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The Catch-22 of Conservation: Indigenous Peoples, Biologists, and Cultural Change

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Resurgent protectionists advocate a return to strict nature protection characterized by excluding most people from ecologically fragile areas. Certain groups of indigenous residents, namely those with low population densities, simple technologies, and subsistence economies, are seen as conservation friendly, but groups who are experiencing demographic growth, using Western technologies, and producing for the market are perceived as incompatible with biodiversity conservation. Using insights from common property theory as well as ethnographic observations of the Huaorani Indians of Ecuador, I illustrate how such assumptions constitute a "conservation Catch-22" in which cultural conditions deemed compatible with biodiversity conservation are precisely those from which we would not *predict conservationist practices to emerge. Romanticized conditions deemed harmonious with nature lack the incentives necessary for people to develop conservationist practices. Conservation is not a state of being, but a social process inextricably linked to social and political institutions influencing resource management.*

KEY WORDS: Huaorani; Amazon; indigenous peoples; conservation; Ecuador.

INTRODUCTION

> [I]t is often claimed that forest resources would be well managed if only the traditional users were allowed to maintain control. It is, indeed, widely believed that traditional communities use their resources in a sustainable manner. This belief is based on the fact that traditional communities lived at low densities, had limited technology, and practiced subsistence rather than commercial utilization. Unfortunately, given growing population pressure, increased access to modern technology,

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> increasing market orientation, and steady erosion of traditional cultures, there no longer are guarantees that biodiversity objectives will be any more likely to be achieved if resource control if placed in the hands of indigenous peoples. (Kramer and van Schaik, 1997, pp. 6–7)

In Ecuador's Amazon region, the approximately 2000 Huaorani Indians appear to be a good illustration of Kramer and van Schaik's position, and a lens through which to investigate some scholars' underlying assumptions about indigenous peoples and conservation. As one of the most "traditional" of the indigenous peoples in Ecuador, and arguably, the Amazon, the depiction of the Huaorani in written publications (Kane, 1996) and film (e.g., Walker, 1996, *Trinkets and Beads*) has captured the imaginations of outsiders. It is not difficult to see why. Fiercely independent and protective of their territory, the Huaorani are known for spearing oil workers, missionaries, and *cohouri* (non-Huaorani) in general. It is this reputation for violence that has given the Huaorani command of a large territory. Yost estimates that in 1958, when sustained peaceful contact with missionaries began, about 500 Huaorani controlled a territory of 20,000 km^2, giving a population density of 0.025 persons per square kilometer (Yost, 1991, p. 99). With their raided metal tools, blowguns, spears, digging sticks, chambira nets and bags, the Huaorani obtained their sustenance from the forest and rivers. Living in autonomous *nanicaboiri* (long houses comprised of close kin), they hunted game, fished, gathered forest products, and cultivated sweet manioc, plantain, and other crops. Indeed, with their low densities, limited technology, and subsistence orientation, the Huaorani appear to be a population practicing sustainable resource use described in the quote above.

However, like many indigenous populations in Amazonia, the Huaorani are experiencing population growth, adopting outside technologies, and are increasingly involved in the market (Holt *et al.*, 2004; Lu, 1999). With missionary contact, the Huaorani have largely ceased practices of warfare and infanticide. Moreover, the introduction of modern medicines and the availability of aircraft to evacuate medical emergencies have all contributed to an increase in Huaorani population in the past few decades. I (Lu, 1999, p. 26) give a rough estimate of an annual rate of increase of 2.5%, close to Yost's (1981, p. 687) estimate of 2.2%. Demographic growth is not the only problem. Since Ecuador's petroleum boom in the early 1970s, its Amazon rainforest has been invaded by oil corporations, roads, and colonists. According to the 1990 census, the Amazon region has a rate of population growth over 5% annually, double that of the country as a whole, primarily from inmigration (Pichón and Bilsborrow, 1992, p. 7). In 1991, oil production activities spanned nearly 1 million ha in Ecuador's Amazon, including over 300 producing wells and 30 production camps, producing

roughly 282,000 barrels of crude per day (Kimerling, 1993, p. 21). The resulting circumscription of land, increasing population density, development of market infrastructure, and availability of wage labor opportunities have changed Huaorani economic patterns and resource use, from the replacement of the shotgun for the blowgun, to households engaging in market activities such as oil work and sale of meat, handicrafts, and live animals (Holt *et al.*, 2004). Do these changes mean that the Huaorani are no longer "traditional communities" using their "resources in a sustainable manner" as in the quote above?

I would use this high-visibility case to problematize the Kramer and van Schaik's position and more broadly, to illustrate shortcomings in the approach taken by some conservation biologists adhering to a "protectionist argument" (*sensu* Wilshusen *et al.*, 2002). Specifically, I draw heavily from Terborgh (1999) as an example of the protectionist view, analyzing his argument in light of the Huaorani case study. I make two main points. First, protectionists have placed indigenous peoples in a "Catch-22" whereby the cultural conditions deemed compatible with biodiversity conservation (i.e., low densities, limited technology, and subsistence production) are precisely those under which a common property theoretical framework would *not* predict conservationist practices to emerge. Conservation awareness arises when people exert use pressure on resources and recognize the potential for overexploitation, conditions concurrent with population growth, adoption of Western technologies, and market production. This is the same transition that, as made clear by Kramer and van Schaik (1997), ironically renders local people less desirable as conservation allies in the eyes of biologists.

Second, I question the implied notion of Western culture and all its trappings as both the problem (e.g., when indigenous people adopt shotguns, wear t-shirts, and eat Oreos) and the solution (i.e., as the paradigm from which conservation biologists operate, giving them the ability to make conservation decisions in places like the Ecuadorian Amazon). Adherents of a protectionist argument who view the adoption of Western ideas and goods by indigenous people as incompatible with their continued "harmony with nature" apparently derive the authority to judge because they are a product of Western culture. The history of Western exploitation of the natural environment appears to bestow on members of this culture insights into ways to steward nature, and even the authority to intervene in how other groups manage their resources. A protectionist argument dismisses local residents (1) because they are becoming too "like us" in their consumption habits and other characteristics, and (2) because they do not supposedly possess the ability to steward nature to the same degree. In doing so, it glosses over the historical process by which Western culture gained awareness about conservation, and denies other groups this same process

of learning. By withdrawing their support from local peoples and refusing to facilitate more informed decisions about resource use, some conservation biologists are instead advocating draconian measures to exclude locals, both in terms of a place at the decision-making table and an ability to inhabit areas deemed ecologically fragile. In essence, these conservation advocates are abandoning local communities when they could have the most positive impact by sharing scientific understandings about ecological monitoring and stewardship.

Two points should be stated at the outset. First, as someone who worked in the Ecuadorian Amazon with the Huaorani since 1992, I strongly support efforts there and around the world to prevent ecological destruction. Central to this effort are rigorous, scientific studies documenting and monitoring biodiversity loss, habitat fragmentation, and disruption of ecosystem processes. Terborgh (and many other tropical ecologists) has been making important contributions fostering such understanding for decades, and his dedication to and passion for protecting Neotropical rainforests are unquestionable. We share many commonalities in our vision of the ends, but have different views about the means to those ends. Second, while I critique the romanticized idea of the "ecologically noble savage" (Redford, 1991) living in harmony with nature as it has been both applied and refuted by conservation biologists, it is important to acknowledge that this characterization of "traditional" or "primitive" peoples has a long history in Western thought (Ellingson, 2001) tracing back to the seventeenth century. The pervasiveness of this conceptualization is certainly not limited to discussions of conservation, but it is this discourse which houses the most recent manifestation of the myth of the noble savage.

THE RESURGENT PROTECTIONISTS

Wilshusen *et al.* (2002) describe a "resurgent protectionist argument" among conservation biologists and ecologists who, in response to failures in people-oriented approaches in conservation, advocate a return to strict protection of ecological areas through a focus on protected areas and authoritarian enforcement practices. The authors examine four recent works representative of a protectionist stance: Kramer *et al.* (1997); Brandon *et al*. (1998); Terborgh (1999); and Oates (1999). Although Wilshusen *et al.* support the goals of biodiversity conservation, they critique the policy proposals advocated in these works as operationally unrealistic, morally questionable, and unaware of the political and social context of nature protection. Of the five key elements of a resurgent protectionist argument that Wilshusen *et al.* identify as socially problematic, I focus specifically on the fourth: that "harmonious, ecologically friendly local communities are

myths" (Wilshusen *et al.*, 2002, p. 21). This view is articulated by Oates (1999, p. 55):

> . . . there is little robust evidence that . . . "traditional" societies anywhere in the world . . . have been natural conservationists. On the contrary, wherever people have had the tools, techniques, and opportunities to exploit natural systems they have done so. This exploitation has typically been for maximum short-term yield without regard for sustainability; unless the numbers of people have been very low, or their harvesting techniques inefficient, such exploitation has usually led to marked resource depletion or species extinction.

This view is congruent with the one articulated by Kramer and van Schaik earlier—people are compatible with conservation when they lack the population size, technology, and market incentives to have an impact. Because so few ecologically innocuous populations remain, the resurgent protectionists argue that we cannot rely on human populations to be benign to nature, and thus we require bureaucratic conservation measures to keep people out. Terborgh (1999) is straightforward about the policy implications of this notion that local communities cannot be trusted with conserving nature. He calls for the "political courage" to establish "a carefully constructed and voluntary relocation program" for "contacted indigenous groups" (p. 56) so that these people can acquire goods, educate their children, and participate in the market economy. Here a distinction is once again made between indigenous people who are conservation-friendly and outside the monetary economy who can remain in their ancestral lands, and those who are threats to conservation and should be considered for relocation. On a larger scale, not only are the local communities in biodiversity-rich tropical countries not to be trusted to steward nature, but the larger political and judicial forces in these countries are deemed ineffective, corrupt, and/or unenlightened. As a result, Terborgh advocates for the "internationalization" of nature protection: "internationally financed elite forces within countries, counterparts of the rangers who protect national parks in the United States and are legally authorized to carry arms and make arrests" (p. 199). Rather than being purely a matter of academic debate, the argument of resurgent protectionism has the potential to have profound social consequences, from a withdrawal of support for local communities' efforts to improve their livelihoods, to loss of land, forced relocation, and imposition of outside, locally unaccountable, armed forces.

INSIGHTS FROM COMMON PROPERTY THEORY

Oates is correct to point out that there are few examples of people acting as "natural conservationists." This begs the question: what does it mean

to practice "conservation," to be a "conservationist"? From the rhetoric of some of the protectionists, being a conservationist is a "Black or White" state of being devoid of human agency, depending instead on characteristics like consumption patterns, demographics, and contact with or insulation from forces such as the market economy. What Alvard (1993, 1995) calls "epiphenomenal," this type of conservation stems from an inability or lack of incentives to incur significant use pressures on a resource. While epiphenomenal conservation can result in low levels of resource exploitation, it is not resilient in the face of demographic, economic, technological, or other sources of change. For his hunting study among the Piro of Amazonian Peru, Alvard operationalizes "conservation" as hunting decisions that are costly in terms of short-term harvest rate maximization, yet increase the long-term sustainability of the harvest (Alvard, 1993, p. 358). By testing whether Piro hunters sacrifice present returns to foster the viability of game populations in the future, Alvard focuses attention on the intentional and behavioral aspects of conservation, in contrast to earlier studies (e.g., Reichel-Dolmatoff, 1976) emphasizing the religious and ritualistic aspects. Studies of conservation need to marry both beliefs and behavior in examining people's relationship to the environment: people do not always act in accordance to norms and beliefs, and even if they do, they are not always successful in attaining the desired result. Alvard's use of optimal foraging theory as a null hypothesis to test whether the Piro hunt in a conservationist manner, although clever, is incomplete. People's resource use behaviors do not occur within a social vacuum.

Instead of asking whether people are natural conservationists (and expecting a yes/no answer), efforts should be made to identify the conditions which foster conservation among a group of people. Being a conservationist is not akin to being left- or right-handed; rather, it is a set of social understandings and behavioral patterns that can emerge when there is an agreement by a group of people to temper their resource use in the expectation that others will do the same. Wilshusen *et al.* (2002) point out that a protectionist argument for putting up fences and fortifying guards largely ignores the past and present decision-making, organizational, and governance processes that structure resource use within and among local communities. In other words, if we view conservation as inextricably linked to social and political institutions which influence resource management, then it is possible to move beyond the static perception of "natural conservationists" to a more accurate understanding of resource use regimes. In an examination of the social relations of property, resource use rules and conceptions of ownership, a common property theory framework is invaluable.

The conventional theory used to explain how local users relate to shared resources makes grim predictions about users' ability to avoid the "tragedy of the commons" (Hardin, 1968). When there is a resource held

in common by a group of people, such as a fishery, forest, or pasture, each individual user receives the full utility of extraction (e.g., the extra fish, timber, or head of cattle), while the costs of a degraded resource base are borne by all. Thus the rational course for each user is to keep extracting, and the tragedy is seen in the ruin of the resource. As Terborgh (1999) concurs, "Benefit to the few and cost to the many is a fundamental principle of natural resource exploitation" (p. 148) and adds, "The person who leads the way to ending the tragedy of the commons will truly be the person who saves the world" (p. 208). Policies based on the acceptance of this line of reasoning have advocated privatization of property or takeover by the state as means to create incentives for sustainable management.

This belief has been challenged by academics (e.g., Berkes *et al.*, 1989; McCay and Acheson, 1987; McKean, 1996; Ostrom, 1990; Ostrom *et al.*, 2002), who assert that the "tragedy of the commons" refers to open access, not a common property regime. In common property regimes, a group of individuals can be a private owner that can share property rights, invest in the long-term productivity of a resource, and promote stewardship and conservation. Instead of a free-for-all, common property regimes are structured ownership arrangements within which management rules are developed, group size is known and enforced, incentives exist for co-owners to follow the accepted institutional arrangements and sanctions work to ensure compliance (Bromley and Cernea, 1989, p. iii). Such a social institution could promote ecological conservation by assuring that users coordinate and regulate use patterns, monitor and invest in the resource, and place limits on the numbers of legitimate users—all without having to parcel the resource into small units. Examples from across the globe (see Lu, 2001) of successful common property regimes demonstrate that conservation does not necessitate top–down approaches from the state or an international police force; local communities can develop the coordinated, collective arrangements to maintain natural resources from generation to generation.

What are the requirements for such a conservation-promoting institution to emerge and function? There are many (Agrawal, 2002; McCay, 2002), but I will choose a small subset to discuss. Hames (1987) emphasizes three conditions under which conservation is likely to evolve: first, territoriality (defense of land and resource against those who may try to thwart conservation plans), and second, mechanisms for dealing with cheaters (e.g., social to supernatural sanctions). (See Lu, 2001, for a discussion of the first two conditions in the Huaorani case.) Third, Hames writes that "conservation implies that unregulated hunting and fishing or population growth places so much pressure on a group's resource base that increases in work effort and/or decline in the consumption of limiting resources will ultimately result in a crash of the group's population" (Hames, 1987, p. 105). This last point is key: for conservation awareness to emerge, there has to

be some stress on the resource base, made tangible through scarcity and/or increases in work effort, with significant repercussions for the user group. As Bromley and Cernea (1989, p. 24) similarly emphasize, "the resource's relative scarcity vis-à-vis the demand placed on it will be critical, as will situations in which some users have a sufficiently large stake in the careful management of the resource." Common property regimes that regulate resource use involve "transaction costs," e.g., efforts to reach consensus among members about needed actions, to monitor resource conditions, and to identify and punish cheaters. Thus, the implementation and maintenance of a functioning common property regime which will regulate resource use and promote conservation requires time and effort, and has to be deemed worthwhile. At a minimum, people need to recognize that a resource is becoming scarce, that their exploitation of the resource is having deleterious consequences, that the resource is of importance to their survival and well-being, and that they have the capability to regulate their use such that the overexploitation can be remedied.

Thus, a sense of resource scarcity is a critical component for conservation. Having experienced generations with a large land base at their command, the Huaorani believe in an idea of the forest's bounty, of natural abundance (Rival, 1992, 2002). For the Huaorani the natural environment is inextricable from the social environment (Rival, 1998). When Huaorani "see a wealth of food and materials in the forest, they say that the forest has much to give to the living, thanks to the previous generations … who, through their own hunting and gathering activities, made the forest plentiful" (Rival, 1992, p. 159). The peach palm (*Bactris gasipaes*) fruit feasted upon in the beginning of each year is one symbol of this natural abundance; each tree is associated with the relative who planted it, and their labors reinforce the notion of the environment as "giving." As one *Huaorani* man stated, "Here you live well, there is everything."

In two communities along the Shiripuno River with whom I have worked (see Lu, 1999, and Holt *et al.*, 2004, for a detailed description of the characteristics of the study communities and their relationship to the natural environment), the idea of natural abundance resonates. For example, residents were asked what the standard of living will be like for their children, and responses were unilaterally optimistic: the youth will have the same resources that people enjoy now. This is because Huaorani territory is so extensive, and because they take care of the trees and waterways. When asked to give their definition of "conservation," most people (14 of 17 heads of households interviewed) did not know. The three who gave a definition said: "to care for the trees so they live"; "to maintain the forest for children and grandchildren"; and "to have plenty to eat from the garden and the land." People shared their perception of the role of humans

in the forest, which they see as intimately tied to using resources: "to serve yourself of the animals, fish and resources to live, this is the role of humans . . . animals serve to eat and sell, rivers to bathe, drink, fish, and navigate . . . the role of humans is to live and eat animals . . . in the forest, find wood, in the river, find water, and in the forest, find materials to make crafts." In 1996–1997, when asked about resource use rules, the Huaorani I interviewed denied having set limits on hunting or fishing, or areas off limits to exploitation. In my study of the social relations of property and ownership among the Huaorani, I found that although they have a common property resource management regime, it is geared towards the clear delineation of social boundaries and ownership rather than promoting resource conservation (Lu, 2001). However, it is not uncommon that institutions for managing the commons had their genesis in efforts to mitigate user conflicts rather than to promote resource sustainability, but these institutions provide experience and infrastructure that may be used to handle problems like overexploitation (McCay, 2002). Moreover, regimes developed to reduce user conflict and protect groups from other potential competing users can essentially promote conservation. Although the Huaorani with whom I have worked deny having rules governing resource use, they are clear that this applies only to those *bonafide* members of the community (i.e., Huaorani residents and their Quichua kin by marriage), and that they need to "watch over the limits of the territory so that others don't steal what is for our children and grandchildren."

A CONSERVATION CATCH-22

The title of Joseph Heller's (1961) book, *Catch-22*, has become a phrase signifying a situation in which a person is frustrated by a paradoxical rule or set of circumstances that preclude any attempt to escape. In the world of biodiversity conservation, a Catch-22 can be found in the rhetoric of protectionists who ascribe conservationist ethics to people in a state of limited technology, subsistence production, and low population pressure, and conversely view people as incompatible to conservation when they have modern technologies, market involvement, and higher population densities. As we know from common property theory, "Open access is an acceptable method for resource management only when we need not manage resources at all: when demand is too low to make the effort worthwhile" (McKean, 1996, p. 8). When pressure on a resource is low due to few users, limited procurement technologies, and subsistence production, there is little incentive for the development of coordinated resource use behaviors and restraint which characterize conservation. In other words, the conditions

under which people are seen as ecologically friendly under the protectionist viewpoint *are the same conditions under which we would not expect conservation to develop.* But when people are faced with a situation that may promote resource stewardship (such as increased population pressure or resource exploitation for market), under the protectionist viewpoint they are then perceived as obstacles to conservation.

In the case of the Huaorani, the belief in natural plenty is starting to change in light of increasing threats to their territory in the form of oil company exploitation, road construction, logging, and an influx of colonists and other indigenous peoples. Their concerns were apparent in interviews conducted in 2001. As one man said, "There are many animals now, but when there's a road, it will be difficult and the animals won't return." Besides roads, Huaorani informants cited the noise of gunshots and chainsaws as other causes which "drive animals away." Some are adamantly against the oil companies and the damage they cause, from road building and illnesses to "rotten air, polluted rivers and cars that kill animals." Similarly, opinions about logging companies are negative: they damage the forest, the noise of the chainsaws drives away animals, they take fish and game from Huaorani territory, and leave locals with no cedar with which to build canoes. For most of these Huaorani residents, the threat to the environment is external, not internal, but that is not always the case. When asked about the population of game still remaining in the forest, one man gave a response indicative of this changing perception about resource scarcity. He said, "Within the last 25 years the population has grown, now the community has become large. In 20 years game is going to become a little scarce. Peccary and monkeys are going to become hunted out a bit. Pacas and agouti are going to tolerate this pressure more. Trumpeters and guans are going to disappear more quickly." His response indicates an awareness of Huaorani hunting pressure resulting in changes in game abundance as well as a grasp of differences in various species' ability to rebound from hunting pressure.

Similarly, Vickers (1994) documents a transition from "opportunism to nascent conservation" among the Siona-Secoya of Ecuador. The approximately 500 Siona and Secoya Indians live along the Aguarico River and its tributaries in the Ecuadorian Amazon. Vickers found that their hunting patterns are better explained by efficiency maximizing hypotheses derived from optimal foraging theory rather than conservation explanations. However, the data he collected from 1973 to 1982 indicate that the Siona-Secoya along the Aguarico River were hunting most prey sustainably. Vickers (1994, p. 321) attributed this to their low population density (0.2 persons per square kilometer), availability of a large hunting territory, and their limited hunting technology. In their belief system, the Siona-Secoya viewed the forest as a vast habitat with abundant and ultimately inexhaustible resources.

In recounting one myth, a respected elder shaman recounted the transformation of man into the tapir and said "There will always be tapirs. They will never end" (Vickers, 1994, p. 323). Good shamans were believed to provide for abundant game around a village by "calling" the animals. Therefore, hunting was not a threat to animal populations because they could be increased through supernatural means. Beginning the late 1970s, however, the Siona-Secoya landscape began to face profound changes, from the establishment of African oil palm plantation and colonist precooperatives to contamination from oil spills. The Siona-Secoya have organized themselves into indigenous federations, sought and received land title to part of their former territory, and were part of a class action lawsuit against Texaco brought in the United States. While still practicing their traditional subsistence technologies, the Siona-Secoya are developing new economic strategies to support their increasing population size (especially critical given their reduced land base), including cash cropping, livestock raising, wage labor as tourist guides and agricultural workers, and logging.

Ironically, precisely when groups like the Huaorani, Sionas and Secoyas are beginning to become more aware of the need for active conservation efforts, according to the protectionist view, they are enemies of nature who have lost their "pristine" and "traditional" ways. At this critical juncture, where conservation biologists and ecologists have a marvelous potential for collaborating with local communities facing changing resource availabilities and ecological threats, the resurgent protectionist rhetoric says that instead of working to develop management plans, we should build fortified fences; instead of incorporating locals as parabiologists with much ecological knowledge, we should relocate them from sensitive ecological areas. Thus, through exclusionary practices advocated by resurgent protectionists, people like the Huaorani are denied much more than the assistance that influential and knowledgeable biologists could bring: *they lose the opportunity to adapt their resource use institutions to reflect current challenges*. Locals are caught in a conservation Catch-22, and as they broaden their economic activities and technologies for survival in changing circumstances, this is taken as evidence they have lost their "natural conservationist" tendencies.

In summarizing the Siona-Secoya case, Vickers writes, "One lesson to be drawn from this case is that 'conservation' is not a state of being. It is a response to people's perceptions about the state of their environment and its resources, and a willingness to modify their behaviors to adjust to new realities" (1994, p. 331). Conservation develops as a result of experiences and learning, sparked by negative changes in resource characteristics which are accompanied by a belief in the potential to remedy these changes and the efficacy of social and political institutions to do so. Coming from Western

culture, protectionists take for granted the learning process tracing back the last few centuries that has formed the conservation consciousness in the United States and Europe. This forms yet another part of the protectionist Catch-22: Western culture and all its trappings are considered both the problem and the solution, depending on whether you are an outsider or insider, respectively.

WESTERN CULTURE AS BOTH PROBLEM AND SOLUTION

Terborgh (1999) describes the encounters he has witnessed between indigenous peoples and researchers and other outsiders in Manu National Park. He concludes (Terborgh, 1999, p. 46):

> First contact with indigenous peoples has been described as obeying the Heisenberg uncertainty principle. Contact with modern civilization irrevocably changes people, so it becomes impossible to observe them as they were before. A man who is given a steel ax will never again pick up a stone ax in the manner of his forefathers. Acquisition of one labor-saving device creates a desire for more. The gift of a mosquito net or a set of clothing creates dependence in a society that was independent until the minute before. Contact alters life for both parties. One side is instilled with desires it never had before and a feeling of impotence and inferiority in the presence of technology it cannot understand or acquire. The other side is pressured into a form of charity that it knows will only foster dependence. First contact is thus a no-win situation.

This argument is similar to the one discussed earlier, in which indigenous people are perceived as having two states of being: pristine and untouched or contacted and corrupted. Western goods and technologies, it seems, are so powerful that "a mosquito net or a set of clothing" can create dependence within minutes, the indigenous culture being subsumed by a techno-lust for what our society has to offer. By accepting these items, not only is there no going back, but it is equivalent to opening an ecological Pandora's box, as the relationship between humans and the natural environment undergoes irrevocable changes. Study after study, Terborgh writes, shows that once a premodern society trades firearms for bows and arrows, and chainsaws for stone axes, the overexploitation of natural resources ensues (p. 51). Such a view denies agency to indigenous people, making a deterministic prediction about technological change and not allowing for the possibility that another outcome is possible—e.g., perhaps people hunt for less time with a more efficient technology, taking the same amount of game as before? Moreover, concomitant with any introduction of new item into a culture, there is a dynamic process of learning and reconfiguring. Terborgh's mosquito net is not the first time indigenous people have adopted something from outside their culture, and it will not be the last.

Implicit in Terborgh's and others' argument about mosquito nets, clothes, and the market economy is that these Western goods and ideas are so powerful to indigenous people as to be a corrupting force, a juggernaut that rolls over them and makes threatening what was earlier ecologically benign. However, this appears to hold only when we speak of non-Western people, as these same items and ideas have not corrupted us Westerners—instead, we have the solutions to these conservation problems. Indeed, "The well-organized societies of the industrialized world are the ones most concerned about biological diversity and most capable of providing the stable, long-term institutional support needed to preserve it" (Terborgh, 1999, p. 12).

Although a preservationist argument leaves indigenous people in a Catch-22 by denying them the process of learning and experience vis-à-vis conservation, it is apparent that the eco-consciousness of the West is a result of a long, checkered history. Our insights about minimum viable population sizes and habitat fragmentation was not something intrinsic to us, but the result of making mistakes and learning from them. As a society, we have largely agreed to doing conservation—we have established rules about the use of resources, implemented sanctions for noncompliance, developed governmental and non-governmental institutions, etc., but these have all been hard-won accomplishments. Terborgh calls for the scientific management of natural areas in this time of ecological crisis. He calls for "rational, scientific criteria" (p. 160) and "reason and objectivity" (p. 188), and grants priority to (Western) scientists and their explanations and strategies for protecting biodiversity. Moreover, he explicitly discusses how the United States and Northern Europe have what it takes to protect the environment, from prosperity and population stability to democracy and education (pp. 189–190). However, much of the biodiversity remaining is not located in the United States or Northern Europe. In the process of destroying much of its own natural environment, "the West" has learned lessons about the importance of conservation. Yet the resurgence in protectionist arguments for conservation leaves little room for other cultures to learn for themselves and develop their own conservation institutions. It can be argued that this learning process is a luxury the earth simply cannot afford, given the extent of environmental degradation and the potency of current technologies; that there simply is not time for indigenous cultures to follow the same process that Western peoples did in developing a conservation consciousness. It would follow from this line of reasoning, I argue, that efforts at conservation could use as many allies as possible, rather than alienating or discounting entire constituencies with strong vested interests in intact ecosystems.

Rather than pulling out support when it can be the most useful, it is still possible, I believe, for conservation biologists and others to work collaboratively with local communities by sharing knowledge and insights in a culturally respectful manner. This return to "people-centered conservation" would not be a rehashing of the same framework that was seen in the 1980s under integrated conservation and development projects and "sustainable development." Rather we could make a meaningful, concerted, and committed effort that involves more long-term timelines (on the order of a decade or two rather than a few-year funding cycle), nuanced understandings of inter- and intracultural diversity and indigenous knowledge (Brosius, 1997), a recognition of the current reality of mixed subsistence and market economies, meaningful decision-making and participation of local peoples, and clear definitions of the goals, means, and measures of what constitutes "conservation." Not only is this post-Catch-22 model more likely to avoid social conflict and political instability, but, as Colchester (2000) points out, such collaboration based on a respect for indigenous self-determination also is in accordance with international law.

CONCLUSIONS

Although once characterized by a small, highly dispersed and semi-nomadic population living at low densities, centered around extended kin groups autonomously producing for subsistence consumption, with technology centered around blowguns, spears, and the occasional raided machete, the Huaorani generally no longer fit this description. For some biologists advocating a "resurgent protectionist" approach to conservation, this former state was compatible with conservation, while the current one—marked by the use of firearms in hunting, increasing market integration and demographic increase—place the Huaorani at odds with goals of preserving the rainforest. Using a common property theory framework, I discuss how this viewpoint places the Huaorani and other indigenous groups in a "conservation Catch-22": the conditions some biologists extol as compatible with conservation are precisely the ones in which we would not expect conservationist behaviors to emerge. Instead, this emergence is more likely to occur in the current situation of increasing resource use pressure and increasing awareness of resource scarcity. Yet these biologists consider Huaorani drawn into the Western world as threats to nature. It is a situation in which the Huaorani cannot win, with potentially deleterious outcomes for them. Such outcomes include loss of outsider support and a concomitant decline in having a voice at the conservation decision-making table at the very least, to implementation of draconian policies such as forced relocation

and a militarization of their territories at worst. In describing this conservation Catch-22, I highlight the value of approaching conservation as not a state of being but a social process involving experience and learning leading to the development of institutions and arrangements. I call into question the double-standards inherent in a resurgent protectionist argument: Western culture gives those on the inside the wisdom to know better but only corrupts those on the outside. It is simultaneously the problem and the solution, depending on whom it is being applied. Rather than pointing accusatory fingers or demonizing biologists, the purpose of the discussion is to emphasize the fundamental role that a social science perspective plays in illuminating the human context of conservation, a role that complements the insights into natural systems provided by biologists.

Just as Terborgh argues for a moral imperative to protect nature (and not just a utilitarian or economic one), local communities ought to be included in the process of conservation not just because it is key long-term success, but also because it is morally correct. As Alcorn (1993, p. 426) states,

> . . . conservationists are acting as gatekeepers to a discussion table that does not have a place set for those whose homeland's future hangs in the balance. . . In the real world, conservation of forests and justice for biodiversity cannot be achieved until conservationists incorporate other peoples into their own moral universe and share indigenous peoples' goals of justice and recognition of human rights.

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