Contested Cordillera: Forest conversion and conflict in a Dominican watershed

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The Contested Cordillera:
Forest Conversion and Conflict in a Dominican Watershed

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This study draws on environmental history, political ecology and poststructuralist social theory to critically examine the conflicts over forest conversion in a watershed in the Dominican Republic. The upper Rio Yaque Norte in the Cordillera Central is vitally important to the northern half of the nation as a source of drinking and irrigation water and hydroelectric power. This mountainous region was once covered in extensive pine ($P. occidentalis$) and mixed broadleaf forests, though today the forest cover has diminished significantly. Until the middle of the 20th century, the watershed was sparsely populated by descendants of settlers who practiced conuquismo, the Dominican form of swidden agriculture, and ran cattle on communal forest lands. During the Trujillo regime (1930-1961), the Cordillera Central was opened to commercial exploitation of the forests. Logging proceeded without any form of control or concern for the ecological and social consequences until the state imposed a cutting prohibition in 1967. The widespread road building, and unsustainable forestry practices left behind denuded hillsides, which were vulnerable to subsequent exploitation by burgeoning numbers of land-poor farmers and former timber workers. This study examines Dominican agriculture and some of the political and socio-economic forces that compelled campesinos to convert greater amounts of forest, and the resulting conflict they have encountered with the Dominican forest service, and the Dominican army. Based on facile and self-interested assumptions about the nature of the problem, the government's approach to forest conservation in the watershed has relied heavily on enforcement of the cutting ban. Campesinos have been regarded by the state as antagonistic toward forest conservation and have been held responsible for much of the forest conversion. This study questions the validity of such views. This study also explores the non-governmental and grassroots efforts aimed at protecting and rehabilitating the watershed.
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PREFACE

Many studies on tropical forest conversion focus on the phenomenon on a grand scale, say for example, as it occurs in places like the Amazon or Madagascar. My study takes a much narrower focus, and looks at perhaps similar processes but in a much smaller, and very specific, place. In size, the upper Rio Yaque del Norte is roughly equivalent to my home watershed, Rattlesnake Creek. Still it is important to recognize that forest conversion occurs on scales small and large, and the in ways unique to each place. Regardless of the extent, lives are affected in the process.

In essence, this study is just the story of a rural people, and their problems in a particular place. My aim here is not to forward some overarching theory of deforestation as others have done, nor to make some universal truth claim. Nor do I even seek to make a categorical statement about the nature of the forest problem in the upper Rio Yaque del Norte watershed. Rather, through a narrative of the stories people shared with me it is my intent illuminate some of the complex forces that have shaped a watershed and its inhabitants. Such an effort inevitably focuses on the power relations between a variety of actors, from a hillside campesino to urban elites and beyond. The subtext in this thesis is about power, and who exerts it and in what ways, and who benefits and who suffers.

My approach is multi-disciplinary. In various places, I draw on sociology, anthropology, geography, history, forestry and ecology to provide a context for events in the region. In telling this story, my approach also reflects my journalistic background and interest in people and their stories. (For their privacy and protection, I have changed some of the names of the people I interviewed and places I visited.) In general, I have tried to tread in two worlds -- the academic and the popular -- by weaving a strong narrative line through a grounded theoretical and empirical framework.
In much of this study I discuss the way problems in the watershed are viewed from an array of competing perspectives. I, too, have my own set of filters with which I have examined the problems in the watershed. Thus, any "truth" claims I make here are my own and are based on my study of the situation. My view has been largely shaped by what I've seen and been told by residents of the region. Furthermore, I must confess I hold an affinity and admiration for Dominican campesino families, men and women who live close to the earth, whose activities feed a nation, whose lifeways provide a counterweight to the leaden forces of modernity, and whose world is under mounting pressure from powerful forces. I came by this view during the two years I lived and worked as a community forestry extensionist with the Peace Corps among campesino families elsewhere in the foothills of the Cordillera.

But viscerally, the connection runs even deeper than just that experience. The people of the upper Yaque del Norte live a life in a landscape that evokes the one where I live in Montana. In the field journal I used in the Dominican Republic, I kept a copy of an old photo of some ancestors of mine -- brothers or cousins, perhaps, of my Quebecois great-great grandmother. The place is among the ponderosas near Sixmile Creek in western Montana and the time is the early 20th Century. In front of the cabin, there are three of them, all in dungarees and suspenders and wide brimmed hats, looking proud for the photographer. The one in the center stands erect, left arm akimbo, right arm holding up a dead coyote with a thick winter coat. To his left a man has a pistol tucked into his waist band and a pair of snowshoes on end. To his right, an older man clenches a pipe in his teeth and props up a rifle. These are mountain people -- farmers, hunters, woodworkers living in a small watershed in the Northern Rockies. The lives of my forebears, and those of the campesinos of the Cordillera, overlap in striking ways. Their lifeways were once on the same trajectory, but diverged long ago. But in
looking at the campesino's present I can in some way imagine my own family's distant past.

I owe debts of gratitude to many people who have helped me in endless ways. I wish to gratefully acknowledge the B&B Dawson Research Award and the Erasmus Scholarship for funding my research in the Dominican Republic. I wish to thank my thesis committee: my adviser, Jill Belsky, and committee members Sharon Barrett, Len Broberg and Dan Flores. Other past and present faculty at the University of Montana that have been helpful in various ways are Bruce Jennings, Tom Roy and Carlos Baied. I especially want to thank Karen Gaul for her editorial comments, theoretical insights and moral support throughout much of the writing of this thesis.

In the Dominican Republic, I wish to thank Carolyn Bain for her hospitality in Santo Domingo. Also in the capital, I want to thank another helpful friend, Patricia Rodriguez. I thank Robert Crowley and Alberto Rodriguez for sharing their wealth of knowledge about Dominican natural resource issues. In Los Dajaos, I thank Jose and Naty Cruz for their generosity and assistance. Most of all, I wish to thank the many campesino families of the upper Yaque del Norte who opened their homes, their worlds and their hearts to me.

Friends and family have also been key to the completion of this work. I thank Katie Knipps for the connection to Los Dajaos. Parts of this thesis were written on the move between Montana, Vermont and California. I thank many friends who put me up during this time: compañeros Tony, Cindy and Theo Burton, Louis Hartjes and Brenda Guenzler, Julie Raine, and Mark and Anne Vandermeer. Thanks to my family: Lou and Barb, Michele and Andy, Greg and Jennifer. I am also grateful to Marge and Gene Downey in Missoula for their kindness over many
years. Finally, I would like to dedicate my efforts here to my grandmother, Evelyn Cadieux, who has had a profound effect in shaping the way I see the world.
CHAPTER 1
INTRODUCTION

Environmental management and conflicts over the environment are about ... the way groups of people dominate each other, as well as the way they seek to dominate nature. Not surprisingly, the development, or continuation of more sustainable livelihood strategies carries important implications for the way power is understood between groups of people, as well as for the environment itself. -- Michael Redclift

The ascent into the upper watershed of the Rio Yaque del Norte in Cordillera Central of the Dominican Republic begins at a bustling junction on Autopista Duarte about a mile outside of the burgeoning city of La Vega in the Cibao Valley. It's the late fall of 1995, and this highway, first built during the American military occupation between 1916 and 1924, is under construction again, this time being widened into four lanes. It seems the entire length of the highway between the capital Santo Domingo, and the country's second city and economic center, Santiago, has been torn up and graveled at once. I am heading north from La Vega in a carro publico, a rusting heap of a Toyota sedan with no windshield. The day before, according to the driver who talks fast and gestures wildly, a belly dump truck had kicked up a rock and shattered the already spider-web cracked windshield. Fearing another spray of gravel, I am pleased when my brief ride ends at the junction.

At the foot of the Cordillera Central, the looming mountain range that squarely occupies the center of the island of Hispaniola, sits a large industrial park, known commonly as a zona franca. Here, a predominantly female work force sews and assembles goods for multinational corporations, like Timberland Boots and Ralph Lauren clothes, and for North American consumers like you and me. Wages are low, benefits nonexistent, working conditions poor or unsafe, and unions suppressed. This is the other end of economic globalization.
Should you arrive here at the end of shift you will be hard pressed to catch a *gua-gua*, the generic Dominican name used for public transport. But with luck, or more likely a little aggressiveness, you might catch a minivan making the half-hour trip to the small city of Jarabacoa, the jumping off point for the upper Yaque del Norte region.

From the junction, the road climbs steeply, and the minivan, with its 15 passengers crammed inside, chugs reluctantly upward through sparsely forested hills. At roughly 1000 feet above sea level, the first pines appear and the road enters an undulating valley. The air here cools noticeably, a fact much appreciated by the affluent residents of sultry Santo Domingo and Santiago. Their summer homes and tourist cabanas, both palatial by Dominican standards, conspicuously dot the verdant landscape. Jarabacoa, itself, seems cleaner and more prosperous than most Dominican towns. This town's fortunes were once tied to the boom in the timber industry, though today tourism plays an important role. The attraction here, aside from the cooler climate, is the nearby Armando Bermudez National Park and Pico Duarte, the Caribbean's tallest peak. But my own destination is the source of the Rio Yaque del Norte, a place called Boca del Rios, near the village of La Cienaga at the park's edge.

To reach these headwaters requires yet another *gua-gua* ride, this time in the back of a small pickup truck. The trucks heading upcountry all park outside a small tavern on the outskirts of Jarabacoa. The street scene is frenetic. Music blares from all sides: the mournful twangy guitar of *bachata*, the galloping rhythms of *merengue*, and the syncopation of urban Latino hip-hop all compete for dominance. In the street, the *motores*, -- Honda 70s -- race up and down hauling passengers to and fro across town. The sidewalks are crowded with women coming from the open market, young boys seeking to shine shoes, street vendors selling *chicharron*, the deep fried pig skin, and the ever-present *tigueres*, the
unemployed savvy young men hanging out hoping to hustle a little work or a passing tourist.

In the Dominican Republic, public transport trucks leave when they fill, meaning when nearly every square inch is occupied. This king-cab Toyota has five 100 pound sacks of chemical fertilizer, another 100 pound sack of sugar, a 50 pound sack of corn, and three bound and woebegone live chickens. For human cargo, there are 15 of us in the back, and another half dozen inside. Everyone in the bed of the pickup plays Twister for their lives, grasping, groping for something or someone to hang onto. I am precariously perched on the sack of sugar; one sharp swerve and I'll fall face first into the pavement. An old man in a felt hat smiled and says "que Dios nos cuide," may God take care of us, and I agree.

About a mile out of town we are flagged down by the transit police with their white pith helmets and revolvers. We stop, they approach, pleasantries are exchanged, and a small bribe is passed on. Most government officials, after all, are poorly paid, and thus unofficially encouraged to be creative in their livelihood strategies. Without the bribe, a broken headlight becomes a problem, or certain documents may need to be presented, or the ridiculously overcrowded truck suddenly becomes dangerous. Dealing with these things could cost time and money. Consider the bribe, then, a societal lubricant, one that ensures the smooth functioning of civil affairs.

Onward. Campesinos, the people of the countryside though not necessarily farmers, take it all with good humor, poking fun at the corruption that pervades their society. Much can be learned about life in the upper Yaque del Norte listening to conversations in the back of a pickup traveling upcountry. These rides gather together folks from throughout the watershed, from the numerous little villages known as campos. Public transport, in some ways, serves as a civic forum for the expression of views.
That fall, the coming election, and whether it would be clean, initiated many discussions. Perennial president Joaquin Balaguer, a former puppet president under the dictator Trujillo, had by his own admission committed *fraudito*, a little fraud, and had stolen the 1994 election from the popular leftist Francisco Peña Gomez. Under enormous domestic and international pressure, Balaguer called another election for 1996. From dirty politics, talk often drifts to who had recently returned from 'Nueva York', the name used to refer to any place in the United States. There are roughly seven million Dominicans in the world, and a million of them live on the eastern seaboard of the United States. To go *alla*, over there to the states, is the dream of many Dominicans.

Eventually, conversation in the back of the truck always comes around to agriculture, say the planting of beans or the price of *viveres*, the various roots crops that make up the Dominican food staple. These days, in the upper Yaque del Norte you cannot talk about agriculture without talking about Foresta, the Dominican Forest Service. Voices rise, and gestures become more animated when the talk turns to this agency. For small farmers of the region the pursuit of their livelihood -- their shifting cultivation known as *conuquismo* -- has been, in effect, criminalized.² In recent years this deeply rooted act, so very basic to Dominican subsistence and culture, has become political, almost an act of resistance. Out of legitimate concern for the dwindling forests of the Cordillera, the Foresta -- backed by the Dominican army -- has adopted authoritarian measures to protect what remains. Campesinos are routinely jailed for not only cutting trees, but for burning fields and in some cases just clearing weeds off their own land. The stories abound: A recent returnee from *Nueva York* was hauled off to *Plan Piloto*, a Foresta jail in Santo Domingo once used by Trujillo, for cutting seven small pines; an engineer, a woman who moved with her family to the countryside from the capital, was held at an army post in the nearby town of Jarabacoa because someone had cut several dozen
understory saplings on her land to build a support structure for the chayote
cultivation; a mayor and eight others were arrested for cutting poles to bring
electricity to their mountain community; a longtime Foresta employee spent nearly
three weeks in jail after he lent, on orders from his superior, a saw to a campesino to
cut down a dead tree to build a home.

These are just some of the stories you might hear as you begin the winding 40
kilometer climb from Jarabacoa to La Cienaga. Like Autopista Duarte, this road is
under reconstruction. The bare hillsides above the road, some of them pushing 100
percent slope, were prone to sliding during the torrential rains of the wet season,
and the government was determined to shore the slopes up in places, and reroute
the road in others. The Yaque del Norte, like most of the Cordillera, is rugged,
straight up and down kind of country. An early foreign visitor in the 1850s, Sir
Robert Schomburgk described the Cibao Mountains, today known as the Cordillera
Central, as "peculiarly formed." These mountains, he wrote, had "so many
interlacings by sharp-ridged offsets, that one who had not seen the chain from the
distance, so as to form an idea of its longitudinal direction, would find himself
bewildered in seeking the points of the compass to which this backbone of the
island of Santo Domingo really stretches." Schomburgk, a botanist, called the
diverse flora of the Cordillera "one of the finest pictures of vegetation that [he] had
beheld under the tropics."3

The vista once admired by Schomburgk looks starkly different today. In the
Yaque del Norte watershed, the river threads the narrow forested valley bottom,
while the denuded peaks rise steeply in a topographic jumble. In the early evening
light of November, most of the hillsides appear a pastel pink from the inedible
flowering heads of the yaragua grass (*Melinis minutiaflora*), an exotic forage
introduced by a Spanish priest decades ago. Elsewhere, the slopes look mangy
with scruffy patches of secondary growth dominated by pioneer species such
bracken fern and guava. The stark bare patches, cleared and burned for planting, are the conucos, the farmers' shifting cultivation plots. Even more scattered, and higher, are the remaining pockets of pines and the broadleaf trees -- the forests that the campesinos called monteria -- that once covered these mountainsides.

Along the way, there are numerous stops in the communities of the Yaque del Norte, starting with Pinar Quemado, a campo whose agrarian identity has been largely overwhelmed by the suburban reach of Jarabacoa; Los Dajaos, where local community development efforts and attempts to reconceive agriculture stand as a possible model for its neighbors in the watershed; Manabao, where social inequities in the region may be their most dramatic; and finally La Cienaga, the end of the line, both literally and figuratively.

My gua-gua ride ends in Manabao, where I hitch a ride in a stake bed produce truck heading toward La Cienaga. The driver is heading for a friend's house and an afternoon of drinking rum and playing dominoes. He lets me off about a mile outside of the village, and I continue on foot.

On the outskirts of the La Cienaga, some farmers gather under the zinc roof of the patio that serves as the chapel for the community. The new Japanese truck parked outside belongs to an agro-chemical distributor from Jarabacoa. The farmers had come to listen to a sales pitch about the benefits of herbicides, and for their time, they receive a Tordon ball cap. In the last two decades farmers have turned to a variety of chemical fertilizers, and pesticides, some of which are banned in North America, to augment their land's declining productivity.

The rocky, rutted road strewn with garbage enters the village, a less than pleasant gateway community for the national park. As I pass one of the village's two colmados, the small stores that sell staples of Dominican life, I see a dog urinating on the doorway, while across the street several men stand around a large hog with its throat cut that squeals shrilly as it bleeds its way to a slow death. Dogs hang in
waiting, eager to lick the blood off the cool concrete floor. Near the park's entrance, in front of house built of brightly painted pine slats and a thatched roof, a young boy stands naked, his testicles grotesquely enlarged. It is a birth defect, I'm told, and the family can't afford the surgery to correct it. Further on, two dirty-faced little girls wearing only panties squat along the roadside and beg for money, clothes, anything. "Give me something. I have no clothes," the one pleads.

This, too, is grotesque. But this is what you must overlook when you are an ecotourist, one of thousands of urban Dominicans, Germans, Japanese and a handful of North Americans, who stream through La Cienaga on their way to the park to climb Pico Duarte. Or maybe you pause, give them some change or even one of your T-shirts, before setting your gaze on the 10,000 foot peak ahead of you. But for many locals, to see visitors spend so much to come from so far must be a brutal reminder of how little they really have. These disparities are compounded by the fact that in recent years the government has become increasingly restrictive of most of the traditional uses -- such as feral pig hunting, conuquismo, woodcutting and firewood gathering -- of the area cordoned off by the park boundaries in the 1950s.

At the park headquarters, the road ends and the river begins. Not more than a literal stone's throw from the headquarters, two streams, the Rio de los Guanos and Rio de los Tablones, converge to form the Rio Yaque del Norte, which starts its twisting 296 kilometer course toward the Atlantic at the Haitian border. From its start at the park's boundary, the upper river flows through a landscape on the socio-economic, political and ecological margins of Dominican life. In the upper Yaque del Norte, denuded hillsides and impoverished communities are intricately tied not only to one another, but to the greater world beyond.
Background

In this study, I examine the history of the forces that have shaped the physical and social landscape of the region. Physically, the watershed has seen its forest cover recede dramatically since World War II, which marked the development of the timber industry and the modern era. Claims about the extent of deforestation in the Dominican Republic and the upper Yaque del Norte should be viewed critically, as forest cover data are outdated, or partial at best. Still, a Santiago group in a 1994 report estimated that roughly 80 percent of the upper Yaque watershed had been deforested. Quantified or not, it is evident in looking on the landscape that much of the forest cover in the watershed is gone. How that has happened is one of my primary inquiries.

The social landscape I explore here suggests that the campesinos in the region pursue their livelihoods, principally agriculture, under severe ecological and socio-economic constraints and increasing political pressure. Farmers in this watershed work the steep, infertile lands, receive little outside technical or financial support, and for their labor bring home a fraction of the value of what they produce. Many campesinos speak of the decline of conuquismo as a way of life in the watershed. Agriculture in the region dates back to the days of the pre-Columbian days of the Arawaks, who practiced a root-crop polyculture in permanent mounds they named conucos. Centuries after the demise of the Arawaks, conucos still are farmed on the hillsides, though today they are part of a shifting cultivation system. Up until the mid-20th Century, conuquismo was relatively light on the land. From 1950 on, an array of factors -- socio-economic, political, demographic -- converged to shorten or eliminate fallow periods, thus creating an agricultural system that -- by the campesinos' own acknowledgement -- has been destructive to the forests of the region.
Today, not only are campesinos compelled to farm lands beyond their productive capacity, but the very practice of agriculture itself brings persecution to the farmers. Campesinos, those fortunate enough to possess land, have seen their property rights -- particularly rights to trees and forests -- essentially usurped by the state. In 1967, president Balaguer closed down the sawmills of the Cordillera; thirty years later the order still stands, in effect prohibiting the cutting of any tree -- even on private land -- without state permission. While Balaguer's decree was essential to preventing the complete conversion of the nation's pine forests, its over-zealous application by Foresta today has created innumerable hardships for the rural residents of the Cordillera. These small farmers, on the cusp of a transition between the destructive agriculture of the past 30 years and a more benign variety of the future, face harassment, fines and imprisonment for practicing their subsistence and small scale market farming.

The pressure exerted on the campesinos by the Dominican forest service is symptomatic of a widely held, particularly urban, worldview that holds in disdain the lives and livelihoods of the rural populace. This is particularly true of the Yaque del Norte, which in its middle stretches flows through Santiago, a major center of power. Certainly, urban concerns about downstream effects of forest loss are legitimate. Over its course, the Yaque del Norte drains more than 7000 square kilometers, making it one of the nation's most important rivers in terms of a water source, hydroelectric generation and irrigation potential. One study showed that topsoil loss to erosion in seven partially deforested Cordilleran watersheds averaged a considerable 250 tons per hectare per year. On-farm, this erosion causes declining crop yields, while off-farm costs are seen in increased sedimentation of irrigation systems and hydroelectric generators. Irrigators in the country spend $2 million a year maintaining sediment clogged irrigation systems. On a larger scale is the damage caused to hydropower generation capacity. The Tavera Dam on the middle
portion of the Yaque del Norte lost 40 percent of its dead storage capacity to sedimentation in its first seven years of operation after its completion in 1973. Reduced water flows, too, result from mountain deforestation. One study estimated that between 1964 and 1984 water flows in the Yaque del Norte dropped 25 percent once adjusted for rainfall.4

Thus there is a substantial and powerful downriver constituency for watershed protection. In looking to protect their economic and community interests, some of these urban groups have found that campesinos make easy scapegoats for such physical manifestations of greater societal ills. Facile assumptions often give way to heavy-handed tactics. In early 1995, at the inauguration of a Santiago-based "stakeholders" junta dedicated to protecting and restoring the entire length of the watershed, president Balaguer warned that in order to protect the watershed it may be necessary to evict the area's inhabitants. The deforestation that has occurred in the watershed is "a barbaric action that on occasion must be responded with another barbaric action," said the patriarch of Dominican politics.5 This warning weighs heavily on the minds of the campesinos; they know that their counterparts in other ecologically sensitive areas of the country have been displaced in the name of conservation initiatives.

This is conservation, Dominican-style. As a set of beliefs, practices and constituents, it shares much in common with traditional North American conservation approaches. That is to say, it is rooted in urban-based, educated, middle-class values that manifest themselves through technocracy, the union of science, managerialism and bureaucracy.6 But in nominally democratic places such as the Dominican Republic, with its centuries old history of violence and oppression, this form of conservation takes on an overt authoritarian aspect. Conservation is often achieved at the expense of social justice.
The threat of mass evictions has prompted a response from the area's campesinos, many of whom trace family histories back to before the turn of the century. In Manabao during the summer of 1995, campesinos formed the Junta Yaque, a federation of 16 farmer and women's groups from throughout the upper watershed. President Balaguer was not on hand to lay his blessing on the this group. They aim to protect not only their watershed, but their livelihoods as well.

**Thesis structure**

I have two overlapping objectives: The first is to trace the environmental history of upper Yaque del Norte to shed light on some of the myriad forces -- social, economic, political -- that account for its present physical state. The forest loss that has occurred is the catalyst for both government and grassroots responses. The watershed's history, which has never been amply told, particularly from the campesinos' perspective, offers a critical context that accounts for both the damaging agricultural practices of the campesinos and repressive responses of the state. To tell that story, I sketch the history of agriculture in the watershed -- and the socio-economic forces that shape it -- from the pre-Columbian days of the Arawaks to attempts today by the farmers to employ new approaches. The first chapter on agriculture is followed by an examination of the timber industry that operated in the Yaque del Norte in the 1950s and 1960s. Directly and indirectly this industry, rooted in the rise and reign of the dictator Trujillo, played a critical role in much of the forest conversion of much of the watershed.

Thus, this study emphasizes a historical perspective. But it goes beyond the past and is concerned with the present in the Yaque del Norte. French historian and philosopher Michel Foucault writes of doing genealogy, which he describes as the "union of erudite knowledge and local memories which allows us to establish a historical knowledge of struggles and to make use of this knowledge tactically."
today. Indeed, my work aspires to make use of history to shed light on how present day problems are constituted. Toward that end, my second objective is to look at a number of contested views on the nature of the forest problem, and what to do about it. The fourth chapter explores some of these competing views, the constituents that hold them and the practices they spawn.

My central argument here is that the prevailing discourse that holds the campesino solely accountable for the destruction of the forests in the Yaque del Norte ignores or downplays much of the historical context, and by doing that offers short-sighted, self-interested and repressive solutions. Throughout this thesis, I hope to trace the development of this view, its variations and its sources, from its early proponents to its various adherents in the governmental and nongovernmental circles today. My work is an attempt to offer a countervailing account. Sociologist Steven Seidman has called for postmodern social narratives, ones that provide a practical context for specific events, and that "present critical alternatives to current dominant images..." In the case of the Yaque del Norte, I strive to tell a story seldom heard outside the back of the pickup truck; campesinos tend to be outspoken about the problems in their watershed but their views seldom find expression in academic theses and journals.

For my methodology, I rely heavily on stories from inhabitants of the watershed. These stories are drawn from 25 hours of recorded interviews, and countless hours more of informal talk. Through contacts I made as Peace Corps volunteer in the early 1990s, I met many key informants -- foremost among them farmers, former timber industry workers, and community activists, and to a lesser extent governmental field personnel and regional development professionals. My research methodology also involved a documents search at numerous Dominican and American institutions. I draw on numerous US and Dominican government reports, historical accounts, and scholarly journals not only to flesh out the forest
history of the region but also to trace the development of the dominant discourse concerning forest conversion.

Theoretical framework

Although my principal interest is to offer a compelling account, my approach draws on several theoretical frameworks derived from the humanities and the social sciences. My outlook has been broadly influenced by environmental history, regional political ecology and poststructuralist social theory. That I cross various disciplinary boundaries is reflective of not only my interdisciplinary graduate field of environmental studies, but it also suggests that the different disciplines often talk about similar things in different languages. Complex environmental problems require interdisciplinary sources to understand them and ultimately to examine solutions. This section gives an overview of the intellectual influences that shape my work with the hope of integrating these diverse strands.

With its strong historical focus, this project borrows generally from the field of environmental history. Donald Worster, one of the deans of the discipline, asserts that in its broadest sense “environmental history is about the role and place of nature in human life.” To do such history, as Worster puts it, entails three levels of interdisciplinary analysis, which form a “single dynamic inquiry in which nature, social and economic organization, thought and desire are treated as one whole.”10 In general ways, my work addresses, albeit indirectly, ecological, socio-economic and intellectual concerns. The next chapter opens with a brief account of the natural history, particularly forest ecology, of the region before moving on to Worster’s second level, which looks at livelihood strategies. The third chapter continues with socioeconomic realm by examining the timber industry. The fourth chapter touches on his third level by looking at people’s perception of environmental degradation in the watershed and what to do about it.
The works of other environmental historians provide further guidance in my framework. Dan Flores' essay, "Place: An argument for bioregional history," defines appropriate boundaries for the practice of environmental history. "In truth," Flores writes, "to an extent all history is the history of place. But environmental history can go beyond traditional history and justify its reputation for new insight if we follow the lead of ecologists, geographers, ecological anthropologists—and bioregionalists—in drawing the boundaries of places we study in ways that make real sense ecologically and topographically..." Indeed, the Dominican Cordillera Central could easily be considered a bioregion unto itself. The mountain range holds the headwaters of numerous river basins that flow into the Atlantic and Caribbean. For the purpose of this study, however, I will focus on the upper Yaque watershed—the smallest bioregional unit—and with occasional reference to other watersheds in Yaque del Norte river basin. This basin drains the northern and northeastern portions of the Cordillera Central, and its watersheds, the Bao, the Mao, the Anima, and others, share much in common with of what will be said about the upper Yaque del Norte.

In addition to offering useful physical boundaries for environmental history, Flores' essay also offers good advice on how it should be told. History, in general, is the discipline with the greatest penchant for narratives, or storytelling. Flores argues that, in contrast to many social scientists, "historians communicate generalities with stories of individuals, whose experiences carry more the scent of life for readers." I view my study as a grassroots version of environmental history, one told in part by people who participated in it. The voices included here, with a few exceptions, are from people who live in the contested watershed; they are the ones most likely to be affected by whatever actions are taken there. At times, however, conflicting voices will be heard. Campesinos are bound by life in a rural place, though are divided by socio-economic, political and kinship relations. A
unified voice doesn't exist. What I've tried to do here is to present some of the oft-voiced perspectives of people living in the watershed to offer another version of history.

Environmental history and bioregional approaches lend a valuable, but general, framework. Regional political ecology can augment those approaches with its emphasis on the political aspects of environmental issues. By political, I mean not solely policies, but power dynamics on many levels of human interactions. In this study, subsequent chapters suggest that forces that control the watershed—both past and present—have come largely from outside, from the domestic and international centers of power. Moreover, the exercise of this power has made distinct winners and losers of certain groups within this historical struggle, and undoubtedly left its mark on the landscape. As Blaikie and Brookfield, in their book *Land Degradation and Society*, point out, history shows that "damage to the land and damage to certain classes in society are interrelated." 14

Regional political ecology eschews simplistic or deterministic accounts of destructive land use, that is to say ones that point to a singular cause such as population pressures. Furthermore it is useful in defining what constitutes land degradation: Blaikie and Brookfield consider degradation to be the "loss of capability to satisfy the demands made upon it." 15 Indeed, many farmers of the Cordillera speak of their land's loss of "force." While such a definition of degradation may serve socio-economic ends, a broader, less anthropocentric, one seems necessary as well. The forests of the upper Yaque and the Cordillera have seen great ecological simplifications. Once diverse mixed pine and broad-leaf forests have been converted to poor pastures dominated by exotic forage. If one values biological diversity, this process of conversion could easily be characterized as degradation. By either yardstick, much of the Yaque del Norte and the Cordillera are worthy of the description. Political ecology recognizes the possibility of various
definitions of environmental degradation. "There are competing social definitions of land degradation, and therefore the challenge of moving away from a single 'scientific' definition and measurement must be taken up," write Blaikie and Brookfield. "This means we must put the land manager 'centre stage' in the explanation, and learn from the land managers' perceptions of their problems." 16 This suggestion meshes well with Flores' recommendation about the telling of history of place.

An overview of the field of regional political ecology has been elaborated by Raymond Bryant in 1992 article "Political Ecology: An emerging research agenda in Third World studies." Like Worster's tripartite notion of environmental history, political ecology delves into three distinct, though interrelated, areas: the "contextual sources of environmental change; conflict over access; and the political ramifications of environmental change." 17 These three lines of inquiry are useful for understanding of the situation in the upper Yaque and the Cordillera.

In recent years, political ecology frameworks have been increasingly linked with postmodern, and particularly poststructuralist, approaches. 18 This is not the place to address the myriad of forms and concerns posed by postmodern and poststructuralist thinking, though it is necessary to acknowledge the general influence they have had on my work. As a term, postmodernism is vague, meaning many things to many people, and the body of work is diverse, abstruse, jargon-ridden and at times contradictory. 19 A healthy skepticism toward our major institutions, paradigms and dogmas -- these "totalizing metanarratives" in the lingo -- is perhaps most often associated with postmodernist thought. Capitalism, Marxism, science, technology, democracy, or religion -- in short any belief system that constitute modernity -- are the stuff of incredulity under the postmodernist critique. Many of these views are things I've long felt on a visceral level, without having ever named them. My own skepticism toward technological, bureaucratic,
scientific, urban solutions may shine through in this work. This is not to gainsay any value at all to these approaches. In places, I will make use of empirical data, products of the scientific method. Rather it is to suggest they alone may be insufficient to adequately understand or deal with the enormous complexity and ambiguity of socio-environmental problems.

Just how we come to know and understand the world is a primary concern of poststructuralism. My approach is informed by a poststructuralist sensibility in that it is concerned with the ways language, knowledge and power intertwine in understanding the construction of problems in the upper Yaque del Norte, as the fourth chapter details. Joan W. Scott in an essay describing the value of poststructuralist approaches in feminist theory, echoes Foucault's notion that language is central for understanding the workings of social relations, and that a failure to pay close heed to it only reinforces conventional, and simplistic, notions about the world in which we live.20

The point is to find ways to analyze specific 'texts' -- not only books and documents but also the utterances of any kind and in any medium, including cultural practices-- in terms of specific historical and contextual meanings....The questions that must be answered in such an analysis, then, are how, in what specific contexts, among which specific communities of people, and by what textual and social processes has meaning been acquired. 21

In looking at the way meaning is acquired in an environmental context, geographer Piers Blaikie, among others, calls for the recognition that landscapes and environmental change are social constructions, that is to say that how they are viewed stems from a variety of experiential, cultural, technical and other filters.22 Typically environmental problems have been looked at within the scientific framework, what Blaikie calls the "structural" understanding, one that assumes reality can be perceived thorough empirical, quantifiable, deductive means. It assumes that there is an "objective world whose essence can be reliably measured by different observers with the same results." 23 Blaikie, however,
describes the move in the social sciences toward a more “interactionist” approach in which “there is not an objective reality, but many subjective ones which are provided by different people who see their ‘real’ landscape in their own ways.” Thus in the upper Yaque del Norte, a landless campesino, a community activist, a health promoter, government forestry official, a North American graduate student--each with their unique lens on the world -- all may perceive a problem in the watershed, though from distinct points of view and arrive at dramatically different conclusions. These competing versions of reality vie for dominance in the political realm, and consequent implementation in the “real” world. But Blaikie points out that this competition in the political arena is played on a field that is far from level, that some viewpoints are backed by greater power ideologically and materially than others.

Defining problems and proposing solutions -- in short policy-making -- are inherently political acts because they involve the exercise of power. Maarten Hajer, in his book The Politics of Environmental Discourse, argues that investigating the social construction of environmental debates and policy-making -- in his case the one over acid rain in Europe -- requires a discursive analysis, which "investigates the boundaries between the clean and the dirty, the moral and efficient, or how a particular framing of the discussion makes certain elements appear as fixed or appropriate while other elements appear problematic." Hajer points out the salient features of policy-making: First it necessitates that the social phenomenon be defined -- typically by self-designated experts -- in a manner that solutions can be found. Parameters are set through the following questions. "Within what domain do we have to find our solutions? What institutional commitments have to be respected? Which social conditions are malleable, which ones are fixed?"

These questions are germane to this study of problems in the upper Yaque del Norte in that they help put boundaries around the issue. What is to be allowed in
the realm of consideration? For example, if farmers are pushed to clear
mountainside forests because inequities in land tenure preclude the use of good
arable land, is the problem then unsustainable agricultural practices or is it skewed
patterns of land distribution? Another example: is the small-scale agriculture of the
Cordillera -- which provides a significant portion of cheap food for the urban working
poor -- less important than the export-led commercial agriculture of the lowland
valleys? Or yet another: Should Foresta, and other government agencies, continue
to hold a lock on the management of the nation's forests, or are other alternatives
possible?

Answering these questions may be well beyond the scope of this thesis. What is
important, however, is that they are at least raised and brought up for consideration.
This thesis aims to serve as a forum for examining the problem in the watershed in
its full context; in other words, to point out the privileged interests that have
dominated the region's history and unprivileged interests that seek recognition
today. The hope here is to broaden the boundaries of the debate over what is to be
done in the contested Cordillera, and to open up spaces for new approaches
toward the protection of rural lands and livelihoods.
Moro rises early in the dark, and I hear the murmur of his morning prayers in the next room. He passes through the room where I sleep, pausing to touch the statue of the Virgin Mary and make the sign of the cross. In the kitchen outside, I hear him start a fire and a quick breakfast of strong sweet coffee and *ponche*, an egg shake of sorts. With the coffee on, I get out of bed. We leave the house shortly after daybreak and head up the valley from the village of Manabao. November mornings dawn clear in the Cordillera Central of the Dominican Republic, though by afternoon, billowy clouds knot up, portending evening showers. Here in the upper watershed of the Rio Yaque del Norte, the river that drains the northern half of this massif, it is time for preparing mountainside farms, still known by the Arawak word *conuco*, for planting red beans.

We leave the valley bottom, and climb first through a coffee plantation and then old *conucos*, now in various stages of secondary growth. In these *votaos*, as they're known, Moro points out a few trees and their uses: *Calmito* produces a sweet black fruit at Christmas; *mala mujer* gives you good firewood; and the *pinillo* has a strong wood, one that "will outlive you," he says. Forty years ago, these old *conucos* were all *monteria*. Just before arriving at Moro's *conuco* we pass through a piece of land thick with bracken fern owned by a local forest guard with Foresta, the Dominican forest service. A year before, a fire set to clear the land for planting raced through the dry weeds beyond the *conuco* and burned three acres of sparse pinelands and a portion of Moro's bean field. I ask him about this irony, and whether the man paid for Moro's losses. He smiles and shakes his head no. It was an accident, and wouldn't be fair for one poor man to place such demands on another. "All of us are poor here," he says.
Near the ridge top, we arrive at his conuco, a gently sloped depression covered in yuca, bananas, plantains and sweet potatoes. Moro's wife, Amalia, inherited the land from her father, who worked it 40 years ago. Moro has worked these 20 tareas, (roughly three acres), for the past two years.\(^1\) Even though the soil is tierra caliente, a relatively infertile red clay, Moro believes he'll be able to work it another couple years before giving it a rest.

With a hoe he begins to clear a patch of cadillo, considered a weed by most farmers. Once piled, he leaves them to dry in the intense Caribbean mountain sun. He moves on to older piles of weeds, shrubs and trees such as guava. He puts a match to one and it ignites swiftly, cracking, popping and sending up great pillows of white smoke. With a machete as a digging tool, Moro will plant red beans on this quarter acre.

This is the agriculture Moro has practiced all of his 49 years. It is the agriculture his father practiced and his grandfather as well. But today it is a practice under pressure. In the last 30 years, shifting cultivators have been blamed by domestic and international institutions for substantial forest clearing in the upper Yaque del Norte. Undeniably, farmers have been the physical agents, the actual hands, of much of forest conversion. I find this view, however, is simplistic and incomplete. Still, in the 1990s the Foresta has clamped down on conuquismo, the traditional agriculture of the Dominican campesino. "Nowadays," Moro tells me later, over a noonday plate of rice and beans, "to work in agriculture you have to do it clandestinely, not publicly, because if you do it openly you can land in jail with the Foresta. They don't let anyone work. For a padre de la familia (the father of a family) has to look for a way to support his family."

How to support a family is a universal preoccupation. In the upper Rio Yaque del Norte, the livelihood strategies employed by the campesino have long been adaptable and diverse. To survive requires more than agriculture. "You would fail,"
Moro says. Cash provides for the myriad of domestic needs unmet by subsistence production. For the past 35 years, Moro has guided tourists in a nearby national park. In the past, many campesinos worked part-time in the timber industry, as loggers, oxen teamsters or millworkers, and still maintained their conucos.

The livelihood concerns in the Yaque del Norte are elemental and immediate, and often times mere survival has led to destructive practices. But these practices do not occur in a social and political vacuum. They have been shaped by a chain of socio-economic factors and political events by actors still around today. In other words, they have a history. So the question that arises is does blame for "deforestation" in the Cordillera rest with the campesinos or does it only reflect symptoms of more persistent and deeply rooted societal problems? Indeed, campesinos make an easy scapegoat. How this blame, this discourse, gets to be accepted as the dominant version, and how it gets put into practice, is also a concern of this thesis. As will be shown later in this chapter, simplistic and axiomatic assumptions about campesino destructiveness can be traced back to the 1920s, when the first urban-imposed restrictions were placed on campesinos in the watershed.

To tell the story of agricultural change in the Yaque del Norte requires a brief overview of the natural history of the region, with a focus on the fire ecology of the Hispaniolan pine, a tree that has played a key role in shaping the Cordillera's history. Farmers' activities, particularly burning, at one time expanded the range of the pine forests; today the same activities, practiced under different circumstances, are some of the primary forces causing forest loss. In the subsequent section, farming practiced by the Arawaks offers a glimpse of a past agricultural model that exhibited longevity and productivity, two possible criteria for the slippery notion of sustainability. Next, the chapter looks at the settlement and changes in agriculture in the watershed. The final two sections place agriculture in its societal
context and examines ways the farmers themselves are attempting to change their agriculture.

**The Pine Forests**

Armando Bermudez National Park and its neighbor Jose del Carmen Ramirez National Park form a 1500 km² block of protected wild lands, out of which flow a dozen of the nation's most important rivers. The very headwaters of the Yaque del Norte are found here in the saddle between two of the Caribbean's taller peaks, La Rusilla and Piquito del Yaque. Here Aguita Fria bubbles out of the ground to form the primary tributaries for both the Rio Yaque del Norte and the Yaque del Sur. What the Yaque del Norte is to the northern half of the nation, the Yaque del Sur is to the southern half.

The trip to these headwaters offers some idea of what much of the upper Yaque del Norte might have once looked like a scant century ago. This is not to say that the park is some pristine remnant of highland forest untouched by human hands. Recent history shows that scores of families were ousted from the newly-established park when it was created in 1956. Other evictions have preceded these. Deeper history shows that the Cordillera Central was inhabited by indigenous people of Arawak origin, known popularly as the Taino. Further back were indigenous societies of which nearly nothing is known, though mounds they left behind dot the Cordillera.²

Even with the long human history of the region, the lands cordoned off by the park's boundaries offer some sort of baseline notion of forest types once present throughout the watershed. It is representative in many ways: Elevations in the park run from 1,000 meters at La Cienaga to more than 3,100 meters atop Pico Duarte, and precipitation varies between 1000 and 4000mm. The park includes four of Holdridge's subtropical life zone classifications found in the watershed.³ Much of the park, in the subtropical lower montane wet forest zone, is covered by a multi-
storied flora, one dominated by an overstory mix of broad-leaf trees and pines. The greatest diversity is found among the broad-leaf trees, with the tallest being the stone fruit, *Prunus occidentalis*. Also mixed in are mountain palms like *Prestoea montana*, tropical cedars like *cedrela odorata* as well as numerous others that may sound best in Spanish: *palo santo*, *temblador*, *palo amargo*. The river bottom of Rio Los Tablones is lined with the bamboo-like *cana amarga*, and the trees laced with spiraling lianas. In damper sites at higher elevations, the fronds of tree ferns lean over the trail. Many broad-leaf trees cradle epiphytes, bromeliads that look like pineapple tops. Pines stand draped with old man's beard. These pines are all of one kind, the Hispaniolan Pine (*Pinus occidentalis*) the only native on the island.

Along the steep and badly eroded trail, at about 2400 meters, pure pine forests start to predominate. At this level on the trail to Pico Duarte, the line between the mixed forest and pine forest is distinct, looking like an old burn. Indeed, some of the larger pines show fire sign. The pine forest here consists of an uneven age mix of size classes, from seedlings on up to trees 30 inches at breast height. Trees in the overstory stand more than 80 feet high. Their boles are straight and branchless nearly three quarters the way up their height before crowning out into a needled broccoli-like head. To look on the slopes of the highest peaks in the Caribbean -- Pico Duarte, La Pelona, La Rusilla, Pico Yaque -- is to be reminded the gentler ranges of the Northern Rockies.

The pine has played an enormous role in the history of these mountains and the country as a whole. Dominican botanist Rafael Moscoso suggests that a Hispaniolan pine log washed down a Cordilleran river to the sea and from there was swept to the Azores on the Gulf Stream, where it was found by Columbus, thus confirming his belief that land lay beyond the western horizon. In more recent
times, the pine was the object of extensive commercial exploitation, which is explored in the next chapter.

The relationship between the pine and the campesinos is essentially the narrative thread of this thesis. If the two share anything it is adaptability. Elevationally, the Hispaniolan pine ranges from less than 300 meters above sea level to more than 3000. Those limits are influenced by two forces, fire and ice. On the upper end, hard frost, and even occasional snow, has permitted relatively little incursion by subtropical broad leafed trees. At lower elevations, these same trees would invade and eventually crowd out the pine, except in thin and infertile soils, frost-prone microsites and on the ridge tops.5

Pinus occidentalis has a strong grassland association, and consequently a relatively high adaptation to fire. In the higher elevations it grows with a bunch grass (Danthonia domingensis) while at lower sites it’s occasionally found with the exotic yaragua (Melinis minutiflora), and the bracken fern, (Pteridium spp). Growing among such fast fuels, the pines have developed thick barks and self-pruning branches, rendering themselves more resistant to fire.

The effect of anthropogenic fire on the pine’s biogeography is of special interest in that it suggest the relationship between humans and pines has not always been destructive. In the 1940s, forester Leslie Holdridge linked the pine’s distribution on the island to human fire. "As soon as man entered the area, occasional fires began the process of pushing back the hardwoods from the sections which the pines were able to invade because local sources of seed were available and to hold because pines are quite fire-hardy except when young."6 Geographer William Denevan further argues that the southern limit of pine in the Americas may have been extended by anthropogenic fires.7 In Nicaragua, Denevan argues that native peoples may have encouraged the spread of pine (P. oocarpa and P. pseudostrobus) through fires set to hunt and to make milpas, their
form of shifting cultivation. These fires were irregular enough to permit regeneration and generally coincided with the end of the wet season. Similarly, on Hispaniola, the Arawak used fire to clear land for their mound agriculture and also burned grasslands to hunt the rabbit sized rodents known as huitias (*Plagiodontia* sp.), one of the few native mammals on the island.

Fire interval is a critical factor in Hispaniolan pine ecology. Fire benefits the pines by creating a suitable substrate, and by excluding the subsequent broadleaf invaders. Fire promotes vigorous regeneration, typically of a dense mat of seedlings, much like lodgepole pine regenerates in the Rockies. But it can also hinder regeneration if it comes too frequently. Fire intervals between five and 20 years are ideal for the establishment and maintenance of pine forests; any shorter would prevent regeneration and allow the eventual conversion to savanna or pasture, while anything longer than 20 years would permit the conversion to hardwood forests.

Physically, it is that shortening of the fire interval that has converted much of the forest in the upper Yaque del Norte. Burned year after year to create and maintain pasture, the forest seed source has been eliminated in many places. Again, these shorter fire intervals have largely been determined by the social acting on the biological. Still, fire has always been a part of farming systems on Hispaniola. The history of agriculture in the upper Yaque del Norte and the Cordillera Central predates the arrival of Colon in 1492. The next section briefly examines the agriculture practiced in Pre-Columbian times.

**Historic Agricultural Practices of the Arawak**

Unlike many nations of Latin America, the Dominican Republic has no remaining indigenous people, nor has it for centuries. The first European encounter with native America proved brutally inept and casually genocidal. The early inhabitants of Quisqueya, the Arawak name for Hispaniola, are believed to
have come from the South America mainland, the Orinoco region specifically. In their canoes, another word of Arawak origin, they brought with them to the Greater Antilles a root crop based polyculture that was amazingly productive. But Arawaks were all but extirpated by the middle of the 16th Century. And as if to vex their Spanish persecutors, the last Arawaks to die took their agriculture with them. Of Arawak agriculture today little remains but the name for the subsistence plots, conucos, and the campesino predilection for certain roots crops.

The Arawak tribes practiced extensive mound agriculture throughout the island except for some poorly drained coastal lowlands. Geographer Carl Sauer wrote that if soil was sufficiently present, the Arawaks lived in the highlands and farmed many of the mountainsides. Early Spanish accounts, and numerous Cordilleran archeology sites, including ones near Manabao, indicate widespread settlements in the mountain valleys. Just how populous the entire island was at the time of the arrival of Columbus is uncertain, and estimates vary wildly, from 60,000 to seven million. Of the middle range figures, an early colonial count put the number of indigenous people at just over one million. Father Bartolome de las Casa, the chronicler of the native lifeways and their demise, said there were as many as three million people on the island. The numbers of indigenous people are significant, for it shows that traditional agriculture perhaps provided sustenance for millions of people.

Regardless of the number of mouths it fed, Arawak agriculture was very productive for the labor involved. Most of the work of Arawak conuco making went in at the beginning. Fires were part of the process. To clear land, the Arawaks girdled or felled trees and burned them once dry. Soil was then piled in round heaps, montones, up to two feet high and several across in diameter. The arrangement of the montones impeded sheet erosion. These mounds were planted principally in root crops such as yuca, (cassava) and batata (sweet potato)
and other tubers that occupied different layers. While the *yuca* grew well over three feet, the *batata* sprawled at ground level like an ivy. Aside from the root crops, the *conucos* grew squash, another ground cover, and nitrogen-fixing crops such as peanuts and to a lesser extent beans. The corn-beans-squash polyculture of Meso America, known there as the *milpa*, was practiced as well but Sauer believed it was a relatively late arrival.\(^\text{13}\)

The sharpest distinction between *conucos* of today and the pre-Columbian age is that the former are part of a shifting cultivation system while the latter were not. The mounds were permanent, and in fact, endured after the Arawaks' passing, eventually returning to *monte*. Sauer explains that the mounds were labor intensive to establish but required minimal work after. The *yuca* and sweet potatoes demanded little from the soils, and weeding was limited because the sprawling sweet potatoes and squash warded off competitors.\(^\text{14}\)

Aside from their *conucos*, the Arawaks had forest gardens, a variety of trees, shrubs and plants they tended around their circular thatched houses or bohios. Around these homes grew *bixa*, a small tree whose seeds could be used for red dye, the *mamey*, a prized fruit even today, a species of cotton tree, tobacco, the pineapple, two kinds of hot peppers, and innumerable edible and medicinal plants and herbs.\(^\text{15}\)

Sauer avers that the Arawak *conuco* rivals any form of agriculture in terms of productivity. Arawak agriculture, as described by Sauer, exhibits many of the features of the so-called sustainable agriculture so often sought today:

The mixed planting system gave the greatest range of terrain usable without regard to steepness or regularity of slope. The plants grown were neither demanding nor exhaustive of soil fertility, and were relatively indifferent to soil acidity. They needed no special means of storage, had no critical time of harvest, and were in production at all seasons.\(^\text{16}\)

Except in one critical aspect, the *conuco* of today bears some resemblance to those of the Arawak age. The name remains the same, as do many of the crops
and their arrangement, but the mounds are gone. For most part, the conuco today is associated with shifting cultivation, tumba y quema, or the so-called slash and burn agriculture. Now migratory, and the conuco's sustainability has suffered for it. Equally important, the conuco has become a unit for market production, further straining ecological limits. It is important to keep in mind, however, that once a widespread and enduring hillside agriculture was practiced, one which helped feed large populations with relative ease.

After the genocide of the Arawaks, the Cordillera and Yaque del Norte remained largely uninhabited by humans until the 19th century. As the following section notes, feral cattle and pigs first brought Spanish settlers, and a new, migratory agriculture, to the Cordillera. Settlement brought with it small-scale market production agriculture. The way of life developed by these small holders in the mid-1800s endured nearly a century. Equally important, it was this period that saw the emergence of the urban contention that the campesino and the forest are two irreconcilable enemies.

**Settlement in the Yaque del Norte**

Historian Alfred Crosby has noted that as the native population on Hispaniola declined precipitously, the number of dogs, pigs and cattle on the island grew exponentially. Livestock took well to the land without predators but with such an agreeable climate. One colonial official estimated in 1518 that if 30 or 40 head of cattle strayed off, their number would grow tenfold in as few as four years. Similarly, within a few short years of the arrival of Columbus hogs ran wild in many parts of the island. The feral pig, the *puerco cimarron*, became a "fast, tough, lean, self-sufficient greyhound of a hog much closer in appearance and personality to wild boar than to one of our twentieth-century hogs," wrote Crosby.

The feral hogs that took to the mountains of the Cordillera were soon followed by Spanish and Afro-Hispano settlers and hunters, known as the monteros. Some
Dominican historians speculate that many Spaniards retreated to the highlands during Haitian invasions in the early 1800s and also during the Haitian occupation from 1822 to 1844. The earliest settlers ran their cattle semi-wild in the forests, and farmed small *conucos*. During that time, population was low, and much of the land in the upper Yaque del Norte was held communally in a system known as *terenos comuneros*.

This colonial system dates back to the 16th Century when the Spanish crown would grant an *Amparo Real* to a settler. This gave the holder permission to use the king's land, provided it was either built upon, farmed or most often, stocked with animals. When the original recipient died, the *Amparo Real* was divided into shares and distributed among the heirs. These new holders of *acciones de pesos* could graze cattle or farm anywhere in the granted land. Each new generation of heirs would further subdivide the original ranch. Until the late 19th Century *terenos comuneros* functioned well because of sparse population, cheap land prices, and the lack of surveyors; furthermore it assured all the heirs would receive equal access to water, forage, shelter, and land on the ranch. Over the generations, the *pesos* were further divided, sold, or traded, so much so that the exact number of shareholders was never known, nor was there a group effort at management. This situation would become problematic at the end of the 19th Century when land values rose, and along with them the incidence of fraud.

Many of the community names in the upper Yaque del Norte owe their origin to the first *monteros*: El Dulce, for its abundance of wild honey bees, Los Dajaos, for a type of fish in the stream, Pinar Quemado, for the burnt pine stand, and La Cienaga, the bog. Save for a few *monteros*, the upper Rio Yaque del Norte was sparsely populated until the mid 1800s. An early account of the watershed comes from North American geologist William Gabb, who in 1870 was sent to carry out a three-year geological survey of the nation for some New York mining interests.
At that time, Gabb described Manabao as the last community in the Yaque, and even then there were only two or three families. Gabb admired the people of the Cordillera, calling them a "independent, hardy race of mountaineers." In Manabao, people tended cattle, and hunted wild pigs but mostly grew tobacco, which they rolled into cylinders called andullo and sold. The pungent andullo, still widely smoked by campesinos, provided cash for goods that could only be bought. By the 1860s, commercial agriculture had begun to make in-roads into Jarabacoa and the upper Yaque. The livestock economy based on hides and meat found it difficult to market goods internally and externally. Tobacco production, and to a lesser extent beans, became the major source of income for the residents of Jarabacoa and the upper Yaque del Norte. In the Cibao Valley below, and in the city of Santiago in particular, export tobacco had created a relatively prosperous commercial elite and peasant economy based in equal parts on subsistence and market production.

The way of life noted by Gabb in the 1870s persisted largely intact in the upper Yaque del Norte until the 1950s when the first logging roads were built into the drainage. The activities of the early residents of the Yaque del Norte, however, were not without effect on the watershed, nor did they go unnoticed by the larger society. In the mid-1920s, the Santiago lawyer and national civic leader, Dr. Juan B. Perez, along with Dr. Miguel Canela Lazaro, was hired by the Dominican government to explore and report on the headwaters of the Yaque del Norte. Their mission was to report on the possibility of establishing the nation's first forest reserve. Perez's report is valuable for several reasons: First it gives an account of early "deforestation" in the watershed; second, it marks the genesis of an environmental discourse that holds up the campesino as the problem; third, it reflects the urban bias of many conservation efforts and advocates strong measures that are still prescribed today.
In his 1926 report, Perez described how campesinos had cleared forests in the Yaque del Norte river bottom, the flattest and most fertile land, in the first two decades of the 20th Century. He also noted the fires set to improve pasture. The *montero*, according to Perez, is "by profession a layabout" who doesn't work the land except in scarce instances. He is a "threat to the forests in which vicinity he lives."²³ Perez goes on to frame the issue in a way that is still echoed today:

The case in the Yaque del Norte is clear and precise. From the Yaque, live half of the Republic. Should the interest of this great nucleus of population sacrifice itself to the misunderstood interest of a half dozen poor wretches ... who without mercy are destroying the very sources of this indispensable and legendary river?²⁴

Perez urged the government to establish a protected area around the headwaters of the Yaque del Norte. To do so required the removal of the campesinos -- 15 families with a total of 95 people. Perez suggested that the law of eminent domain could be invoked, and that land could be acquired cheaply. He even mentioned that some residents were squatters who could be expelled without pay, though he added it would be worthwhile gesture to compensate them.²⁵

Perez and Canela -- widely considered the patriarchs of Dominican conservation -- were among the first Dominicans in a lineage that runs to date to call for the removal of the campesinos from parts of the Yaque del Norte. Trujillo would incorporate the first protected area into the national park; today groups in Santiago call for the enlargement of the park, and relocation of the area inhabitants, in order to protect the watershed. The reach of the urban conservation discourse will be examined in the last chapter; suffice to say here that Dominican urban groups have typically viewed campesino livelihood in a disparaging light, and have been able to impose their wishes. In particular, the *conuco* has been demonized. The prevalence of such a view warrants an examination of today's *conuquismo*. How and why the *conuco* has changed is critical to this study. How to "settle" the *conuco* once again is of equal concern. The next section gives a brief
overview of shifting cultivation systems in Latin America, and then narrows in on how it is practiced, and has been modified, throughout history in the Yaque del Norte.

**Conuquismo**

In describing what they label "agrodiversity," Brookfield and Padoch note the "number and variety of farming systems in the world exist because farmers have, over centuries, devised them to fulfill their needs in relation to the physical, biological, social, economic and political environments that they manage." Shifting cultivation's ubiquity in the Tropics is as great as its diversity. Whether it is practiced on a benign or destructive basis is determined in large part by the greater societal context in which it is embedded. The narrative line through this chapter offers that socio-economic and political forces have prompted agriculture in the watershed to change, for better or worse, and that such conditions may now be spurring another change. But there is a tendency among the media, governments and other institutions to lump the numerous forms of campesino agriculture together in one destructive category: "slash and burn" agriculture. In less pejorative terms, this form of agriculture is known as swidden, long or short fallow shifting cultivation. It would be an equally serious mistake to romanticize, or even accept uncritically, the practice of shifting cultivation. Not all farming practices are ecologically benign or productive, nor do all farmers within a region possess the same levels of farming knowledge and resources.

In writing about the Amazon, geographer William Denevan describes four shifting cultivation patterns— all of them evident to some degree in the upper Yaque del Norte. Just as the ecology of *Pinus occidentalis* is tied to the length of fire intervals, so the degree of destructiveness of shifting cultivation depends on the length of the fallow period. Short cultivations in small plots widely dispersed followed by long fallows of 20 years or more mimic natural disturbances and allow
the most substantial forest regeneration. In some places in the upper Yaque, pine stands now grow in the *conucos* of the past. Short fallows are less ecologically sound as they give a farm plot four to 20 years rest, permitting some scrub and low forest regeneration. Bush or grass fallows are frequently seen in the Dominican Republic. These last as few as four years, with the fallow dominated by weeds, grasses and maybe guava. Farmers forced to work grass fallows can somewhat augment their soil's meager fertility organically through manures, compost, and ash or, as more often is the case, through chemicals. Indeed, as the fallows shorten the usage of fertilizers and pesticides increases.

Perhaps the most prevalent pattern throughout the watershed is what Denevan calls terminal shifting cultivation. He writes that it is associated with pioneer areas where roads have recently been built, and its practitioners are often new immigrants inexperienced in farming. Cultivated too long and fallowed too short, these *conucos* basically collapse and become overrun with weeds and pests. In years past, the farmer would move higher into the forests and begin the cycle anew. Denevan again describes the aftermath of terminal cultivation in many parts of the Americas, one especially apt of the Yaque del Norte:

Land deterioration is permanent. The cover is grass and shrub with little or no rotating with either crops or forest. The recovery of the forest is prevented intentionally by burning and chopping, unintentionally by fires set for a variety of reasons, by the invasion of aggressive grasses or bracken ferns, and by a deteriorated soil structure and nutrient level. This 'savannaization' is often extensive, and sources of seeds for regeneration of primary tree species become unavailable.

The story of the modern *conuco* seems one of declension, of gradual slide toward oblivion. The *conuco*'s roots are found in poverty and oppression, and ironically, those roots dog its image today. Farmers wanting to be modern look down on the *conuco* as the embodiment of the culture of poverty. Today's *conuco* is essentially African in origin, though plant combinations and the very name are indigenous. Enslaved Africans were allotted little space by the Spaniards for their
own food production, and out of necessity developed a diverse multi-storied system, the stacked structure of the Arawak conuco. Both imitated a forest ecosystem with its stratified crowns and roots, its nutrient cycling through litter drop, and its diversity of both annual and perennial plants.\(^30\)

North American Robert Werge studied Dominican conuquismo in the Cordillera Central in the 1970s and found that despite its pernicious reputation, it has "its own internal logic and consistency."\(^31\) Werge estimated 20 tareas per year, a little more than a hectare, were cleared by each family to plant conucos. These 20 tareas, however, were divided into several parcels often great distances apart. The diversity of sites, as well as the diversity of crops help minimize risks faced by the farmer.

As a production unit, the conuco is unlike many swidden agriculture systems, which produce for subsistence primarily. Dominican conuquismo includes subsistence and market crops such as red beans and, in the last 20 years, vegetables such as cabbages, potatoes, tomatoes, cauliflower. The surplus root crops such as yuca, sweet potatoes, yautia and rabano, are often sold in town as well.

The fallows, according to Werge, averaged eight to ten years, though that depended on land availability and demographic factors. These cycles of cultivation and fallow continue until the soil becomes too exhausted or eroded away, leaving degraded sites to convert to poor pasture and savannas, the terminal end of shifting cultivation.\(^32\) The old conucos most often become poor pasture for stringy cattle. The conversion of forests to conucos isn't necessarily a permanent one; the conversion of old conucos to pasture, however, may be much more enduring.

Dominican farmers, themselves, have watched -- and participated -- in this process over the decades. Among campesinos old enough to remember the days before the advent of the timber industry and all the roads in the 1950s, there is a
tendency reminisce warmly about life in the Yaque del Norte. Teofilo and Augustine are neighbors and _compadres_, godfathers to one another's children. With their families, they have lived in a small valley outside of La Cienaga for most their lives. They remember during _la época de Trujillo_\(^3^3\) when the hills were forested, when a farmer could work the land without worrying about the _forestales_, when livestock roamed the hillsides, and when they could hunt wild pigs with their pack of dogs. "For forever," says Teofilo, "all our lives, people have hunted pigs. Now it is prohibited."

Along with the loss of traditional hunting rights, campesinos have lost their rights to timber harvesting, and seemingly even the right to farm. "In our property, we can't fall a tree or prune. If we cut down a tree to use for some work in a kitchen or house, it's jail," Augustine says. Over the years, the foundations of campesino livelihoods have been systematically undermined.

Aside from political restrictions, Teofilo and Augustine say they've seen agriculture slip into a long, slow agronomic decline. The soils supporting the mountain forests of the Cordillera are shallow and relatively infertile. Once exposed to the elements -- the torrential rains and winds and even occasional hurricanes -- the topsoil begins to run downslope, or leach out its nutrients; the soil compact under the feet of the farmer or stock; in the intense Caribbean sun, the humus cooks up and moisture goes with it; crops quickly claim the remaining nutrients.\(^3^4\) After a good initial harvest, soil fertility declines and the weeds, the colonizers of the degraded, invade. These processes are exacerbated with each successive cropping cycle. In his own agriculture, Teofilo has seen this firsthand:

This has degenerated. Before when we could cut down trees, we used to go to the hills, when the Foresta wasn't like it is, we could make conucos without adding anything....Today you can't do that. You have to work the same land, and it always loses its force."

\(^3^3\) _La época de Trujillo:_ The era of Trujillo

\(^3^4\) The process of soil degradation and nutrient loss is known as _soil erosion_.
To recoup some of that force, *la fuerza*, many campesinos have turned to chemical solutions. While the benefits of the Green Revolution have mostly bypassed the small farmer, the chemical byproducts -- the fertilizers and pesticides -- have assumed a place in their agriculture. Forced to farm fewer sites, and for longer periods, farmers have increased their usage of chemical fertilizers, herbicides, and pesticides. And while this adaptation has bought them some time, these chemicals are expensive and each planting cycle requires greater inputs as fertility continues to decline. And this mentions nothing of health consequences associated with agrochemical use.

Stationary, the *conuco* seemed a model of agroecological good sense. But the mounded *conucos* of the Arawak are long gone. Migratory, the *conuco* becomes more problematic as fallow periods shorten. The end of Spanish colonialism and the abolition of slavery in the early decades of 19th Century gave greater mobility to people and their agriculture. Under low population density with an abundance of land, a migratory *conuco* probably was light on the land in the long term. Those conditions broke down during the 20th Century. Indeed, the working lives of Teofilo and Augustine span a critical period in Dominican agriculture. They began them at the end of the pioneer era and now see that way of life in eclipse. Farmers have been made criminals; Teofilo has already spent time in jail for clearing land. Gone are the days of ample land, and the land they do own continues to lose its remaining capacity to produce, as Augustine describes:

Every day we fall further behind. And the law get stronger, and less and less production, and less and less land to work because the little bit of lousy land they let us work, the Foresta wants to take it from us and plant trees on it. And like I said if it were fruit trees, or something useful it wouldn't be bad but more and more it is pine they want to plant. And there's no one here that eats pine.

No one that eats pine. That says much about the elemental existence for many campesinos in the watershed. As currently conceived, forestry projects, with a
material return that comes in decades, offer little appeal for many campesinos faced with more pressing needs at the rural margin.

At this point in the study of the agriculture in the Cordillera, I think it is necessary to look at that margin and pose some questions. Why do farmers work the mountainsides? Why don't they use soil conservation measures? Why must they farm land until it collapses ecologically? These are resource management questions with social and political answers. To answer these questions warrants a return to Manabao and Moro, a farmer who has survived in a world ordered by others.

**Agriculture and the socio-economic context**

Economist Rosemary Vargas-Lundius, in her book Peasants in Distress: poverty and unemployment in the Dominican Republic, argues that national development strategies have "systematically neglected the agricultural sector in general and the peasantry in particular." Land and credit are controlled by a relative few. As a result of such inequities, unemployment and underemployment are widespread in the countryside. Landless and jobless campesinos migrate to the cities, where they encounter a whole new set of problems. In the campo, a common refrain captures this scenario: *Aqui, no hay vida* -- here, there's no life.

Here, in this case, is the river valley of the Rio Yaque del Norte near Manabao. The valley bottom widens in this area, and as a consequence much of the best arable land in the watershed is found near the village. This land, estimated at roughly 40,000 tareas, (25 square kilometers), however, belongs not to the locals, but to a dozen or so families living in Jarabacoa. To prevent local use, these owners have fenced off their land, which is reserved instead as pasture for a few head of cattle. This fact does not escape the attention of the campesinos, who have long had to farm the hillsides above the village. "Walk around Manabao and you won't see a yuca plant anywhere on the flat land," says Moro, a third
generation resident of the area. "Today this land has nothing growing but weeds, and produces nothing but a little grass."

Long ago much of the land around Manabao was communal. Over the years the land passed into private ownership, though it never had much value until recent times. Some thirty years ago land sold for 2 1/2 pesos a tarea; today land cost run as high as $15,000 pesos a tarea. "The rich took advantage of those times to get land," Moro says.

Moro's observations have a history. Early in the 20th Century, the dismantlement of the *terenos comuneros* system, further discussed in the next chapter, marked the start of a major shift in the land distribution and tenure structure. The rapid growth of foreign-owned sugar cane plantations initiated the breakdown of communal ownership, and the consequent increase of land values. It also played a role in the rise of the predatory Trujillo regime. These factors all led to vast disparities in land ownership patterns. Today, the system of *latifundio-minifundio*, that of many small farms and few large estates, prevails in the Dominican Republic as it does throughout much of Latin America. Exactly how skewed the distribution is today is unknown; the last agricultural census was in 1981. That year 82 percent of the farms were smaller than five hectares, and accounted for only 12 percent of agricultural land. On average, these farms were one hectare in size, and in 1981 there were almost a quarter million of them on land best suited for forests. Conversely, large farms, ones greater than 200 ha., occupied 36 percent of the farm land but represented only 0.3 percent of the farms. And not surprisingly, most of these were cattle ranches. A 1976 study showed that large farms, those greater than 30 ha., devote 76 percent of their land to pasture and only eight percent to crops.

A study using satellites found that between 1972 and 1986 conversion to pasture accounted for 78 percent of the forest clearing in the western Dominican
Republic, the region occupied largely by the Cordillera Central. Forest conversion accelerated from the late 1970s through the mid-1980s, averaging 36,000 hectares a year. And this process hasn't been just happenstance. It coincides with the creation of legal incentives, as well as the booms in the national and international beef markets. It is noteworthy that in 1972 the Balaguer government passed laws selling state lands with the proviso that they be used for cattle ranching; in 1979 further legislation geared toward supporting the cattle industry was passed. A new class of cattle ranchers has developed in the last 25 years: the urban professionals eager for an investment with low labor costs, and one that carries long standing prestige. In the upper Yaque del Norte, a common pattern was for absentee owners, generally from Jarabacoa or Santiago, to allow campesinos to clear forestland for a crop cycle or two before fully converting it to pasture through repeated burnings.

A related land tenure problem is the lack of clear titles to the land farmers already cultivate. In the Dominican Republic, figures on who actually has a title to their land are non-existent. It is widely acknowledged, however, that many, if not most, of the farmers in the upper Yaque del Norte have no clear title to the land they work. The insecurity stemming from this is problematic: With no certainty that they won't be run off their land, farmers are reluctant to invest the large amounts of labor need for soil conservation measures. Nor are forestry or agroforestry projects likely to be launched without guarantees of title security. Yet another problem is that without a clear title to land farmers are unable to put it up as collateral for much needed loans.

Compounding the inequalities in land holding is the vast amount of land that is not in use or is underutilized. The World Bank cites estimates that 13 percent of the country's farm land -- 350,000 hectares -- are not under cultivation. And half of those lands are government-controlled.
This too is known by Moro. "The government can't give jobs to all the farmers in this country." What it can do, he says, is buy unused lands in the region and distribute them to the campesinos. "If the poor people could have 30 or 40 tareas of flat land to work and support themselves, they wouldn't be on the hills farming," he says.

In the past in the upper Yaque del Norte, dispossessed campesinos have been relocated to other parts of the country in an attempt at agrarian reform. Moro expresses some skepticism at such efforts. He recalls one attempt after the shutdown of the timber industry in the 1960s that relocated some 20 families to the northeastern part of the Cibao Valley, near San Francisco de Macoris. These families were given a small parcel of land to plant rice. They fared poorly in the hot lowland valley. Many sickened because of bad water, and most gave up and left for the towns or the capital. "We would have to see if life would be easier there," Moro says. In the past they took people from here and they suffered from hunger and misery worse than they had here."

Vargas-Lundius argues that agrarian reform in the Dominican Republic has been a myth, an outright failure. If anything, the inequities in landholdings have deepened since reform was first initiated. These failures can be traced to built-in limitation of the reform laws; neither sugar cane plantation nor cattle ranches can be expropriated, thus eliminating most of the latifundios. Furthermore, Vargas-Lundius writes that ambitious laws encounter poor administration by government officials who may themselves be large land holders. "Many of the radical laws that have been issued could not be applied, since some of those who were in charge of their application would be affected by them."45

Nor has the government been any more supportive in giving credit. "There's no help for the small farmer from the government," Moro says. "They won't lend to campesinos. Moro says the government bank, the Banco Agricola, occasionally
will make small short-term (three to four month) loans, mostly to bankroll a bean
crop. Longer term loans, to plant yuca, plantains, or coffee, aren't made to
campesinos. Again Vargas-Lundius' research documents that small farmers with
little or no land also receive little credit from Dominican banks. For large farmers,
credit is needed either to pay for inputs such as seeds, agro-chemicals and labor;
for small farmers credit pays for the family necessities in the lag time between
planting and harvest. Large and mid size farmers, with the best land and
consequently the best collateral, receive low interest loans through the Banco
Agricola. Government lending accounts for 57 percent of all agricultural loans,
while the private lenders account for 28 percent. Interest rates paid in this informal
sector are much higher than at the bank. Private lenders range from store owners
who let farmers run a tab, to truckers, intermediaries and representatives of the
agro-industries. This latter group gives credit, technical support, and inputs in
return for a portion of the harvest.

Yet another problem is the marketing of what is produced. Campesinos in the
upper Yaque often sell their beans, vegetables, coffee or viveres to an
intermediary, often someone with a small pickup, who then takes them to market in
Jarabacoa or La Vega. Campesinos often lament that as producers they receive
the smallest rewards for their labor.

Thus, the socio-economic context in which conuquismo is practiced is
characterized by profound inequities in agricultural land distribution, land tenure
insecurities, the unwillingness of the government to extend credit to small farmers,
and a marketing and transport system that favors the intermediaries. Politically, the
climate is equally harsh. The Foresta crackdown on the small farmers is explored
at length elsewhere in this thesis. In short, it is in no way hyperbolic to say that
agriculture in the upper Yaque del Norte is an endangered way of life, a fact Moro
recognizes. Two decades ago, there were maybe one hundred farmers in Manabao. Today, maybe ten continue to farm.

For me it's difficult to imagine agriculture here in ten years because when you used to look at the hillsides, you'd see 15 or 20 conucos, but now you can't count not even one. Too many have disappeared. Foresta stops you from clearing weeds to plant your viveres. The farmer is always scared to work because he doesn't want to land in jail for working. If he's jailed, his family is going to suffer even more.

The pressure on the farmers affects not only the families, but could ultimately have repercussions for the wider society. Moro points out that the towns depend on the same agriculture that the campesino produces. "If there's no agriculture, the towns are going to suffer from hunger as well," he says. The expanding free trade zones known as zona francas are creating a low paid worker class, one dependent on cheap food costs. With the best agricultural lands often devoted to export crops or ranching, the hillsides are what remain for the nation's subsistence. Just how important the nation's conucos are has never been studied. The dependence, however, of the newly industrializing towns on regional hillsides portends serious difficulties and possibly unrest should that agriculture be undermined by soil erosion or loss of fertility or even worse a complete prohibition and eviction of its practitioners in the region.48

Moro speaks his words directly, yet without resentment. He is an affable man, a deeply religious one. When he speaks of los ricos, the rich, it is not as some Marxist revolutionary; it as a man who has struggled to support a family, and has managed to do it well. He is a farmer, a campesino, and that is more than a livelihood. It is the source of his identification, his culture. "I am 48 years old and I've worked agriculture since I was ten. Sowing, harvesting. I've had lots of failures. I've had, as well, the fruit God has given me to tend. I've produced. For that reason one feels very emotional about working in life. I never get tired of it. " 
And despite the enormity of the forces arrayed against him and other campesino families, Moro is neither cynical nor passive. He belongs to two farmers associations, and another for park guides. One of his groups recently planted 250,000 pines near the park entrance. He says he likes to work with groups, and the church, and believes that the recent formation of the Junta Yaque, a grassroots federation of 16 farmer and women's groups in the watershed, is an important move in protecting their livelihoods. 

"I think when groups unite, unify, study, work, it's always possible to see benefits... For a person alone, a thing might be heavy, but for many it is not."

In recent years, farmers in the watershed have begun to organize themselves. Their efforts have been aimed at education, and the reorientation of the old ways. In the nearby village of Los Dajaos, some five miles from Manabao, one farmers' group has shown some success in trying to put agriculture on a more sustainable footing. The next section examines the efforts of ASADA and its attempts to effect a new agriculture for the upper Yaque del Norte.

**ASADA and the new agriculture**

On the acre behind the house of Jose and Naty Cruz, bands of coffee and nitrogen-fixing shrubs form live barriers that hug the contours of the gentle hillside. In between the barriers, rows of strawberries arch with the bow of the hill's slope. Several double dug terraces are densely covered in corn, vegetables and vivieres. The plantains and bananas grow tall with regular applications of compost made on the farm. Scattered throughout the acre are both tropical and temperate fruit trees, ranging from the familiar citrus and papaya, peaches, plums, and apples to the lesser known like kandango, nispero, and granadillo. On the acre is a duck pond with stocked with tilapia, and a couple of goat huts built on stilts. Cuttings from the calliandra, and other crops residues, help feed the goats while the manure is returned to the field. Above the farm, closest to the house, Naty maintains a brilliant
variety of ornamentals and fruit trees. Below it, two milk cows graze in a small pasture. Across the stream at the bottom of the hill is a thickly forested slope covered in a mix of pine, the shade tree guama, and coffee.

On this small parcel, Jose has established his model of what a more permanent agriculture might look like in the upper Yaque del Norte. Whether this model is attainable by others in the community is a good topic for inquiry. Jose and Naty are not typical residents of Los Dajaos; even by North American standards they would be considered middle class. But they came from the city to reclaim their campo roots. Jose is the son of a farmer from Salcedo in the northern Cibao while Naty was born and raised in a campo outside of Jarabacoa. In Santo Domingo, Jose used to make wrought-iron furniture. They first came to Los Dajaos twenty-five years ago, at first just for the weekends, then for longer periods. About nine years ago, they decided to take up coffee growing, and make the move permanent.

Though relative newcomers, Jose and Naty are perhaps the best friends the community could have. With his old Toyota Land Cruiser, Jose has often been called on to drive a sick or injured neighbor down the valley to a Jarabacoa hospital. But even more important, he's been active in numerous community projects. He brings with him a good deal of influence, and among his many friends, Jose counts NGO representatives, government officials, army generals and university professors. Only half jesting, they call their elegantly simple farm home the Embassy of Los Dajaos.

Motivated equally by community-mindedness and enlightened self-interest, Jose is part of the community drive toward a new agriculture, and a better life in general. Recent years have seen a flurry of community development projects in Los Dajaos, beginning with ASADA and its work. The women's group of Los Dajaos, with the help of a Peace Corps volunteer, launched a latrine construction project and built a pharmacy and a medical consulting office. The Catholic church-
affiliated Obra Social Para El Progresso de Los Pueblos, based in Jarabacoa, has helped with school construction and health promoters. ASADA, and Los Dajaos in general, has received a good deal of attention -- in terms of financial and technical assistance -- from outside the watershed. From international sources, ASADA has received funding from the Falconbridge Foundation, the donor agency of a Canadian mining company that mines ferronickel some 50 miles away, the Inter-American Foundation, and the Canadian consulate. In the early 90s' Peace Corps was an active participant in many community efforts. A group of Spanish doctors, affiliated with a university in Madrid, have volunteered their services in the community. Two universities from Santo Domingo, the Universidad Nacional Pedro Henriquez Ureña (UNPHU) and the Instituto Tecnologico de Santo Domingo (INTEC) carried out a Rapid Rural Evaluation of community resources and problems.

In varying degrees and differing manners, nearly all the activities involved Jose and Naty. Thus, the direction of community development efforts in Los Dajaos have been facilitated, if not shaped in outline, by one couple. Still the work achieved by ASADA and other community groups is the result of many campesino families. To its credit, ASADA's membership and its directive include small holders as well as larger ones like Jose. For example, ASADA's treasurer Hector has lived all his 35 years in Los Marranitos, a poor mountain top community 1000 feet above Los Dajaos. These two communities may be at polar ends of the socio-economic spectrum in the upper Yaque del Norte. Hector's resources, in comparison to Jose's, are many times more modest. Nonetheless, ASADA offers space for both interests; both live in a place where forest conversion jeopardizes their livelihoods, and both face political pressure for a possible eviction from the watershed.

Los Marranitos affords the perfect vantage on a large portion of the watershed. Even in the last 20 years, Hector has seen many of the hillsides cleared. But in the
last decade people have also realized their effect. "People are aware of how things were before and how they are now. They have compared. There was always a lot of water, as well as a lot of forest. Today there is little forest, and little water."

Hector says much of past agricultural practices -- especially cultivation of red beans and corn on steep slopes without erosion-reducing measures -- were to blame. New crops, such as the chayote, the strawberry, the potato, may offer less destructive alternatives. "Our vision is to try to change traditional agriculture for a new agriculture... We have a greater awareness that we have to take care of the forest, and we are trying to develop new crops where we can work less soil and with less erosion." But changing deeply ingrained ways is never easy, he says. The biggest obstacles for the farmers trying to change livelihoods are the lack of economic resources, and education. "Things are changing, but step by step," he says.

Change, indeed, may come incrementally, and in fits and spurts. The first farmers group in Los Dajaos began in late 70s or 1980, but was never very active. ASADA's work began in earnest in the early 1990s, at a local initiative. "We have got to look for a lot of alternatives," Jose says, speaking of alternatives in agriculture, as well as alternatives to agriculture. Ecotourism, however ill-defined, may be one possibility as the watershed still offers some impressive vistas of the park, and a cool pleasant climate. Crafts may prove to be another. Recently, a group of Spanish ceramics instructors spent several weeks in Los Dajaos giving courses on how to make figurines based on traditional Arawak designs. All irony aside, ceramics was a small obsession for many in the village, including Jose. Their works were displayed at a small gallery at the bus depot in Jarabacoa. "If 20 people in the watershed dedicated themselves to producing ceramics, that is 20 fewer that are not going to attack the forests. And it is the same for tourism."
Still the group's focus is on agriculture. ASADA's first project was an aqueduct for a gravity flow irrigation system. Thus far, seventy farms receive water from the project. And it's going to reach more, Jose says. With a dependable supply of water, harvests have improved. In the past, farmers depended on the rain, or had to push higher on to the hillsides. "It was a necessity," says Jose. "I think in time, they will be able to continue working the same land for many years because it has water."

Water is one important factor in developing a settled agriculture in the upper Yaque del Norte. Protecting and slowly rebuilding soil is vital if agriculture to continue in the watershed. Roughly 50 members of the association are practicing soil conservation measures, such as live and dead barriers and drainage ditches. To receive loans from the group's rotating fund, members must employ some form of soil conservation; roughly 40 families have loans with ASADA. There exists, however, a gap between the word and action. Many campesinos may speak of soil conservation or organic methods, and yet seldom use these methods in their bean fields. As their cash crop, beans grown by farmers in Los Dajaos rely on chemical fertilizers, insecticides and herbicides. Again short term exigencies continue to outweigh long term "sustainability" concerns.

ASADA received a substantial boost in 1994 when the Falconbridge Foundation donated $12,000 to farmers in Los Dajaos with the hope of initiating a model for watershed protection in the country. This grant came about as a result of Jose's connections with the foundation. The following year, the Inter-American Foundation donated money to the group. With all its backing, the community established a nursery for producing timber and fruit trees, coffee and bamboo. ASADA, on its own initiative, planted more than 200,000 trees at the headwaters of streams, on roadsides, and private property. Some members say they would plant more trees if they knew Foresta would permit them to some day make use of them.
With the international support, ASADA also expanded the irrigation system an additional 300 tareas, and built an in vitro laboratory for strawberry and flower plant production.

The lab, a rather sophisticated operation for the countryside, was set up with the help of Jose's friends. "The laboratory came about as we were searching for alternatives to reduce the area in crops," says Jose. In the past, strawberry plants came from the United States and were difficult to obtain, expensive and would sometimes arrive in poor condition. "We decided to try to produce the plants here."

The recent gains by ASADA have been recognized throughout the Dominican Republic. Campesino groups from the neighboring Cibao Valley and the southern part of the country have visited Los Dajaos. "Above all," he says, "we want to be a model for our neighbors, those that live in the watershed."

Out of the efforts of ASADA, a new group, the Junta Yaque, was formed in the summer of 1995. This group unites 16 farmer and women's groups in the watershed. But how appropriate is ASADA as a model for the other groups of the Junta Yaque? This question is not intended to denigrate the efforts of ASADA; rather it is to point some critical differences in the communities of the upper Yaque. The other farmers groups, from Manabao or La Cienaga, have not had the resources nor connections that ASADA has. Whether the ASADA model is replicable would depend on if other groups could find equivalent levels of support. And unlike its neighbors, Los Dajaos doesn't have serious problems with land distribution. Perhaps in a testament to greater community cohesion, the landless in Los Dajaos are often lent land to work by their neighbors and relatives.

Another concern with ASADA is inclusivity. Farmers, or even campesinos, are not a homogenous, unified group; rather they are likely to be stratified by class divisions. While ASADA membership spans the spectrum of small to large producers, it has no landless members. In the 1970s, anthropologist Kenneth
Sharp described four distinct classes, with gradations, within a campesino community on the north slope of the Cordillera. Landless or nearly so, the agricultural day laborers *echar dias* (to throw days) for the equivalent of three or four dollars pay in order to buy their subsistence. The next group, the small holders own enough productive land to provide for much of the household needs, but still must find wage labor to meet all their needs. Middle holders have their *conucos* but rely on coffee production for their cash income. With the most land, large holders grow coffee and raise cattle and plant *conucos*. In the community, large holders, like Jose, are the ones who hire the day laborers.

These socio-economic classes are useful in that they suggest who is most likely to undertake "sustainable" agriculture measures. Anthropologist Susan Stonich notes this in her political ecology of land degradation and the campesinos in the pine highlands of Honduras, a societal and environmental context similar to that of the Dominican Cordillera. She found that landless campesinos, renters, and small holders farmed their land with the most impact, using the shortest fallows, and burned the most often. But as land security increased, so did more benign practices. It's not surprising then, that Stonich found that medium and large holders were the most the likely to employ more sustainable practices, such as soil conservation, lengthier fallows, and less burning. If sustainable practices are linked to socio-economic standing, then the most "destructive" farmers will always be the least likely use them. There is the danger then that groups like ASADA will not reach the farmers they need to the most. The worse scenario is that the potential exists for the creation of new local elites, and the further marginalization of those already at the margin. It is not a perfect world. Despite some potential problems, ASADA and its work is something to build on, and the group is young yet. In trying to change their agriculture, ASADA members seek to address much of the history that has led to
their predicament. Their goal of producing more valuable crops on a smaller piece of land is essential if agriculture is to persist in the watershed. In terms of education, ASADA has achieved much in raising awareness in the community about forests and farms. The next step is to see that this awareness is put into practice throughout the community.

ASADA's initial gains seem to illustrate the integral role played by connections and resources. One often leads to the other. Such connections and resources would be key to making similar advances in other communities. To that end, outside support may be further justified. The task facing ASADA, and other groups of the watershed, is enormous, complex and expensive. Small communities alone are unlikely to be able to muster the resources to manage their watershed. The challenge, then, is for these groups to find assistance they need and yet be able to maintain direction of their efforts.

This chapter began with the pine forests of the upper Yaque del Norte, which up until the mid 20th Century, were compatible with a certain level of pressure from the human presence. From the mound agriculture of the Arawak's conucos in 1492 to the double dug terraces of Jose's farm of 1995, agriculture has undergone great changes in the intervening five centuries. Once a long-lived and productive subsistence agriculture was practiced on the hillsides of the Cordillera. But more recently, agriculture in the region has been practiced with only immediate survival in mind, and the results have caused serious degradation of the mountain forests. Placing destructive agricultural practices in their historical and societal context undermines prevailing notions about who is ultimately responsible for the conversion of Cordilleran forests. Campesino actions are largely reactions, or even adaptations, to the conditions imposed by the greater society. Mounting pressures on the campesino communities of the watershed may bring yet another
shift in agriculture. If it doesn't, the prospects for agriculture, and the families that depend on it, in the upper Yaque del Norte appear doubtful.

This story of agriculture in the Yaque del Norte, as told to me by farmers like Moro, Teofilo and Augustine, has been briefly outlined, and is still incomplete. Agriculture in the last 30 years has also been shaped by the Dominican timber industry that preceded it. Much of the Cordillera was opened to agriculture by logging roads built during the decades between World War II and 1967, the year the sawmills were shut down and the cutting prohibition imposed. Population in the watershed more than doubled during the same period. The industry itself was marked by a frontier rapaciousness. These conditions help set in motion much of the forest clearing in the last 30 years. The next chapter examines the development and operation of the Dominican timber industry and its consequences in the Cordillera.
CHAPTER 3
A Dictator and his Forests: The Timber Industry in the Cordillera Central

With his chin up, looking proud, don Manuel probably stands five feet tall. He is 72, and to call him spry would be to slight him, as he is fitter than men half his age. I learn that well the day we hike more than 40 kilometers of muddy trail in the Cordillera Central of the Dominican Republic. That December morning we set out from the village of Los Dajaos in the upper Yaque del Norte watershed for the Constanza Valley in the neighboring Yuna River basin. A gray lid of clouds obscures the peaks of the surrounding Cordillera. In a steady drizzle, we head up the furthest reaches of Arroyo Grande, a tributary of the Rio Yaque del Norte. Don Manuel wears a blue wind breaker, a pair of mock Italian loafers, slacks and a freebie ball cap emblazoned with the name of a herbicide manufacturer. He seems dressed for town, Jarabacoa, and a Sunday stroll through the parque. We're on no stroll, though; don Manuel moves quickly up the trail, picking his way through the ruts and puddles. He takes clear pride in himself as a walker. Many rural Dominicans travel on horseback, or on mules; Manuel has always preferred to go on foot. In 1953, he walked the 40 kilometers from his campo, Jumunuco, to Los Dajaos to find work in the timber mills. Over the next 15 years, he held nearly every job possible in the forests of the region. Once the jefe de la loma, the hill boss, he knew the industry, from felling the great pines with axes and skidding logs with oxen, to milling rough hewn lumber. From Los Dajaos in the east to Rio Limpio near the Haitian border in the northwest, don Manuel has walked and worked the woods of the Cordillera.

After more than an hour, we pause, and from the old logging road we travel, don Manuel points to what is now a small pasture down by the stream. This area, known as El Dulce, was home to a sawmill until 1967. The mill here was one of the
last of hundreds that operated in the Cordillera between the 1930s and 1967. Today no sign remains that a mill ever existed in this place.

For signs of the mill's existence, you must look up to the hillsides that drop steeply from 7,000 foot peaks. From El Dulce we climb the scrubby divide between the Yaque country and the Yuna basin. This was once all "monteria," Manuel says. We arrive at the uppermost reaches of the drainage, a place named for the increasingly scarce Hispaniolan parrot, La Cotorra. Unlike Los Dajaos, where pine forests cover much of the land not occupied by farms, La Cotorra is a denuded landscape. Hills there are covered in the yaragua grass, the ubiquitous bracken fern, and the colonizing shrub known as escoba for its value as a broom. An enormous charred stump toppled in the midst of a hillside farm, a conuco, reminds us of what once occupied this land. This tree, palo de viento, has long competed skyward with the pines for overstory dominance in the mixed pine and broadleaf forests that covered the Cordillera. Here that ecological struggle has ended; the red beans, the sweet potatoes and the yuca have won for now.

Don Manuel says the area had been logged until the mills closed, though that's not what accounts for the landscape. "The mills did a lot of damage to the forest, but the farmer has done more. The mills, what they did, was cut a lot, but they didn't set fire. The farmer burns, he burns the forest." Indeed, that combination of logging and conuquismo has physically converted major portions of the Cordillera's forests to poor pasture, or early successional brush patches. La Cotorra offers a stark illustration of what occurred throughout the Cordillera Central.

Down the trail, we pass a man and a barefoot woman, probably seven months pregnant, planting sweet potatoes among blackened stumps in a burned over field. Further on, we come across a smoldering stump of a recently -- and illegally -- felled tree. Adjacent to it, acrid smoke wafts from a charcoal pit. The manufacture of
charcoal, illegal under the law, is an industry of and for the poor. The rural poor carry out the hot, dirty work; the urban poor use it in place of gas stoves. The only ones who make money are the intermediaries, derisively known by some campesinos as the *chupa sangres*, the bloodsuckers. A quarter mile ahead of us, we see a man with children leading a mule loaded with charcoal down the mountainside toward the town of Constanza. Manuel says they'll wait on the outskirts for nightfall, when they're less likely to encounter forest guards from Foresta. That campesinos take high risks for paltry returns says much about their lot in life. In La Cotorra, the means of subsistence are meager, and often illegal.

There is a direct interrelation between degraded physical and social landscape of today and timber industry of the past. In the two decades following World War II, the highland forests of the Dominican Republic suffered a dramatic decline. These forests had seen some pressure from early settlers who have practiced shifting cultivation since before the turn of the century. Still, most of the pine forests of the nation's highlands remained largely intact prior to the war; in 1939 an estimated 750,000 hectares of pinelands were found in the Cordillera Central, and in the Sierra de Bahoruco in the southwestern part of the country. In 1967, following nearly three decades of intensive commercial (largely export) logging, those pinelands had dwindled to 215,000 hectares. In this chapter, I examine the history of the mill era and its ramifications in the upper watershed of the Rio Yaque del Norte. During the timber era, the forests of the upper Yaque watershed fed numerous sawmills. Their rise and operation, as well as their effects on the physical and social landscape, are worthy subjects of examination.

In the Cordillera, that kind of inquiry must include an examination of the role played by US imperialism and the Trujillo dictatorship. Nearly like bookends, the two American invasions (1916 and 1965) delineate the timber era. The first US occupation of the Dominican Republic in 1916 set into motion a series of events
that eventually facilitated the exploitation of the pine forests. Foremost, the Americans trained and established a Dominican National Guard that would become the private army of Rafael Leonidas Trujillo Molina. Arguably Latin America's most brutal and corrupt dictator, Trujillo ran the Dominican Republic as if he owned it for 31 years until his assassination in 1961. The lumber mills of the highlands -- whether under his direct or indirect control -- were but a small part of his ill-gotten empire valued at more than $500 million in 1961.2 After Trujillo's death, four years of political instability ensued, ending with the second US invasion. That action, in essence, restored moderated Trujilloist forces to power, thus perpetuating an authoritarian political culture.

The rise of commercial lumbering converged with demographic factors to lead to subsequent deforestation in the Cordillera. Census data show that in the Rio Yaque del Norte watershed, the population more than doubled between 1935 and 1960. With Trujillo's death came the freedom to move, and the burgeoning numbers of campesinos took advantage of it to claim new land. This was compounded by the collapse of the logging industry when many of the former woodworkers turned (or returned) to their conuquismo. The thin-soiled slopes of the Cordillera did not hold up well under increasing demographic pressure. Hillsides denuded of their pine forests were then denied an opportunity for natural regeneration by land-poor campesinos.

The intent of this chapter is not necessarily to wag an accusatory finger at the culpable; rather it is to illuminate the genesis of Dominican forest policy. This policy has engendered conflict between the campesinos and Foresta in the upper Yaque and other parts of the Cordillera. Borrowing generally from a regional political ecology perspective, this chapter seeks to remind us that the forces that cause deforestation are enormously complex and interrelated. In the attempt to protect or restore the ecological health of the upper Yaque del Norte watershed some
simplistic assumptions hold currency among important institutions about the nature of the problem and its solution. The Dominican forest service, like other domestic institutions and some international aid agencies, has laid the blame for the degradation of the Cordillera at the feet of the campesinos. Even some campesinos themselves, like don Manuel, situate responsibility for the forest loss with the farmers. While small farmers make a visible scapegoat, they alone cannot account for the forest conversion that has occurred in the Cordillera. The previous chapter explored the societal context in which a destructive agriculture has been practiced. Assigning blame to the campesinos also absolves Trujillo and the mill-owning Dominican elite of any responsibility for the forest degradation. Part of the intent here is to shed light on the factors often overlooked by the dominant discourse, to connect the present landscape with past events. To make some of those connections, one must begin with a look at the nation's tumultuous history.

The occupation forces

Dominican history is marked by a past dominated by colonial and imperial forces, a past noted for cycles of invasions and occupations, revolutions and dictatorships. Spain's first possession in the New World, the colony known as Santo Domingo was poorly administered and neglected by a mother country more interested in the riches of Mexico and Peru. In 1822, Santo Domingo was invaded by its neighbor, Haiti, which ruled until 1844. By the early 1860s, fear of another Haitian invasion prompted Dominican rulers to ask Spain to reannex the nation. Governed poorly once again, Dominicans revolted against the Spanish, and won independence in 1865. Until 1882, the nation was run by regional warlords, the caudillos. From 1882 to 1899, the dictator Ulises Heureaux controlled the country with the backing of foreign loans. His assassination was followed by 22 governments in 17 years.3
By 1905 the Dominican Republic owed $40 million to mostly European banks and companies. Fearing European intrusion in the hemisphere, the Roosevelt administration took control of the collection of custom duties in 1907. This receivership paid off its European and North American creditors, and turned over to the Dominican government 45 percent of the money collected. While warding off possible European intervention, the move only increased the instability in the Dominican Republic. As James Ferguson notes in his study of Dominican politics, *Beyond the Lighthouse*:

Political pressures from Washington fueled a further round of coups, revolts and assassinations. In 1915, the US proposed taking over all Dominican finances and replacing the army with a US-trained constabulary. Dominican indignation at the suggestion forced the resignation of the president. On 15 May 1916, the first detachment of the US Marines landed at Santo Domingo, beginning an eight-year occupation.4

Initially intended as a show of force to extract Dominican concessions, the occupation was formalized -- partially out of security concerns -- on the eve of the U.S. entrance into World War I in late 1916. Military law, as enacted and enforced by the U.S. Navy, ruled the nation. The military mission, according to Dominican historian Frank Moya Pons, was to "correct the economic, political, and social life of the country according to the U.S. Navy's conception of a more stable order." To that end, the military government took decisive steps. The constitutional rights Americans cherish most were among the first to be abolished under military rule. The government, under Captain Harry S. Knapp, forbade the possession of firearms and imposed a stringent censorship on the press, prohibiting the expression of "unfavorable opinions to the United States of America or to the military government in Santo Domingo."5

To recast the Dominican Republic as a model of naval efficiency, the American military government embarked on a series of ambitious projects. Various public works, planned prior to the occupation, were launched. Between 1917 and 1920,
hundreds of schools were built, allowing for student enrollment to increase from 20,000 to 100,000. Health and sanitation projects were also carried out or imposed. The most significant of the public works, however, was construction of a network of roads that connected the most important regions of the country. The military government borrowed freely from American banks -- $1.5 million in 1918 -- to build three major highways. The first, the Duarte Highway, linked the capital with Santiago, while the other two highways fanned out to the east and west of Santo Domingo. Road construction had numerous beneficial impacts: it allowed for the political unification of an atomized nation; it facilitated transportation of goods and produce within the country; and, it improved mail service. Duarte Highway played a key role in opening the Cordillera to timber exploitation. Although the highway doesn't pass directly through the Cordillera, it does cross the Cibao Valley at the foot of the mountains. One of the cities it passes through in the Cibao is La Vega, a gateway to Jarabacoa and the upper Yaque del Norte.

In addition to developing a national infrastructure, the Americans also sought to modernize the land tenure system. Under the American occupation, centuries old land ownership patterns were further usurped by private ownership. Originating in the 1500s at a time of low population density, the colonial system of *terenos comuneros* allowed for communally held property. Dominican and foreign business interests considered the system counterproductive to the growth of sugar, coffee and cacao industries in the late 19th and early 20th Centuries. As early as 1907, the Dominican government had taken steps toward the registration and partition of communal lands. In 1920, the military government passed the Land Registration Law. This law required all lands to be surveyed and registered at the expense of the owner, many of whom could not afford it. Unclaimed lands were awarded to the state or were sold at bargain prices. The upshot of the change in tenure patterns was that foreign, especially American, companies and a small
Dominican elite began to dominate large portions of the best agricultural land, a trend that became aggravated under the Trujillo regime. The inequities in Dominican land distribution today in part can be traced back to this era.7

The human toll of the loss of communal lands manifested itself in the eastern part of the country where sugar cane displaced many campesinos. "The expansion of sugar plantations had left many families with barely enough land on which to live or had forced them to move to the less fertile lands of the small mountain chains in the east."8 In those mountains, armed resistance rose against the American occupiers. From 1917 until 1921 the U.S. Marines, along with the newly-created Dominican National Guard, waged a brutal campaign against peasant guerrillas known as the gavilleros. In their attempts to subdue the "bandits," the Marines committed numerous atrocities, among them summary executions, torture and the burning of villages. Particularly notorious for savagery was one Captain Merckle. Historian Melvin Knight in his study, Americans in Santo Domingo, recounts testimony at Senate Hearings in 1921-22 that described some of the brutalities carried out in the eastern provinces:

Dr. Coradin, of Hato Mayor, testified that he had seen two men killed offhand. One of them, a man eighty years old, had first been dragged at the tail of a horse. The other "appeared to have made some remarks that offended Captain Merckle," whereupon the officer "took him to a corner of the house, drew his revolver, and shot him in the left ear...Emilio Saurez, drafted as a guide in April 1918, described such tortures as cutting off ears, burning a wounded leg, and putting acid fruit juice in slashes made in a man's chest.9

Captain Merckle eventually faced charges for his excesses, though he killed himself before his trial began. Merckle is significant not only because he represents the brutality inherent in gunboat diplomacy, but also because of one Dominican who served under him: Rafael Leonidas Trujillo Molinas. Dominican journalist German E. Ornes, who fled the Dominican Republic in the 1950s, asserts that Trujillo served as a guide and informant for Merckle. Trujillo --who had been
a guard at an eastern sugar cane plantation -- proved to be a "keen, proficient
disciple" of his role model, Merckle. "He learned that military rule cannot bear
criticism and how to deal with offenses against authority. Moreover, the late
Captain's forms of torture and arbitrary 'justice' have been perfected by 'the Chief'
and used on a larger, more terrifying scale."

Trujillo entered the Dominican National Guard as a second lieutenant in early
1919. He saw combat against the *gavilleros* and was highly commended by his
American superiors. After a brief stint in officer's school in 1921, Trujillo became a
captain and a company commander. Ornes writes that in 1923 Trujillo engineered
the murder of his chief rival -- a major involved in an affair with another officer's
wife. Trujillo informed the cuckolded husband of the tryst and its whereabouts,
resulting in the death of the couple. With his competition eliminated, Trujillo was
promoted to major in early 1924, lieutenant colonel in late 1924, and colonel and
commander of the National Police in 1925. In 1927, that force became the
national army, with Trujillo as its brigadier general. Three years later, in
February of 1930, a bloodless coup brought Trujillo to the highest office in the
country, the presidency.

The Era of Trujillo

"I am sure there is something in destiny for there are forces outside of us,"
Trujillo told his sycophantic American biographer Lawrence de Besault in 1936.
"But destiny does not shape men's careers. The efforts and decisions of a man
himself make him or break him." Indeed, Trujillo's rise illustrates what cunning
and ruthlessness -- and one lucky break from outside forces -- can do for a person.
"In the Dominican Republic itself," wrote Ornes, "it is common belief that without the
American occupation Trujillo would have sunk into oblivion as a minor underworld
figure." For a man who had been a petty thief and forger in his youth, Trujillo, at
39 years old, became a thief without rival.
Trujillo's dictatorship was notable in many respects, for its systematic imposition of terror on the populace, for the all-pervading propaganda machine, for his megalomania and the cult of personality that elevated Trujillo, not only the Father of the Fatherland but also the Benefactor of the Fatherland, to deity status. Trujillo's brutality merged with his racist views and took form in the massacre of 18,000 Haitians in a matter of days in early October of 1937. With the use of terror, espionage and propaganda, Trujillo established "a noncollectivist totalitarian political system without parallel in any other country in Latin America."14

Central to this study, however, were the avarice and business acumen displayed by Trujillo and his favored few associates. "From the beginning," writes Moya Pons, "Trujillo's government was a regime of plunder organized to furnish him with total control of every economic enterprise existing in the country."15 The Jefe first set out to establish monopolies; salt, dairy and meat products, fruit, banking and prostitution were among the industries controlled by Trujillo. In 1934, after only four years in power, Trujillo was the wealthiest man in the nation.16

Aside from monopolizing existing industries, Trujillo launched or took control over new ones prior to and during World War II. In wartime, all imports and exports had to be licensed, providing a windfall for the profiteering dictator. Still it was a boom time. Santo Domingo grew as a major new industrial center, and the industrialization created an economic roar for the generalisimo and the nation: Between 1938 and 1960 the number of manufacturers doubled, the work force grew 250 percent, and annual industrial sales rose from $13 million to more than $164 million. By 1947, the economic boom allowed Trujillo to retire the nation's $16 million external debt, thus earning him yet another official title: Restorer of Financial Independence.17

The flourish of economic activity and modernization would also reach the Cordillera during the war years. Trujillo had continued the public works programs
initiated under the American occupiers. New post offices, telephone lines, and radio telegraph lines all advanced communications within the country. The expansion of the road network opened the long-remote Cordillera to exploitation. The pine forests of the Cordillera had remained largely untouched as long as they remained inaccessible. Nationwide, in the first six years of his dictatorship, more than 1600 kilometers of roads were repaired or reconstructed, and an additional 235 kilometers of new roads were built. In 1935, Trujillo built a spur from the Duarte highway, connecting Jarabacoa and La Vega. From Jarabacoa, logging roads would snake up the Yaque del Norte and smaller drainages. Other roads opened access to watersheds on the north slope of the Cordillera. The new roads served two purposes, the first political, the second economic, as the ecologist Gustavo Antonini points out: "Though this road improvement program was prompted by the government's desire to maintain political and military control over the populace, nonetheless it did provide the basic infrastructure required to begin the exploitation of the country's vast pine resources."

In this political and economic climate the logging industry mushroomed from a small, decentralized industry into a rapacious one with far-flung social and environmental consequences. Although a small part of Trujillo's overall empire, the timber industry emerged as a result of the dictator's methodical extraction of the nation's wealth. In upper Yaque del Norte, and other parts of the Cordillera, the legacy of that extraction can be seen in today's physical and social landscape.

Into the Cordillera

Although lumbering in the Cordillera grew dramatically in Trujillo's era, the first commercial milling of pines in the Dominican Republic began in the Yaque del Norte river basin in 1906 in San Jose de las Matas. These watersheds on the north slope of the Cordillera, a region known as La Sierra, have a longer tradition of lumbering than in the upper Yaque del Norte. In some drainages, such as the
Bao-Jagua and Mao-Anima watersheds, a decentralized timber industry was in swing by 1920, providing a minor boom for the millowners and the muleteers who provided the transportation. Prior to the arrival of the road grid, logs were shipped down river to the processing centers. During high water, these rafts of logs would occasionally overshoot their destination in Santiago and be carried down river to the mouth at Monte Cristi and then the Atlantic beyond. In the upper Yaque, old-timers remember log rafts taking two weeks to cover the 20 kilometers between Manabao and Pinar Quemado, a small town just outside Jarabacoa.

Most of the early timber came from either terrenos comuneros or state land, though at that time there was little difference between the two. Eugenia Georges, in her study of migration in a northern Cordilleran village fictitiously named Los Pinos, found that villagers had long assumed a communal use of the surrounding forests. Communal forests provided timber to build homes and land to run free-range cattle, goats and pigs. Despite long-standing attempts to register ownership of lands, remote parts of the Cordillera remained unsurveyed, and thus, traditional land tenure prevailed until the mid-1930s, when Trujillo first turned attention to the forests of the Cordillera.

That attention paid to the forests of the Cordillera is perhaps illustrative of Trujillo's systematic approach to controlling the nation's resources. Despite earlier assessments, no estimate of the pine forest's economic value had been made until 1937 when a Venezuelan forester named Carlos Chardon embarked upon a week-long reconnoitering of the Cordillera Central. In the employ of the Generalísimo, Chardon had been charged with studying the nation's mineral and forest resources. In his account of that trip, Chardon seemed clearly moved by the landscape he traveled through. As Chardon and his party climbed from the valley floor of the Cibao, they caught their first glimpse of the interior pine forests near "magnificent spectacle of the valley of Jarabacoa." The road ended at Jarabacoa,
where they continued on horseback. "Beyond there, ahead, as far as sight allows, high mountains can be seen, this time more rugged, covered in a continuous forest of pines," Chardon wrote. "In the valley bottom, on both sides of the path, the tropical vegetation remains impenetrable, but on mountainsides and the peaks, the \textit{Pinus occidentalis} stand proudly below the fresh and pure air of this beautiful subtropical region."\footnote{21}

But Chardon was not paid to wax eloquently about the scenery. His job was to assess and describe the nation's natural wealth. And in the Cordillera, along with spur ranges in the southwest, Chardon found the greatest forest resource in all the Antilles. In his report, Chardon estimated that there were 7,200 square kilometers of pine forest in the Cordillera, with an additional 300 square kilometers of pineland in the Sierra de Bahoruco. Chardon calculated an average of six pines per tarea for a total of 72 million pine trees in the nation. And at .60 cents apiece, these trees were worth $43,200,000. Chardon's estimate, as he admits, was a conservative one.\footnote{22}

Even before Chardon's report, Trujillo already had begun to develop the timber industry in the Yaque del Norte basin. Either through companies he owned outright, or through fronts, Trujillo bought the rights to timber on more than 110,000 hectares of communally-owned lands in the Cordillera.\footnote{23} Georges argues that in some communities Trujillo simply stole land from families. In Los Pinos in the mid-1930s, Trujillo, through an army captain, voided all land titles and laid claim to all communal lands under the guise of a cadastral survey. With the exception of Trujillo cronies, most of the residents in Los Pinos lost their access to the pine forests, which covered 374,431 tareas in the area. Compounding this landgrab, were the threats of imprisonment for those who continued to use the forests.\footnote{24}
On the lands Trujillo controlled, the Generalísimo sold concessions to build mills. Numerous old families benefited handsomely from their ventures with the jefe. The dictatorship also created a class of nouveau riche, particularly military officers. Bermúdez, Espaillat, De Leon, Nuñez, and Bautista were among the more prominent family names in the timber industry. The families that controlled the mills of the Cordillera are still among the wealthiest and most powerful in the nation.

Under Trujillo and his proxies, the mills proliferated. In 1940, there were 20 mills operating in the country. But by the end of the war in 1945, there were 75 mills, most of them in the Cordillera. In the towns that ringed the mountain range, lumber trading centers laid the groundwork for exploitation. These centers served as intermediate stops between the forest and the market, and many of the centers were served by two to three mills deeper inside the Cordillera. The mills of the interior provided a boom for formerly sleepy Cordilleran towns such as Jarabacoa, Constanza, Moncion, and Restauracion.

National lumber production jumped dramatically as the number of mills increased. In 1940 native pines produced between seven and eight million board feet a year for the domestic market. During World War II, the Dominican timber industry began to offset some of the imports of American southern pine, imports worth as much as a $1,000,000 annually. By the end of the war, production had increased to 13 million board feet, and the nation no longer imported timber. The increase in timber production not only satisfied domestic needs but it also spurred a growth in exports. Beginning in 1936, those exports climbed during World War II when pine was exported to other islands in the Caribbean, such as Puerto Rico, Aruba, Curacao, Martinique and Venezuela. In the wartime export market, pine wood found a far better price than in the domestic one; whereas a thousand square feet of pine lumber would fetch $34 in the Dominican Republic,
the same amount would bring $84 in its pine-less neighbor, Puerto Rico. Dominican timber exports had focused on mahogany and other precious hardwoods in the first two decades of the 20th Century. Thus, the growth of pine exports represents the tapping of a new resource and the decline of an earlier one. FAO figures show that between 1940 and 1946 the country exported eight times as much pine as it did hardwoods, and that the value of the pine was six times that of the nearly depleted hardwoods.

Pine exports not directly controlled by Trujillo were still subject to his taxes. Prior to the war, sawmill owners initially paid the government $5 per thousand cubic feet. But when wartime prices skyrocketed, Trujillo boosted the tax to $18 per thousand cubic feet, of which $15 went to the Oficina Particular del Generalísimo. "These payments," write Darrow and Zanoni in their study of the Hispaniolan pine, "were to ensure the continuation of the contracts, and for the permission of the sawmill owners to ignore regulations that prohibit the felling of trees less than 20 cm in diameter, and as well to allow them to ignore rules requiring the planting of 10 trees for each one cut." Indeed the absence of regulation may be the most salient characteristic of the logging era in the Cordillera. So long as the jefe received his share, the mills operated unhindered.

**An industry unrestrained**

In a 1941 report, Carlos Chardon issued a traditional forester's plea for judicious management of the forests for the "economic future of the country." He urged the eventual expansion of a national forest system to cover all forests above 1200 meters, the perceived upper limit of agriculture. Furthermore, the Cordilleran forests should be exploited in an "orderly and scientific" manner to ensure steady supplies of lumber for the domestic market, and to assure natural regeneration. Laws dictating the allowable size of tree to be cut would be needed. With good management, pine forests could regenerate every 30 to 40 years. "If in addition to
these measures, a certain amount of research could be carried on," Chardon wrote, "forestry in the Dominican Republic would be firmly established on a permanent basis and could serve as model and provide valuable experiences to the rest of the Antilles."31

Indeed forestry law under Trujillo seemed to advocate at least the concept of good forestry. The forest law of 1934 declared national forest reserves, banned the use of fire, and prohibited cutting in the higher reaches of mountain ranges, near waterways, and on the summits of hills. The law gave hillside farmers one year to abandon their land or show "that its cultivation is indispensable to their livelihood." To enforce the new forest law, Trujillo created the first forest service in 1934.32 In 1940 there were only 40 "guardabosques" -- forest guards -- nationwide. In a country with more than three million hectares of forest, these 40 men were responsible for "regulation of cuttings, fire prevention, reforestation, regulation of stream flow, soil erosion control, and investigation."33

For the entire upper Yaque and neighboring Yuna watersheds there was only one forest guard based in La Vega. Campesinos, the older ones at least, fondly recall the ease with which they could take from the forests what was needed, whether a clearing for a conuco or timber to build a house. Unlike their neighbors in the Sierra, the campesinos of the upper Yaque never suffered the full wrath of Trujillo's economic plans. The social effects of the dictatorship and the timber boom were far more benign in the upper Yaque than they were in other parts of the basin. For example, the upper Yaque escaped the land seizures, evictions and violence that occurred on the northslope of the Cordillera. Many old-timers remember the Trujillo era as a time of plentiful and cheap food. Goats, pigs, cattle ran loose in the hills as they always had. If a farmer worked his ten tareas, as mandated by law, kept his identification card current, and most of all, kept quiet his opinions about the nation's state of affairs, he had few problems. "He (Trujillo)
used to protect the working man, *el hombre del trabajo,* " said one resident of the watershed. "But the campesino never knew what Trujillo was doing."

Thus older campesinos in the watershed often have warm memories of Trujillo's *guardabosques,* particularly when contrasted with the forest guards of today. The hands-off approach of the *guardabosques* may have been good social policy, but environmentally it was disastrous. The practice of Dominican forestry could not have been further removed from the recommendations of Chardon or any notion of sound forestry. The techniques employed by Trujillo and the Dominican mill-owning families exemplified the unabated cut and run forestry practiced in the American West and upper Midwest at the turn of the century. From the beginning, the logging and milling went essentially unregulated. A U.S. Forest Service forester sent to investigate fire problems in the Cordillera in the early 1960s could not resist commenting on the logging industry and its practices in the Cordillera.

The sawmill and timber harvesting people have a very definite responsibility to the nation. They cannot operate on a cut and get out basis. They must become vitally concerned with proper land use.34

To what extent was the timber industry concerned with "proper land use" and did it assume its "responsibility to the nation?" What were the ecological consequences? To answer these questions, we must return to the upper Yaque, to La Cotorra to examine the logging and forestry practices of the era.

**Work in the woods**

The forests surrounding La Cotorra were opened with the establishment of the sawmill in El Dulce in 1962. That mill was one of at least nine that operated in the upper Yaque in the timber era. The mill was average sized, employing about 40 people from the area. Loggers, oxen teamsters -- the *bueyeros,* -- bulldozer operators, truck drivers, and mill sawyers were all part of the work force. Women found work cooking huge pots of rice and red beans for hungry loggers and sawyers. Most logging work was hard, physical labor, *trabajo fuerte,* as don
Manuel calls it. Huge pines, some 40 meters high, were felled, limbed and bucked with axes and machetes. Some trees were big enough to yield seven or eight logs. Logs were hauled by teams of brawny oxen to the roads that led to the mill. Bulldozers punched in new roads to gain further access to timber.

The emergence of the timber industry brought wage labor to the mountain valleys. Farmers found a new source of cash, though many continued with their agriculture on a smaller scale. Don Manuel, for example, worked six days a week timbering and in his conuco on Sundays. Good paying jobs in the timber industry drew outsiders, campesinos from neighboring areas, and workers from the towns such as Jarabacoa, La Vega, Santiago and the capital. "They came from all over," Manuel remembers. Much of the timber work paid according to production: trees cut, logs hauled, board feet milled. El Dulce owners paid 90 centavos per thousand board feet, and a mill could produce 12 to 13,000 feet in a day. Ten pesos a day was good money in early 1960s. Work, however, was not always steady. Mills operated from February until November, and closed as Christmas holidays approached. Mills would also close during the rainy season, when mud made roads impassable.

With good timber jobs, some communities in the upper Yaque enjoyed a mild prosperity. With money made in timber, Manuel bought land, as did many other workers. Socio-economic benefits, however, were accompanied by ecological consequences. The effects of logging were apparent as early as 1940, when American forester J.G. Scarff expressed concern about the unsound forestry practices he observed. He noted along the Duarte Highway in the Cibao the pines were disappearing at a rapid rate:

As one of the principal highways in the Republic is through this region, much cutting has occurred here during the last 15 years; and, at present rate of exploitation, the remaining stands of pine can last little longer, except in highly inaccessible locations. It is not, however, so much the amount cut as the accompanying bad practices, that endangers the forest type -- such practices as
clear-cutting large blocks of timber with no thought to the growing stock or reproduction and allowing fires to burn over the mountain sides unchecked. From the outset, the Dominican timber industry practiced a profligate forestry, one marked by waste and degradation from start to finish. A FAO report on the Cordillera in the late 1960s found that a "lack of control in the exploitation permitted a brutal treatment of the forest." Silviculture in the Cordillera left much to be desired. Sustained yield was not a concern. Timber was never cruised (marked) by officials. Typically forests were highgraded, thus removing the largest and finest genetic stock. Another American forester in the early '60s advised against the practice: "Many large trees are in excellent health and vigor and should not be cut as they are like money in the bank and are growing and paying interest." His advice went largely unheeded.

The lack of concern for regeneration, in part, stemmed from the fact that the land belonged to the state. During the logging boom, the state owned roughly 70 percent of all the nation's forests. Dominican forester Alberto Rodriguez argues that the companies had no incentive nor interest in conservation of lands they didn't own. On private lands, however, an ecologically sounder approach to forestry was taken. On some of these lands, millowners would leave seed trees, control access of subsequent users, and prevent fires. One mill harvested secondary growth pines that had regenerated following an initial cut 30 years prior. Such lands proved the regenerative powers of the forest if allowed protection.

Logging techniques were wasteful. With no crosscut saws, the loggers relied on axes, thus leaving stumps 2-1/2 to three high. For each tree harvested, at least another suffered damage to its crown or trunk from careless felling practices. To make the hauling easier, logs were tapered on one end, a further waste of wood. Skidding logs straight down hillsides with oxen also caused significant gully erosion. Slash, the limbs and branches stripped from the trees, often found its way
into creeks, clogging them and causing washouts, stream bottom scouring and
damage to downstream bridges.\textsuperscript{40}

In the late 1950s, the advent of heavy machinery, like the bulldozers in El
Dulce, opened up new areas of the Cordillera to logging, and added new ways of
transportation. And as Rodriguez notes, this addition exacerbated impacts of
logging. "It's probable that this boom was a negative factor from the point of view of
natural resource conservation and environmental protection, given the lack of
technical personnel and the absence of rational standards for the use of the
forests."\textsuperscript{41} Logging roads created by bulldozers in the Cordillera were also a
source of watershed degradation. Most the roads were poorly located and
constructed on grades too steep without adequate drainage.\textsuperscript{42} Once abandoned,
these roads form deep washes and gullies. During the torrential rains of winter,
clay roads run like red rivers, washing away embankments, causing slumps and
plugging culverts.

Safety, waste and environmental problems were equally prevalent once the
logs reached the mill. During a 16 day assessment of Dominican mills, U.S. Forest
Service forester Rufus Page detailed the markings of a fly-by-night industry.

Most of the sample mills were inefficient, the lumber was inaccurately cut,
and the equipment was in poor shape. Many were underpowered.... Most
sawyers lacked a fundamental knowledge of the care and maintenance of
mill equipment. Only at a very few mills were the men safety conscious.\textsuperscript{43}

Indeed Manuel knew men that died in the woods. Aside from the dangers, the
mills were also unproductive and wasteful. Page estimated that an additional 25
percent of lumber could be obtained from the same amount of logs if they were
felled and bucked with crosscut saws instead of axes, and if the logs were properly
processed. At one mill, nearly 65 percent of the lumber was cut either too thick or
too thin or simply miscut. Most mills, located along streamsides, dumped sawdust
and others wastes directly into the streams.\textsuperscript{44}
Once the original forest cover was removed, the sawmills -- most of them small enough to be portable -- would move on to the next site. With increased mechanization and road building, logging crept deeper into the Cordillera in the 1950s. Despite nearly twenty years of commercial logging, forest management never called for methods that would ensure natural regeneration or reforestation. And that lack of good forestry carried with it increasingly apparent ecological ramifications in the watersheds of the Cordillera. Sociologist Eugene Georges describes some of these impacts:

Mechanized lumbering also diminished the forest canopy of this region, profoundly altering the volume and regime of larger rivers. This situation was further aggravated by the agricultural activities of farmers, many of whom were attracted to the area by the building of new roads and by the extension of the lumber industry. Severe flooding in the rainy season began to alternate with the near disappearance of rivers during the driest months.45

Eventually concern about the effects of deforestation in Cordillera on the lowland agricultural valleys prompted Trujillo to designate the highest reaches of the mountain range as J. Armando Bermudez National Park in 1956. Rather than change rapacious forestry practices at the root of the problem, Trujillo evicted hundreds of campesinos from the deepest part of the Cordillera to create the new protected area.46 Two years after the park’s creation, the timber industry in the Cordillera cut more than 32 million board feet, the peak during the Trujillo years.47

As Georges and others have noted the destructive lumbering methods were aggravated by the small farmers who followed. Logged areas were vulnerable to these subsequent users, whether the conuqueros or the campesinos who pulled stumps to extract the resin for turpentine production. The damage caused by these users became increasingly clear as the era of Trujillo drew to a close in the early 1960s.
The post-Trujillo Era

After reigning more than 30 years, Generalísimo Trujillo met an end consistent with his rise and rule. On May 30, 1961, while on his way to his mistress' house outside the capital, Trujillo and his limousine driver were overtaken and sprayed with machine fire. Trujillo was killed in the ensuing gun battle. The period following his assassination is marked by transitional governments, coups, elections, more coups, civil war and U.S. invasion. This instability coincided with a time of internal migration, which had been tightly controlled under Trujillo. The vacuum of authority coupled with demographic factors led to more forest degradation in the Cordillera. Beginning with Trujillo's death, a new force began to drive deforestation. Known in the northern Cordillera as "la zafra" or the harvest, this forest clearing came at the hands of land poor campesinos. "It has been suggested by planners and policy makers that this harvest phase represents a true peasant revolt against the dictator's inhuman policies," wrote the ecologist Gustavo Antonini. "In the eyes of the peasants, however, the invasion of company lands and the indiscriminate cutting of the pine forest had a more basic purpose: to obtain the land needed to grow crops and to satisfy increasing demands for food by growing numbers of families." Subsistence not resistance more likely spurred the cutting. With the timber boom, work took greater numbers of farmers from the farm to the forest. The sawmills lessened the numbers of farms, but accelerated the rate deforestation by arriving at places the campesinos hadn't. While the mills were operating, there were fewer conucos but when the mills closed, workers either returned to their lands, or acquired land from friends, family or compadres. Many just occupied marginal lands.

The large-scale peasant clearing of Cordilleran forests in the early 1960s reflects demographic trends as well. During the Trujillo regime, large families were encouraged in order to meet the labor demands of the industrializing nation.
Countrywide, the population more than doubled between 1935 and 1960, when it reached three million people. In the 1935 national census, the communities of the upper Rio Yaque del Norte counted 3,200 residents while 25 years later the same area had grown to nearly 7,900 residents.50

Despite the political instability of the period, the short-lived governments in the early '60s recognized the mounting pressures on the forests of the Cordillera and enacted legislation. In 1962, Law 5856 created the Dirección General Forestal (DGF), the Dominican forest service most commonly known as Foresta. Still the major forestry law for the nation, 5856 charged the agency with management of all timberlands, regulation of all timber cutting, reforestation, control and transport of firewood and charcoal and the prevention and suppression of forest fires. The latter became the agency's initial preoccupation as more than 56,000 hectares burnt in the Cordillera and Sierra de Bahoruco in 1962.51

One who remembers well the drought and arson fires in the upper Yaque near Manabao that year is don Tomas. In 1962 he left his farming to fight fire with the new agency. For the next 25 years, Tomas worked as a forestal, then a catch-all job title that covered patrolling, forestry work, trail building and firefighting. Today, at 67, Tomas is recently retired from the Dominican park service, where he spent the last ten years as a ranger. Like his parents, Tomas was born in Manabao, "poor from the cradle," he says smiling. "In my early years, during the era of Trujillo, I worked in agriculture. The headwaters, streams, rivers, lakes ... I always had feeling for them, and always treated them with great consideration ... I was born, wanting to be a friend of the forest ..."

The fires that burned in the upper Yaque in 1962 troubled him personally. "That was sad, compadre," These arson fires began with the establishment of Foresta, continued for about 6 years after its formation. That first year, Tomas recalls spending three sleepless days fighting fires. Some mill owners closed mills
and sent workers to fight fires. Don Tomas attributes many of these fires to the resentment created by the new Dominican forest service. The woods had long been unregulated. Moreover, jobs as forestales were one of the few sources of steady salaried work at the time. The new jobs created envy in the community; at 60 pesos a month, the forestales were viewed as ricos. Resentful "criminal hands" expressed themselves at night with matches. "They'd light a hillside, say 500 or 2000 or 3000 tareas of pines; this was nothing to them."

Following the fires of 1962 came the first genuine attempts to regulate the mills came. Mills now needed permission from the Secretary of Agriculture to take up to 500 pine trees. For the first time, forest workers cruised timber, marking the ones that could be taken. The millowners, however, often took more than what was marked. The initial effort to control the sawmills was short-lived. When Juan Bosch became president in 1963, he tried to close the mills. Bosch's center-left government, however, along with his forest policy, lasted only seven months when he was overthrown in a coup. His elected government was replaced with a junta representing the Dominican business and legal elite. That government lasted until April 1965, when tensions between the left led by Bosch and the military dominated by Trujillo's men erupted into urban civil war in Santo Domingo. Just as the Trujilloist army appeared to be defeated, Lyndon Baines Johnson sent in the US Marines -- 42,000 of them. The United States had supported Trujillo -- a conveniently vociferous anti-communist -- through most of the dictatorship. Launched ostensibly to protect American interests, the US invasion aimed to prevent a "second Cuba," and to divert American attention from a more remote Third World conflict: Vietnam. Historian Frank Moya Pons points out: "In April 1965 there were only 17,000 U.S. Marines in Indochina while in December that number had risen to 245,000, a fact that went by unnoticed by the American people."
The second US intervention was brief. The occupation forces rejuvenated the old army, established an interim government and called for elections in June of 1966. Seeking the presidency were both Bosch and Joaquin Balaguer, who had been Trujillo's pet intellectual and puppet president. During the violent five-month campaign in 1966, more than 350 Bosch supporters were killed by the Dominican military. Balaguer won, and began a 12-year regime known for its violent suppression of its political opponents. Bosch -- who weathered the Trujillo dictatorship in exile-- once again left the country for Spain.54

Despite the upheaval in Santo Domingo, life in the Cordillera remained largely tranquil. The logging continued with even fewer impediments. The production zenith of the logging era came in 1964 when 39 million board feet of pine were cut.55 In the logger's wake came the campesinos, claiming state and former communal lands. And fires followed the farmers. In 1967, drought again dried the Cordillera for the third time in a decade, and arson plagued the woods. That year, Balaguer administratively transferred the Dirección General Forestal from the Secretariat of Agriculture to the Dominican Armed Forces. That move, according to a USAID report, was made to "strengthen its ability to protect the forests of the country against invasion by transient farmers and illegal cutting." And with an executive order, Balaguer closed the nation's remaining sawmills, and assumed control over the processing and transporting of forest products. The imposition of the logging ban closed roughly 200 mills and put an estimated 3000 people out of work in the Cordillera.56 The owners of the mills, and to a lesser extent, the workers, were indemnified for the closure by the government. The owners received some relief for the investment in equipment, while the workers received a small severance pay. The Balaguer government put some of the millworkers to work in government nurseries, where they worked for a short while. This, however, was scarcely sufficient to offset the loss of a reasonably well-paid timber job.
Unemployed woods workers returned to their conucos, exerting further demographic pressures on the mountain forests. For roughly thirty years, the forests of the Cordillera suffered a tandem assault: the first from the logging, the second from subsequent campesino agriculture. For next thirty years, the campesino would be viewed as the chief agent of deforestation in the Cordillera. *El enemigo del bosque,* the enemy of the forest. Undoubtedly, under mounting demographic pressure widespread traditional shifting cultivation has not been well-suited to the steep Cordilleran slopes. What is not considered in this view, however, is the context that created this dynamic, nor those who skated away without blame.

**The aftermath**

When the mills closed don Manuel returned to Los Dajaos from the Haitian border. After the mills, he farmed his conuco, planting red beans, squash and cassava and later, market produce such as tomatoes and cabbage. Good with his hands, he also worked in carpentry and masonry. In 1980s, he was hired by Foresta as a forestal. He's worked hard and done better than many in the watershed. "Now I'm old, I don't need to kill myself working. You gotta conserve your life," he says grinning.

The story of Manuel's life tells much about the forest history in the Cordillera. The logging era, per se, did not cause irreparable damage to the Cordilleran watersheds. Even with the poor practices used by the logging companies, the mountainsides would likely have regenerated. Outside of the national park, much of the forest that exists in the upper Yaque is secondary growth. We should not underestimate resilience of forest lands allowed rest. But when coupled with subsequent activities -- particularly conuquismo and fires -- logging proved to the first step in the degradation and the conversion of Cordilleran forests. It was logging that created the initial disturbance and opened new areas for settlement.
and exploitation; it was also logging that helped create socio-economic conditions that prompted campesinos to clear forest.

In a sense, the history of the timber industry in the upper Yaque began with the arrival of Captain Merckle and ends yesterday with the rhythmically dull thud of an ax striking pine bark. The US intervention played a critical role in shaping the watersheds of the Cordillera. The assisted rise of Trujillo as the absolute ruler of a predatory regime later permitted the mining of the forests without regard to the consequence. But Trujillo neither open the Cordillera nor reaped all the rewards of its exploitation alone. Thirty years after the closure of the mills, the political and economic players from the logging era are still around. These actors are no less central to much of the forest loss in the Cordillera than the campesinos themselves. The era of the mills in the Cordillera marked a significant period in the region's environmental history. It represents a major acceleration in the rate of deforestation. The cut-and-run approach exemplifies the squandering of a resource base for the short-term gain of a few. It marks the integration of remote watersheds with the world market economy. It also established the socio-economic and environmental conditions for subsequent deforestation by campesinos. Finally, it prompted a well-intentioned though poorly conceived and implemented forest policy. In effect, that policy wagers low-intensity war on the farmers of the region.

The farmers who remain today practice their agriculture under the vigilant gaze of Foresta and the army. But the relationship between the campesinos and Foresta wasn't always so adversarial. "When I was a forestal, " don Tomas recalls of his work in the agency, "I used to feel good working; I was giving life and I was conserving. But nowadays, I don't see that. They're putting a lot of men in jail, they're putting forestales in jail. I don't look on that very well. I couldn't be a forestal now for that reason."
But don Manuel, a campesino like Tomas, holds a more sympathetic view toward the forest service. "The farmer here has done the most damage to the forest," he says. "If Foresta ceased to exist, the country would be finished. Foresta has to exist. The problem with Foresta is that we, the people, we're very ignorant. We want to do things where they shouldn't be done. For that reason we have problems with Foresta. ... Never, never, have I had a problem. I do things as things should be done, according to Foresta's laws. I know the law."

Don Manuel's view is not unique among campesinos in the upper Yaque. It is important to remember that campesinos should not be expected to speak with one voice. Like many others, Manuel recognizes that much of the damage done to the Cordilleran forests have come at their own hands. Campesinos have felt the pressure to change ways, to leave the young pines, to abandon the burning, to build dead barriers, to plant trees. *Yo soy amigo del bosque*, many a farmer says. A friend of the forest. To prove their point they've organized. In the upper watershed of the Yaque last summer, a confederation of campesino groups -- the *Junta Yaque* -- formed to protect their livelihoods and their watershed. "We have to find alternative to support ourselves," says Manuel, a new member. "That's what we're looking for now."

The previous chapter looked at efforts to change traditional agriculture through the farmers' group of Los Dajaos, ASADA. Out this group has emerged the Junta Yaque. This group is only one of several involved in the watershed. The next chapter examines what is being done by a variety of institutional and grassroots actors to protect and restore the upper Yaque del Norte watershed.
Chapter 4
The Contested Watershed: The Institutional and Grassroots Response

After five decades of living and farming in the upper Rio Yaque del Norte, Aquiles Jimenez has seen much and has not forgotten. With no formal education, he has nonetheless been an astute and analytical observer of the changes in his world. He remembers as a child riding six hours on a mule to town to sell the red beans his father had grown. He remembers when the roads arrived, not to serve the isolated mountain villages but rather to ease the transport of logs. He remembers watching the mills arrive and depart in a span of roughly 20 years, and notes their consequence:

The mills came to finish off the world. These [mill owners] didn't have a mind that thought of the future but only the present. The campesino saw that he couldn't take care of the trees. Why? Because other people came, instead of the campesino, to take advantage of them. And the only thing you are left with are the weeds...If the campesino, for example, had been the one who benefited from the pines -- more than those... millionaires who put up the mills here and hauled away fortunes and left disaster -- then he would take care of the pines.

In decades between the end of World War II and 1967, the timber industry flourished in the upper Yaque del Norte. As the previous chapter has shown, the industry exemplified a cut-and-run ferocity. Aside from the ecological impacts of destructive logging practices, the timber era brought an influx of people to the watershed, which was left wide open to further exploitation with the vastly expanded road network. Landless farmers, and newly unemployed woodworkers, began to farm mountainsides previously too remote to reach.

The 1967 mill closure brought on by Law 211 also made illegal the harvest of trees and put a tax on imported wood. The actual effect of the move, still standing in place, was to negate all property rights to trees on both state and private lands. Balaguer's decree was a momentous event in that it marked the shift of responsibility for the destruction of Cordilleran forests from the timber industry to
the campesinos. The enforcement of the cutting ban is essentially the core of Dominican forest policy, almost to the exclusion of other elements. This heavy-handed response has created not only animosity among the rural residents of the Cordillera, but also has nearly eliminated any incentive to care for the forest.

Aquiles explains a view widely held among residents in the upper Yaque del Norte:

The people in this campo have been the enemy of the pine because the pine has always brought them trouble with Foresta. If on my farm, ten pines sprout, then I have ten enemies, because if a friend of mine passes by my farm and cuts a pine, Foresta thinks it was Aquiles that cut it. And they haul me off to jail. And then what happens, perhaps I spend a month or two in jail and later... when I come back from jail I'm going to cut them all so as not to have this problem again. For that reason people feel themselves enemies of the pine because Foresta hasn't educated them to take care of them, that you could live off them. If I have those ten pines, and a forest guard passes by and tells me 'Aquiles don't cut those ten trees because in the future you'll benefit from them. But he doesn't tell me these words. No the words he tells are 'if you cut a pine you'll land in jail. A forest guard shouldn't be a person that pressures but rather one that educates other people. The forest guard should simply be educators of the campesinos. With pressure they don't gain anything.

The pressure exerted by Foresta, and by extension the Balaguer government, is just one of the numerous institutional responses to the problem of forest loss and conversion in the upper Yaque del Norte. The situation has also drawn the attention of regional and national non-governmental organizations (NGOs); church-affiliated groups, international aid agencies, private foundations and universities. The list of institutional actors is long: governmental agencies such as Foresta, the National Parks Directorate, the Secretary of Agriculture, Institute for Agrarian Reform; non-governmental organizations like Plan Cordillera, Social Work for the Progress of the Villages, the Junta Salvaguarda; international agencies such as the Canadian Consulate, the Inter-American Foundation, the Peace Corps and private foundations such as the Falconbridge Foundation; and numerous grassroots farmers and women's groups.
Among these groups there is no disagreement that a problem exists in the watershed; what that problem is, and what to do about it, however, are subject to numerous interpretations. These interpretations, which are often served up as truth, are essentially social or cultural constructs. Whose truth are we talking about when we speak of the problems in the upper Yaque del Norte? Is there, then, but one objective reality, or does that reality reflect the values, perceptions and agendas of the observer? Early on, I made known the nature of my filters. In other words, the truth claims I make are my own rather than some objective truth. In recent years, the social sciences have begun to address the ways in which the social reality is constructed. Barbara Deutsch Lynch, for example, in writing about environmental beliefs in the Hispano-Caribbean, notes the value of a social constructionist view:

To accept the environment and environmentalism as cultural constructions that vary according to context does not deny the reality of the physical landscape or negate the importance of concerns about its destruction, but rather suggests that attention to difference in environmental constructions may offer new possibilities for creating more habitable places. Conversely, failure to understand the cultural contexts in which environmentalisms are embedded all too often perpetuates, if not aggravates, social injustice as well as environmental degradation.¹

In this chapter, I explore some of the interpretations of the problems in the upper Yaque del Norte. The various actors involved bring with them distinct perceptions of the problems and consequently widely divergent solutions. This begs the question of who defines the problem and who proposes the solution. A hillside farmer, a forest guard and a hydroelectric engineer have competing and generally conflictive interests. Whose interest shall prevail? These questions are political because they address power relations, as Greider and Garkovich note in a recent article:

In the political arena of environmental issues, self-interests are embodied in a group's definition of itself as reflected in its landscape. The particular landscape that comes to dominate and thereby influence social actions
and the allocation of social resources is the one that represents the group exercising the greatest degree of power. Three key factors underlie power in these processes: the ability to define what constitutes information (i.e. the ability to construct knowledge), the control of this socially-constructed information, and the symbolic mobilization of support.\textsuperscript{2}

In this study I've tried to pay a good deal of attention to the words -- both written and spoken -- behind what is "known" about forest conversion in the upper Yaque del Norte. Language is central to discourse, and as Arturo Escobar points out the latter is the "process through which social reality inevitably comes into being."\textsuperscript{3} The prevailing view of "deforestation" (itself a value-laden and problematic term) in the upper Yaque del Norte, as well as the Dominican Republic in general, holds the campesino largely responsible for the condition of the watershed.

Undeniably, much of the forest conversion in the region has come physically at the hands of the small farmers. But as geographer Lucy Jarosz notes in her study of small farmers and deforestation in Madagascar: "Abstracting shifting cultivation and population dynamics from specific regional contexts and omitting a consideration of external processes ... may serve an ideology of repression, feed the fires of prejudice and fear, and promote what are exactly the wrong kinds of solutions."\textsuperscript{4}

Indeed the widely held understanding that campesinos are the problem in the upper Yaque del Norte requires scrutiny. What makes such a view problematic is that it ignores contextual factors, excludes other interpretations, reinforces technocratic solutions and serves as a basis for proposed official actions. While I do not wish to portray this view as monolithic, it nonetheless, in various ways and to varying degrees, pervades the mindset of not only governmental agencies such as Foresta, but also some local and regional non-governmental organizations (NGOs), and international aid agencies.

My intent in this chapter is to delve into some sources -- from the international down to the local -- of the view that holds the campesino solely culpable for the
current state of the watershed in the Rio Yaque del Norte, and to show the ways that such a definition of the problem manifests itself in the actions of governmental and non-governmental actors. As previously stated, the range of institutional actors in the upper Rio Yaque del Norte is a wide one; in this chapter I focus on the Foresta and a non-governmental urban-based "stakeholders" group, the Junta Salvaguarda, formed to protect and restore the watershed. Traditionally, power elites from urban centers can bring to bear far greater influence over contested landscapes than the rural residents of the region. The campesinos, while far from powerless, struggle to enter the debate from the margins. In response to the environmental degradation they themselves recognize, and the perceived threats to their livelihoods, some campesinos have begun to organize on a watershed-wide basis. Their attempts to control their land and livelihoods reflects a new approach to environmentalism, that of community-based conservation. Ultimately, the aim is to show that the campesinos have their own discourses, their own stories, and by doing so broaden the debate over what to do in the watershed by amplifying voices least often heard, those of the campesinos of the upper Yaque del Norte.

Conventional wisdom

In the search for ways to counter environmental degradation in the Third World, the conventional response has reflected a technocratic bias. In this view, environmental problems are essentially physical and thus have technical solutions, which can be administered by the appropriate agencies. Largely excluded from this view are social and political factors. Randall Baker points out that the technocratic approach overlooks important causal factors such as inequitable access to the natural resource base, the deleterious effects of export-led agricultural economies and the "short-term asset stripping for a quick profit by those who make, or are beyond the control of, the laws." Worse yet, he argues, the
technocratic approach not only displaces blame onto its victims but also creates "a serious illusion of concern on the part of those really to blame and to allow them -- in the name of environmental protection -- to tighten the screws on the marginalised poor." 

This description applies to the situation in the upper Yaque del Norte and elsewhere in the country. Dominican social scientist Pedro Juan del Rosario asserts that in regard to deforestation the society at large has traditionally viewed the campesino as either the evil-doer or more often the good fool who knows not what he does. No one, he argues, exhibits these views more than Dominican field technicians, ones often trained in North American methods mostly inappropriate to the highland Tropics. "The agronomist, confronted with the field reality and the impossibility of applying many of his learned technologies, has two choices: recognize the inadequacy of his knowledge or establish as an axiom the 'stupidity,' the 'ignorance,' or the 'laziness' of the campesino." Most often chosen, according to Rosario, is the latter.

Thus, there is a tendency among some -- though certainly not all -- domestic and international resource professionals to hold ill-founded stereotypes about campesinos. Michael Redclift finds that much of the resistance to development programs, environmental projects in particular, stems from the programs' source, its root in the countries of the North. Derived from a knowledge base alien to their own, this agenda causes people to resist in subtle ways. "Frequently, people who are relatively powerless, because their knowledge systems are devalued, or because they do not wield economic power, resist in ways which look like passivity: they keep their own counsel, they appear 'respectful' towards powerful outsiders, but they simply fail to cooperate."

Northern and urban views of campesino agriculture have long been disparaging. A North American forester sent to assess the Dominican Republic's
forest resources during the US occupation in the early 1920s found that *conucos* "served a temporary progress of providing a few scanty crudely cultivated agricultural crops," and urged steps to "correct the destructive tendency." In this assessment, survival becomes equated with "temporary progress." The failure to recognize explicitly the elemental concerns of the rural poor characterizes a technocratic approach. As I noted in chapter 2, the first domestic calls to restrict *conuquismo* in the upper Yaque del Norte also came in the 1920s when Dominican geographer and man of letters Dr. Juan Perez, a native son of Santiago, warned about the forest destruction along the river bottom, and called for the removal of some of the headwaters' inhabitants.

Escobar points out that this type of assessment focuses on the obvious, the plainly visible, and obscures as much as it reveals. Escobar characterized such views in this way:

> Over the years, ecosystems analysts have discovered the 'degrading' activities of the poor, but seldom recognized that such problems were rooted in development processes that displaced indigenous communities, disrupted people's habitats and occupations, and forced many rural societies to increase their pressure on the environment. Now the poor are admonished not for their lack of industriousness but for their 'irrationality' and lack of environmental consciousness. Popular and scholarly texts alike come to be populated with representations of dark and poor peasant masses destroying forests and mountain sides with axes and machetes, thus shifting visibility and blame away from the large industrial polluters in the North and South and the predatory way of life fostered by capitalism and development to poor peasants and 'backward' practices such as slash-and-burn agriculture.  

This technocratic view of swidden agriculture has evolved over the years to at least acknowledge in passing some of the societal factors behind forest loss and conversion. A 1969 study by the Organization of American States, found that "for various reasons, chiefly of a socio-economic nature, the farmers have for the last few years been engaged in almost systematic destruction of the forest in a desperate effort to find new land for the establishment of a precarious subsistence agriculture." These latter words, "a precarious subsistence agriculture" are
rhetorically softer than "scanty crudely cultivated agricultural crops" though they carry still a pejorative ring. The Food and Agriculture Organization (FAO), itself the embodiment of technocracy, in its Forestry Action Plan describes environmental deterioration brought on by "marginal agriculture" in the upper watersheds of the Dominican Republic. Still, the plan recognizes that the "marginal agriculture" of the mountainsides and intermountain valleys provides 80 percent of the nation's beans as well as a large percent of the country's viveres, the tubers and root crops that form the staples of the Dominican diet.  

When I returned to the Dominican Republic in the fall and early winter of 1995, I initially had in mind an investigation of the environmental effects of the fall of the dictator Trujillo. My stateside research indicated that following his assassination in 1961 began an intense period of forest conversion that continued up until today. A USAID 1981 environmental profile, prepared by a team of North American experts, found that the main life zone found in the upper Yaque del Norte (Holdridge's subtropical lower montane moist forest) had been "deforested or seriously degraded by slash and burn agriculturists." The report offers this account of how that happened:

Serious watershed degradation probably began in earnest during the 1961-1967 timber boom when loggers and campesinos made massive advances into the pine forests of the Cordillera Central. Although the forced closure of all sawmills in 1967 brought an abrupt halt to logging, it did not lessen the campesino demand for new land. The continued high rate of population growth and unequal land tenure patterns have pushed the small farmers even higher in the Cordillera Central watersheds, almost invariably onto steep, highly erodable slopes incapable of supporting annual cropping. Pressure for land has taken small farmers up to the boundary of the two national parks in the Cordillera Central, thus there is literally no more unoccupied land available for colonization in the Cordillera Central.  

This appraisal, while mentioning some of the socio-economic and demographic factors that spur damaging land practices, fails to acknowledge fully the complexity of the problem. "Serious degradation," I later learned, began not with
the death of Trujillo, but rather, as the previous chapter has shown, with the development of the timber industry in the 1940s. Profligate forestry practices and extensive road-building account for much of the destruction that occurred in the early and mid 1960s. The "high rate of population growth" too began in the Trujillo years as the dictator encouraged large families to provide a larger labor pool for the industrializing nation. The "massive advances into the pine forests" made by the campesinos implies that these lands were legitimate property of the late dictator, when, in fact, they were once owned communally. Even the mention of "annual cropping" suggests a Northern bias and a dim view of traditional agriculture. Finally, to say that no land is available for colonization overlooks the fact that most of the best arable land in the watershed is not under cultivation, and is owned by outsiders.

Domestically, similar types of assessments are widely made. In looking specifically at the upper Yaque del Norte, an engineer from a government hydrology agency, INDRHI, not only echoes the prevailing discourse but also reflects its constituency:

The activities of the population that live in the Yaque del Norte watershed have brought to more than half the grand extension of mountains a situation of very serious degradation and this degradation not only reduces the quality of life for the inhabitants of the upper watershed, but also has severely affected activities of development, like hydroelectricity, and has impacted adversely the population that lives in the lower parts, reducing in quantity and quality the water for human and animal consumption, for irrigation, industrial development, and has deteriorated the environment. The major impact of the degradation of the upper Yaque del Norte watershed on the western Cibao Valley can be measured not only from an environmental point of view but also from the development of sustained economics in agricultural activity.14

Inevitably, such pronouncements work their way into policy and practice. A National Forest Management Plan for the Dominican Republic, prepared by the USAID, Michigan State University, and the Dominican Secretary of Agriculture offered this directive: “Further intrusion into publicly-owned forest areas by hillside
farmers must be prevented. Patrols and similar activities should be pursued to
arrest the practice."15

How this dominant view of the campesinos and the forests becomes visible in
the actions of governmental and non-governmental sectors is the subject of the
following sections. I examine the government response to forest conversion in the
Cordillera by giving an institutional overview of Foresta, before returning to the
upper Yaque del Norte for an on-the-ground look at discourse in governmental
practice.

The Foresta

In the Dominican Republic, the primary forest law of the land is law 5856.
Passed during the tumultuous years after the fall of Trujillo in 1961, this law created
the General Directorate of Forests (DGF), most commonly known as Foresta. Law
5856 placed the agency in charge of managing all the nation’s forests; such a
charge entails enforcement, fire prevention and suppression, control of timber
harvesting, reforestation, and regulation of the transport and sale of firewood and
charcoal. In 1967, the five-year-old agency was transferred from the Secretariat of
Agriculture to the Secretariat for Armed Forces, thus giving military backing to a
formerly civilian function. Although since 1982 the agency has answered directly to
the Office of the President, it is still headed by an army colonel, as it has been
throughout the 1990s.

Despite its political proximity to the presidency, Foresta has long received low
budgetary priority. According to a 1984 USAID report, the DGF was a “weak,
eglected stepchild” of an institution, whose mandate was broad and its resources
thin.16 Between 1983 and 1989, funding for all the agencies involved in forest
management received 0.3 percent of the government’s annual budget. 17 What
money Foresta does receive goes mostly to pay its employees. In 1989, the DGF
spent 85 percent of the $1.7 million it received for its operations on salaries and wages, leaving little for actual project work.18

With too few resources to actually carry project work or even forestry extension, the Foresta has focused on enforcing the cutting ban. Out of 2,100 Foresta employees, 1,200 are forest guards, known as forestales. (By comparison, the agency has one forester trained at the bachelor of science level, and 45 forestry technicians.)19 The guards -- sometimes armed -- patrol their assigned regions, searching for violations of the forest law. While not members of the military themselves, the guards can rely on the backing of the local army detachment.

Foresta’s disproportionate attention paid to enforcement has long been recognized as counterproductive. The 1984 USAID report found that even enforcement itself was identified as a task too large to effectively carry out:

All forests cannot be patrolled constantly and, when an inspection shows a violation which is prosecuted, the enforcement appears arbitrary and at the convenience of the agency. This does not help the DGF’s image as a technical organization, nor its ability to assist in such areas as private forest plantation and agroforestry management.20

Well over a decade has passed since that assessment was made, and in the intervening years little has changed. If anything, Foresta has stepped up its enforcement efforts in recent years, partly because of internal and external pressures. Dominican conservation groups, particularly the national network of ecological societies, began to echo calls made earlier by international voices. A noticeably stricter enforcement of forest laws began in the early 1990s, when Colonel Pedro Candalier headed the Foresta. Once in charge of policing the Haitian border, Candalier gained the enmity of the campesinos and the admiration of the urban middle classes for vigor in which he embraced his job. A tale oft-told by campesinos throughout the Dominican Republic is how Candalier swept down out of the sky in his helicopter on an old carbonero, a charcoal maker, killed and burned his mules laden with charcoal and hauled the old man off to the Plan Piloto...
jail in the capital. Candalier, to his credit, took on big as well as the little. He was removed from his post by Balaguer when he began to jail powerful interests responsible for industrial pollution in the nation’s rivers, including the Yaque del Norte. He has since been moved to the National Parks Directorate.

As an institutional actor, Foresta maintains a presence at the local and regional levels in the Yaque del Norte watershed. While many of its activities are highly centralized, the agency has a district office in Jarabacoa, and a field office in Manabao.

**Forest -- Manabao**

The Foresta office in Manabao sits on a knoll surrounded by exotic Caribbean pine. The spartan room—a radio, a desk, a file cabinet and a bulletin board with a lone poster urging parrot conservation—was empty, except for Altagracia, the cook and cleaner. The supervisor, she said, was on his way from Jarabacoa, some twenty miles away. He was new to the job, an acting director. Two weeks prior, the former supervisor, and a nursery foremen were arrested for allegedly running a small mill in the hills above town.

I chat with Altagracia while waiting. She has a broad smile and is easy to talk to. She’s in her early fifties, and a native of Manabao. The mother of 11 children, she says her oldest is my age, and like many rural Dominicans, is desperate to get to the United States, most often called *Nueva York*. Her husband is a farmer, though that line of work is getting tougher all the time because her employers, Foresta, won’t let farmers clear land to plant *conucos*. “They tell us to plant trees, plant trees, plant trees, but who can eat a tree?”

After two hours, the interim supervisor, Francisco, arrives on his motorcycle. I explain my purpose and he graciously agrees to an interview. He deftly skirts the issue of the “small inconvenience” with the former supervisor, and instead delivers the official line of Foresta’s mission: preserve the forests of the watershed. Foresta
came into the watershed, he says, to halt the "almost total devastation" brought on by the mills that operated in the area.

He soon shifts the interview's focus from enforcement to reforestation, recounting past projects in the area. Most occurred in the late 1970s and early 80s' near Manabao. The dense stands of exotic pine (*Pinus caribea*), an import from the Caribbean lowlands of Honduras and Belize, are the result of those years. More recently, Foresta began a "right to cut" program. Currently, only the president and chief of the Armed Forces can permit the harvest of any tree on state or private land. Under this relatively new program, DGF nurseries will ostensibly donate seedlings to small and medium size producers. Once the seedlings are planted, the farmers receive a certificate of plantation, a guarantee of the right to one day harvest. "We have used it a lot and it has given us good results," Francisco says. "There are farmers who have changed their agricultural crops to timber crops because it is more profitable."

The "right to cut" program, begun in 1988, is certainly an advance for the agency. Still it poses problems, ones unrelated to the everyday constraints faced by campesinos. That is to say that assuming a campesino has the land, the time, and labor resources to plant trees, he, or in rarer cases, she, faces the following difficulties: First, the bureaucracy involved can be intimidating, time-consuming and costly for small producers. Much of the paperwork is done at the district level in Jarabacoa, necessitating frequent visits to town. Ultimate approval comes from central offices in Santo Domingo. Foresta is understaffed, which means it is often difficult to get a technician to visit farm sites. (Forest guards lack the training and the authority to grant certificates.) When, or if, available, the "donated" seedlings are sometimes sold to campesinos by enterprising -- and poorly paid -- nursery supervisors. The greatest worry, however, for farmers is whether such certificates of plantation will be honored years or decades later when trees reach a
harvestable size. Foresta, like many Dominican agencies, is known for its institutional instability. In assessing the forestry sector, the FAO found that personnel turnover at all governmental levels is so high that it is "practically impossible to confer continuity and consistence to policies and programs for a time period long enough to secure any achievements." Thus, for many campesinos, the program poses many practical obstacles.

Francisco tries to assuage such concerns by saying that farmers have legal protection. "The law protects them totally," he said. "But you know, almost no one believes it, and this is one of the problems here in this country." Such distrust seems the essence of the relationship between the Foresta and the small farmers of the Dominican Republic. I ask if the campesino is an enemy of the forest.

I don't believe it. What is missing is a lot of forestry extension, a lot of forestry education. What is missing is coordination, communication and education. We have to make the farmer, the campesino, a friend of the forest. I think if you teach someone what they should do, it would be very difficult for them to commit an infraction.

For the farmer who abides by the forest laws, and solicits the requisite permission for clearing land, there is no problem, Francisco says. Even for first time offenders, he says, the agency shows some leniency, putting them to work in the nursery. The problem is that there are many people who repeatedly commit infractions of the forestry law. "And when a person repeatedly violates the forestry law, it is necessary to punish him so that he sees he can't do it again. When he returns from that jail, he comes back with a new outlook."

As an interim supervisor based in the Jarabacoa, Francisco is at least physically removed from the people he feels need educating. To see the day-to-day workings of Foresta personnel, I asked to accompany a forest guard on his patrol. One who interacts daily with the rural inhabitants in the watershed is Rubio, one of 17 forestales in the watershed. For more than a decade, he's worked as a
forest guard in the upper Yaque del Norte. Three days a week he patrols the hills above Manabao looking for signs of illegal activity. These days illegal activities include just about anything a farmer might do in the field. Typically he oversees the permit process for land clearing, for making conucos. If a farmer, on his or her own land, wants to clear a field of weeds and shrubs for planting, a permit from Foresta is required. The farmer first solicits the forest guard, then approaches the administrator in Manabao, and then an application is made to the district office in Jarabacoa. This cumbersome process, however, had largely been frozen in late 1995. "Right now, they are not giving any permits," he says.

As we walk briskly along old logging-roads, Rubio explains that the recent clampdown resulted from a spate of charges of violations, ranging from the discovery of several small mills in the area, and an incident where a Foresta supervisor, a nursery foreman and a farmer were all arrested for illegal cutting, and the arrest of a large landowner who paid workers to clear land for pasture. Much of the land we pass through seems to be in early successional stages, covered in great expanses of bracken fern. This area, he says, was forested up until the 1980s, and when I ask what happened, he answers "lo' campesinos."

"Campesinos are cutting too many trees. One can't put his trust in the campesinos for that reason," he says. "The campesino's destruction and Hurricane David have lessened river flows. For that reason we have Foresta's repression. To conserve the rivers so that they don't dry up, so that what happened in Haiti won't happen here." Well-known in the Dominican Republic, and elsewhere, is the environmental degradation that has occurred in Haiti. The neighboring nation is often held up as a specter of what awaits the Dominican Republic should it fail to conserve its dwindling forest base. Despite the important nature of his work, Rubio struggles at times with the authoritarian tactics of his agency, and where that puts him in his community.
I look for every way possible to avoid jailing people. It is better if one doesn't create hate in the community. I would always like to help the poor, the poor campesino. But the situation we're in, I can't help because what happened to the chief, and the forestales -- the ones they had to fire for doing favors -- would happen to me.

Indeed, Foresta policy holds the forest guards responsible for any illegal activity that occurs within their jurisdiction. Not only are their jobs at stake, but also their freedom. Forest guards are routinely jailed for violations that occur under their watch. No one knows this better than Trinidad, the recently fired nursery supervisor. I first met Trinidad in the back of a crowded Toyota pickup as he was returning from Plan Piloto. During the winding ride up from Jarabacoa, I listened quietly as he told his friends and neighbors about his experience. His supervisor told him to loan a saw to a farmer, who wanted to cut a dead tree to build a house. "I am just a little guy," he said, and did what he was told. For it, he would be fired, arrested, and jailed for 22 days.

I met with Trinidad a week later for an interview at his home, a small, three room, wood framed, dirt-floored house he shares with his recently widowed sister and her three children. He was born and raised in Manabao, and remembers a time, roughly twenty years ago, when most everyone dedicated themselves to agriculture. With the Foresta, Trinidad expressed frustration, but no bitterness. He spent many years with the agency, earning about $115 a month, and still takes great pride in having participated in the reforestation projects from the late 1970s and early 80s' that surround the hills closest to Manabao. "In all that I had a hand." He's also seen dramatic changes within the agency. Only in recent years has Foresta become "so drastic, so hard," he says.

In part it's right. We can't be so predatory, finishing off nature. Although, on the other hand, man has to work to live. Right now things are such that for cutting a cadillo plant you'll land in jail. In Foresta's prison, the largest part are farmers... Most the farmers that worked this area have had to emigrate toward Santo Domingo, or La Vega, looking for a way to earn
a living because they can't work here. There's no way to produce food for
the Dominican nation if things continue the way they are.

Trinidad says he sees little resolution to the conflicts between Foresta and the
remaining farmers of the watershed. The farmers will continue to face difficulties
with Foresta for practicing their agriculture above the valley floor where Manabao
sits. The good land around the village, he says, is owned by outsiders, mostly
people from Jarabacoa, and is devoted to pasture. "Thousands and thousands and
more thousands of tareas are occupied by five head of cattle. Most of the people
here have no more than the little piece where they live. Land here belongs to the
powerful."

As to his own situation, Trinidad hopes to find work as a park guard in the
national park. Failing that, he may have to follow his neighbors. "Maybe I'll go to the
capital as well. We will see. You know, I don't like it, but neither can I let us die of
hunger."

Such are the exigencies of life for some residents of the upper Yaque del *
Norte. These elemental demands have hardly been recognized let alone
accommodated by the government's response. Despite the best intentions of some
field personnel, Foresta's approach has only alienated residents and exacerbated
existing problems. The inadequacy of the governmental efforts has in part spurred
non-governmental initiatives in the watershed.

Like many Latin American nations, the Dominican Republic has a vibrant NGO
movement. These groups represent the breadth of concerns, of discourses. One
umbrella group, the Junta Salvaguarda, has been formed to address the problems
in the Yaque del Norte river basin. The next section looks at some of the
constituents of this urban-led attempt at watershed conservation. And while the
approach of the NGOs is more constructive than that of the government, some of
them nonetheless embrace the notion that at the root of the forest problem is the campesino.

**Junta Salvaguarda**

It is almost arguable whether Santo Domingo is the actual capital of the Dominican Republic. As a center of bureaucratic power, Santo Domingo is undisputed; the presidential palace, the Congress, the executive offices are all found in the 500-year-old city. But if you look for the real power, the economic and political clout that sets the nation's direction, you must look to the north, to the nation's second city, Santiago de los Caballeros. Located on the northwestern end of the fertile Cibao Valley, Santiago is an agricultural and industrial center of the nation. It is home to the old landowning oligarchy, and many of the most powerful families in the country.

After tumbling out of the Cordillera Central, the Rio Yaque del Norte flows north to eventually part the city before banking to the northwest and emptying into the Atlantic Ocean near the Haitian border. For the residents of the upper watershed this geographic fact perhaps shows their plain bad luck. To be precariously situated above the nation's center of power is not an enviable spot. Affect those below you and expect reaction. The divisions are evident: Center/periphery, urban/rural, lowland/highland, prospering/struggling, powerful/powerless. As the last chapter has shown, the marginalized communities of the Cordillera have had their destinies controlled by powerful forces from the outside, oftentimes from Santiago.

It was then perhaps an occasion for concern for the residents of the upper watershed when in early 1995 a group formed in Santiago with the aim of protecting and restoring the health of the watershed. The Junta de Directores del Proyecto de Salvaguarda del Rio Yaque del Norte brings together an array of so-called stakeholders, among them community development NGOs,
environmental groups, industry, commercial agricultural interests, government agencies, municipalities and universities. Conspicuously absent were grassroots campesino groups. At the junta's inauguration, then-president Joaquin Balaguer, the blind octogenarian who got his political start as a puppet president under Trujillo, warned that the nation's attempts to protect the watershed's forest would be in vain if its inhabitants continued their traditional practices, and thus it may be necessary to remove the residents. Deforestation, he reminded the directors, is "a barbaric action that on occasions ought to be responded with another barbaric action." 22

In Spanish the word is desalojar, to evict. It's powerful word among campesinos, people who know its meaning well. Elsewhere in the country, entire campesino communities have been uprooted to make secure park boundaries, or in other cases to clear room for expanding mines. Balaguer's admonition weighs heavily on the minds of campesinos in the watershed.

Fortunately, however, Balaguer's view may not be wholly representative of the junta itself. Among those most active in the junta is Dr. Domingo Carasco, director Department of Natural Resources at Instituto Superior de Agricultura (ISA) in Santiago. Balaguer's decree gave official status as the protective body for the Yaque del Norte to school after it had begun its study. Thus far the group has been designated, though remains unfunded. "It's one thing about our country," Dr. Carasco observes in his paneled air conditioned office on the outskirts of Santiago. "Laws are passed to execute activities or take specific actions, but they don't make resources available to implement them."

The goal of Junta Salvaguarda is to look at the entire watershed, from its headwaters to the mouth. More specifically it aims to inform, to conscientizar, the country of all the environmental problems of the Yaque del Norte. Another study could easily examine industrial and agricultural contamination of its middle and...
lower stretches as it passes through Santiago and the northwestern portion of the
country. Dr. Carasco, who has a doctorate in watershed management from a North
American university, says the group strives to bring together disparate attempts at
protecting the watershed. "What is the result of these isolated activities? Nothing
and the environment continues to degenerate." Salvaguarda, then, takes a
participatory stakeholder approach to addressing problems in the watershed, says
Dr. Carasco.

We understand that (past efforts) haven't been sustainable because the
people, the stakeholders, haven't been consulted to see how they
perceive the problem, to see how they perceive the solutions. So we said,
well, this paradigm isn't working, let's use a paradigm that is participatory,
where everyone participates in the identification of the problem and as
well as the identification of the solutions. This is the process we have
followed. We want the people to participate in such a manner that when
the implementation is finished, the people can continue with the activity.

In the upper part deforestation and soil erosion have been identified as
problems. "Traditionally we have attacked the symptoms, and we haven't attacked
the problem. We put a band-aid on it but really the problem has not been cured," he
says. One of the problems is that roughly 80 percent of the people depend on wood
or carbon for cooking fuel, which comes from the forest. Another is that many
campesinos have no title to their land. "If I'm not the owner of the title, I don't have
a strong incentive to better the quality, or maintain the quality of soil for many
years." Yet another problem with soil conservation measures is the long time
frame in which participants will see benefits.

The problems seen in the upper watershed affect the lower watershed. "For
example," Dr. Carasco says, "if there is a high degree of deforestation, and
consequently a loss in the volume of the rivers, because there isn't a high degree
of infiltration or there isn't sufficient percolation ... if there isn't sufficient water to
produce electricity, there's no electricity in the lower part. Nor is there sufficient
water to irrigate in the campos where there is agriculture dependent on irrigation."
One member group of the Junta Salvaguarda particularly concerned about such interrelations is the Association for the Development of Santiago, a long-standing community group. (ISA itself was formed more than 20 years ago by the association.) In 1994 the group undertook its own study of the problems in the mid and upper watersheds. Its conclusions and recommendations reflect a markedly different set of concerns than those held by residents in the upper watershed.

The author of the report, Ing. Ramon Isidro Rodriguez, adds his own figures to the debate. He estimated the remaining forest cover the upper Yaque to be only 20 percent of the 1,288 square kilometers watershed. The watershed is the source drinking water for 700,000 inhabitants in the Cibao Valley as well as irrigation for 33,000 hectares, and produces through the Tavera-Bao dam 200 million kilowatt hours annually.

Of greatest concern, according to Rodriguez's report, was the sedimentation of the dams and the potential for downriver flooding. In 1979, Hurricane David, which caused enormous damage to the forests and farms of the upper Yaque, brought flooding to Santiago, and caused water to come within five feet of spilling over the dam at Tavera. To lessen these worries, the report calls for construction of the Manabao-Bejucal hydroelectric project on the upper river. That project, first proposed by president Jorge Blanco and his Partido Revolucionario Dominicano (PRD) in the late 1970s and early 1980s, would place a small dam on the upper Yaque del Norte near the community of Los Dajaos. When Balaguer returned to power in 1986 after an eight year hiatus, he scrapped plans for the dam, opting instead to build the Higuey-Aguacate Dam elsewhere in the southern Cordillera Central.

The ideal solution, the report continues, is to reforest the watershed, but the costs of such reforestation projects may be prohibitive. Plan Sierra estimates the cost of reforesting one hectare to be roughly US$753; with nearly 1,300 square
kilometers in need of planting, total costs would run about US$97 million. Realizing that it is already perhaps too late for that, and indeed enormously expensive to carry out such extensive work, the group offered these suggestions: Create one institution to coordinate restoration activities; conduct a natural resource and agricultural inventory; suspend agricultural and pastoral activities except in some areas already using soil conservation measures; and begin some forestry projects.24

Most worrisome for the residents in the upper Yaque del Norte, however, was the Santiago group's recommendation that calls for the eventual enlargement of Armando Bermúdez National Park. This move would add 600 km² to the park -- which now covers only 429 km² -- in order to encompass the headwaters of a dozen tributaries of the Yaque del Norte. Engineer Rodriguez suggests that the lower elevational limit of the new park reach down between 500 and 700 meters.25 What this would mean for the residents of Los Dajaos, Manabao, La Cienaga and other communities -- all of them above 700 meters -- of the upper Yaque del Norte is unclear and not spelled out in the report. When such recommendations are coupled with stern warnings from the highest governmental levels, the concern about an eviction expressed by many residents of the region indeed seems well-grounded.

Engineer Rodriguez's report exhibits the concerns of urban and downriver interests. Away from the center, in the upper Yaque del Norte, rural and upriver interests may have to be content with less than authentic voice in the Junta Salvaguarda. In the Junta, campesinos are represented through groups such as Plan Cordillera and Plan Sierra. It is questionable whether these groups -- despite their beneficial work for and with campesinos -- can truly represent campesino interests. The former is church affiliated while the latter is a quasi-governmental agency.26 Plan Cordillera merits brief examination in that it is the vehicle through
which the rural residents of the upper Yaque del Norte ostensibly air their concerns.

Plan Cordillera is a Catholic church-affiliated NGO based in Jarabacoa. At the group's newly-built office and nursery, I met with the director, Francisco Antonio Rosario. A former longtime Foresta employee, Rosario said the 12-year-old group began with financial support from the Foresta and international donor agencies, though reorganized about five years ago and became affiliated with the diocese from La Vega, a mid-sized city at the foot of the Cordillera in the Cibao Valley. The backing of the Church, both financial and moral, has lent credibility to the group's efforts, says Rosario. "We all know that almost all development programs in the country have become politicized and have ended in failure," he says. "The participation of our campesinos in religious activities has helped us penetrate with them. And they have more trust in us with development programs." Rosario says Plan Cordillera projects draw heavily on community involvement, undertaking projects "only when the community participates directly in our work," Rosario says. "We don't give anything to anybody. If we put a latrine in a community, or to a school that needs it, the community has to pay the value in reforestation or nursery work."

Although the group is involved in apiculture, latrine projects and aqueducts, the focus of Plan Cordillera is primarily forestry projects. Rosario cites oft-quoted figures that 67 percent of the country -- because of its rugged topography -- is better suited to forestry than agriculture. Rosario says they strive for an integrated approach that involves forestry project work with educational efforts.

We believe education is the most basic thing in the program. Our education program aims at integrating man with natural resources. We want that a man knows a tree is a renewable resource, that there are times and places where and when you can't make use of that tree ... But there are other sites where it is possible to develop forestry programs that will benefit the campesino. We don't believe reforestation is a burden; on the
contrary, we believe that reforestation is going to solve the world's problems.

Whether reforestation alone is the answer is debatable. And while it is not my intent to undermine the work of any group working toward environmental protection and betterment of living conditions for rural poor, I do find it appropriate to point out problematic viewpoints. Plan Cordillera seems to exhibit the technocratic and paternalistic impulses antithetical to a community-based approach to conservation. Questions remain as to whether Plan Cordillera alone could adequately represent campesino interests.

If Junta Salvaguarda seeks to encompass all the concerns of the residents of the watershed, if participation is the goal, then it should include the grassroots groups in the region. The value of a stakeholders' approach to conservation issues is that it incorporate a wide range of legitimate interests. It must be remembered, however, that all interests are not created equal, and that some bear with them more power and influence than others. In writing about of the role of institutional actors in community-based conservation, Marshall Murphree notes this shortcoming of the stakeholders' approach:

The danger is that this perspective easily can transform interest into a conceptual collective proprietorship by a vast and amorphous circle of stakeholders. Those stakeholders who have invested the most in professional expertise and monetary capital form the board of directors. But this accounting procedure is false. Communities' investment in their environments -- their land, their resources, their labor, their local environmental knowledge, their managerial presence, and their stake in the future -- is in the aggregate and, by social accounting, is far higher than that of all external actors put together.

Without genuine grassroots participation, groups such as Salvaguarda run the risk of employing the long-standing top-down approach to conservation strategies. These are often imposed from above and or outside; the locals generally have little to no say in what's carried out. Such attempts run contrary to a growing body of research focusing on community-based conservation. That approach can be seen
in the desire to regain control over local resources, a sentiment widely expressed by many campesinos in the upper Yaque del Norte. In the summer of 1995, a federation of farmer and women’s groups in the watershed formed to take a proactive stance on protecting their watershed, the source of their livelihoods. This group, JuntaYaque, though still in its infancy, could be an appropriate vehicle for initiating community-based conservation efforts. This is not to deny the legitimate concerns of national groups like Salvaguardas, nor to denigrate the contributions they could make; rather it is to call for some melding of the two approaches. No one has a more intimate knowledge of the watershed than the campesinos who live there. What they lack are the technical and financial resources -- resources national groups could contribute -- to effect much needed conservation measures. In the next section, I look at the response at the grassroots, and some of the difficulties faced by communities striving to control their land and lives.

**JuntaYaque**

The road from Los Dajaos gains more than a thousand feet in elevation as it climbs the mile to Los Marranitos, one of the poorer communities in the watershed. On a rutted red clay road the wood houses are unpainted, the tin roofs rusting and the seemingly ubiquitous *colmado*, the little store that sells Dominican staples such as rice, beans, rum, sugar, and oil, is absent. To buy these requires a trek down the mountain to Los Dajaos. Until the early 1990s, there were no latrines in Los Marranitos. At more than 5,000 feet in elevation, the village offers a vantage point on over half the Yaque del Norte watershed. That vista has changed dramatically in only the last dozen years or so, according to Sonia, who moved to her husband Hector’s community in the early 1980s.

A 29-year-old mother with four children, Sonia has been the health promoter for La Obra Social, a church-affiliated NGO in Jarabacoa, for the last five years.

“When I arrived here, in this area where we work, lots of children died of fever, of
vomiting, of diarrhea. And the mothers didn't know what to do. But today the mother
knows, more or less, what to do when her child has a fever through us the
promoters."

Today sanitation has made gains in the community; with the help of a Peace
Corps volunteer, latrines were built for all but two houses in the community. Still
the root source of many of the illnesses remains: "The other cause is water; we
don't have water." There once was a small aqueduct for the community, though it is
all but dried up. Another aqueduct passes through Los Marranitos destined for El
Manguito, a mile below, and some residents siphon water off it, causing conflicts
with their downstream neighbors. Most people, however, get their water from a
small intermittent stream that trickles out of the denuded hillside. "If you saw it, you
would just die," she says.

Sonia recalls the forest loss around Los Marranitos was dramatically
noticeable in her early years in the village, especially between 1984-1986. During
those years, which coincided with the International Monetary Fund's imposition of
structural adjustment measures on the country, many residents depended on
charcoal-making for incomes. Equally damaging to the area's forests during those
especially tough years were the conucos and the fires. "I, myself, remember
when Hector, one time to make a conuco, knocked down a tree -- so big it pains me
to say -- big, big trees... Today I see it and it pains me. He was really young, and
they were trying to get ahead, not really knowing what they were destroying. To
destroy a forest is to destroy one's life"

Still Sonia is optimistic about her and her family's future in the watershed.
Indiscriminate burning has decreased over the years. "They used set fire and burn
everything, not considering those who would come later. This has changed a lot."
Her husband Hector, a member of the farmers' group ASADA, farms on the steep
slopes above Los Dajaos using soil conservation measures, a change from the old
ways. Changes in the use of the forests have come largely as a result of greater education, the realization that the forest base was dwindling, and the recognition that if they don't act themselves they may be acted upon. “People are getting a little scared. It has been said that they are going to evict (us) and this has got people scared. For that reason we have this junta, JuntaYaque. To orientate, to make conscious that people should not attack the forests.”

Thus the JuntaYaque can be seen as a local attempt at exerting control over the campesino's land and their own lives. The group formed in the summer of 1995 as an outgrowth of the local farmers' association (ASADA) in the community of Los Dajaos. The idea, according to JuntaYaque president Evaristo Bautista, grew out of the recognition that the upper Yaque del Norte had suffered serious degradation, and that many downstream users rely on Yaque water for agriculture and power generation. The JuntaYaque strives to encompass the diverse concerns of the watershed. Communities represented vary in socioeconomic standing and local custom. Los Dajaos, for example, seems more affluent than a community like Los Marranitos. Lack of arable land is a much greater problem in Manabao than Los Dajaos. Still the Junta seems an attempt to band together disparate groups into a cohesive body, with a conservation aim. The task of protecting the watershed, Evaristo notes, was too large for one group:

We have to form a junta of associations to protect the watershed because one association alone cannot protect the watershed. It's too big. We've seen the danger it is in. We are in the highest part of the Yaque, and we have got to take care of the forests. We have to pay attention to all the Cordillera Central. All of our rivers are born here. We need to sincerely recognize that the campesino lives in the campo, and that in the campo are the forests, and that the campesino can best take care of the forests.

Evaristo is in his late thirties, and has lived in Los Dajaos all his life. He and his family run a colmado. His father first came to the area during the logging era in the 1940s. When I first met Evaristo he was working other members of ASADA in
the community nursery hanging shade cloth for tree seedlings. One goal of the Junta Yaque is to promote community efforts at reforestation through creation of nurseries in each community. In addition to working toward critical rehabilitation goals, reforestation could augment meager campesino incomes. But the Junta Yaque wants more than jobs in the forests: It wants greater control over the watershed itself. Evaristo continues:

They [government officials] have invested millions of pesos in things that have shown no result. Why not invest them in the campo and put the campesinos to work in the forests. They can live by taking care of the forest, like a park, but still be able to produce food to eat. This is a good solution. We say the creation of work here in reforestation is one of the things that is going to protect the Yaque watershed....My principal interest is that the upper watershed of the Yaque del Norte be managed by the campesinos. We need an agreement that gives that opportunity to the campesinos. On the contrary, if I as a campesino, if I am not considered important, then I am not going to give importance to the forests.

Concerning the other Junta, Bautista says if its resources are invested downstream it will resolve nothing in the watershed. Still Bautista hopes cooperation is possible, between the two juntas and the government agencies as well. "Together with the institutions that are working to care for [the watershed], we ought to unite our efforts. Neither them alone nor us alone. " An adversarial relationship achieves nothing. "When there are two enemies, it's not a good thing. The authorities believe they are taking care of the forests, but they are making life impossible for the campesinos. And it is causing the campesino to hate the forest."

If the animosity that some campesinos exhibit toward the forest is to change, it'll require education on both sides; the Foresta and the campesinos. Bautista says it would be easy to educate Foresta officials.

For me I think they need to change their attitude, change from repression of to reforestation with the campesinos. That would be educating them. Foresta ought to part of the civil society. Foresta should not be part of the army. This resolves nothing. The army is here to defend, but here there is no war.
Educating the campesinos of the watershed is also part of the Junta Yaque agenda. "It is necessary to change traditional agriculture. You can't do away with it altogether; people will always have a little bean field." Indeed, agriculture in parts of the watershed may be already changing. The farmers and residents of Los Dajaos, through their group ASADA, are looking toward a variety of alternatives. The watershed, with its cool yet frost-free climate and abundant rainfall, is suitable for some new forms of agriculture. Once dominated by the cultivation of red beans, agriculture in the watershed now looks to crops such as strawberries, citrus, flowers and nuts. Ultimately the goal is to farm less land but grow higher value crops, and to diversify the livelihood strategies of the watershed residents. New agriculture, forestry work, penned livestock, fish-rearing, small crafts, and perhaps even ecotourism are among possibilities often discussed. Ultimately, he says, the aim is the maintenance and betterment of a way of life for the rural residents of the watershed.

For the junta, what we are looking for are ways that the campesino can continue to live in the Yaque watershed, and live better, not only for the short term but the long term as well. We want to see them live better without being evicted... A person from the campo has to do whatever they have to because no one is going to die from hunger. In the campo, there are trees. Here, in the campo there is no industry for the people to work in. Here a person has to cut in order to live. How can we improve this situation? Look for solutions like we are, the association here.... For precisely that reason we formed the junta to spread knowledge to the other communities we have here. To do that we need a lot of resources. Right now the junta is walking on foot, like a burro.

One thing for certain is that restoring and protecting damaged watersheds will not come cheaply. New groups, such as Junta Yaque and its 450 members, undoubtedly are cash-strapped, and within its relatively small membership and the entire watershed there exists no chance that the funding will be self-generated. This means groups must look outside for financial support. Groups like ASADA, through the efforts of one particularly dynamic and well-connected member, have
had reasonable success soliciting donations from international donors. One donor agency active in the watershed is the Inter-American Foundation, a progressive and relatively autonomous agency funded by the US government. The IAF, unlike the Agency for International Development, answers to a board rather than Congress or the president, thus better shielding it from US politics. The Inter-American Foundation, according to one of its officials, supports "several thousand projects emanating from organizations of and for poor people who lack access to adequate income, information, social networks and participation in the decisions that affect their lives." Increasingly, the IAF is funding more environment-related projects such as agroecology, environmental education, forestry, and watershed management, than previously.28

JuntaYaque may have to look to a variety of sources, including external agencies such as the IAF, to fund its efforts. Reliance on outside donors, however, raises questions about the efficacy and adverse consequences external funding carries. The issue of donor agency paternalism and community dependency has been explored in depth elsewhere, particularly in Roland Bunch's Two Ears of Corn.29 Murphree succinctly characterized these problems as the "initiation of unsustainable capital development projects and localized bureaucratic structures; communities tactical acceptance of objectives that are inconsistent with their own perspectives; and the introduction of power differentials within the community." 30

Indeed, the Dominican Republic, like many nations subject to the development programs, is rife with examples of community wells that worked until the pump broke for the first time; or farmers who use soil conservation measures as long as they were paid to do so; or communities divided by the infusion of outside money.

Murphree asserts that despite problematic nature of external funding, it is justifiable especially at the outset of a program. The difficulties faced by the JuntaYaque exemplify this. The key aspect of donor funding is that it should
"further community interests rather than buy the donor a stake in the community' resources.” 31 This is a critical distinction: The urban-based Junta Salvaguarda is in a far better position to fund project work in the watershed than the Junta Yaque. The danger is that such funding could be used to impose exogenously determined programs, which most often fail.

In discussing the two Juntas, Junta Yaque and Junta Salvaguarda, it has not been by my intent to paint one as good and the other bad, or to portray them as rivals. Both groups are new, and dynamics between the two remain to be seen. The hope here is to open up space for understanding and cooperation. External institutional actors can play an important role in community-based conservation. These actors -- groups like Junta Salvaguarda -- could help to implement community-established economic and environmental agendas, rather than having a community adopt an externally-derived agenda.32 Rather than play the role of a traditional NGO, the Junta Salvaguarda could act as a grassroots support organization (GSO). These organizations bring with them no set agenda, but rather serve as a conduit for services and resources between community groups and government and donor agencies. 33

In this chapter I have attempted to look at the discourses behind the different efforts made to protect the upper watershed of the Rio Yaque del Norte. Foresta, the Junta Salvaguarda, and the Junta Yaque all have their own interests, discourses, and assets. Despite conflict that exists among them, their interests need not necessarily be mutually exclusive. All contend they want to protect the Yaque del Norte. Conflict resolution could serve as a means of reconciling competing interests. If watershed conservation is to be achieved, Foresta must yield some of its authority, and shift its focus from paramilitary enforcement to education and extension. Junta Salvaguarda could play a integral enabling role in watershed protection as a grassroots support organization. It could marshal
resources and offer technical support where needed. It is critical that external organizations recognize the local knowledge base found among the campesinos of the watershed. Defending their homes and their livelihoods, they are the ones with the most at stake in the protection of the upper Rio Yaque del Norte.

The call for cooperation among conflictive elements may sound quixotic, and it is easy to fall into cynicism. It would be easy to say that the government would never devolve authority to its rural poor, or that urban powers will do as they wish because they can. But the value of a discursive approach is that it can identify multiple and conflicting positions and point to or open up spaces for considering the seemingly unworkable. This chapter is but a modest step toward that much-needed end.
CHAPTER 5
CONCLUSION

Conservation policies and schemes which fail to balance environmental protection and human welfare are likely to result not only in increased hardship for certain groups but also in forms of social conflict, clandestine activities, non-cooperation or apathy which undermine the possibility of effectively arresting environmental degradation, let alone rehabilitating the natural resource base. -- Peter Uttig

This thesis is a story about a small watershed in a small country. Although there may be some wider lessons, I have not made an attempt here to extract generalities that might explain other situations of environmental and social conflict in regions outside the Dominican Cordillera. Instead, I have tried to share the concerns of the inhabitants of region with whom I have spoken, and for whom destiny has been largely controlled by outside forces. In my own examination of the situation in the Yaque del Norte, I have attempted to trace the contours of power as they shape the physical and social landscape of the watershed, as well as some of the campesinos' perceptions and reactions to them.

In mapping those contours, I found that the region's history has been shaped by forces emanating from the urban centers of power -- Santo Domingo and Santiago in particular. The greater Dominican society -- through its political bodies and economic development strategies -- has fomented a climate in which agriculture has been practiced at the expense of the watershed's forests in the Yaque del Norte. A small economic elite once benefited handsomely from the unhindered exploitation of the region's forests. A handful of wealthy land owners continue to benefit as much of the converted forest is now pasture. Still, today some urban groups express indignity at the abused state of the watershed, and call for decisive action.

I would be equally remiss to hold domestic urban governmental and economic elites solely accountable for that climate. The role of US imperialism must be
acknowledged in looking at the shaping of Dominican affairs. Twice in this century the United States has sent the Marines to the Dominican Republic to intervene in the nation's matters. The 20th Century Dominican Republic is many ways the product of American foreign policy. Forest conversion in the upper Yaque del Norte, then, is just the outermost ripples of imperialist splash made by American intervention.

In reflecting on the history of forest conversion in the upper Yaque del Norte, I see a need for a redistribution of responsibility. I have tried to challenge the simplistic, state-backed notion that irrational, ignorant, or backward campesinos are clearing forests because they know no better, or worse yet out of malicious intent. Popular discourse embodied by governmental agencies, such as Foresta, and some nongovernmental ones as well, has considered the campesinos the chief agents of destruction in the nation's forests. What I have attempted to show is that campesinos' actions are colored by their existence on the margin of Dominican society. Given their circumstances, they have acted rationally, that is to say they have done what they have had to do to survive. But I have also tried to show the ways the campesinos have responded to their situation. Many of the campesinos I spoke with realize their adaptations to societal conditions have brought great destruction to their forests. They know now that they must act to protect what remains and try to restore what has been lost. They look to society -- i.e. the government, the urban powers -- and the international community to give them the opportunity to be the chief agents of forest protection and restoration.

Indeed, I believe they are looking in the right direction. "Knowledge of the historical underpinnings of current difficulties is fundamental to understanding the functioning of community-based conservation," writes Brazilian senator Fabio Feldmann. In the case of the Yaque del Norte historical analysis serves to
broaden the scope of assigning responsibility for forest conversion, and to illuminate the roots of repressive and counterproductive conservation practices.

The aim of this thesis has not been to disparage or undermine the notion of forest conservation. Rather it has been to point out that traditional, that is technocratic and managerial, approaches to conservation or environmentalism are not inherently benign forces, or an unqualified good, particularly in the places like the Dominican Republic. At best, they can fail to achieve their aims; at their worst they can be repressive to rural people. This view, I realize, may be construed as hopelessly anthropocentric. The goal, after all as some might argue, is to protect the forests, not necessarily the forest dwellers. In my own life, I may aspire toward a biocentric ethic, though I realize that this perhaps reflects an advantaged socio-economic background. I can afford it; in other words, my own "livelihood struggles" are not elemental in the way that a campesino's are. It's unlikely I'll ever face hunger as a fact of life. When issues of social justice collide with environmental concerns, or particularly when power acts on the powerless in the name of environment, I find anthropocentric views warranted. In this thesis I call for a melding of social and environmental concerns: environmentalism with a human face. If that is possible, some suggest it will be through a community-based approach to conservation.3

Community-based Conservation

The task of protecting and rehabilitating a watershed is undoubtedly a daunting one. Watershed management projects in the Cordillera Central of Dominican Republic have been undertaken in the past 15 years with variable results. Some like Plan Sierra, in neighboring watersheds of the Yaque del Norte basin, have made some gains, though recently the project was undermined by party politics. Other projects have floundered and at great expense. In 1981, the Management of Natural Resources Project (MARENA) sought to promote soil conservation in two
watersheds in the southern slopes of the Cordillera Central and also to build institutional capacity of the Secretary of Agriculture (SEA) and its sub-secretariat of natural resources (SURENA). Funded by the USAID, at a cost of $11 million, the project drew on the efforts of several state agencies, the Catholic Church and several community groups. A 1993 World Bank report notes that funds aimed at strengthening government agencies achieved little. More important, the project showed initial success with its promotion of soil conservation measures, though these practices were linked to farmers' access to credit. Another critical problem with the project was that much of the funding for the project never left the capital, Santo Domingo, "leaving meager and delayed field level disbursements to the project." Furthermore, none of the funding reached community level groups.

The variable success of past watershed projects points out the need for new approaches to watershed conservation. The traditional top-down, technocratic, governmental attempts, exemplified by the MARENA project, have largely failed to achieve their aims. Sociologist Michael Cernea raises some important concerns regarding the difficulties faced in watershed projects:

A single watershed may contain a broad diversity of tenurial arrangements, stratified social groups, and various farming systems and land use patterns. Moreover, the rehabilitation of deforested watershed demands much more than watershed forestry and massive planting of trees. It involves flood control and soil conservation; often bench terraces need to be built with massive excavation and refill work; farming systems need to be adjusted to ecological characteristics; and there may be changes in the land rights system, in the rules of land transmittal, in settlement patterns and the number of inhabitants.

All that, Cernea argues, is well beyond the capacity of individuals, thus calling for group action supported by technical agencies. The difficulty, then, is to find a way to "engineer the formation of a group out of discrete and not necessarily organically interactive farmers." The establishment of the Junta Yaque seems a step toward that goal. But even more important it is an approach that seeks out, and embraces local knowledge and participation. "Participation" is a word that ought to
be viewed critically; too often it is used in reference to local people providing labor for development projects that have been conceived by outside consultants. Peter Uttig, in his book *Trees, People and Power* writes that participation is more than just involving communities in project design, implementation and evaluation. "It is also about 'empowerment,' or the organized efforts of marginalized groups to transform patterns of resource allocation and increase their control over material resources and resource management decisions." This essentially is what JuntaYaque says it wants: to manage its own watershed. This desire reflects a new take on environmentalism, that of community-based conservation (CBC). Two of the field's leading advocates, David Western and R. Michael Wright, describe the new approach:

Community-based conservation reverses top-down, center-driven conservation by focusing on the people who bear the costs of conservation. In the broadest sense, then, community-based conservation includes natural resources or biodiversity protection by, for and with the local community. ...The deeper agenda for most conservationists, is to make nature and natural products meaningful to rural communities. As far as the local communities are concerned the agenda is to regain control over natural resources and, through conservation practices, improve their economic well-being.

While CBC offers a new approach to resource management, it still faces substantial challenges. For example, essential to CBC is empowering local level organizations, or more specifically, opening up channels of political access. "Political pluralism and a strengthened democratic process are the most fundamental preconditions for conservation," writes Feldmann. With this in mind, Feldmann sees environmental education not merely as a means of informing communities about ecological issues, but more importantly an instrument for "assisting communities in the exercise of their full rights as citizens."  

This exercise of citizenship may prove to be the most significant challenge to CBC initiatives. It follows that such an exercise requires the state to cede some of its authority to communities. Community-based conservation cannot proceed
without state recognition. In the Dominican Republic, with its long history of authoritarian and nominally democratic regimes, devolution of power may prove improbable. Many CBC projects strive for control of state lands. In the Dominican case, the state -- through Foresta and the army -- exerts authority over all lands, state and private alike. If the state were to relinquish its authority over private lands alone, it would be an improvement over the current situation. The next step would be allow greater community control over state lands -- most of which were historically communal -- in perhaps some form of comanagement scheme. Ideally, under such a strategy, the government would facilitate community-generated forest management efforts.

Murphree, however, notes that this seldom happens. "The inbuilt tendency of government structures is to assert power and claim authority, even when they lack the resources to fulfill the implied responsibilities."10 As illustrated throughout this thesis, this proclivity is especially true of Foresta, which, unable to carry out its full mission, has focused on enforcement of the cutting prohibition as a means of maintaining control over the nation's forests. The failure of Foresta's approach is amply evident, though it remains to be recognized.

Recently, however, a new window of opportunity may have opened. The political situation long dominated by the 90-year-old Balaguer and his Social Christian Reformist Party (PRSC), who controlled the Dominican Republic for 22 out of the 30 years between 1966 and 1996, may have come to a close. In the 1996 election, Leonel Fernandez of the Dominican Liberation Party (PLD) became the nation's youngest president. A Santiago native raised in New York City, Fernandez calls himself a centrist and a reformer. Thus far, he has taken steps to retire two dozen generals, a bold move given the history of military interference in civilian affairs. Still, Leonel must contend with a Dominican congress, judiciary and military dominated by Balaguer loyalists. He and the nation face huge problems
with chronic power shortages, growing crime rates and a slew of other economic and social problems.\textsuperscript{11}

The shift in the political climate should neither be over-estimated nor downplayed, but rather viewed with guarded optimism. The new government is centrist, and thus not likely to push for dramatic populist reform. Fernandez is from Santiago, the regional center of power and the prime determinant of the watershed's fate. The change in governments, however, offers a critical opportunity for reforming managing the nation's forests. Whether he and his party have the interest or ability to reform the Foresta remains to be seen.

The change in government, and the retiring of the numerous generals, could bring a chance for a civilian-headed Foresta, and perhaps a new direction. What is needed is a severing of ties to the military, as many campesino leaders point out. The Foresta should be an enabling agency, not an enforcer. Toward that end, the agency should redirect its resources and personnel toward educational and extension efforts. The recent change in government could reveal whether the authoritarianism wielded by the agency is institutionally inherent or merely reflective of Balaguerista politics. Thus far, the governmental presence in the forests of the Yaque del Norte has served only to exacerbate problems.

**Future Research Agendas**

My work here -- essentially descriptive and diagnostic -- addresses perhaps the simplest part of the problem in the Yaque del Norte. Of course, further research -- drawing on both the social and natural sciences -- is needed in order to inform action. Specifically, what is required are the nuts and bolts of how to protect and restore the watershed, but in ways that mesh with the local ecological and social situation. There are three particular areas that need to be further understood: first how to apply a community-based conservation approach to watershed protection in the Yaque del Norte. Empowering historically unprivileged viewpoints,
such as those of the farmers of the region, is critical to this. This means on-the-ground community organizing, institution-building, fund-raising and the development of links to outside -- domestic and international -- sympathetic institutions. One risk to CBC is the possibility that the approach could be used to co-opt local leaders and movements. Outside forces, both governmental, business and non-governmental, could use community participation in planning to modify pre-conceived projects, rather than truly generate them from the community itself. One good research question then is how a group like JuntaYaque can link itself to outside forces and still maintain the direction of its efforts, or keep its agenda intact?

Related to this is perhaps is the need for conflict resolution, perhaps one savvy to the nuances of power and language. There are numerous institutional actors in the watershed. Conflict varies in degrees between the various actors, high for example between some individual farmers and the Foresta, and low between different NGOs working in the region. Still, recognizing and reconciling these competing interests is of critical importance.

The second principal area of investigation would be research and extension that examines strategies to "settle" the hillside conuco. There is much about the old Arawak conuco to be admired from an agroecological vantage. But conuquismo today has become problematic. As I discussed in chapter 2, socio-economic and political factors preclude much of a future for shifting cultivation as currently practiced. While groups such as ASADA look to sophisticated methods, such as the biotechnology of the future, to develop new market crops, a look back may be needed as well. The Arawak conucos, permanent farm plots that were productive, ecologically sound, low maintenance once established, stationary and long-lived, offer a possible model for the future of subsistence farming, the bedrock of rural self-sufficiency. Indeed, elsewhere in Latin America, particularly across the
Caribbean on the Central American mainland, there is a small but growing effort to develop alternatives to the two predominant agricultural practices: swidden and the high yield-oriented "modern" agriculture. In Honduras, where there are parallels to the Dominican situation, World Neighbors, a US based grassroots support organization, has promoted a new approach to agricultural research, one that invokes empowerment and self-reliance as an asset, and that values farmers' knowledge. Inter-American Foundation representative Jim Adriance describes the outlines of the new approach:

Throughout the Central American isthmus, thousands of campesinos are working with a growing number of visionary yet pragmatic grassroots support organizations (GSOs) to reinvent agriculture. In this new agriculture, farmers don't wait for the 'experts' to guide them. They do their own experiments and they share their finding with other farmers. Farmers look beyond this year’s harvest to the long-term health and richness of their soil, and the natural environment has become an ally, not an enemy to be conquered.

There are research centers in the Dominican Republic focused on organic agriculture and soil conservation. In Rio Limpio, in the western Cordillera near the Haitian border, the Regional Center for Alternative Rural Studies (CREAR) offers training sessions in soil conservation and organic agriculture. How can low-input agronomic, farmer-centered technologies be used and transferred in the region?

The third, though no less important than the first two, is how to nurture participatory forest management regimes in the watershed. "What is required to make the concept of participation viable is proprietorship," writes Marshall Murphree, "which means sanctioned use rights, including the right to determine the mode and extent of management and use, rights of access and inclusion, and the right to benefit fully from use and management." This laudable but politically difficult in the Dominican Republic. Campesinos in the watershed today do not even possess these sorts of rights to their own property let alone to land belonging to the state. Still, there is need to invest the communities with some literal sense
that the watershed belongs to them, not to the state, not to a Santiago NGO, and not to an international donor.

One possible idea is to investigate the possibility of establishing a grassroots Cordillera conservation corps. Such a group -- endowed with recognized rights to the use of land in the watershed -- could identify, design, and implement forestry and agricultural projects in the watershed. Ideally workers in the such a group would not consider themselves working for the government, or any other institution, but rather for themselves. Aside from augmenting agricultural earnings, such work could possibly further a conservation ethic, one that links the health of the land to the health of campesino families.

These are suggestions, and suggestions are easy to make, and may sound hopelessly naive. It would be easy to end this thesis on a pessimistic note. It would be easy to say that the campesinos of the Yaque del Norte are relics of an age past, a people whose adaptations to societal conditions have contributed to the ecological degradation of Cordilleran forests. This could easily be a declensionist storyline, that of the decline of a rural people and their land. It is conceivable that the Foresta could continue its war of attrition, pressuring farmers until the point where they give up. More dramatic would be an overt eviction and resettlement of the campesino communities. This would not be inconsistent with much of Dominican history. In the Dominican Republic, the power to act has never been tempered by a moral conscience.

Campesino lifeways could also meet a demographic demise. A common sight on the road up from Jarabacoa are the Pathfinders and Landcruisers of city people flying upcountry to their summer homes. Increasingly, the Yaque del Norte is becoming the second home to many urban professionals. As more and more urban people move to the countryside, farm families -- through distress sales -- could be bought out of existence. The landscape, once the object of commercial
exploitation, could be commodified and consumed in new ways as scenery, as
nature, or as a bucolic retreat. The future for the region, which despite it substantial
forest loss still offers a pleasant climate and pastoral vistas, could center around
summer homes for the affluent urbanites, and ecotourism for affluent visitors. It is
perhaps a prescient fact that recently a bed and breakfast has been established
outside of Manabao. The influx of new, affluent urbanites is not inherently bad for
the locals, as some newcomers, like Jose and Naty Cruz, bring a genuine concern
for their neighbors, as well as a variety of resources. In looking at environmental
and rural issues, nothing is clear-cut, black and white. But it would not be difficult to
imagine a not-too-distant future in which the campesino, who no longer exists as a
malignedy actual figure, becomes a symbolic one, an object of nostalgia, a reminder
of a simple, yet tragic, agrarian past.\textsuperscript{15}

Thus continued governmental pressure, or the changing demographic face of
the \textit{campo} could bring about the complete dislocation of a rural people, and the
disappearance of a historic agrarian way of life. Many farmers in the Yaque del
Norte express skepticism about continuance of their agriculturally-based
livelihoods in the region. It could be argued that while regrettable, this is progress,
a triumph of modernity over "backward" country ways.

But as a North American observer, I feel I am not entitled to any more cynicism
that what is held by campesinos and campesinas like Moro, or Aquiles or Sonia.
They are forthright in expressing their frustrations, yet manage to act constructively
on them as well. The formation of the JuntaYaque seems the institutional
embodiment of both their grievances of today and their aspirations for tomorrow.
For fledgling groups like the JuntaYaque, operating in a highly political context, the
desire for self-determination is likely to meet opposition. Those who wield power
are likely to relinquish it only reluctantly. But the campesino families of the Yaque
del Norte have too much at stake to do nothing. And more importantly, they realize that if they don't act, they will be acted upon once again.
NOTES

Chapter 1


6. For a good account of the problems with technocratic approaches to conservation see Randall Baker's "Protecting the Environment against the Poor: The Historical Roots of the Soil Erosion Orthodoxy in the Third World." The Ecologist 14 (2) 1984 pp.53-60.


11. Dan Flores, "Place: An Argument for Bioregional History." *Environmental History Review* Winter 1994 p.6. The history of place, geographer Piers Blaikie argues, would also include "nonplace" analysis, which examines outside forces, such as colonialism or state policies, that shape "place." See *The Political Economy of Soil Erosion in Developing Countries* (London: Longman, 1985.)

12. It should be noted that the Cordillera extends the most length of the island of Hispaniola, that is to say across the border into Haiti. This may raise questions about just where boundaries should be drawn in doing bioregional history. I would consider the Haitian portion of the mountain range to be worthy of its own history on the grounds that its culturally, linguistically, ethnically and historically distinct from the Dominican Cordillera.


18. The melding of political ecology and poststructuralist theory has recently been called "liberation ecology" by geographers Richard Peets and Michael Watts. For an excellent theoretical overview, with numerous case studies, see their collection *Liberation Ecologies: Environment, development, social movements*. (London and New York: Routledge, 1996)


Chapter 2

1. A note on land measurements: The *tarea* is the Dominican unit of land measurement. One hectare equals 16 tarea. There are 2.47 acres to the hectare and 100 hectares to a square kilometer.


7. Pines are not native south of Nicaragua nor are they found to the south or east of Hispaniola in Puerto Rico or the Lesser Antilles. The Central American connection is literal: Hispaniola was once connected to the mainland during the Miocene and it is speculated that pines arrived via Tertiary land bridges. See N.T. Mirov, *The Genus Pinus*. New York: The Ronald Press Company, 1967.


12. Sauer, Spanish Main, p. 68. In a few short decades, however, census taking became a much more manageable task. By 1518, only 11,000 Arawaks remained and in another decade, the race was all but extinct.

13. Sauer, Spanish Main, pp. 51-56.


15. Sauer, Spanish Main, pp. 56-57.


20. William Gabb, "On the topography and geology of Santo Domingo." Transactions of the American Philosophical Society. Vol. 15, 1881. p. 54: Gabb went beyond Manabao to La Cienaga, where he and his party spooked a large herd of cattle, which "tossing their heads and switching their tails as only wild cattle can ... started off bellowing with alarm and plunged across the marsh, belly deep in mud and water." p. 115.


28. Denevan, "Swiddens and Cattle," p. 31. The next chapter will look at this phenomenon, spawned by the boom in the timber industry in the Cordillera.


30. North American Robert Crowley, a longtime observer of and participant in Dominican natural resource and agriculture issues, and a farmer as well, is an invaluable source of information on these topics.


33. The epoch of Trujillo is how many older Dominicans refer to the 1930-1961 Trujillo dictatorship. In the upper Yaque the period is remembered largely as a time of plenty. Elsewhere in the Yaque del Norte basin, in the Bao watershed, older campesinos recall the brutalities of one Trujillo's army captains and the seizure of campesino lands. The Trujillo dictatorship is examined in the next chapter.

34. Denevan, "Swiddens and Cattle, p.27.


36. In the 1960s the peso was roughly pegged to the US dollar. In the fall of 1995 there were roughly 12.5 pesos to the US dollar.

37. World Bank "Environmental Issues," p. 67. The figures for 1981 showed a widening gap since 1971 when 69 percent of the farms were smaller than five ha and occupied 14 percent of the agricultural land.


43. Even farmers with secure title to their land may show reluctance to initiate forestry projects, given the fact that although they may have tenure to the land, the government effectively reserves all rights to trees.


48. I owe this insight, in part, to Robert Crowley.

49. The formation and workings of the Junta Yaque are detailed in chapter four.


52. All that's within the campesino community socio-economic structure; it does not include absentee land holders, the ones who wield perhaps the greatest sway in the watershed. Nor does account for other people who consider themselves campesinos though do not work in agriculture: *colmadao* owners, carpenters, bricklayers, butchers, lottery ticket vendors, school teachers, *forestales*, Dominican Yorks, and increasingly ex-urbanites searching for country life.


3. For treatment of the full sweep of Dominican history, see Moya Pons Dominican Republic: A National History.


13. Ornes, Trujillo, p. 34.


15. Moya Pons, Dominican Republic p. 359.


32. Scarff, "Forestry and Forest," pp.4-6.


39. FAO, Cordillera Central, p.29.


42. Armstrong, Fire Problems, p. 10.


45. Georges, Transnational Community, p. 62.

46. Georges, Transnational Community, p. 62.


52. Darrow and Zanoni, "El Pino," p. 32.


Chapter 4


17. Foresta is not the only agency charged with natural resource management. Aside from the DGF, there is the National Technical Forestry Commission, separate fishery and wildlife services under the SEA, the Agrarian Reform Institute, the Institute for Hydraulic Resources among others. A World Bank report from 1993 counted 26 government institutions dealing with environmental issues, and found them understaffed and underfunded and often redundant in their efforts. Equally problematic are interagency rivalries and contradicting mandates. Long-standing is the territorial feud between Foresta and CONATEF. An example of conflicting agendas can be seen in some the agrarian reform programs that have resulted in substantial forest conversion. Land reform in Arroyo Grande, a tributary of the Yaque del Norte, in the late 70s' brought significant forest clearing.


26. On the northslope of the Cordillera, still within the Yaque del Norte river basin, Plan Sierra began work in integrated rural development in 1979. This group is loosely affiliated with government, and funded by private interests from the Cibao Valley and Swedish foreign assistance. Working in a 2000 km² area -- the Bao, Mao and Amina watersheds -- Plan Sierra launched programs in native forest management, forestry extension, agricultural credit, health programs and conservation education. Although the group has shown some success and longevity, it has recently been nearly completely undermined by politics. Conflicts within government agencies and military officials based in Santiago were part of the problem. Indeed Francisco Rosario's observation rings true. President Balaguer managed to place loyalists on the group's board of directors, which once acted relatively autonomously. As a result, by late 1995, nearly all the field technicians, dozens of whom had been there for 15 years, had been fired. There was, however, speculation that the group might be able to resume work, provided it could draw on international support, both financial and political forms.


32. Murphree, "Institutions" p.421.


Chapter 5


12. See Jim Adriance's "Planting the Seeds of a New Agriculture: Living with the Land in Central America," grassroots development Vol 19 No.1 p.2


Map No. 1: Hispaniola mountains, valleys and rivers.
ANEXO 3. Ubicación Geográfica Los Dajaos