

# Traditional Peoples and the Struggle for Land in the Amazon Basin

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Current processes of deforestation and development in the Amazon Basin continue historical trends that have devastated indigenous populations and drastically reduced their land rights. While protection of the Amazon ecosystem has become a worldwide concern, many indigenous and folk groups employ forest management strategies that utilize natural resources without causing permanent degradation. This paper considers historical, political and socioeconomic circumstances that threaten the survival of indigenous groups and their sustainable forms of forest use. The paper argues that discrepant cultural models and attitudes contribute to the differences in land use between traditional Amazon residents and newcomers. The problems and possibilities entailed by efforts to protect traditional land rights are also discussed.

Keywords: Indigenous and folk populations, land rights, economic development, Amazon, Brazil, political ecology, sustainable resource management.

## INTRODUCTION

Deforestation and development in the Amazon Basin threaten the indigenous and folk populations who have managed the forest resources for generations without causing permanent degradation. Although their mixed economy of agroforestry, gathering, hunting and fishing appears to be an appropriate and sustainable management strategy for the fragile rainforest, the legal recognition and protection of lands occupied by traditional inhabitants remains largely at the mercy of political and economic prerogatives. The purpose of this paper is to explore traditional populations' systems of land use and tenure, examine their position in relationship to the broader social context, and consider how they might gain the legal and social recognition necessary for survival.

The analysis recognizes the social, political, ideological, and economic contexts which complicate the recognition of indigenous and folk land rights. This perspective acknowledges the insights of political economy, but lies closer to political ecology in the emphasis on the way that these contexts influence human interaction with the environment. Although indigenous and folk populations vary in their conceptions of the environment and their relationship to it, they share similar approaches to

land use that contrast with those of the state and colonists. Discrepant conceptual models of the human-environment relationship, linked to inequitable social relations of power, inform the processes of Amazonian development, deforestation and inter-group conflict.

#### DEFINITION OF TRADITIONAL POPULATIONS

The populations addressed in this paper include indigenous groups and long-established rural peasants. The latter, which are also referred to as "folk" populations, include *caboclos*, *riberieños*, and people practicing extensive extraction methods, such as rubbertappers and *castanheiros* (Brazil nut gatherers). The *caboclos* of Brazil and the *riberieños* of Peru are descendants of detribalized natives and European immigrants, who live mainly along the riverbanks and floodplains of Amazon Basin rivers (Anderson 1990a:67, Parker 1989:251, and Padoch and de Jong 1989:103). Folk populations retain indigenous knowledge of tropical ecosystem management, and employ a mixed economy of agroforestry, gathering and hunting similar to that of extant native peoples (Denevan and Padoch 1988:4; Hiraoka 1989; Parker 1989:255; Anderson 1990:67-69). Many folk populations, and certain indigenous groups, participate in production for the market economy in addition to subsistence activities. Rubbertappers, for example, harvest latex, Brazil nuts, and other forest products for the market, but also employ swidden fallow agriculture, hunting, and gathering for subsistence (Allegretti 1990:256, Schwartzman 1989).

Although the Amazon Basin covers a vast territory including parts of nine nations<sup>1</sup>, indigenous and folk groups comprise a small proportion of the region's population (Allegretti 1990:253). Brazil has dominion over approximately 70% of the Amazon Basin (Bunyard 1989b:2), but indigenous peoples constitute only 0.2% (or 250,000 people) of the national population. Not all of these live in the Amazon (Araújo Leitao 1994:48). Data on folk populations are less certain, but like indigenous people, they remain largely powerless in the political arena, confront deforestation and pasture expansion on their lands, and encounter difficulties acquiring legally recognized land rights in the face of encroaching development efforts (Shiguango et al. 1993, Posey 1989:241, Romanoff 1992:132).

#### SOCIAL AND HISTORICAL CONTEXTS OF AMAZON DEVELOPMENT

##### A BRIEF HISTORICAL OVERVIEW

The history of the Amazon reveals the roots of its current situation. Prior to European arrival, the population of the Amazon Basin was probably between 6 and 12 million inhabitants (Hecht and Cockburn

1989:2; Anderson 1990c:4-5). Population densities appear to have been higher than in the present, and the people sustained themselves "through finely balanced and complex relations with the environment and with each other" (Bunker 1985:60). The arrival of Europeans brought devastating epidemics that wiped out incalculable numbers of indigenous peoples. Efforts to obtain indigenous people as slave labor contributed to the population decline, and slaving expeditions seeking captives penetrated as far as the Peruvian Amazon (Bunker 1985:62; Republic of Colombia 1990:58).

Through the 1600s and 1700s, the Amazon Basin provided sarsaparilla, vanilla, cinnamon, waxes, honey, aromatic resins and turtle eggs for the world market (Padoch 1988:75; Hall 1989:1). European demands for oil and meat from turtles and manatees decimated those species, which had been managed sustainably by indigenous peoples as important dietary resources (Bunker 1985:63). To meet changing market demands for desired forest products, local elites imposed processes of extraction and overexploitation that impoverished indigenous populations (Bunker 1985:16; Hall 1989:2).

By the time of the rubber boom, labor scarcity created a problem in meeting labor-intensive practices of harvesting latex. The scarcity of labor and a complex hierarchy of intermediaries — in conjunction with strong world rubber demand and supply inelasticity — generated high rubber prices in the world market, and fostered a high concentration of profits for the elites (Hall 1989:2; Bunker 1985:68). Excesses and atrocities associated with the rubber boom drove many native peoples deeper into the forest, while others were forcibly integrated into the rubber trade under miserably exploitative conditions (Barham and Coomes 1994:103; Republic of Colombia 1990:63; see also Taussig 1986). Many *caboclos* and new immigrants to the region also became debt peons for rubber estate owners<sup>2</sup>, and participated in violence against indigenous peoples (Hall 1989:2). The end of the rubber boom in 1915, when Asian plantations began to produce inexpensive rubber, left a legacy of boom towns, immigrants, and a dispossessed population of indigenous peoples (Padoch 1988:76).

The post-rubber boom era brought brief popularity to a number of minor forest products, including *baleta*, *leche caspi*, and *barbasco* (Padoch 1988:76). Many rubeertappers remained in the area, and survived through minor extractive activities, horticulture, hunting, and gathering. They stayed in contact with the market through intermediaries, who brought in necessary goods and offered a price for the people's products. The exchange rates remained highly unfair to producers, keeping the majority in constant debt (Bunker 1985:73). Although rubeertappers in certain areas have since gained autonomy, the patterns of property rights, ethnic subordination and labor relations that emerged during the

rubber boom have largely endured (Barham and Coomes 1994:103; Romanoff 1992:122-123).

#### AMAZON DEVELOPMENT AND DEFORESTATION IN THE PRESENT ERA.

Historical processes integrated the Amazon region into the world economy, and established unequal power relationships and exchange rates between social groups. Even though certain indigenous groups may not have been directly affected by displacement, slavery, or coercion to participate in extractive processes, it is likely that only a few groups — if any — have remained completely untouched by the market system. The asymmetrical relationships continue into the present, and undermine traditional populations' efforts to claim land, enter into equitable market exchanges, or gain access to commodities and basic human services. For indigenous groups, increasing contact with the market and development programs may also threaten their cultural traditions, if not their existence (Bunyard 1989:56-60; Behrens 1989). Until the 1970s, the Carajá people carried on trading relationships and suffered few serious incursions, but with the cattle ranch expansion they were displaced. Today only a few survive. They eke out an existence by selling crafts to tourists, and serving as guides (Hecht and Cockburn 1989:133).

Outright violence against indigenous groups continues (Hecht and Cockburn 1989; Romanoff 1992:132). This violence, along with displacement and disease, has wiped out one-third of the indigenous groups extant in 1900 (Hecht and Cockburn 1989:2).<sup>3</sup> Efforts of indigenous and folk populations to defend their land through peaceful or violent means have frequently met with reprisals — as the murder of Chico Mendes (former leader of the Brazilian rubbertappers' union) attests (Hecht and Cockburn 1989). Given their small populations, and cultural, social, and political differences with the dominant culture, traditional peoples face a tremendous disadvantage in defending their rights and battling capitalist powers eager to exploit their resources (Posey 1989:241).

Historic and ongoing processes of depopulation and dislocation interweave with the European conception of forests as a demographic void—"an empty frontier from which profits could be rapidly and wastefully extracted with little regard for, or sustained economic participation by, existing socioeconomic or environmental systems" (Bunker 1985:77). Governments have created various incentives to hasten Amazonian settlement, leading to soaring land values and burning of the forest. Real estate speculation has played a major role in land clearing (Fearnside 1989a:216). Foreseeing great profits, speculators have used any means at hand to possess land. In the market economy, unlike in traditional systems, land has become valued as an object of exchange and speculation rather than for its productive potential (Hecht and Cockburn 1989:107).

The conversion of forest to pasture has been a signature feature of Amazonian development. Through the 1980s, Brazil and Colombia offered financial incentives and low land prices to encourage investment in pasture (Hecht 1989b; Republic of Colombia 1990:56, Hecht and Cockburn 1989:150). Investors responded enthusiastically to obtain the generous tax breaks and subsidized credit for their businesses and other investments, and to make profits as land values appreciated (Hecht 1989b:230; Hecht, Norgaard and Possio 1988:233-234). Despite initial claims of the wealth to be made in livestock, the rapid degradation and low productivity (only 0.5 head per hectare) of Amazonian pastures eventually proved to give negative returns (Eden, et al., 1990:283, Hecht and Cockburn 1989:105, 113). Brazil and Colombia have since abolished subsidies for cattle ranching (Brooke 1992), but land speculation and additional social and economic considerations continue to favor pasture creation (discussed further below).

Few government projects favor smallholder agriculture, but spontaneous colonization occurs wherever roads open into the forest. Planned colonization programs have largely failed. The Transamazon Highway Project promised land titles, credit, subsidies and human services — all of which proved elusive for settlers. Funds designated for small farmers were often appropriated by owners of large tracts of land. Colonists encountered poor soils, high disease rates, lack of basic services and difficulty reaching markets — problems that also confront spontaneous colonization (Hall 1989:17; Moran 1983). In any colonization process, differences in settlers' economic conditions and knowledge of the Amazonian environment set the stage for the better-off to buy-out the less fortunate (Hecht and Cockburn 1989:110-112). Settlers rarely escape threats from land grabbers and large landowners, and many abandon their land under the pressures of speculation, land disputes and violent confrontations (Hecht and Cockburn 1989:112). Displaced settlers often migrate further into the forest and onto indigenous lands, where the cycle of land clearing, degradation, and displacement frequently repeats itself.

Current development in the Amazon stresses linking distant regions with national markets, thus spurring road construction. Roads open the forest to logging companies, cattle ranchers, migrant farmers, miners, and other interested groups — including land grabbers. Since subsistence and smallholder production do not fit in with growth-oriented development planning, government development projects favor large-scale businesses (Schmink and Wood 1987:45-46). Projects include hydroelectric plants (Hildyard 1989b), pig iron smelting (Anderson 1990), oil drilling in Colombia and Ecuador (Thomson and Dudley 1989; Republic of Colombia 1990:56) and mining operations (Hall 1989:33-34). These projects typically involve forcible removal of inhabitants and degradation of their land. The construction of the Tucuruí Dam, to provide the electricity for

mining and mineral processing industries, involved the displacement of some 35,000 people with little or no compensation, and flooded 2500 square kilometers of uncleared rainforest (Hall 1989:42-59).

Deforestation, with concomitant displacement of traditional populations, has proceeded rapidly under smallholders, largeholders, industries and corporations. While estimates of current deforested area vary, Moran notes that "the average area deforested each year in the 1980s has been equal to the total area deforested before 1980" (1989:3). Rural violence is increasing due to land disputes, growing food insecurity, and land concentration. The conflicts have pitted colonists, larger commercial farmers, and traditional groups against each other, and have led to a rising death toll (Hall 1989:79-110). In sum, development processes have exacerbated inequities and threats to land, as indigenous and folk peoples have increasing difficulty in maintaining their land and ways of life.

### TRADITIONAL LAND USE STRATEGIES

Whereas colonists' techniques generally lead to rapid degradation of Amazonian soils, traditional people know how to manage the environment effectively. Agroforestry systems comprise one of the major features of indigenous and folk land use. Denevan and Padoch define agroforestry as "a sustainable management system that combines agriculture and/or livestock with tree crops and/or forest plants on the same unit of land, either simultaneously or sequentially" (1988:1). Alcorn (1990:142-143) discerns seven shared attributes of indigenous agroforestry systems, which appear to apply to folk systems as well:

1. Use of native species.
2. Reliance on successional processes to produce resources, improve and protect soils, and reduce problems with pests.
3. Recognition of natural environmental variation and the use of various farming strategies.
4. Incorporation of numerous species, which promotes risk reduction, pest control, and production of diverse products.
5. Flexibility. Individuals can make modifications year to year and field to field to meet their own needs and preferences.
6. Diversification. The use of many species protects against the failure of any one crop. In addition, a combination of high and low labor intensity production strategies protects the producers in case of illness or disability.
7. Promotion of individual and group survival. The conjunction of the previous six attributes work together to ensure survival of individuals and communities. Members use their own resources, but also share a community resource base.

These attributes find expression in the pattern of agroforestry techniques found among indigenous and folk populations. Denevan and Padoch delineate four characteristic, but not universal, practices (1988:1): (1) Diverse, multi-storied swidden plots; (2) house (dooryard) gardens enriched by household waste, ash and/or manure; (3) planting, protecting, and harvesting of trailside and campsite vegetation ("nomadic agriculture" or "forest fields"); and (4) manipulation of swidden fallows (combining annual crops, tree crops and forest regrowth).

These approaches are rare among colonists (Denevan and Padoch 1988:1), who often lack understanding of the Amazonian environment, and use prior agricultural practices that are poorly adapted to tropical forest soils. Research of settlers along the Transamazon Highway project revealed that *caboclos* produced twice as much as the newcomers (Moran 1976:67). In addition, Alcorn (1989) points to differences between the agricultural ideology of traditional farmers in the tropical forest and those from the dominant culture's temperate farming system: Modern farmers invest energy to stop natural processes and eliminate natural elements. By contrast, natives of the tropical forest perceive natural processes as subsistence tools, and employ naturally available processes as well as the natural flora and fauna (Alcorn 1989:67).

Specific cases illustrate the ingenuity of indigenous agroforestry strategies: The Ka'apor people of northern Brazil distinguish six major vegetation zones, all of which are used to varying degrees — house garden, young swidden, old swidden, fallow, managed forest, and swamp forest. All plants in Ka'apor language appear to have "activity signatures," such that every plant is recognized by a use category. No word parallel to "weed" or "useless plant" exists among the Ka'apor (Balée and Gély 1989:133).

The Kayapó (Mebengokre) people utilize concentric zone agriculture, as well as trails, forest gaps and "resource islands," to produce desired products (Hecht and Posey 1989:179-180). In a comparison study with colonist systems, the Kayapó yields per hectare over five years proved to be over 200% higher than those of the colonists. Whereas Kayapó agricultural areas produced for well over five years, most colonist agriculture stopped after five years (Hecht 1989a:173). Analysis of soils revealed that the Kayapó system maintained higher levels of critical nutrients, and emphasized crops that required low levels of the scarcest nutrients (Hecht 1989a:176-177).

After a slash-and-burn clearing becomes unproductive for staple crops, the Bora of northeastern Peru manage successional fallows by planting fruit trees, leaving desirable successional species, and weeding out certain plants. The useful species managed in younger fallows appear to be "analogs" (similar in characteristics) to weedy secondary growth that would normally invade a clearing (Denevan and Treacy

1988:41). Older fallows continue to be productive for 30 to 50 years (Unruh and Paitán 1988).

As the above discussion of land-use systems suggests, the native and folk populations evidence flexible, resilient, and sustainable methods for utilizing Amazon resources. The success of these systems probably relates not only to management approaches and ideology, but also to the following factors: low population density, extensive land-use practices, and relatively small-scale disruptions. The changes imposed by human populations under these conditions allow regeneration of the forest after degrading activities (Uhl et al. 1990:33). Social institutions among indigenous peoples contribute to the sustainability of the system. Religious tenets, mythological beliefs, and social customs foster wise resource management and perhaps even population control (Bunyard 1989:41; Posey 1989:244).

Traditional land-use systems and social institutions may break down with market participation. In the case of the Shipobo people of eastern Peru, intensification of rice production for the market has reduced time for hunting and gathering activities, constrained traditional agricultural principles of selecting garden sites, led to intensification of land use, and increased garden size (Behrens 1989:94-95). Indigenous peoples who evidence minimal levels of market involvement, including the Bora (Padoch 1988), the Kayapó (Posey 1989), and the Ka'apor (Balée and Gély 1989), maintain the integrity of their land-use systems.

Involvement in the market system may not necessarily degrade traditional land uses. *Caboclos*, *ribereños*, and rubber tappers share similar land use strategies with indigenous populations, but they contrast with most tribal groups in that they have directed their productive activities toward the market economy. Anderson (1990a) argues that *caboclos* practice an extractive production system that not only promotes conservation but also constitutes an economically rational approach to natural resource exploitation. Padoch and de Jong's study (1989) of the *ribereño* village of Santa Ana revealed production of diverse forest goods for a local market. Difficulty in transportation and distance from a major market constrained market participation. This contrasted with the village of Tamshiyacu, located near a major urban center (Iquitos, Peru), which showed considerable market involvement, relatively large profits, and highly productive management of a long-standing agroforestry complex (Padoch et al. 1985).

Autonomous rubber tappers (those freed from debt peonage) have developed another successful market-oriented production strategy, through which they meet family needs rather than merely paying off accumulated debts. Extraction of latex, Brazil nuts, and other forest products for the market constitutes their primary economic activity, and provides a comparatively good income. They augment their economic secu-

ity by raising agricultural crops and domestic animals, fishing, and hunting for household consumption (Allegretti 1990:256; Schwartzman 1989:156). Despite debts to middlemen traders, the overall income of one group of autonomous rubbertappers in Acre amounted to nearly twice the minimum monthly salary. By comparison, only half of the economically active population in the region earned as much as the minimum wage (Schwartzman 1989:155). These examples suggest that market activity does intensify production of certain goods, but under the existing conditions (low population density, extensive land use, and respect for successional processes) it need not result in degradation of the natural resource base.

#### PROBLEMS FACED BY TRADITIONAL LANDHOLDERS IN GAINING LAND TITLE

Indigenous and folk land-use strategies present definite advantages in conservation of the forest structure, and the potential for sustainable market production. Even if these benefits did not exist, the acknowledgment of human rights and respect for cultural diversity should provide adequate justification for recognizing indigenous and folk peoples' land rights (Maybury-Lewis 1985). Browder observes that indigenous populations have a moral right to maintain the lands they have cultivated for centuries (1988:285). But as Netting notes, "a lack of understanding of the conceptions and operations of property systems in other societies is a frequent cause of conflict, injustice and exploitation" (1982:451). This lack of understanding illuminates some of the problems in gaining indigenous land rights. Specific difficulties in establishing land rights, delineated below, indicate that political, social, and economic differences, power biases between social classes, and the position of Amazonian nations within the world system also contribute to the complexity of the situation.

Traditional land-use systems leave most of the land in forest, but the dominant culture perceives forest clearing as the primary indication of land occupation. Forested land appears unused and unoccupied to settlers and planners, and clearing land is the principal means of establishing possession in the Amazon. Brazilian law allows settlers to claim three times the area of the land they clear. This accelerates deforestation by small farmers and large landholders whether or not they require cleared land (Binswanger 1989:5-6). Not only does cleared land support property rights, it also protects landholders from losing land in agrarian reform (Hecht 1989b:231). Although traditional populations have occupied the forest far longer, their use of the land becomes very difficult to prove under a system that awards land rights based on disruption of the natural environment.

The land-use and tenure system practiced by traditional peoples does not fit into the dominant culture's model founded on private property. Traditional systems involving shifting agriculture usually recognize the cultivators' rights to crops grown, rather than to the specific piece of ground (Netting 1982:464). Netting (1982) points out that a clan or village may retain territorial rights to tracts of fallow land, but soil fertility must be restored before the land is reallocated on the basis of need to group members. In the meantime, the land provides a community resource for future utilization (1982:464). This system involving mobile garden sites and community allocation of resources does not find recognition within standard European land tenure institutions.

The desire to fit traditional populations into the dominant culture's conceptions has resulted in granting unsuitable tenure conditions for some traditional peoples. Governments recognize land areas too small to sustain the traditional, extensive land-use patterns (Gray 1990:224). In cases where the state took control of rubber-tapper holdings for the purposes of establishing individual property rights, families found their average landholding size diminished from 300-500 hectares to 60-100 hectares. On average, only two rubber trees per hectare occur naturally in the forest (Romanoff 1992:124).<sup>4</sup> Therefore, families were left with insufficient resources to continue rubber-tapping. The situation compelled families to overexploit their property to meet subsistence needs, and eventually forced them to sell out (Allegretti 1990:257-259, Schwartzman 1989:154). The process served to consolidate land in the hands of the local elites. In other cases, indigenous peoples have been granted individual titles, leading to destruction of the community and the culture (Gray 1990:224).

Political interests and ideological justifications on the part of governments promote encroachment on indigenous territories. In the case of Brazil, military regimes have envisioned Amazon development as the means to protect national borders against perceived expansionist threats of neighboring countries, foster economic growth by accessing the Amazon's vast resources, and diffuse pressures of landless multitudes agitating for agrarian land reform (Hecht and Cockburn 1990:103-104, Hall 1989:11-13). Guerrilla groups and revolutionaries active on the Colombian border and Surinam's political climate also spurred counter-insurgency concerns (Hall 1989:13; Hecht and Cockburn 1989:118). The Calha Norte project was designed to ensure unrestricted access to the mineral reserves located on tribal territories, increase military presence on the border, and integrate indigenous populations into colonization and development programs — i.e., to turn them into malleable Brazilian peasants (Treece 1989:225; Hecht and Cockburn 1989:118-119). The military has ignored proposals for indigenous reserves in the region, leaving

the land rights and livelihoods of 50,000 indigenous people at risk (Hall 1989:36-38).

Economic pressures for development can obstruct recognition of indigenous territories. Amazonian nations face crushing debt burdens and economic problems as international development interests offer their expertise to profitably exploit Amazonian resources. As the Calha Norte project suggests, the pressure for economic growth takes precedence over respect for native rights or for the natural environment. Timber companies, particularly from nations such as Japan who import the majority of their lumber, express growing interest in Amazonian lumber as Southeast Asian forests become depleted (Myers 1984:100). Multi-national corporations vie for the opportunity to access Amazonian petroleum (Thomson and Dudley 1989) and mineral resources (Treece 1989:225-226). Development of known mineral and natural resources of the Amazon forest offer a promising short term solution to the pressing economic woes.

Desire to control valuable resources encompassed by native peoples' territories takes priority over other considerations. Throughout the history of the Amazon, avarice for prized resources has motivated significant incursions onto indigenous lands and displacement of the original inhabitants. Land is now one of the most coveted resources. Wherever roads have given access, colonists and land speculators have invaded indigenous and folk populations' holdings to burn off forest and lay claim. The Brazilian government regularly grants companies prospecting and mining permits on indigenous lands, and illegal invasions by prospectors and *garimpeiros* (independent placer gold miners) are rampant. The Grande Carajás projects' iron mine and smelting plants, together with associated fortune seekers and colonists, threaten 15 indigenous groups (13,000 people) living on tribal territories within a 100 kilometer radius (Hall 1989:89).

Gold mining proves particularly insidious. As it destroys fishing grounds and pollutes the water, the most serious danger is posed by the mercury used in gold extraction. Mercury disperses through the water and air, accumulates in the food chain, and ultimately poisons humans (Hecht and Cockburn 1989:141-147). Despite opposition by indigenous peoples, the placer gold miners are notoriously difficult to expel. The Yanomami lands have been profoundly degraded, and the people suffer from serious human rights abuses and imported diseases, while their ongoing struggle to stop the mining has been opposed by the Brazilian military's refusal to oust the miners (Rabbin 1990:342; Ireland 1991:57; Turner and Yanomami 1991:59).

## THE AMAZON: FRONTIER MENTALITY AND COMMON PROPERTY RESOURCES

### THE AMAZON AS FRONTIER

The social, economic, and political context of Amazonian development explains part of the difficulty encountered by traditional groups fighting for land rights. An aspect of the problem involves the status of the Amazon as a rich frontier. The Amazon's perceived wealth and wildness in the eyes of its conquerors and settlers have shaped the tenor of their actions. An early commentator described the Amazon as "virgin soil which awaits the seeds of civilizations" (Néry, quoted in Hecht and Cockburn 1989:3). In the present day, construction magnates who drove the Kalopalo Indians from their lands in Mato Grosso, and cattle ranchers who create degraded pastures, present their efforts as the imposition of order and utility on raw, unprofitable nature (Hecht and Cockburn 1989:3).

The patterns of Amazonian settlement share certain characteristics with the settlement of the North American frontier, as related by Jordan and Kaups (1989:3-4). These include:

1. High mobility. Recent studies reveal that many Amazonian social groups are highly mobile — including *caboclos*, gold miners, small farmers, and extractivists (Cleary 1993:338). A study of migration patterns in Latin American frontier zones revealed that the retention rate of colonists varied by region, from a high of 88% (in one area for a 5 year period) to a low of 17% (in another area after 8 years)(Moran 1976). Many migrants have no intention of staying, and in a survey in a Bolivian frontier settlement, a majority of settlers (66%) expressed preference for their children to pursue wage labor or higher education rather than inheritance of their land (Findlay 1988:278-279). Mobility may not be by choice, as many forest colonizers have been pushed off their lands by land grabbers, or to make way for dams, plantations, mining projects, or other development projects (Hildyard 1989:5; Hecht and Cockburn 1989:112-113; Cleary 1993:339).

2. Lack of concern for conservation. The extractive processes used to exploit the mineral and natural resources of the Amazon reveal lack of interest in sustainable production and disregard for the effects of pollution. The Grande Carajás project to smelt pig iron will require enough charcoal to deforest 450,000-610,000 hectares annually. The smelting is cost-effective only if the value of the forest is calculated at zero (Treece 1989:226; Hecht and Cockburn 1989:46). Cattle pastures, which frequently degrade within 10 years, constitute the largest cause of deforestation, but are not profitable without subsidies or speculation (Hecht 1989b; Fearnside 1989a:215-216). Extensive burning of the forest, with its

concomitant implications for plant and animal life, appears to exceed comprehension — in 1991 an area twice the size of Delaware went up in smoke (Brooke 1992).

3. Subsistence based on slash-and-burn agriculture. This practical approach to clearing forest for gardens remains the most accessible means for colonists, as well as traditional people, to open their land for agriculture. In contrast to traditional systems, colonists abandon fields after land becomes unproductive rather than developing successional stages (Denevan and Padoch 1988; Alcorn 1989).

4. The keeping of open range animals. The North American colonists preferred pigs during initial settlement, then adopted cattle as the forests were cleared. Although cattle raising has been shown to be unsustainable in the Amazon (Loker 1993:14), smallholders and largeholders alike find cattle an advantageous, risk-reducing economic investment. Cattle conserve their value in inflationary economies. They require minimal labor investment, and serve as "savings on the hoof" that can be sold in times of need. Cattle grazing can also extend the use of land (Loker 1993:17-18; Hecht 1989a:232). Converting forest to pasture is the cheapest and simplest strategy for establishing occupation rights. If land disputes lead to adjudication (a frequent occurrence), the larger the area cleared, the greater the indemnification received (Hecht 1989a:232). In short, pasture expansion in the Amazon is likely to continue in the foreseeable future due to the diverse social and economic factors that policy changes alone cannot resolve (Hecht, Norgaard and Possio 1988).

These parallels between the North American and Amazonian frontiers imply that similar forces, or relationships, may be present. Jordan and Kaups, however, hold that the settling of North America's interior involved a unique culture at a particular point in history, and therefore normative models fail to provide applicable insights (1989:247). The Amazon is likewise a unique case, in that its distinct history, economic conditions, natural resources, ecology, and socio-political context set it apart from the North American frontier. Cleary (1993) argues that in fact the Amazon is not a true frontier, for the frontier zones have expanded and receded over time. Even so, the parallels should not be dismissed out of hand. Both frontiers have involved low population densities of the indigenous and colonizing populations. In both cases, a technologically advanced culture has intruded on a vast region sparsely occupied by cultures with relatively simple technology. The colonists in both frontier zones, geared to European-based models of hierarchical political organization and private property, have misunderstood and disregarded the community-oriented land use systems and property rights of the indigenous populations. Given that the above relationships set the stage for progressive use and domination of a frontier zone until it can no longer be called a frontier, it is relevant to consider whether the process can be

slowed or reversed. The hopes for indigenous land rights, and conservation of the Amazon rain forest, depend upon stopping incursions before the Amazon becomes completely degraded by the dominant culture.

#### THE AMAZON AS COMMON PROPERTY

The Amazon may be viewed as a commons at several levels of interpretation. First, the region as a whole may be a commons from the perspective of the nations that own it, and the settlers and businesses that occupy it. Second, the traditional populations appear to have utilized their land, at least in part, as a common property resource. Third, the viewpoint of the developed world and the scientific community seems to value the Amazon as a "commons for the planet." It has been argued that its incredible biodiversity, its role in global climate stabilization, and its human cultural diversity make it an irreplaceable, invaluable natural resource for the whole world.

Hardin, in his 1968 essay "Tragedy of the Commons," argued that property "open to all" inevitably face degradation under increasing population pressure. Behavior on the Amazon frontier, and behavior on an open access commons, appears to involve similar rationales. Hardin's applicable insight is that economically rational human beings have little reason to limit their exploitative or polluting activities in a commons, even if the behavior ultimately leads to the destruction of the resource in question. This behavior proves rational because, as Hardin relates in his now famous tale, a herdsman will gain the entire benefit from each additional animal grazed on the commons, but he only pays a fraction of the costs of overgrazing. What is rational for the individual proves irrational for the group (Hardin 1968:1246). The same rationale holds true in reverse for contaminating activities: the costs of controlling pollution would be high, but such conservation would result in only fractional benefits for the polluter. The rational decision is to pollute and share the damage fractionally with everyone (Hardin 1968:1246).

Deforestation and development activities in the Amazon reflect a similar logic. Although colonists and businesses may own land rights, they have more to gain by overexploitation than by conservation, since they do not have to pay the full costs of their activity. Once the land is exhausted, it can be sold or abandoned and the owner can move to another area. The "disposability" of land in the Amazon, resulting from the idea that it is unlimited and available, encourages its degradation. Legal sanctions seem inadequate to discourage degradation, and many policies, particularly the requirement of clearing land to prove possession, encourage it. Largeholders, multi-national corporations, and large-scale businesses benefit most from this situation (Hildyard 1989:207). For smallholders, constraints in legal, social, labor, and marketing dimen-

sions limit their options and favor unsustainable uses (Collins 1986; Anderson 1990). The end result is the same: environmental deterioration.

In the commons discussed by Hardin, human activity under low population density stays below the carrying capacity of the land, and the land can regenerate from wasteful or polluting practices. A "tragedy of the commons" doesn't occur until population pressures and/or surplus production for the market exceed the carrying capacity. The carrying capacity of the Amazon is a topic of intense scientific research. Biologists and soil scientists recognize that the Amazon is a fragile, or easily degraded, environment, and they emphasize the need for sustainable uses (Uhl et al. 1990; Gow 1989:29; Nicholaides, et al. 1983:105; Sánchez, et al. 1982:821). At the same time, the scale of human intervention in the Amazon today far exceeds that of any prior known human impacts. Climatologists warn that beyond a certain level of deforestation, the forest may never regenerate, leading to permanent changes in global climate (Shukla, Nobre and Sellers 1990; Monastersky 1990). The existing encroachment on traditional populations, the rates and scale of deforestation, the reduction of biodiversity and disruption of the ecosystem, along with the social and ecological costs of Amazonian resource mismanagement, may already qualify the present situation as a "tragedy of the commons."

Despite the gloomy picture presented above, research in societies with common property resources indicates that humans are capable of creating community-based controls for effectively administering a commons (Netting 1976; McKean 1982; Ostrom 1990:71-77). Factors in effective communal management appear to include expected benefits, expected costs, and the time horizon with which people evaluate their options. Indigenous and folk populations perceive a long time horizon for their land use. Within a perspective that often encompasses past and future generations, land use decisions include the planting of trees and successional fallows that mature over decades. In contrast, many colonists and other recent immigrants to the Amazon may foresee only a short term relationship to the land (Findlay 1988:278). Neither they nor their children expect to stay, so they don't expend energy on activities whose results will not benefit them; neither are they concerned with the consequences of their actions beyond their period of occupation.

### OPTIONS FOR ESTABLISHING LAND TENURE

A number of options exist for attaining legal recognition of indigenous and folk peoples' land rights. All of them present problematic aspects and mixed prospects for successful implementation. The underlying conviction in the following analysis is that recognition of indigenous and folk land rights should result in permanent and inviolable title to

each group or community, under their own terms and with respect to their existing practices of land tenure. Gray declares, "the priority for indigenous peoples is to gain a secure land and resource base and to ensure that all marketing and recognition of intellectual property rights should be firmly under their control and implemented according to their way of life" (1990:224). These words apply equally well to folk populations. Netting, in a discussion of land reform, advises that policy should allow flexibility and multiple options, and aim to suit tenure to use — as opposed to bureaucratically imposed policy planned from the top down without reference to local needs (1982:492). The creation of policy to validate indigenous and folk land rights requires no less sensitivity to local realities.

Setting aside lands for indigenous and folk populations is an urgent necessity. As already shown, these peoples have suffered significant incursions on their lands and populations. Moreover, traditional peoples' intimate knowledge of their environment can offer an invaluable intellectual contribution to our understanding of the Amazon's natural resources (Posey 1989:242). Given that these peoples have managed their resources without causing degradation, it may be added that study of their land-use systems could lead to insights for sustainable development projects (Hecht 1989:177-178). With these considerations in mind, the analysis will address the following proposals: indigenous reserves, national parks, extractive reserves, land-for-debt swaps, and conservation easements.

#### INDIGENOUS RESERVES

Indigenous reserves and Colombian *resguardos* aim to provide land for native peoples and allow them to maintain their lifestyle free from encroachments (Bunyard 1989:39; Hecht and Cockburn 1989:201). Both initiatives originated without consultation with indigenous peoples, and boundaries were chosen by the government, not the people. In Brazil, the establishment of indigenous reserves has not protected their inhabitants. The reserves have been invaded by settlers, private enterprises, and goldminers, as Brazil's official Indian protection agency (FUNAI) legally grants land permits to parties interested in exploiting resources on reserves (Hecht and Cockburn 1989:201). *Resguardos* have suffered less encroachment, but their future may depend upon remaining inaccessible — an unlikely scenario.

#### NATIONAL PARKS

The goal of a national park system is to foster conservation of the tropical forest resources. Environmentalists frequently emphasize the importance of national parks to protect wildlife and the natural envi-

ronment. They are generally created without concern for the people living within their boundaries. Due to lack of funding, parks have been poorly protected. Inadequately paid forest guards have been known to look the other way while logging companies cut down park trees (Hecht and Cockburn 1990:197). Governments responsible for creating national parks have also been responsible for undermining their integrity by allowing extractive or invasive projects.<sup>5</sup> Local populations often regard parks with hostility, because some have been evicted when their lands have been declared as parks. While natural resources are fenced off from local inhabitants, they are made accessible to wealthy tourists (Hecht and Cockburn 1990:198). The result is but another type of dislocation of the poor to benefit the rich. National parks are unlikely to support traditional populations' land rights, unless the state maintains its commitment to protection and the inhabitants of park zones participate in planning and maintenance.

#### EXTRACTIVE RESERVES

The proposal to establish extractive reserves for rubbertappers and Brazil nut gatherers has gained a great deal of public attention, most of it favorable. These reserves "provide legal rights to lands historically occupied by social groups that utilize forest products in an ecologically sustainable manner" (Allegretti 1990:253). Unlike the preceding proposals, the idea for extractive reserves emerged from the rubbertappers themselves, in alliance with scientists studying rubbertapping (Allegretti 1990:253). The extractive reserves offer the advantages of integrating economic and environmental concerns, granting rights to the traditional landholders, and maintaining proven sustainable land-use strategies (Fearnside 1989:389; Schwartzman 1989:152).

Extractive reserves present several disadvantages. Lands remain under the protection of the state, which is expected to serve as a mediator between the rubbertappers and outside economic interests. If the state perceives better use for the land, however, nothing can stop it from rescinding the leases (Katzman and Cale 1990:829; Hecht and Cockburn 1989:201). In addition, inequities in the social structure endure, since local elites retain their power. Even if the reserves are protected by the state and controlled by the rubbertappers, reserve areas remain threatened by planned roads and uncontrollable colonist incursions (Schwartz 1989:246).

#### DEBT-FOR-NATURE SWAPS

This proposal arose from a search to find a way to fund environmental actions in nations facing serious economic problems. Through legislation passed in the US Congress, it became possible for private,

voluntary organizations to buy off portions of a nation's debt with hard cash. Nations agreeing to conservation measures, and conservation groups willing to pay for them, can use this mechanism to reach an agreement to establish a reserve, a buffer zone, or funding for an environmental initiative (Hecht and Cockburn 1989:198-199; Katzman and Cale 1990:828-829). Although not designed to provide traditional peoples with land rights, in theory this idea could be adapted to that purpose.

This arrangement, however, has serious limitations. First, no controls exist to protect property rights. Second, such agreements bring little continuing economic benefit for the involved nations and thus carry minimal incentives to abide by a conservation measure. Third, the proportion of debt paid off by a conservation group does not make a significant difference to the country. Finally, such exchanges have been interpreted by receiving nations as an affront to national sovereignty (Katzman and Cale 1990:829; Hecht and Cockburn 1989:199). A "debt-for-land rights" swap in favor of traditional people would entail the same disadvantages; the nation involved could even perceive the intervention as an insult to its policies on indigenous land rights.

#### CONSERVATION EASEMENTS

The limitations of existing strategies to set lands aside for traditional peoples and conservation has resulted in a new proposal—conservation easements. The easement can be established in perpetuity or for a fixed period. It allows traditional populations to continue their ways of life, but forbids clear-cutting. This arrangement requires a consortium of developed nations to establish a rank order for potential easement habitats. Nations containing the desirable habitats would set an offering price, probably in proportion to its perceived development value. The consortium would establish a budget for the purchase and protection of the land through the life of the easement, and the consortium would obligate developed nations to contribute a negotiated amount. Once established, the habitat would be monitored. The nation would receive annual payments to cover monitoring and protection costs, and an amount to reflect the opportunity costs of lost development. If damage occurred, the payment would be diminished (Katzman and Cale 1990:829-832).

Conservation easements, should they ever come into existence, face difficulties despite their elaborate plan to surmount the problems of other proposals. The initiative appears paternalistic since wealthy nations would be restricting sovereignty rights of the owner nation over its territory. Katzman and Cale (1990) note that easements could only be successful if participation was willing and voluntary. Convincing industrialized nations to pay for preserving tropical lands may prove difficult as well, however well-intentioned a consortium might be. Moreover, the

stated intent to allow indigenous peoples to stay on the land does not entitle them to ownership. The process of creating a conservation easement excludes the affected people from the decision-making process. As in other plans, the people remain subject to the beneficence of a controlling institution.

#### EVALUATION

The proposals discussed above present various advantages and disadvantages, but none of them meet the initial criteria: providing inviolate land rights to traditional populations on their own terms. Extractive reserves may come closest, at least in that the rubbertappers themselves contributed to the design. Hecht and Cockburn claim that traditional peoples have obtained a voice and won the battle against tutelage, even if it is not universally acknowledged (1989:194). But their assertion seems weak, especially in the area of land tenure rights. The existing legal and social institutions still lack a way to recognize traditional forms of land tenure without either disturbing the social patterns or placing the people at the mercy of the state.

A major problem ties all the proposals together: nation-states can choose to violate or compromise whatever agreement they make. Perhaps this weakness can never be avoided. Rights to eminent domain belong by definition to nation-states, whether or not those rights are exercised for the good of the people. Even private property holders are subject to expropriation. The best protection against the loss of land rights appears to be wealth and political power, neither of which can be expected for the Amazon's traditional populations. Indeed, the western conceptions of wealth and power may mean nothing to them within their social context.

If no satisfactory method to acknowledge indigenous land rights exists, what should then be done? As a short-term approach, it may still make sense to establish reserves, *resguardos*, debt-for-nature swaps, and national parks. Poole calls for a partnership between indigenous peoples, land use planners and conservationist groups: "an agreement worked out through dialogue and negotiation...for the mutual protection of threatened wilderness areas and endangered habitats" (1989:ii). Cultural Survival, an advocacy group for indigenous rights, holds that bringing together representatives from the government, indigenous groups, development agencies, and interest groups to discuss and suggest approaches results in better arrangements than otherwise. One effort in Ecuador resulted in the titling of indigenous lands on the borders of national parks, to protect the parks as buffer zones and to provide hunting and gathering access to the native peoples (Maybury-Lewis 1985:384). Satellite technology provides another powerful aid to monitor reserve and park

boundaries; the Brazilian government is already using satellites to discover illegal deforestation (New York Times 1994:D3). Despite the difficulties in achieving the desired goals, there is hope. It is preferable to work with flawed plans, and to recognize their problems, than to do nothing.

### CONCLUSION

The problem of establishing land rights for traditional peoples escapes any easy solution. The problem involves not simply a few people against powerful nation-states, but rather a dynamic and complex set of relationships — here termed the political ecology of the Amazon, and ultimately, the world. The economic needs of the Amazonian states, pressed by international market relations, make it unlikely that encroachment in the Amazon will be stopped any time soon.<sup>6</sup>

A number of recommendations have been proposed to address legal, infrastructural, and technological dimensions of the problem. Legal changes would help reduce forest destruction. First, a capital gains tax on land sales should be established to counteract land speculation. Second, property taxes should be instituted and collected for cleared land; this would slow deforestation (Moran 1989:8-9; Fearnside 1989a:218). Third, land tenure law should recognize farmers with agroforestry systems as legal owners of land, rather than requiring settlers to clear forest. This would provide support for traditional populations' land claims. In addition, methods should be sought to restrict colonization to currently accessible areas. If farmers cannot expect to replace degraded land with virgin tracts, they will be more likely to use sustainable methods.<sup>7</sup> Where infrastructure is concerned, it is critical to halt construction of new roads. This would to limit farmers' migratory agriculture, and impede movement of miners and fortune hunters (Moran 1989:8-9; Fearnside 1989a:218). Since colonists' agricultural technology is unsuited to the Amazon, indigenous agroforestry should be encouraged. Land titles and economic incentives might be offered to promote sustainable methods, for unless the migrant farmers and colonists find economically feasible alternatives, they will continue to invade indigenous areas. Finally, if industrial development projects are planned, they should minimize forest destruction. Taxes and fines should be imposed to force companies, investors, and funding agencies to pay for the environmental degradation and population displacement. This latter proposal would require a fundamental transformation in the assumptions and calculations used to evaluate the costs and benefits of industrial development. These recommendations would be a tremendous step forward if they could be implemented effectively, but as Moran acknowledges, "some of the policies could be changed at the stroke of a pen but their implementation is less likely" (1989:10).

Schmink and Wood (1987) propose that policies to manage natural resources need to be constructed with respect to the political ecology of the area in question. They recommend that policy goals and recommendations acknowledge the choices, contradictions, and trade-offs involved, as well as the context related to existing land uses. Policy development culminates in a bargaining process, which recognizes the immovable social and political obstacles, makes concessions where necessary, and through compromise reaches a workable, if not ideal, intervention strategy (Schmink and Wood 1987:53-55).

While Schmink and Wood address the administrative level, the international and local levels provide other arenas for action and social change. International human rights and conservation groups, such as Cultural Survival, can mobilize international political pressure against inauspicious development projects, serve as conduits of information between traditional peoples and the international community, and provide some support for traditional peoples' struggles. The initiatives must rise from the local people; they cannot be instituted from outside. Through contact with the international community, the Kayapó publicized the threat of a hydroelectric project on their land and convinced the World Bank to withdraw funding (Hildyard 1989; Ireland 1991:54). The Yanomami, defending their land against invasions and hydroelectric projects, have also won attention that might help them toward their goals (Thomson and Dudley 1989).

While international pressure can provide ancillary support, the future depends upon the people who live in the forest. Many groups are now forming their own national and international alliances to speak out for their rights and oppose unjust conditions. The rubbertappers' movement to defend their land has inspired respect, gained the world's attention, and brought them a taste of political power (Hecht and Cockburn 1989:182-183). The Confederation of Indian Nationalities of Ecuador has united indigenous organizations of the coast, highlands, and Amazon (Shiguango, et al. 1993:56). In Brazil, the Union of Indigenous Nations was the first national organization directed solely by indigenous peoples (Araújo Leitao 1994:48).

The presence of effective group actions give signs of hope, yet to effect genuine and enduring change, underlying assumptions must be altered. As long as the Amazon is perceived as a vast, uninhabited frontier, or an open access commons, it will be treated wastefully. The apparent reality — the Amazon is large and sparsely inhabited in terms of relative population density — supports the conceptions of the nation-states and of colonists, but ignores the fragile nature of the Amazonian ecosystem.<sup>8</sup> Before indigenous land management can be respected and understood, conceptual models must be transformed. Policy change, implementation and enforcement are just as problematic. Unless social relations of power

and access to resources become more equitable, the wealthy and powerful will distort policy implementation and enforcement to their benefit, and continue to exploit and abuse the less fortunate majority.

Hecht and Cockburn state, "the forest's fate will depend on the vision and the political sagacity of the people who live in it" (1989:206). This is largely true. Yet in a world of interconnecting economies and a planetary ecosystem, the actions and decisions of the rest of humanity will also play some role in shaping the future of the Amazon forest and its traditional populations.

#### ENDNOTES

- <sup>1</sup> The Amazon Basin encompasses 7.05 million square kilometers, and approximately 5 million square kilometers lie in tropical rain forest (Anderson 1990c:4). Five million square kilometers of the Amazon belong to Brazil (Republic of Colombia 1990:51; Bunyard 1989:2). The other eight nations with Amazonian lands are Guyana, Surinam, French Guyana, Venezuela, Colombia, Ecuador, Peru, and Bolivia.
- <sup>2</sup> Coomes and Barham (1994) argue that in fact many rubeertappers were able to retain substantial surplus, and that the debt-merchandise contract provided a stable and mutually beneficial relationship between trader, tapper, and patron — but theirs is a minority position.
- <sup>3</sup> Extinction of indigenous peoples can be defined as cultural extinction (where the culture is lost but the people survive in a new social context) or physical extinction (death of the members).
- <sup>4</sup> Tappers can slightly increase the concentration of rubber trees (*Hevea brasiliensis*, *H. benthaminana*, and other species) through planting, but trees grow slowly and natural pests prohibit concentrated planting. Rubber plantations fail in the Amazon due to the presence of leaf blight (Coomes and Barham 1994:252-253; Hecht and Cockburn 1989:84).
- <sup>5</sup> The case of the Yasuni National Park in Ecuador illustrates the point: The Yasuni Park constitutes one of the largest and most important reserves in the Amazon, due to the richness of its animal life. It is also the home to the Waorani Indians, some of whom remain uncontacted by outsiders (Thomson and Dudley 1989:220). The park also contains important oil reserves, Ecuador's most important export good. The Ecuadorian government has granted exploration rights in the park, and roads to facilitate oil drilling are under construction. With the construction of access roads, incursions by settlers, farmers, land speculators, and timber companies will be unavoidable (1989:221). Where the state willingly ignores its legal commitment to protection, the future of national parks is dim.
- <sup>6</sup> Ironically, the best defense for the Amazon may be economic stagnation and recession in the nations that own it. The rates of deforestation and pasture formation have declined over the past few years in Brazil because of the poor economic climate and a related decline in government funding for development projects (Brooke 1991; see also Cleary 1993).
- <sup>7</sup> Moran recommends research on intensive agriculture options to increase food production and reduce deforestation consequences of population growth

(1989:8-9). Since migration by smallholder farmers into forests has resulted in extensive degradation, intensive agricultural methods on currently cleared lands would provide an alternative to continued forest clearing. This latter recommendation could only be effective, however, if colonists were prevented from making further incursions. The history of agricultural intensification indicates that populations avoid intensification, and its heavier labor demands, until population pressure compels people to increase food production on existing lands. If population pressure is diffused by expansion into new territory, people do not need to intensify production (Boserup 1967).

<sup>8</sup> Due to the fragility of the Amazonian ecosystem and the degree of degradation, a more rational perspective would be to consider the scale and rates of deforestation, not the low population density.

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