 1989 and 1990 surveys over-sampled relatively degraded areas with low soil fertility in the Southwest and relatively dry areas in the Southeast with larger farm size and also lower productivity. . . . This may account for part of the apparent increase in land area and decrease in soil fertility between 1984 and 1990.

10. See Table 18.1, "Food and Agricultural Production, 1980-82," in World Resources Institute (1994, p. 292). Grosse (1994a) states that these data may not accurately represent the existence of significant intercropping.

Migration

After independence, internal population movements in search of better land and livelihood became common. From 1978 to 1991, 76% of all rural communes experienced net emigration; however, as the agricultural frontier closed, the rural zones of immigration became few and were mostly of marginal agricultural potential (Olson, 1995, p. 26). Environmental scarcity caused people to move to ecologically fragile upland and arid areas. Urban areas had few opportunities for employment, and rural-urban migration was restricted after the onset of the civil war. Migrants had little choice but to move to and settle in hillside areas, low-potential communes adjacent to western parks and forests, wetlands requiring drainage, and eastern communes near Akagera Park (Olson, 1994, p. 15).

Decreasing Government Legitimacy

The Rwandan government based its legitimacy on its ability to provide for the needs of the population. The Habyarimana government was responsible for securing a great deal of international development assistance that allowed it to build a sophisticated infrastructure, undertake anti-erosion and reforestation projects, and maintain support among the population. As noted, however, most of this assistance was channeled into the northwest, the president's home region, causing resentment in the rest of the country. In addition to facing a decline in per capita agricultural output and the lack of opportunities in both rural and urban settings, the Rwandan economy was seriously affected by decreases in coffee and tea prices in the late 1980s, the structural adjustment policy implemented in 1990, and the civil war.[11] Ninety percent of export earnings came from 7% of the land and were mainly derived from coffee (Waller, 1993, p. 27); declining coffee prices therefore debilitated the economy. The government's increasing inability to solve the country's problems created a crisis of legitimacy. Opposition parties formed and organized peaceful protests against the regime. Much of this opposition was based in the southern and central parts of the country, the areas most affected by environmental scarcity and least aided by government funding.

For these grievances to cause civil violence, opportunities to channel and articulate them had to exist. There are four hypotheses that identify possible links between environmental scarcity and the outbreak of this conflict. It appears, prima facie, that the outbreak of violence derived from environment and population pressures.

11. Numerous Rwandan specialists have remarked on the absence of linkages between rural society and urban society; although the government was affected by agricultural decline in rural Rwanda, it felt the impact of the civil war, structural adjustment policies, and the fall in coffee prices much more.

Four Hypotheses Linking Environmental Scarcity and Conflict

Clearly, environmental scarcity was correlated with conflict in Rwanda, but to establish environmental scarcity's causal role, it is not enough to demonstrate that high levels of environmental scarcity were accompanied by conflict. To avoid spurious claims about causation, all factors contributing to the Rwandan conflict must be analyzed and the interaction of environmental scarcity with these factors must be examined.

We propose four hypotheses specifying possible links between environmental scarcity and violent conflict in Rwanda. The first focuses on high levels of grievance caused by high population growth and decreased food production; this grievance caused increased levels of frustration, aggression, and conflict. The second highlights how state institutions were weakened and how the state became increasingly unable to manage the transition from authoritarian rule. According to this hypothesis, the 1989 famine, continuing food shortages, and population pressures were partly responsible for this weakening of the Rwandan state. The third emphasizes the development and manipulation of ethnic identity by elite groups in order to maintain popular support for the regime within the Hutu community.

The fourth hypothesis synthesizes the first three, identifying elite insecurity as the central variable and relegating environmental scarcity to an aggravating factor in the conflict. The insecurity of Hutu elites increased because of internal and external pressures for democratization and the concessions of the Arusha Accords, both of which occurred in the context of falling coffee prices, structural adjustment, the civil war, and environmental scarcity. The Arusha Accords weakened key segments of the Habyarimana regime; these elites then tried to retain control of the state by harnessing popular support and frustration after the death of Habyarimana.

HYPOTHESIS 1: HIGH LEVELS OF GRIEVANCE

Land scarcity was severe: Little new land was available for cultivation in an overwhelmingly agricultural society. The majority of the population was young, and a strong social norm existed that couples needed access to wealth—for example, a plot of land—before they married. The lack of land, combined with few nonagricultural employment opportunities, created resentment and frustration within the large agricultural segment of Rwandan society. In addition, there were reports of increased rivalry and conflict among neighbors over land (Grosse, 1994b, p. 12). The structural adjustment program both reduced government aid programs and increased the price of imported goods, such as food (Grosse,

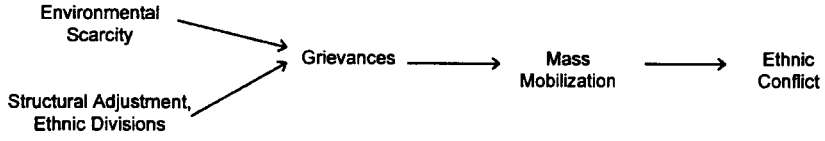

Figure 1: Increased Mass Grievances and Mobilization Potential

1994b, p. 19), whereas poor economic conditions reduced alternative employment opportunities for youth in urban areas. Frustration was further intensified by the increased corruption in the Rwandan government (Waller, 1993, p. 33) and the unresponsiveness of both opposition parties and government agencies to the problems of rural society (Newbury, 1994). In the context of ethnic cleavages, these grievances were easily channeled into ethnic conflict.

The level of grievance among the population was indeed high, and government propaganda did attempt to create and capitalize on popular fear by stating that the Tutsi, in the form of the RPF, were going to seize land. This was a significant threat. The land belonged to the state, and an RPF-dominated state put in place after the implementation of the Arusha Accords could have forced Hutu farmers off their land.

Although many Rwandans felt aggrieved, grievances do not automatically translate into violence. Three conditions are necessary to establish a relationship between deprivation-induced grievance and violence. It must be shown conclusively, first, that deprivation was increasing; second, that this deprivation was increasing the level of grievance; and, third, that the aggrieved participated in the violence (Rule, 1988, p. 206). The first two conditions held in Rwanda, but the third did not. The southwest experienced the greatest scarcities, and the population's ability to sustain itself was clearly decreasing. The political opposition was based in the south. The area remained relatively quiet, however, for the first few weeks after the death of Habyarimana. Only when the militias from the north moved in and began their systematic killing of all Tutsi and opposition leaders (Dallaire, 1995) did violence overtake the south. There is no conclusive evidence that large numbers of Rwandans—especially those experiencing the most severe effects of environmental scarcity—participated in the killings. For those who did participate in the south, there is substantial anecdotal evidence that peasants were coerced to participate in massacres by militias and local authorities.[12]

12. Reports indicate that the militias attempted to recruit locals to participate in the killing. The easiest people to recruit were peasants and uneducated, unemployed young men. Figures on how many and who participated, however, are difficult to confirm. This said, Rwanda could be considered an excellent example of how it takes relatively few aggrieved people to incite mass terror (Bonner, 1994c).

HYPOTHESIS 2: THE TRANSITION FROM AUTHORITARIAN RULE

The second hypothesis focuses on the transition from authoritarian rule. Regime legitimacy—the government's moral authority—declined because of the 1989 famine, the specter of further food shortages in 1994, and the regime's general inability to meet the needs of rural society. Farmers refused to participate in the central government's one-day-a-week *umuganda* labor system to build roads, dig erosion ditches, and plant trees. Much of this work was seen as useless (Grosse, 1994b, p. 15); the agricultural advice of local farmers, often the best experts on soil and farming because of the diversity of Rwanda's geography, was not heeded (Waller, 1993, p. 26). The Rwandan government had prided itself on Rwanda's food self-sufficiency. The rural food crisis and the failure of its own development strategies combined to undermine popular support for the government (Grosse, 1994b, p. 20). Moreover, these events occurred at the same time as the international trend toward democratization brought pressures from donor countries for similar measures in Rwanda (Grosse 1994b, p. 20).

The four general stages of the movement toward democratization are the decline of authoritarian rule, the transition from authoritarian rule, the consolidation of democratic institutions, and the maturing of democratic political order (Shin, 1994, p. 143). Successful democratization requires the negotiation of pacts among the elites; hybrid regimes—in which old institutions are combined with new ones—usually oversee the transition periods (Shin, 1994, pp. 144, 161). Hybrid regimes are often not resilient, which creates a high potential for reversion to authoritarian rule. Przeworski establishes some conditions for a successful transition:

> If reforms are to proceed under democratic conditions, distributional conflicts must be institutionalized; all groups must channel their demands through democratic institutions and abjure other tactics. Regardless of how pressing their needs may be, the politically relevant groups must be willing to subject their interests to the verdict of democratic institutions. . . . Reforms can succeed under two polar conditions of the organization of political forces: the latter have to be very strong and support the reform program, or they have to be very weak and unable to oppose it effectively. (Przeworski, 1991, p. 180)

In early 1994, Rwanda entered a period of transition from authoritarian rule. The Arusha Accords provided for the establishment of a hybrid regime. Many members of the army and government would have lost their privileged positions within the state under the democratic arrangements outlined in the Accords. At a critical moment in the transition, when the previous regime had lost all legitimacy and the democratic institutions of the new regime had not fully developed, a coup d'état

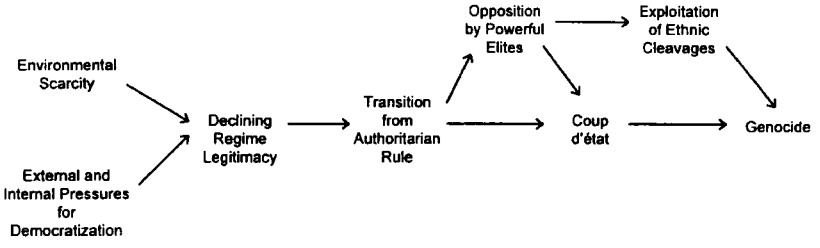

Figure 2: Weakened State Legitimacy and State Breakdown

occurred. Although it is not known precisely who killed President Habyarimana, most experts have concluded that an elite within the Rwandan government—led by the leaders of the two main militias—assassinated him as part of a broader strategy to retain the power and wealth that came with control of the state. These elites tried to garner support within the Rwandan population by exploiting ethnic cleavages; all Tutsi were identified as members of the RPF and targeted for death by the militias and army.

The explanation provided by the second hypothesis is incomplete: It is not clear that there were strong links among environmental scarcity, declining regime legitimacy, the transition from authoritarian rule, and the outbreak of conflict. The regime's agreement to undertake a transition to democracy was mainly a reaction to the RPF invasion and civil war, not to its declining legitimacy. It is plausible that the RPF invaded because it perceived that the state was weak, and this weakness was partially induced by environmental scarcity. Although internal pressures for democratization, caused in part by environmental scarcity, were important, the regime appeared largely able to maintain control of the state apparatus when faced with domestic appeals for democratization. The Arusha Accords, however, threatened members of the Habyarimana regime, in particular the army and militias, as power and wealth would have been shared with the RPF.

HYPOTHESIS 3: MANIPULATION OF ETHNIC IDENTITY

In a context in which ethnic affiliation mattered, environmental scarcity created conditions that increased competition between Hutu and Tutsi. Cross-national research shows that cases of severe ethnic conflict share the following characteristics: institutionalized group boundaries and stereotypes, an experience of ethnic domination by one or more groups, the strong perception by one group that the opposing ethnic group has external affiliations, and ethnically based parties with no significant

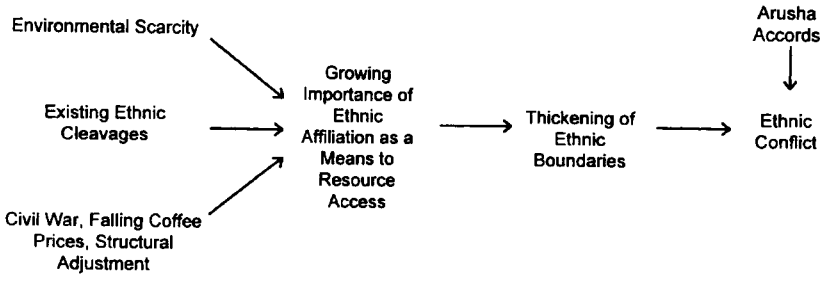

Figure 3: The Manipulation of Ethnic Identity

interethnic coalitions (Horowitz, 1990, pp. 455-456). Rwandan ethnic relations exhibited all these characteristics: colonial rule institutionalized interethnic boundaries, and these boundaries were thickened by Hutu regimes after independence; the Tutsi were the most powerful ethnic group in the preindependence period, and independence was seen as a Hutu revolution; civilian Tutsi were perceived to have strong affinities with the RPF; and General Habyarimana's ruling party and militias were controlled solely by Hutu.

The scarcity of environmental resources, combined with other factors, created a context within which ethnic affiliations mattered. Ethnic identity was one means that Hutu elites used to establish and maintain control over resources, including environmental resources such as cropland. Economic opportunities for the Hutu elite had been squeezed by the country's general economic crisis because of the structural adjustment plan, the economic strain suffered from the civil war, and the collapse of coffee prices. The importance of access to environmental resources increased as alternative economic options disappeared. Ethnicity was the key to this access, which for the Hutu elite was threatened by the Arusha Accords.

This explanation also appears inadequate. Anti-Tutsi attitudes were reportedly much stronger among more educated Hutu than among the mass of the Hutu population. Environmental scarcity therefore clearly did not increase the salience of ethnicity among the majority of Rwanda's population, or even among those who were most severely affected by the scarcity. Instead, ethnicity was most important among members of the elite, who were least affected by scarcity. A careful review of the evidence shows that ethnic affiliations became salient among the elite, because the predominantly Tutsi RPF threatened the regime's hold on power. Moreover, ethnic divisions were not the only cleavages in Rwandan society: Regional cleavages were important, especially under President Habyarimana's rule. Being a Hutu was not enough. One had to be a Hutu from the president's northwestern region or share the sentiments

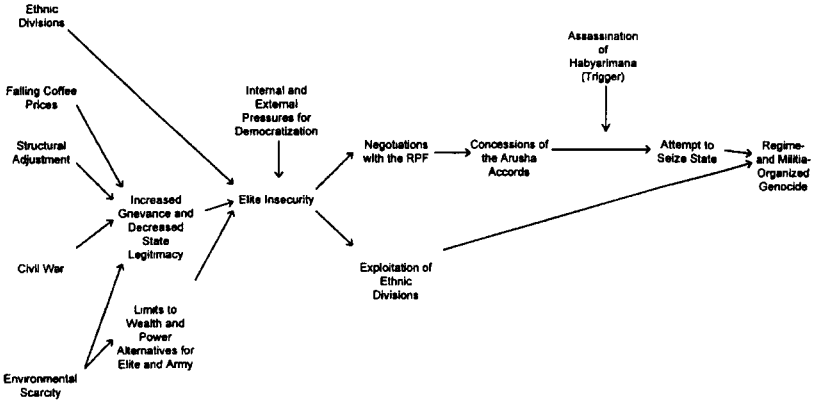

Figure 4: Elite Insecurity in the Context of the Arusha Accords

of Hutu extremism,[13] which explains the large number of moderate Hutu targeted by the militias. A hypothesis centered on the multiple forces contributing to elite insecurity provides a more powerful explanation of the genocide.

HYPOTHESIS 4: ELITE INSECURITY IN THE CONTEXT OF THE ARUSHA ACCORDS

The most plausible explanation of the recent conflict, outlined in Figure 4, is a combination of the three hypotheses above. Elite or regime insecurity plays a central role in this synthesis.

Job, in his recent work on the insecurity dilemma[14] faced by developing states, emphasizes the importance of distinguishing between the state and the regime when analyzing conflict in the developing world. The state has two sets of relations with its environment: external relations with other states and internal relations as its constituent institutions organize, regulate, and enforce interactions among groups within its territory. The norms of international law guarantee that the external relations of the state are rarely threatened, but control of internal relations is often contested by various segments of society.

The regime is the set of individuals that has gained control of the state's internal relations. In developing societies, the regime usually

13. The prime minister designate at the time of the conflict, Faustin Twagiramugu (who is now prime minister), was a Hutu from the south. The government perceived him as an enemy (Hilsum, 1994, p. 15).

14. The insecurity dilemma results from competition among various forces in developing societies. This competition means less effective security for all or segments of the population. Therefore, the capacity of centralized state institutions to provide services and order is lower, and the state and its citizens are more vulnerable to outside influence, intervention, and control (Job, 1992, p. 18).

lacks the support of a large share of the population: It represents the interests of a specific ethnic, economic, or military group. The distinction between the internal and external aspects of the state is crucial to our understanding of the Rwandan case: It was the Habyarimana regime, not the Rwandan state, that faced threats to its security. The regime did all it could to maintain its grip on power. According to Job,

> [Regimes] are preoccupied with the short term; their security and their physical survival are dependent on the strategies they pursue for the moment. Consequently, it is rational for regimes to adopt policies that utilize scarce resources for military equipment and [humanpower], to perceive as threatening opposition movements demanding greater public debate, and to regard as dangerous communal movements that promote alternative identifications and loyalties. (Job, 1992, p. 27)

In Rwanda, regime and elite insecurity was principally generated by the civil war and the Arusha Accords. The role of environmental scarcity in the conflict was limited, but not insignificant. Environmental scarcities, particularly as they affected food production, undoubtedly increased grievances within the Rwandan rural population and generally weakened the legitimacy of the regime. Scarcities limited the opportunities for wealth creation and for achieving economic and social status within Rwandan society, but there were other significant factors at work: The civil war, structural adjustment, the fall in coffee prices, and Rwanda's position as a landlocked country with little chance for economic diversification also boosted grievances and weakened regime legitimacy. These pressures threatened the preservation of the regime. Rising external and internal demands for democratization compounded elite insecurity by eroding its control of such institutions as the army, the police, and the bureaucracy.

Although the structural adjustment measures, declining food production, and the general economic malaise had hurt the majority of Rwandans, the elite and the armed forces were two groups that did not suffer directly. The army increased from 5,000 to 35,000 soldiers in only two years (Waller, 1993, p. 12). The Arusha Accords provided for a reduction in the size of the armed forces and for integrating the RPF and the army into a new national force. The Accords also provided for the creation of a transitional government until the elections were held. This government was to have included not only members of the RPF but also members of domestic opposition groups. Those displaced by the Accords would have had few economic or political opportunities in either rural or urban areas. Therefore, the power and privilege of the regime and the army were threatened in a general context of economic crisis and limited opportunity, which was only partly caused by environmental scarcity.

To maintain its hold on power, the regime began its two-track policy (as indicated in Figure 4): It negotiated with the RPF, and it undermined

the potential transfer of power to the RPF by fomenting anti-Tutsi and anti-RPF animosity in the general population. The impending implementation of the Arusha Accords—guaranteed by Habyarimana's final trip to Arusha—was the death knell for the regime's control of the state.

Members of the regime shot down the president's plane in retaliation for his soft stand at Arusha and seized the state.[15] They attempted to acquire the support of the population by targeting members of opposition parties and Tutsi as RPF sympathizers who had to be eliminated for national security.[16] They underestimated, however, the lack of popular support for their strategy and the military strength of the RPF (Gordon-Bates, 1994, p. 3).

The Implications of the Rwanda Case

The Rwanda case tells us important things about the complexity of causal links between environmental scarcity and conflict. Scarcity did play a role in the recent violence in Rwanda, but, given its severity and impact on the population, the role was surprisingly limited. The role also was not what one would expect from a superficial analysis of the case. Although the levels of environmental scarcity were high and conflict occurred, the connection between these variables was mediated by many other factors. This complexity makes the precise role of environmental scarcity difficult to determine.

The Rwanda example teaches us key lessons for the future study of cases exhibiting a strong correlation between environmental scarcity and violence. If our analysis had focused solely on environmental scarcity and the social effects it produced, then its contribution to the conflict would have appeared powerful. By carefully tracing the effects of environmental scarcity and by seriously analyzing competing explanations of the conflict, a more accurate explanation of both the conflict and environmental scarcity's role was established.

If researchers are to understand complex conflicts like the Rwandan genocide, they must be acutely aware of the issues motivating the conflicts' actors. They must examine not only the actors' actions and physical environment but also their motivations. A conflict motivated by different political issues could have occurred in Rwanda in which environmental scarcity played a central role. Although the recent violence occurred in conditions of severe environmental scarcity, the Arusha

15. Evidence is needed to determine three things. Who shot down Habyarimana's plane? Did the army act independently, with members of the government responding to its initiative after the fact and colluding with it? Or was the seizure of the institutions of the state a cooperative effort by the government and the army?

16. Execution lists reportedly were created months in advance, which raises interesting questions about how long these events had been planned (Gordon-Bates, 1994, p. 3).

Accords and regime insecurity were the key factors motivating the Hutu elite; environmental scarcity played a peripheral role.

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