The Political Ecology of a "Forest Transition": *Eucalyptus* forestry in the Southern Peruvian Andes

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Research

Abstract

In numerous peasant communities of the Peruvian Andes, the eucalyptus tree (*Eucalyptus globulus* Labill.), an introduced species from Australia, represents a fundamental component of the rural livelihood system. This study examines the ways in which a forest transition—the partial reforestation of this region through eucalyptus plantation forestry—has, in addition to providing a valuable resource, transformed peasant economic and land tenure systems and shaped the position that peasant communities have assumed in Peruvian political and economic systems in recent decades. During the agrarian reforms of the late 1960s and early 1970s, the state promoted large-scale eucalyptus forestry, partially as a means of strengthening its political presence in the countryside. More recently, in the wake of structural adjustment, non-governmental actors—namely NGOs and private business—by engaging in rural forestry, entered the political and economic vacuum created by a receding state apparatus. Applying a political ecological perspective to a case study from southern Peru, this study looks specifically at the role that this widespread introduced species has played in shaping land tenure institutions, market integration, and peasant interactions with the state, outside NGOs and businesses.

Introduction

While the questions of deforestation and reforestation in Peru generally conjures images of the nation's Amazon Basin, the term is less commonly associated with Peru's Sierra. However, a visitor to the Southern Peruvian Andes will indeed find that many mountainsides are green with large stands of forest, consisting of both native and introduced species, most notably eucalyptus. The eucalyptus forests that currently dominate many Peruvian hillsides represent a massive transformation of a montane landscape that had for many centuries previously been largely devoid of trees (Dickinson 1967, 1969, Gade 1999). A political ecological perspective shows the ways in which this forest transition has affected and has been affected by the political and economic contexts of the region. Specifically, I use a political ecological perspective to examine the role that this introduced species has had in shaping the peasant economy, local land tenure systems and the relationship between the peasant community of Yutto, and entities outside of the community, including the state, urban-based businesses and NGOs.

While *E. globulus* was introduced to the Peruvian Andes over a century ago, initially being planted primarily in small stands in cropland (Dickinson 1969), it did not become a prominent feature of the landscape until the middle of the 20th century. It was widely promoted first as a source of mine supports when imported supplies were threatened during WWII, through USAID-funded forestry programs in early 1960s (Dickinson 1967, 1969) and subsequently under the agrarian reforms of President Velasco's center-left military regime of the late 1960s and early 1970s. During this time, the state took a strong interest in the affairs of **campesinos**, redistributing hacienda property to landless peasants in one of the most ambitious

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land reform programs ever attempted (Bourque & Palmer 1975). Hand-in-hand with land redistribution went a strong program promoting the cultivation of eucalyptus throughout the Sierra. Eucalyptus, it was hoped, would provide peasants with a source of fuel, of building material, and perhaps a commodity to export to urban centers and even to foreign markets. In many respects, these goals have been achieved, and eucalyptus has come to play a central role in the peasant economy. Exemplifying the important role of eucalyptus, at the time of research, a popular **huayno** song called **Eucalyptochay** ("My Dear *Eucalyptus*") celebrated the singer's love for the eucalyptus tree in ballad form. In addition to changing the peasant resource base, at the local scale, the *E. globulus* has reshaped local land tenure and political systems, and at a regional scale, it has reshaped the relationship between peasant communities and the national government and economy.

In order to develop an understanding of the significance of eucalyptus in a peasant community in terms of both its internal economy and relations with the larger political-economic landscape, I conducted fieldwork in the **campesino** community of Yutto and the neighboring **mestizo** town of Andahuaylias in the Department of Cusco in the Southern Peruvian Andes. In the course of my research, I explored several questions related to the role of eucalyptus in peasant-state relations. First, how did the eucalyptus forest transition reflect peasant-state relations in Peru in the mid-20th century? Second, what have been the economic implications of eucalyptus forestry for peasant communities in this region—especially regarding their integration into wider economic systems? Third, how has the changing nature of eucalyptus forestry affected local land tenure institutions? Fourthly, in the recent atmosphere of neoliberal politics and the state's diminished presence in the countryside, what new institutions are emerging to fill the role abandoned by the state and what are the continuities and discontinuities between them? Finally, what are the theoretical implications of the Peruvian Sierra's eucalyptus forest transition for political ecological studies linking environmental, political and economic change?

The Eucalyptus (Eucalyptus globulus)

The eucalyptus, or Tasmanian blue gum, is a stately tree renowned not only for its aesthetic beauty, but also for its rapid growth, high adaptability and ability to rapidly produce timber and fuel wood. While eucalyptus has come to form a prominent part of landscapes in places such as California and southern Europe, it has been most extensively promoted in the developing world (Doughty 2000). European colonialists first introduced eucalyptus, an Australian native, to far reaches of the globe, including such locales as India, Kenya, and Peru. Building upon these colonial beginnings, the eucalyptus diaspora out of Australia accelerated immensely during the post-colonial period. Beginning in the middle 20th century, national governments and international organizations such as the United Nations Food and Agriculture Organization (FAO) have collaborated in the propagation of eucalyptus as a fast-growing renewable resource for the developing world (Doughty 2000). The ability of eucalyptus to coppice and rapidly produce new stands of timber after cuttings has made this species an even more desirable tree for regions experiencing shortages of fuel wood and timber.

While the focus of this paper is the political and economic implications of eucalyptus in the Peruvian Sierra, it is important to note its (mostly negative) ecological implications. Eucalyptus, it was hoped, would both provide a much-needed resource to impoverished people and, by providing an alternate fuel source, reduce pressure upon existing forests. However, it would soon become evident that eucalyptus often brought environmental degradation as well. The roots of eucalyptus are widely thought (both in Peru and elsewhere) to draw up massive quantities of water and soil nutrients, a harmful characteristic in regions such as the Peruvian Sierra where peasant survival is so closely linked to adequate water supplies and fertile soil. Due to its rapid growth and high rates of transpiration, eucalyptus can consume as much as 10-25% of the water that passes through its leaves (Doughty 2000:155-156). While eucalyptus clearly depletes water supplies and adds to soil acidity, the degree of nutrient depletion is still debated (see Mitchell 1991:107 and Doughty 2000:154 for opposing perspectives). In interviews, I encountered concerns among some of my peasant informants that, due to its tendency to out-compete rival plants, eucalyptus creates a landscape denuded of undergrowth, and thereby increases the susceptibility of hillsides to soil erosion. This concern can be found in the literature on eucalyptus as well (see, for example, Doughty 2000:156). Finally, the resins in eucalyptus leaves do not necessarily stay where the leaves fall, but may reach waterways where the increased acidity threatens aquatic animal life.

Field Site

The location for the research project was the small Peruvian **campesino** community of Yutto (Figure 1). The community is located in the Department of Cusco, Quispicanchis Province, approximately 60 kilometers from the city of Cusco and some 5 kilometers from the nearest paved road. As of 2000, the community had a population of approximately 335.

Upon the dissolution of a hacienda that had controlled the land and labor in the area, Yutto was incorporated as a legally-recognized peasant community, and control of the surrounding land given to it. The community of Yutto owns 645 hectares of land (Bernex 1997:197), roughly one-third of which lies in a fertile valley bottom. As of the early 2000s, most families owned between three and five maize fields that usually varied between 0.5 and 3 hectares in

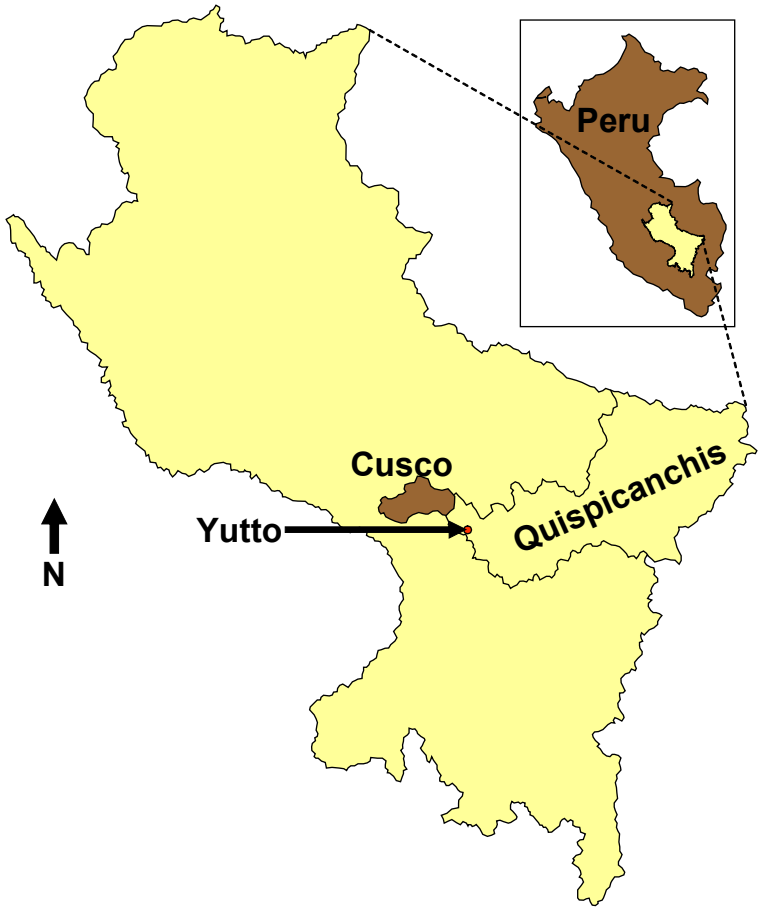

Figure 1. **Campesino** community of Yutto, Department of Cusco, Quispicanchis Province, Peru.

area. Additionally, nearly all families owned smaller plots scattered at various levels in the mountains above the valley floor. In the higher reaches of the valley and on ridge tops, residents cultivated wheat, barley, potatoes, **quinoa**, as well as other crops. Also, of most importance to this study, scattered in small stands around homes, between fields and, more extensively, on uncultivated mountainsides, residents managed woodlots—almost exclusively eucalyptus—covering approximately 10% of the community's total land holdings.

The area surrounding Yutto contained several forestry-related industries. The nearby **mestizo** community of Andahuaylias (some 5 kilometers from Yutto), for instance, had a lumber mill that employs roughly a half dozen full-time employees and many more temporary workers. Additionally, the economy of the nearby community of Piñapampa (approximately five kilometers along the paved highway toward Cusco), was devoted almost exclusively to tile-manufacture, a process that relied upon eucalyptus as fuel for the firing process.

Methods

The research project was primarily qualitative in nature, relying principally upon in-depth interviews, participant observation and library/archival research. The majority of the research process focused upon Yutto and nearby communities. I conducted additional research in the city of Cusco. This included library research at the Biblioteca Bartolomé de las Casas, supplementing library research conducted at my home institution prior and subsequent to fieldwork. During my visits to Cusco, I also interviewed representatives of various organizations and agencies which currently or previously had been involved in rural forestry projects in the department of Cusco. These included governmental agencies, NGOs, and the Universidad de San Antonio Kayra. Additional interviews were conducted with representatives of regional businesses (often centered in Cusco) that dealt with eucalyptus materials.

I gathered data through semi-structured interviews with key informants as well as through informal conversations with numerous other individuals in Yutto and neighboring communities. Individuals interviewed included local farmers and woodlot managers, the owners and employees of area eucalyptus logging operations, end-consumers of eucalyptus (e.g. representatives of a local factory), and representatives of locally-active NGOs and governmental agencies. On various occasions, I conducted farm and forest transect walks with local residents. These walks allowed me to gain a better understanding of the material and symbolic significance of the various agricultural and forest-based activities conducted in the community while also eliciting information about the land use histories of community lands.

Political-Ecology and Forest Transitions

This paper uses a political ecological approach to assess the impacts of a forest transition that has occurred in both Southern Peru and elsewhere in the Andes (Gade 1998). A political ecological perspective explores the relationships between human society and a "politicized environment" (Bryant & Bailey 1997). In such a perspective, environmental changes are seen as linked with political-economic processes. Political ecology situates environmental change within a context of local-global articulations and linkages between the local community, the nation-state and international institutions (Biersack 1999).

Much literature has addressed the question of deforestation—especially in the tropics (e.g. Geist & Lambin 2001). However, until recently, the increasingly important phenomenon of reforestation has been largely overlooked. Various scholars (Mather & Needle 1998, Rudel *et al*., 2005) have called attention to "forest transitions"—trajectories in forest cover accompanying various stages of economic development and urbanization. More recently, given the variety of trajectories in the 38% of nations experiencing reforestation in the 1990s, Rudel *et al*. (2005) assert that forest transitions leading to expansion in forest cover tend to follow one of two general trajectories. Drawing upon the FAO's Forest Resource Assessment 2000, they note that in some countries, such as Greece, Ireland and Portugal, rises in urban economic opportunities have led to rural labor scarcities and a disincentive to maintain marginal land in agricultural production. In other countries, such as China, India and Bangladesh, reforestation has occurred through economic forces and governmental policies rising in response to growing shortages of products and services provided by trees (e.g. timber, fodder, flood control).

The southern Peruvian Andes represents an example of the latter process. At various points in the 20th century, and especially in the late 1960s and early 1970s, the Peruvian government collaborated with peasant communities to reforest large tracts of land—most commonly with eucalyptus monocultures—to address a growing shortage of timber and fuel wood. A political ecological perspective shows how eucalyptus forestry, itself a product of economic and political imperatives arising from increasing consumption needs and inadequate forest resources, has in turn shaped the political-economic environment in which peasant communities of the Southern Peruvian Andes live.

The Political-Economic History of a Forest Transition

From pre-Inca times until the present, Peru's landscape and ecology—including its forests—have been intimately integrated with the political-economic structures of a larger empire or nation (Murra 1985, Mayer 1985). Various researchers have argued that contemporary forest fragments of native species are actually remnants of a much more extensive high Andean forest system (e.g. Gade 1975, 1999, ONERN 1986). It is likely that these forests played an important role in the political-ecology of preconquest Peru. Under the Inca, forests were protected as property of the state and damaging them was a punishable offense (Chepstow-Lusty & Winfield 2000); however, they were subsequently decimated after the Spanish conquest. For nearly three centuries, the Peruvian Andes remained nearly treeless, until the arrival of the eucalyptus during the late 19th century.

Eucalyptus globulus was introduced into the Cusco region around 1880 and within 20 years could be found in various parts of the Vilcanota Valley (Dickinson 1969, Gade 1975). Peasants first planted eucalyptus as a cash crop in the 1940s. However, eucalyptus cultivation did not reach large-scale proportions for several decades (Mitchell 1991). With state assistance, the first sizeable eucalyptus plantations were planted in 1963, under the Belaunde administration, largely in an effort to supply mining operations with a cheap source of mine supports (Ocaña 1998). Shortly thereafter, with loans from USAID, the state began to sponsor the establishment of eucalyptus plantations for industrial purposes (Dickinson 1969). While eucalyptus cultivation had its beginnings during this era, its large-scale expansion and incorporation as a key component of agrarian policy became much more significant under the agrarian reforms of President Velasco (1968-1975)—the last five years of his tenure being a time of especially intense reforestation in the Peruvian Andes (ONERN 1986). The study region was especially-heavily affected by these reforestation programs; during the twenty years between 1966 and 1986, the Department of Cusco had one of the highest rates of reforestation of Peru's departments—most of which was due to the planting of *E. globulus* (ONERN 1986).

Peru's 1969 agrarian reform represented one of the Western Hemisphere's most thorough rural transformations (Valderrama *et al*. 1996:421) and South America's largest (Skar 1982). Prior to agrarian reform, Peru was one of the most economically stratified countries of Latin America. Shortly before the reform, 3.9% of Peru's farmers controlled 56% of the arable land, forcing the remaining 96% onto tiny plots (Seligmann 1995). Subsequent to agrarian reform, hacienda land holdings were generally reduced to a maximum size of 5 hectares.

The primary purpose of eucalyptus reforestation projects was to fill a growing gap between the region's timber and firewood needs and production capacity. However, it also represented an avenue through which the state entered into a patron-client relationship with the peasantry—a position previously occupied by the increasingly defunct hacienda system. During the mid-1960s, with credit assistance from the Agrarian Bank and technical support from the Ministry of Agriculture, **campesino** communities and individuals planted large areas of eucalyptus plantations in the region (Dickinson 1969, ONERN 1986). In other cases, the Ministry of Agriculture provided food, tools and seedlings to facilitate the establishment of eucalyptus plantations (ONERN 1986). Through eucalyptus, peasants became dependent upon a resource that the state, through its monopoly on funding and technical knowledge, ultimately controlled.

Eucalyptus and the Peasant Economy

The stated purpose of eucalyptus forestry under the Velasco regime was to provide a timber resource for a growing **campesino** population in an otherwise nearly tree-

less landscape. However, it has also proved a powerful indirect force pulling peasant communities into increasing participation with the regional and national cash economies (Dickinson 1967:2969). Despite an initial skepticism toward eucalyptus in many peasant communities—including, for example, a concern over dedicating agricultural land to an unfamiliar tree species (ONERN 1986)—eucalyptus in recent decades has grown in economic and symbolic importance and has both reinforced and transformed economic relations both within the community and between the community and surrounding areas.

Eucalyptus and the Subsistence Economy

While peasants continued to rely to some degree upon other species, eucalyptus has come to represent the most economically significant tree species exploited in communities of the Southern Peruvian Andes such as Yutto. In addition to its use as a fuel source and building material, peasants have also relied upon the very durable and abundant eucalyptus for tools such as ox yokes, pick handles, and plows. Furthermore, though it played a secondary role to native plants and to western medicine in the treatment of most physical ailments, eucalyptus has been incorporated into local medical knowledge system (see also Dickinson 1967). Most commonly, Yutto residents boiled the leaves into a tea that was known to be helpful for coughs and other respiratory conditions.

Eucalyptus as a Cash Crop

In addition to providing a useful resource to the community, eucalyptus has had other economic implications as well. By providing an avenue for wage labor as well as a cash crop, eucalyptus has promoted the integration of peasants—at the household and community levels—into regional economic structures. Through the sale of lumber, the community earns money and through the sale of labor, households garner cash income.

During recent decades, eucalyptus as a cash crop has become an increasingly important component of the regional economy. In Cusco, as of the time of research in the early 2000s, eucalyptus could be found being used from construction sites in the city's periphery to the pizza ovens in tourist-oriented restaurants near the plaza. Furthermore, the famous tile roofs of this region, ubiquitous in both Cusco and outlying areas such as Andahuaylias and Yutto, relied upon eucalyptus for their production. The firing process requires large amounts of fuel, usually in the form of eucalyptus biomass not used for timber (see also Dickinson 1967, 1969).

The community of Piñapampa, located on the Cusco-Puno highway just north of Andahuaylias, had become a major supplier of tile and consumer of eucalyptus in this region. Lying low in the Vilcanota valley, nearly at river level, the soil in this community is rich in a clay which is especially well-suited for tile. Due to this industry, it was common to see commercial flatbed and dump trucks stacked with green eucalyptus branches on the highway to Piñapampa. Approximately 80-90 such trucks delivered eucalyptus to the town each week, which sold for 250-300 soles ($83-$100) per truckload. During a typical logging season, the Piñapampa tile industry purchased approximately $60,000 to $81,000 worth of eucalyptus from neighboring communities. These numbers indicate how significant the sale of eucalyptus had become to Piñapampa and to the surrounding communities which supplied the fuel wood. In the poor peasant communities, such as Yutto, that were selling eucalyptus to Piñapampa, this sale represented a significant cash influx.

In Yutto, most eucalyptus forests were community owned and the revenues from the sale of marketable trees benefited the community as a whole. From the sale of eucalyptus, the community gained a substantial portion of its cash income. Around Yutto, eucalyptus is generally harvested every ten years and sells for roughly 1000 soles ($330) per **topo** (one **topo**=.3 hectares). Given the tendency of cut eucalyptus to coppice, multiple yields could be cut from a single stand. Thus, from a hectare of land, the community could earn roughly $1000 every ten years.

Eucalyptus has a long history as a source of communal cash revenue in peasant communities—funding, for example, the construction of local schools (Dickinson 1967, 1969). In the case of Yutto, communal eucalyptus sales have yielded a much appreciated public good. During an interview, a resident indicated a six hectare patch of young eucalyptus trees growing on a slope above the community. This area, covered with return growth, had been logged some ten years previously in order to pay for community electrification in the early 1990s. The earnings from this particular sale were approximately 20,000 soles or $6,000. Without the money from eucalyptus, it is doubtful that Yutto would have found funds for a project of this magnitude, especially given limited governmental budgets for providing such services in rural areas

Eucalyptus and Wage Labor

As in other peasant communities of the Peruvian Andes, while labor exchange within the community of Yutto was usually based on traditional forms of labor reciprocity, labor outside the community (e.g. stone quarries, lumber mills) tended to be directly cash-based. I found that these patterns were represented in eucalyptus production as well. Within the community, cash was rarely exchanged in the harvesting and use of eucalyptus. However, when exchanging labor or goods with non-peasant communities, as in lumber sales or wage labor in the Andahuaylias lumber mill, Yutto peasants almost always engaged in cash transactions.

Unlike long-distance migratory labor to urban areas or coastal farms, working with eucalyptus usually does not require migration away from one's home and fields. During fieldwork, I identified two dominant forms of wage labor related to eucalyptus—felling timber and processing timber in mills. Unskilled wood processing in lumber mills was the most common form of wage labor among Yutto **campesinos**. In nearby Andahuaylias, lumber mills provided temporary and permanent employment to residents of this and neighboring communities such as Yutto. One Yutto resident was a near-full-time employee. When not actively engaged in farm work in his fields near Yutto, he spent his days as a foreman at the mill. Other Yutto residents held more temporary positions as day laborers—on most days when I visited, five or six Yutto residents would be present—performing less skilled and often non-mechanized operations such as splitting firewood from logs unsuitable for timber. Though the unskilled mill work paid more than logging, the pay level was far below what Andahuaylias residents were accustomed to earning. Normal daily pay for part-time **campesino** workers was approximately half the daily wage of full time (and generally **mestizo**) workers.

Eucalyptus and Land Tenure

In addition to its economic impacts, eucalyptus has affected land tenure institutions in Yutto as well. Before the agrarian reforms, a hacienda had controlled Yutto's most productive fields—namely the irrigated maize fields in the level valley bottom. In exchange for their labor, the hacienda owner provided peasants with a small portion of the maize production as well as usufruct rights to the less productive lands located far from the hacienda and above the maize production zone. Subsequent to Velasco's agrarian reforms, the hacienda's lowest and most fertile fields were redistributed by the state to individual **campesino** families. As of the early 2000s, the village's most valued land—the irrigated fields where maize production predominates, was located in this area. These fields were privately owned and could be sold or inherited, but only within the community. They could not easily be expropriated from local ownership, as sale to outsiders required consensus agreement from all community members. The surrounding hillside fields that had been cultivated by and for peasants themselves were not privatized but were officially designated as community property.

These communal lands came to be used for various purposes. While this land was valued much lower than the maize producing valley bottom, it continued to be important for rainy season pasture and as a source for various forest products. In suitable areas, peasants also used small portions of this land for crops such as potatoes and **quinoa**. It is also in these former fields and pastures, especially those closest to the valley floor, that one today finds the majority of the area's eucalyptus stands.

While the state assumed in eucalyptus forestry in the mid-20th century, control over forests was shared with local peasant communities, many of which developed institutions to regulate the use of this new resource and the land on which it is grown. In Yutto, if a village resident wanted a small amount of firewood, he or she was free to cut any dead eucalyptus trees. If an individual required more trees for a project such as home construction (usually requiring 30 to 50 trees), the community president needed to be consulted. The president then called an assembly of all community members over eighteen years of age. If a simple majority approved the sale, the timber harvest could proceed, assuming that the person in question paid the community for the trees that were harvested.

The institutions implemented during the Velasco era to manage eucalyptus have more recently come under increasing criticism in communities such as Yutto. Concurrent with a dwindling state apparatus in the forestry arena, there has been a gradual deterioration of community-level institutions that had once supported it. While conducting fieldwork in Yutto, I heard several complaints about the current assembly system. The two-year mandate for community presidents led to discontinuity in community policies. One informant told me that while he served as community president, he had the community's water reservoir stocked with trout. However, when the office changed hands, the new president neglected the project, allowing the remaining fish to die or be stolen. The same, he claimed, was often true with forestry projects. As community president, he had hoped to start a small-scale native tree program, but hadn't been able to do so due to the brevity of his tenure as community president. The current president, he told me, while not necessarily corrupt, had shown little inclination to continue projects begun by him and other past presidents.

As of the early 2000s, a general disillusionment with community government contributed to a common sentiment in Yutto and Andahuaylias favoring privatization of eucalyptus woodlots. In Yutto, while informants tended to agree that the current community president was trustworthy, they pointed out that in other communities local political officers had embezzled profits from logging sales. According to various informants, this is especially a problem in larger communities with less transparency where political dealings are subject to less public involvement and overview. Thus, the high degree of transparency arising from tight social networks in Yutto likely was mitigating, to some degree, the pressure toward woodlot privatization that would otherwise be expected in other larger communities. However, many **campesinos** told me that, even with honest officials, they felt logging proceeds could be better spent by individual woodlot owners. Through woodlot privatization, a family would have a fairly liquid cash reserve available for household emergencies.

Ironically perhaps, most government officials and members of the lumber industry were among the strongest supporters of the communal tenure system. In Andahuaylias, the son of the mill owner told me that, from his perspective, it was much easier to negotiate with communities than individuals. Under the existing system, either an entire stand was cut, or the operation simply asked elsewhere. With private ownership, logging companies would have to negotiate with individual smallholders—leading to higher transaction costs for the purchaser. It would also lead to increased operational costs as the ratio of fixed costs (e.g. construction of access roads) relative to harvestable area would increase with smaller scale logging concessions.

Recent Directions: Private enterprise and NGOs

Although Peruvian governments have generally wielded sufficient power to enact policy, few have had the moral authority to ensure the continuity of their policies under future administrations (Hunt 1996). Velasco's regime certainly was not an exception to this rule. Subsequent trends in Peruvian politics during the Fujimori administration (1990-2001), especially structural adjustment and the refinancing of the country's foreign debt, led to a greatly reduced state apparatus in the countryside (Mauceri 1996:11). The era of structural adjustment, ushered in by Fujimori in 1990, led to drastic cutbacks for government-sponsored forestry and the opportunity for other agents—such as urban-based private industry and NGOs—to enter into the new vacuum created by a retreating state.

In recent decades, other entities—most notably private enterprises and NGOs—have assumed much of the role once occupied by the state in eucalyptus forestry. Beginning in the early 1980s, government investments in reforestation diminished considerably, due in part to tightening state resources (ONERN 1986). Though many regulations concerning forest management and logging remained officially on the books, my experience revealed that they were often not enforced. For example, in the case of large-scale timber concessions of roughly 500 to 1000 trees (usually to outside logging interests), the purchaser began by following the legal protocol required for smaller sales involving negotiations with the community. They then needed to obtain a license from the Ministry of Agriculture before commencing logging. However, this last requirement had become increasingly easy to circumvent.

During a visit to a logging site located some 10 km from Yutto, I spoke with several peasant laborers and the operation's proprietress (a resident of Cusco). During our conversation, I asked her about the role government agencies played in the logging process. She responded that she always worked directly with **campesino** communities and never involved the government in lease contracts. Thus, while regulations requiring state approval of large-scale logging still existed, they were not necessarily obeyed. Logging companies had begun to circumvent the state and, for most practical purposes, its presence was maintained primarily on paper only, in the form of laws that had grown obsolete and unenforced.

In the absence of enforceable government regulations, no safeguard existed to regulate the exchange process between **campesinos** and logging companies. In the absence of governmental intermediaries, no laws prevented a peasant community from breaking its contract in mid-operation. Indeed, she asserted that this had in fact occurred the previous year. After her company had financed the construction of a logging road, the peasant community broke the contract by refusing to sell the timber. Of course, in the absence of a strong state presence, peasant communities felt the risks of broken contracts as well.

In addition to private companies, non-governmental organizations (NGOs) have become an increasingly important presence in forestry in Peru and elsewhere in Latin America. As of the late 1990s, at least 20,000 NGOs were in existence across Latin America (Keese 1998). Generally less bureaucratic, smaller in scale, and lower in cost than government organizations, NGOs often find themselves better equipped to face local economic and environmental problems than state governments. This is especially true in countries like Peru where the state's bureaucratic structure and severely limited financial resources have prevented it from effectively confronting such issues. NGOs, in contrast, usually incorporate local social mobilization as one of their primary goals. In the case of Peru, whereas the Velasco administration discouraged extra-governmental **campesino** organizations, in the liberalized political atmosphere of the Fujimori and Toledo administrations, NGOs faced much fewer restrictions upon their activities.

In the Yutto area, several NGOs, particularly the Andahuaylias-based Centro de Capacitación Agro-Industrial Jesús Obrero (CCAIJO), had begun to fulfill the roles largely abandoned by the state. For example, CCAIJO's nursery provided fruit seedlings that in an earlier era would have been grown in state-run nurseries. In this area, CCAIJO had also assumed the state's former role in social mobilization. CCAIJO was actively coordinating development projects, including forestry, in five **microcuencas** (watersheds) in the region. In the Vilcanota valley, CCAIJO assisted with community development in several communities and maintained a tree nursery across the Vilcanota River from Andahuaylias. In a protocol reminiscent of earlier government-sponsored forestry programs, CCAIJO provided seedlings and non-labor costs, which were subsequently to be repaid by the participating communities from future timber sales.

Both private logging operations and NGOs saw the state as neither a beneficial ally nor a formidable foe. For both private enterprise and NGOs involved in forestry, the state had become a largely obsolete institution, which need

only be bypassed. While forestry-related environmental change remained a politicized process, the field of stakeholders had become much broader. As of the early 2000s, peasants remained the primary stakeholders in forestry programs. However, the state's retreat from the countryside had created a much larger political space for both NGOs and private enterprise in the politicized landscapes of the Peruvian Andes.

In many respects, the NGOs I encountered were attempting to incorporate social justice and the rectification of past power imbalances into their development programs. Thus, CCAIJO provided classes designed to give peasants the labor skills (e.g. carpentry, mechanics, etc) necessary to rise out of the job market's lowest levels. It also facilitated meetings with regional government officials where peasants could present their grievances. However, to some degree, the NGOs I encountered maintained patron-client relationships with peasant communities that were similar to the ones which previously had existed between the state and peasants. While peasants received a much greater voice in their dealings with NGOs than with the state, many NGOs were fundamentally external to the peasant communities in which they worked. At CCAIJO and other NGOs visited during fieldwork, I found that the personnel consisted exclusively of Europeans or **mestizo** Peruvians. Likewise, funding for these NGOs generally came from international sources—primarily Europe. In order to best serve peasant communities, such organizations must encourage peasants to take a more prominent role not only in the regional economy, but in the political structure of the NGOs themselves.

The Political-Ecology of Eucalyptus Forestry

A political-ecological perspective, one that sees environmental changes as intrinsically linked with political and economic changes, can prove useful in exploring the dynamic relationship among Peru's eucalyptus-based forest transition, peasant communities, and the regional political-economy. The point of departure for such an approach is an understanding of the Peruvian countryside as a politicized environment and of eucalyptus as a politicized tree. Together they have created the arenas in which peasant communities have negotiated their positions within larger political and economic structures.

Political-ecology approaches environmental change in the context of a "politicized environment"—one in which "environmental problems cannot be understood in isolation from the political and economic context within which they are created" (Bryant & Bailey 1997: 28). By recognizing the Peruvian Sierra as a politicized environment, it is possible to see that political-economic and environmental changes as exemplified by eucalyptus forestry have been closely linked. While state agrarian policies have contributed to a eucalyptus-based forest transition in the Peruvian Sierra, the resulting forests have subsequently had a continued impact upon **campesino** communities, shaping their political and economic relationships with outside entities such as the state, NGOs and businesses.

Though I find the notion of "politicized environment", as elaborated by Bryant and Bailey (1997), to be useful, I have found that an expanded definition is more appropriate for understanding the political and economic impacts that the eucalyptus forest transition has had in the Southern Peruvian Andes. While the term, as defined by Bryant and Bailey, implies that environmental change cannot be understood in isolation from its political-economic context, I argue that, at least in this case, the converse statement is equally true. Political and economic changes can often best be understood in the context of environmental changes. That is, while the eucalyptus-covered mountainsides of Yutto are an environmental manifestation of distinct political policies occurring in the 20th century, especially in the 1960s and 1970s, many political and economic processes such as the introduction of a cash economy, electrification and changing attitudes toward community government systems have been directly shaped by the process of reforestation with *E. globulus*.

Directions for Future Research

This study has drawn upon largely qualitative data to illustrate the social and economic transformations brought by a forest transition in the peasant community of Yutto. It must be noted, however, that these findings relate to a specific Andean community; to generalize to wider regions demands further research in other areas of the Peruvian Andes. The subject of eucalyptus and the forest transition in Southern Peru is a topic that has received relatively light and sporadic attention by researchers, meriting further research beyond that presented in this paper.

At least three specific aspects of the Peruvian Sierra's eucalyptus forest transition merit further research. First, more quantitative data is needed at the household and community levels regarding uses and perceptions of eucalyptus and other native and non-native tree species—especially as this may vary in regard to such factors as biophysical conditions (e.g. altitude and precipitation regime), access to markets, land tenure system and extension programs. Second, remote sensing analysis of the spatial distribution and species composition of the region's forests can provide insights into the spatial aspects of Peru's forest transition, especially as it has developed over time. Finally, given existing and proposed infrastructure projects aimed at improving transportation between Peru's highlands and lowland Amazonia, studies are needed that link changes in forest cover and forest use in the Sierra with those occurring in other parts of the region and country.

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