

**SÉRIE ANTROPOLOGIA**

**281**

**THE COMMODIFICATION OF THE INDIAN**

**Alcida Rita Ramos**

Chapter written for the book *Human Impacts on Amazonia: The role of traditional ecological knowledge in conservation and development in Brazil*, edited by Darrell A. Posey.

**Brasília  
2000**

## THE COMMODIFICATION OF THE "AMAZONIAN INDIAN"

Alcida Rita Ramos  
Universidade de Brasília

### Frontiers Old and New

The advance of the economic frontier has been a recurring theme in the Amazon since the first decades of the sixteenth century. In the nearly five-hundred-year history of Western rapacity, the region has witnessed a number of ways in which non-Indians appropriated its wealth, first, at the expense of indigenous peoples, and later, of regional populations as well. In their attempts to secure quick profits, colonizers promoted massive indigenous slave labor, spread devastating epidemics, looted forest products (*drogas do sertão*), and grabbed territories, water, and subsoil resources as if Amazonia were an immense no-man's-land, literally up for grabs (Pinto 1980; Ramos 1991). The infernal paradise of both tropical fevers and tropical bounty served well the dominant vision of Amazonia as an empty expanse to be exploited for future gain. But this vision has not been limited to the Amazon. It has appeared whenever the "Whiteman" (Basso 1979) has ventured into the "wilderness." In Africa, for example, "The European improving eye produces subsistence habitats as 'empty landscapes,' meaningful only in terms of a capitalist future and of their potential for producing a marketable surplus" (Pratt 1992:61).

The twentieth century has seen acceleration in the swell of the economic frontier, particularly in the 1960s and 1970s when South American governments entered the era of megaprojects financed by international capital. As devastation of the rain forest reached an unprecedented speed, numerous indigenous peoples found themselves severely depopulated by both new and old infectious diseases, and, without an adequate subsistence base, were forced to join the multitude of citizens who live well below the poverty line (Davis 1977; Ramos 1984).

After decades of struggle for the guarantee of their land rights, some indigenous peoples in Brazil are still desperately fighting to have their territories legally secured. Although most other ethnic groups have had their territories officially demarcated, invasions and other kinds of abuses continue to occur throughout the region. Nevertheless, as the legal battle for securing indigenous lands slowly but steadily approaches its goal, the demand for land rights is being replaced by another type of call. Economic interest in the labor force and in what was traditionally designated as natural resources is decreasing compared with an interest in other sources of profit. The Indians are now being bombarded with new threats. Not only do commercial interests continue to exploit natural products (e.g., soil, latex, gold, and Brazil nuts) as integral entities, but increasingly these interests covet the dissected

fragments of the Amazonian gene pool. In short, the economic frontier has entered its microscopic phase. Associated with this new demand is the attempt to tap the indigenous cultural pool as a shortcut to reaching the final scientific-commercial product more quickly—for native guidance helps save researchers the often excruciatingly time-consuming task of random sampling. Thus turned into marketable items, Amazonian Indians now face the Herculean task of having to inform themselves, however minimally, about the baffling fields of genetics and world economics in order to better defend their persons and their resources from scientists and other highly sophisticated predators. In other words, in addition to enduring the habitual modes of spoliation, the Indians are now being attacked at the very heart of their cultural and physical integrity. Indigenous knowledge and selected cultural features have served as appealing bait in advertising campaigns, generating profits—the dimensions of which the best informed Indians were until recently unable to fathom—for non-Indians. These new forays into the innermost spaces of indigenous minds and bodies may not directly endanger lives, but they pose a threat to the Indians' social integrity nonetheless. Pressure is mounting on the Indians to either conform to market forces, or to surrender their precious territories and resources to the “rational” demands of “development” (read Western market). In order to justify the protection of their lands, many indigenous peoples are obliged to prove themselves productive in market terms. To put it in a nutshell, the expansion of the knowledge and genetic frontiers is continuing the plunder begun by the old-style natural resources frontier.

Three fronts have lately troubled indigenous peoples, particularly in the Amazon. I am referring to the commercial exploitation of their knowledge, their genes, and their image. Although closely related, these aspects deserve to be examined separately, since each represents a distinct mercantile province.

## **Knowledge**

The virile vision of a European on horseback, surrounded by excited natives, triumphantly reaching a promontory in the act of “discovering” a geographical sensation—be it the source of the Niger or the Nile, or any other Western fetish—became a praised icon in the eighteenth and nineteenth centuries (Pratt 1992:202). A mixture of arrogance and heroism, the white explorer, usually male, entered Western history as the one who, in the name of knowledge (read Western knowledge), endured unbelievable hardships in indomitable jungles. He can be exemplified by a number of travelers in South America and, especially, Africa, like Mungo Park in search of the sources of the Niger: “He traverses desert wildernesses, suffering the trials of thirst, beasts, and banditry” (Pratt 1992:75). Yet the promontory syndrome was cultivated to “render momentarily significant what is . . . practically a non-event” (202), for all the explorer needed to do—and actually did—was to ask the natives about lakes, watersheds, and the like. As Pratt goes on to remark, “Discovery in this context consisted of a gesture of converting local knowledges (discourses) into European national and continental knowledges associated with European forms and relations of power” (202).

Well, the figure of the intrepid explorer or naturalist roughing it in the jungle is being replaced by that of the pragmatic scientist who wants to get to the point as quickly as possible, using Indian knowledge as a shortcut. The promontory has flattened considerably. In centuries past the natives were acknowledged for being carriers, not of useful knowledge but

merely of the Whiteman's gear, if not of the Whiteman himself (Buarque de Holanda 1986; Taussig 1987). (Who was whose burden, we may well ask.) Nowadays it is proper to praise indigenous ingeniousness. For instance, the World Bank stated in 1981: "Tribal groups can make valuable contributions to the wider society, especially to the national society's knowledge of socioeconomic adaptations to fragile ecosystems" (World Bank 1981:3). Some actually regret that there isn't more indigenous knowledge available to non-Indians; for example, the Brazilian Eletrobrás technocrats lament the Indians' illiteracy because it precludes the preservation of the "valuable collection of knowledge accumulated by indigenous tribes, especially with regard to the thousands of native biological species that exist in their ecosystems and with which they have lived for centuries" (quoted in Viveiros de Castro and Andrade 1988:19). Lack of writing, however, does not seem too serious a deterrent:

Tapping this reservoir of knowledge has already proven effective. Three-quarters of the plants that provide active ingredients for prescription drugs originally came to the attention of researchers because of their uses in traditional medicine. Accordingly, the NCI [U.S. National Cancer Institute] collection strategy involves close attention to indigenous medical practice and especially to the expertise of traditional healers and *curanderos*. Similarly, the USDA's [U.S. Department of Agriculture] crop germplasm acquisition policy now gives priority to obtaining samples for which the ethnic source of the cultivar is described.

Kloppenburger Jr. (1991:15)

Repeated failures to turn quick profits from the Amazon into long-term returns, plus the emergence of the ideology of environmentalism, particularly in industrialized countries, have steered the market's attention to indigenous systems of knowledge. There is now a demand for cooperation between economic agents and anthropologists, ethnobiologists, and other experts who are expected to know how to "bridge cultures." Comparing traditional knowledge with industrial knowledge, Cunningham considers that "ethnobiologists and anthropologists are in a position to act as brokers to facilitate a partnership agreement for the benefit of both rural communities and urban-industrial society" (1991:4). Anthropologists in particular are put in the disturbing role of indigenous surrogates, the next best choice to the real thing, namely, real Indians (Ramos 1994).

Even among Indian sympathizers, respect for cultural wealth is not always accompanied by respect for ethnic agency. Two common assumptions seem to underlie their positions. One is that it is preferable to deal with specialists in indigenous cultures than with the Indians themselves. The other is the tacit disregard for the Indians' thoughts and feelings: would they want to put their knowledge at the service of those directly responsible for their centuries-old plight? Like fauna, flora, or stones, the Indians seem to be just there, passively accessible to Western science and markets. When the Indians and their allies protest the poaching of biological materials—removed from Indian territories as if they were free for the taking—entrepreneurs and scientists engage in elaborate justifications for denying indigenous property rights to the resulting research products. The casuistic filigree of patent laws is worth

examining.

As the argument goes, there is a basic difference between the genetic management of species in their natural habitat (in situ), and the genetic processing of samples in laboratories or botanical gardens (ex situ). Although the Indians may be entitled to compensation for in situ species, these resources are considered to be the “common heritage of humankind” (Kloppenburg Jr. 1991:14). As to ex situ products, which are comparable to quotations taken out of context, Indians are denied royalties because these products are classified as human manufactures and hence the object of private property. The imbalance of world power imposes U.S. patent laws upon the rest of the world, especially southern tropical countries. According to U.S. law, what is in nature cannot be the object of private property, but the moment you manipulate elements extracted from nature, you have the right of patent so long as your product is new, not common sense, and clearly useful (RAFI 1995:8–10). Furthermore, “you can patent the invention of an inventor in another country—if it hasn’t been patented at home or if an article hasn’t been written about it. (American inventions, however, are always protected—even if not unpatented or unpublished.)” (McGou’an 1991:20).

The result has been a predictable tendency for resources in nature to be transformed into objects made by humans, or as Latour (1993) would put it, into quasi objects or hybrids, a composite of natural and fabricated materials. Whenever the natural “impurity” of an entity or substance (for example, different DNA cells mixed together in a living organism) is isolated, purified, and altered, it is no longer a product found in nature. It becomes a man-made artifact, and as such, it is patentable and the source of private revenue. Hence the protection of nature’s products from privatization “has been converted into something hollow” (RAFI 1995:8). Far from being a spontaneous, chance phenomenon, this state of affairs is the result of concerted action on the part of drug corporations. “Business interests in the developed nations have worked very hard over the past ten years to assemble a legal framework that ensures that genetically engineered materials—whole organisms, tissue cultures, cells, DNA sequences—can be owned” (Kloppenburg Jr. 1991:16). In other words, the distance between impurity in nature and purity in the lab is the distance between natives deprived of fair compensation and the business groups and individuals likely to make millions.

Whether actual millions are made is not the real issue. From the perspective of the indigenous peoples involved, what matters is, on the one hand, the often clandestine manner in which prospecting is undertaken, and on the other hand, the high expectations, unrealistic as they may be, that the product of research will bring big gains to the communities. “We are not opposed to having our knowledge favor non-Indians. . . . But we do not accept that our knowledge be used without our due permission. Researchers and industries cannot get rich at our expense without the proper compensation due us” (Wapichana 1999:42).

As genetic research progresses, more indigenous peoples are affected by Western exploitation of their resources. Amazonia is one of the richest regions in the world in biodiversity. In the Brazilian Amazon alone one finds 30 percent of all tropical forests, concentrating more than 50 percent of the Amazon’s species. It is in the Amazon region that 98 percent of indigenous territories are located. “Therefore, the correlation between indigenous peoples, tropical forest, and biodiversity is obvious” (Santilli 1996:19). Consequently researchers are constantly probing Amazonia for marketable forest products, be they the anticoagulant found in Uru-eu-Wau-Wau territory, the pain killer from

Marubo[thanks for catching this] villages, the ubiquitous *urucum* (*Bixa orellana*), or the equally common *ayahuasca* (*Banisteriopsis caapi*).

I shall now briefly refer to the case of the Wapichana Indians, based on work by Ávila (2001). This is one of scores of examples of the unethical patenting of indigenous resources occurring the world over, and specifically in the Amazon.

- 1840. “I have endeavoured to make the reader acquainted with some of the trees which, with reference to their timber, are of importance to commerce. Of equal, if not greater value, are the trees and plants from which medicinal substances may be obtained.” (Schomburgk quoted in Ávila 2001:64).

- 1996. “It has been known for some time that Amerindian peoples of the Rupununi area of Guyana, South America, chew the nuts of the greenheart (*Ocotea rodiaei*) as a crude form of contraception. Also, infusions of the bark of the greenheart tree have been used as a febrifuge and as an antiperiodic in fevers” (United States Patent No. 5,569,456, Oct. 29, 1996, quoted in Ávila 2001, Anex 3:101).

- 1998. “The term ‘cunani’ has long been used by Amerindians for a group of fast-acting fish poisons. Such fish poisons are generally derived from plants, and especially from the leaves thereof. South America probably possesses greater numbers of recorded fish-poison plants than any other continent” (United States Patent No. 5,786,385, Jul. 28, 1998, quoted in Ávila 2001, Anex 3:106).

- 1999. During an international seminar on rights over biodiversity, Wapichana leader Clóvis Ambrósio expressed his irritation at the news that U.S. patents for plants grown in Wapichana lands straddling the Brazil-Guyana border had been registered in the name of Gorinsky:

My people, the Wapichana, live in the Brazilian grasslands and in British Guiana. . . . With our common knowledge of the vegetation . . . we use a plant named *cunani* for fishing. We also produce medicines extracted from a tree known as *tibiru*, or greenheart. . . . Many of our kinsmen don’t even imagine what our knowledge can represent to the [Western] industry. That is why chemist Conrad Gorinsk, the son of a Wapichana woman and a German man . . . researched the *cunani* and the *tibiru* while promising to help our communities with medicines. He never did. . . . Mr. Conrad Gorinsk has patented the cunaniol and the rupununi in the United States, Europe, and Great Britain. He has contacted multinationals for the exploitation of his “discoveries.”

Wapichana (1999:42)

Two years earlier, the National Indian Agency (FUNAI) tried, apparently without success, to guarantee compensation for, or the cancellation of, a patent registered in Great Britain to the chemist Conrad Gorinsky for the substance extracted from the seeds of the *tibiru* tree—the substance that the Wapichana used as a contraceptive (Braga 1997). During

the 1990s, two other indigenous substances were also patented in Europe: *Cunani* (*Clybadium sylvestre*) was patented in 1998; *tibiru* (*tipir*; *Octotea rodiaei*) or greenheart was patented in 1994 and given the name Rupununines, after Rupununi, the Wapichana homeland in Guyana (Ávila 2001:67).

Conrad Gorinsky belongs to one of the powerful families that for more than a century have occupied indigenous lands, primarily for cattle ranching, on both sides of the international border (Rivière 1972, 1995; Farage 1991). Although the son of a Wapichana woman, Gorinsky is not recognized either in Brazil or in Guyana as a member of the Wapichana group because ethnic recognition is based on social rather than on genetic criteria. The Wapichana are angered that his family holds large portions of land at their expense. That he is now patenting indigenous products adds insult to injury. Decades of struggle to eradicate illegal ranching have sharpened indigenous consciousness about the extent of both external abuses and indigenous constitutional rights. No wonder Indians make a close association between biopiracy and the issue of land demarcation. Although these matters involve two countries, as far as the indigenous peoples of the Guiana region are concerned lack of credibility and private rapacity do not stop at national borders. For this reason, cross-boundary indigenous organizations join forces when it comes to expressing their grievances (Ávila 2001:80).

Again Clóvis Ambrósio: “If the government has not resolved the problems of land demarcation, if the perpetrators of crimes against our communities go unpunished, if predatory fishing and illegal exploitation of minerals and timber happen every day with no concrete measures to curb them, then how is the Brazilian state going to protect biodiversity and our traditional knowledge?” (Ávila 2001:74). Negligence on the part of the federal government along with the explicit anti-indigenous policies of all Roraima governors to date make up an explosive combination that has cost the indigenous peoples of east Roraima great losses in resources and lives, a situation that is far from being resolved. The Web site of the Conselho Indígena de Roraima (CIR), available at [www.cir.org.br](http://www.cir.org.br), gives an idea of the social unrest that deeply disturbs the savanna communities practically on a daily basis.

I would like to call attention to the role of the Brazilian press as detonator in the explosive field of biopiracy. Ambrósio himself first heard about the Gorinsky patents from the daily *Folha de São Paulo* while he worked at the CIR headquarters in the capital town of Boa Vista (Ávila 2001:71). In the 1990s Brazilian newspapers reported numerous cases of scientists, filmmakers, and other professionals, especially from abroad, to whom FUNAI granted official authorization to carry out their declared activities; once in the field, however, those groups engaged in illegal collecting of samples of genetic materials. “When one hears talk about biopiracy,” says a journalist from *O Estado de São Paulo*, “one imagines smugglers, in the still of the night, crawling in the forest to take away active substances, plant seedlings, animals, the secrets of Brazil’s natural wealth that the Indians franchise for a pittance. This furtive method may actually exist, but there is another, more blatant system: many biopirates come in through FUNAI’s front door in Brasília” (Sant’Anna 1998:A20).

Examples of biopiracy multiply, as attested by the frequent headlines. From one Brazilian newspaper we read: “The fight for third world genes” (*Folha de São Paulo* 1995), “United States patents virus from Indian and is accused of ‘vampirism’” (1996), “Biopiracy hits Amazon forest” (1997a), “Attorney General’s office in Amazonas will investigate biopiracy” (1997b), “Acre prohibits foreigners in the forest” (1997c), “Biopirates act freely in Amazonia” (1997d), and “Biopiracy in the country is a police case, says São Paulo professor”

(1998).

The effort to curb biopiracy is a rare case in which national and indigenous interests converge. Brazil, as well as other nations, has vehemently protested against such predation and has used events such as the 1992 Earth Summit in Rio de Janeiro as opportunities to elicit more equitable commitments from the Northern nations. Official reactions from Southern countries have reinforced the indigenous sense of indignation.

Through their increasing activism, indigenous peoples have become aware that their cultural patrimony is being grossly consumed for purposes totally alien to their interests. A number of international organizations have emerged to help curb abuses, although with less than ideal force and effectiveness (Posey 1991). Various meetings have served as arenas for native peoples from various parts of the world to discuss the matter, draw up plans of action, and write declarations and resolutions (IWGIA 1995).

Among these, the Coordination of Indigenous Organizations in the Amazon Basin (COICA) firmly established its position at a regional meeting held in Santa Cruz de la Sierra, Bolivia, in September 1994. The arguments emphasized the cultural embeddedness of indigenous knowledge, a complexity always ignored by business-oriented agents. Pointing out the “colonialist,” “racist,” and usurping character of commercial ventures in biodiversity, COICA members insisted on the inextricable bond of biodiversity, knowledge, and culture with the indigenous conception of territoriality, an all-encompassing notion that cannot be reduced to treating land as a mere dwelling place (Ramos 1986:13–22; Colchester 1995:6) or a potential commodity. They stressed the collective and intergenerational constitution of indigenous rights and social systems, declaring that “each generation is obliged to preserve for the next” (IWGIA 1995:24). They also repudiated the application of patents and other intellectual property rights to life forms, and maintained “the possibility of denying access to indigenous resources as well as protesting against patents or other exclusive rights over what is essentially indigenous” (24).

All this is forcing a reorientation of the premise that what is in nature is for free, but what is in the laboratory is for profit. At the 1992 Earth Summit, 170 countries signed the Convention on Biological Diversity, asserting that the products of genetic and chemical resources are no longer the “common heritage of humankind,” but of the countries and communities where they are found. Nevertheless the issue of Intellectual Property Rights (IPS) is not generally accepted among the Indians. For instance, COICA has expressed its distrust of IPS because they see it as one more subterfuge for exploitation: “The system of intellectual property for indigenous peoples means the legitimation of undue appropriation of the knowledge and resources of our peoples for commercial ends” (IWGIA 1995:24). One reason for this distrust is the fact that property rights are conceptualized in terms of individual ownership, which contradicts indigenous ethics. Another reason is the very impropriety of subjecting collective knowledge and resources to the logic of Western capitalism. Far from refusing to share knowledge and resources with the rest of humanity, indigenous peoples simply object to their privatization and commodification. COICA emphasizes the capacity of indigenous peoples to manage their own traditional knowledge and declares that they are “open to offer it to humanity whenever their fundamental rights to define and control their knowledge are protected by the international community” (17).

The issue of knowledge for profit has divided anthropologists. Some defend the policy of fair compensation for the transmission of indigenous information; others feel that translating native knowledge into copyright dividends is to debase it and to subject



indigenous peoples to the rapacious logic of the market: “It is not by advocating an increased commoditization of knowledge that we will alleviate the plight of tribal minorities, but rather by fighting for a world where ownership would not be the sole measure of one’s ability to control one’s destiny” (P. Descola, quoted in Strathern et al. 1998:119). Against the Western fixation with ownership, “we might do better to formulate our concerns in terms of accountability and responsibility rather than ownership” (P. Harvey, quoted in Strathern et al. 1998:125). Meanwhile, as we wait for such enlightenment to descend upon the Western world, native peoples of the earth are continuously despoiled.

Turning now to the cultural content of knowledge, the indivisible aspect of a cultural legacy cannot be overemphasized. What COICA members designated under the notion of territoriality encompasses a whole universe of beliefs, social relations, and practical knowledge that makes up a given society. This point is repeatedly underscored by native peoples the world over. In the words of Stella Tamang from Nepal: “In reality we are talking about the whole way in which we conceive the world, our cultures, our lands, our spirituality as indigenous peoples. All of this is joined together. We must examine this total panorama” (IWGIA 1995:14). Hence Indian knowledge cannot be mechanically transferred from one type of society to another as if by mental transfusion. What business-minded people who tout their admiration for the sustainability of indigenous ways of using natural resources fail to appreciate is that this wisdom involves much more than simply identifying, describing, and utilizing fauna and flora. Such knowledge is moored to worldviews and lifestyles so different from the Western mode as to be either undetectable or utterly baffling, and in any case, practically incompatible with the matter-of-fact, predatory vocation of industrial activities. What often passes for quaint customs—food taboos, supernatural constraints on activities like hunting and fishing, metaphysically motivated divisions of labor, elaborate rituals before economic activities—may turn out to be the cornerstone of indigenous knowledge. Pragmatic as it is by definition, business cannot be troubled with the cultural intricacies of native life, which makes one wonder if behind the frequent displays of respect for indigenous wisdom there is anything besides paying lip service to political correctness.

## Genes

Through the genescapes of Amazonia the commodification of the Indian reaches its climax. One practice, in itself ethically questionable if done unilaterally, is to collect indigenous blood in the name of science, as in the case of the Human Genome and Human Genome Diversity projects. Another practice, not disconnected from the former, is the seizure of peoples’ genes for commercial ends. Both of these sides of the gene rush depend on gene-rich parts of the world (Kloppenburger Jr. 1991:14), such as Amazonia. This is quite explicitly put to justify the Human Genome Diversity Project, which was created “after a plea published in *Genomics* calling attention to the vanishing of indigenous peoples and their absorption by predominant genetic clusters” (ISA 1996:22).

It is quite clear that these two fronts of genetic prospecting are not separate endeavors: “Whether collected by government, university, or corporate scientists, the genetic and cultural information extracted from the South is ultimately intended to be applied to some useful purpose” (Kloppenburger Jr. 1991:16). A 1993 RAFI (Rural Advancement Foundation International) report warned of the growing tendency to patent forms of life. It mentioned the

intention of the Human Genome Diversity Project to process samples of human tissue collected from more than 700 human populations, including native peoples around the world. For instance, the U.S. government claimed universal patent rights over the cell line of a twenty-six-year-old Guaymi woman from Panama (RAFI 1995:11), but withdrew its claim after encountering mounting pressure from various organizations, including GATT (General Agreement on Trade and Tariffs); nevertheless it continued to hold the Guaymi cell line as its exclusive property. The genetic material extracted from the Guaymi woman, who had been hospitalized in Panama City with advanced leukemia, was “immortalized” in liquid nitrogen in the labs of the American Type Culture Collection, the largest bank of patented biogenetic products in the world, with headquarters in Rockville, Maryland (Arias and López 1995:19).

The Guaymi were predictably appalled: “Never did I imagine,” declared Isidro Acosta, president of the Guaymi General Congress, “that people could patent plants and animals. . . . To extract human DNA and patent its products violates the integrity of life itself, and our deepest sense of morality” (RAFI 1995:11). Supported by various entities, among them the World Council of Indigenous Peoples, the Guaymi General Congress launched a campaign for the repatriation of the cell line, with the result that the U.S. government withdrew its patent request (Braga 1997).

Cases such as that of the Guaymi aroused comments like those made by Alejandro Argumedo of the Indigenous Peoples Biodiversity Network, based in Canada: “The renouncement is cause for celebration on the part of indigenous peoples. At the same time, it provides us all with the opportunity to reflect upon the immorality of industrial countries that allow the commodification of human cells, genes, and other tissues” (IWGIA 1996:58).

Biogenetic technology is worthy of a “brave new world” fantasy. The cell lines are called immortal because they can be kept alive indefinitely under artificial conditions of controlled temperature, nutrition, and sterilization. Thus preserved, human cell lines are an inexhaustible source of the donor’s DNA. Bioengineers “have inserted alien genes, including from humans, into the chromosomes of various animals such as hogs, sheep, goats and chickens. In the future, genetic engineering will allow scientists to combine genetic material from human beings and animals to produce animal-human hybrids” (RAFI 1995:9). The future is here, if not yet with humanoid hybrids, then with the transgenic food we now eat, even if unwillingly and most often unknowingly.

Inflamed over genetic expropriation, John Liddle, director of the Australian Aborigines Central Congress, fumed: “In the last two hundred years, non-aboriginal people have taken our land, our language, our culture, our health—even our children. Now they also want to take away from us the genetic material that makes us Aborigines” (RAFI 1995:12). The violence of the expropriation is so great that it has driven people like Liddle to fall into the genetic determinism trap set up by the West. Once native peoples succumb to the snare of biological naturalization—“genetic material that makes us Aborigines”—they indeed run the risk of meeting doom, as history attests in both old and new cases of genocide.

The issue of informed consent, complex as it is, has brought to light another set of considerations. The difficulties of explaining complicated genetic notions to laypeople, often in a language unknown to the researcher, are frequently evoked as an alibi for dispensing with informative accounts of fieldwork. In dodging the issue, researchers may simply lie about their research projects. One such case involved the Karitiana and Suruí Indians in the Brazilian state of Rondônia, who denounced researchers from Ohio State University (Braga 1997) for having taken blood samples from the villagers when they were only authorized to

make a documentary film. Furthermore the researchers made the ludicrous claim to the Indians that they were interested in searching for a mythological entity, the elusive *mapinguari* sloth. The Indians took the case to a commission of the National Congress to investigate biopiracy. What happened to the blood after it was taken away is not known. The same indigenous groups from the state of Rondônia were also the object of genetic research (unauthorized by the Brazilian government) by Francis Black, from the Department of Epidemiology and Public Health, Yale University. Black and his team presented their findings from the Karitiana, the Suruí, and the Mexican Campeche. Candidly and as a matter of course, they deposited “five cell lines from unrelated individuals . . . in the Human Genetic Mutant Cell Repository at the Coriell Institute for Medical Research (Camden, New Jersey) [after which the cell lines became] publicly available” (Kidd et al. 1991:778). In April 1996, Coriell Cell Repository was advertising the sale of Karitiana and Suruí DNA samples at US\$500 a sample (Santos and Coimbra Jr. 1996:7; Braga 1997). Affronted by these attitudes, the Karitiana are now little disposed to cooperate with researchers. Instead they submit them to virtually impossible demands, such as requiring that they finance the paving of 100 kilometers of road surface for a graduate student whose 2003 project was to study the effects of biopiracy on Karitiana life!

The Yanomami present another case where disregard for informed consent resulted in delayed, but mighty, consequences. Stunned by the uproar triggered by the publication in 2000 of *Darkness in El Dorado* (Tierney 2000), a journalist’s book that offers more scandal than seriousness, the U.S. anthropological community engaged in one of the longest and ugliest confrontations in recent times. The book’s author, Patrick Tierney, all but openly accused the late geneticist James Neel and his research team of having caused a measles epidemic among the Yanomami during the course of a vaccination campaign conducted in the 1960s and 1970s as part of a scientific experiment funded by the U.S. Atomic Energy Commission. A subsequent analysis of Tierney’s evidence by a group of Brazilian medical doctors set the record straight by affirming that vaccines do not produce epidemics, even though they may cause lethal side effects in individuals (Lobo et al. 2001:18). There were, however, enough breaches of research ethics left in Tierney’s denunciations to render the Neel episode the focus of a long and acrimonious dispute (Albert 2001) One of the manifestations of unethical behavior was the false explanation given to the Yanomami that the purpose of taking blood samples was to cure their illnesses. Bribing the Indians with piles of trade goods, Neel’s team extracted blood samples that are now stored in five U.S. research institutions (CCPY 2002b:2).

In the wake of accusations and counteraccusations of unethical behavior on the part of scientists, a virtual wall was erected and fiercely disputed in what came to be known as the science versus antiscience debate. Biomedical researchers defended Neel’s actions in the name of pure science, while culturally oriented anthropologists reacted critically to the notion that ends justify any means. The American Anthropological Association faced the problem by creating a fact-finding task force for the purpose of reaching a conclusion about what had happened thirty-five years earlier. As expected, the results were inconclusive and the scandal dwindled into semioblivion. But the Yanomami were startled by the news that the blood of their relatives, many of whom had already died, was circulating in foreign lands without their consent and jeopardizing the postmortem peace of its owners. The Yanomami want the repatriation of the blood samples and are considering the possibility of demanding compensation for damages—in part because they were misinformed about the real purpose of

the blood-taking (CCPY 2002a; 2002b; 2003).

It is often argued that it is difficult to explain the purpose of, say, genetic research to a “monolingual” community, or worse, to people who couldn’t possibly understand the complexities of Western scientific thinking, even when it is explained in their own language; this argument camouflages either the linguistic incompetence of the researchers or their indifference to what the research subjects may think. The recent experience of the Yanomami who have been successfully admitted to the official body of microscope technicians after relatively short periods of training belies such patronizing arguments. The Yanomami know enough about the Western ethology of malaria to do their technical job splendidly. There is nothing that cannot be explained satisfactorily to laypeople when researchers have an honest attitude and professional aptitude.

The controversy generated by *Darkness in El Dorado* provides a good opportunity to rekindle long overdue discussion about such issues as informed consent in the context of field research, the neutrality of “objective” science, and the social responsibility of the field-worker. There is, of course, a significant difference between biomedical or genetic investigation and ethnographic inquiry: the former involves doing research *on* human beings, the latter *with* human beings. Collecting samples of people’s physical substances can be more intrusive of lives and beliefs than is collecting myths or kinship charts. The ethnographic record of the Yanomami, built on research with, not on, them, points to the vital importance of blood and other substances to the destiny of both their living and their dead; this has special significance if these substances fall into enemy hands (Albert 1985). This explains why the Yanomami were so upset when they heard that their blood was being handled by total strangers, and was completely out of their control.

The Yanomami case also points up the difference between work done *in situ* and work done *ex situ*, where the researcher analyzes the data collected in the field and prepares it for publication. Neel conducted genetic research that involved collecting bodily materials, whereas his assistant, anthropologist Napoleon Chagnon, gathered data on genealogies, migrations, marriage patterns, and such. Neel worked on research subjects, Chagnon with them; nevertheless, each in his own way caused problems for the Yanomami. In the case of the geneticist working *in situ*, the worst (but not sole) problem occurred because of the collection and removal of the Indians’ bodily substances. In the case of the anthropologist working *ex situ*, the worst (but again, not sole) problem was the depiction of the Yanomami in highly derogatory terms

This example brings up yet another difference between biomedical and ethnographic research. If, for instance, the ethnographer incurs a breach of etiquette by demanding to know secret personal names, the Indians may simply refuse to cooperate but will not necessarily curtail the research. But if the geneticist asks for blood, saliva, or hair samples, the Indian’s refusal may put an end to the research project. Thus the Indians’ control over genetic research is limited to the field phase.

The Yanomami are far more concerned with the proper treatment of the physical substances of their dead than they are with what is written about the blood that was collected. The impact of the research upon indigenous values is essentially the same whether the researcher deals with the blood itself or with cell lines produced in a lab. However the issue of possible royalties generated from pharmaceutical products derived from their blood raises questions that are not directly related to the physical or cultural integrity of the research subjects, but concern, rather, the Indians’ economic interface with the outside world.

Conversely the end product of ethnographic data-gathering directly affects not so much the core of indigenous values as the Indians' relationship with the majority society. The products of ethnographic results—descriptions, analyses, representations, hypotheses, or theories—are constructed outside the context in which empirical data were collected. Once published, ethnographic writings take on a life of their own, out of the subjects' control and often out of the researcher's control as well (as in cases of misuse or misrepresentation). In sum, both biomedical and ethnographic research—for different reasons—must always be considered from an ethical perspective.

Nevertheless, the issue of informed consent is not easy to resolve and raises more questions than it answers. How informed must consent be in order to ensure that what is done in the field is not simply subtle coercion or friendly persuasion? How is informed consent constructed in the field: Is it a vacuous protocol, or is it the object of prolonged negotiations? Is it established the day the researcher, who knows nothing of the local language, arrives in a village, or months later, when researcher and hosts can communicate, albeit minimally? Can consent be given verbally or must there be a written and signed document? Is a written form of consent a sure warranty against abuses? Who regulates the process: Is it the host community, the host country, the researcher's professional association, or the researcher's government? Taken to its logical extreme, would informed consent inhibit and in due course even obliterate research? What would the absence of research mean for the people studied? At this point one can only say that if things are bad *with* informed consent, they are surely worse *without* it.

## Images

Intimately tied to the issues of knowledge and genetic exploitation, but separate for analytical purposes, is the problem of the commodification of indigenous art forms and images when it is conveyed in media such as photographs, paintings, and films. Serving a different market from pharmaceutical companies and the like, these indigenous objects of desire appeal to a variety of Western interests ranging from New Age believers, to green business, to art dealers, interior decorators, recording companies, and museums. Though image commodification produces profit margins much more modest than genetic or pharmaceutical research, it can nevertheless generate a significant amount of money for the Western world. One must, however, make a distinction between material objects that the Indians themselves intend for private ownership, and other artistic manifestations, such as music, that indigenous peoples do not regard as commodities. Although due payment is appropriate in the case of crafts produced for sale, the privatization of photographs, film footage, oral literature, music, and so on, is totally alien to most indigenous traditions. Let us see first the problems involved in the commercialization of material objects and then turn to other modalities of image exploitation.

Every year, on April 19 (National Indian Day), Artíndia, the commercial outlet of FUNAI, organizes a special event known as *moitará* (a Kamayurá word for trade as it is practiced in the Upper Xingu region) (Galvão 1979:83 n20) The event includes talks, exhibitions, and the sale of indigenous crafts of superior quality. A clientele familiar with the choice pieces of the *moitará* gathers outside the FUNAI building in Brasília well before opening time. In less than an hour, the place is cleared of the best specimens of pots, stools, weapons, masks, featherwork, basketry, and the like. The majority of the early arrivers,

usually foreigners, are sales agents for expensive shops in São Paulo, New York, Paris, or London. The price they pay at Artíndia more than compensates for the hours of waiting at FUNAI's door. For example, a Yanomami basket that sells in the field for less than US\$2 is worth twice as much at Artíndia and can be seen advertised in interior decorating magazines for nearly US\$100. A large Yawalapiti zoomorphic stool sells at Artíndia for US\$50 at the most, whereas in posh stores in Paris it can be bought for US\$700. No Yanomami I know, and very likely no Yawalapiti, has ever been reimbursed beyond the price of the original transaction.

To take another example: A São Paulo store named *Arte Nativa Aplicada* (Applied Native Art) is known for its attractive fabrics. They are painted with indigenous motifs, mostly geometric designs. Tablecloths, napkins, cushion covers, and garments usually have the name of a Brazilian indigenous group written on a corner by way of a simulacrum of a designer signature. The managers insist that their designers research indigenous styles before printing their cloths. As to paying the original artists, they argue that the publicity the Indians get is already a form of payment. In fact, the Tukano, Kadiweu, and other ethnonyms bear little relation to the designs, as indicated by the telltale Xingu "signature." In fact, Xingu is nobody's name, but it is the name of a river and a reservation. Pressed about the ethnographic accuracy of the designs, the managers confess that any design will do and that the native names are actually chosen at random. For their purposes it matters little whether the "Tukano" crisscross design is actually made in the Xingu or anywhere else. In effect, these merchants are applying the bioengineering rationale to the field of arts and crafts by behaving according to the *ex situ* argument: you mix styles, print them on a nonindigenous medium, and the product is no longer indigenous property. As long as the "ethnic" style remains in fashion, it is important to vendors to maintain the appearance of cultural authenticity; but it is equally desirable to keep real Indians at a distance, particularly from the profits made from their aesthetic ideas. One thus benefits from these images, transfigured through metonymy into pieces of craftsmanship, without having to deal with real people and their real demands.

In the case of cultural manifestations such as music, Western logic seems to follow the same course as in the gene market. In entering the commercial domain, indigenous music becomes commodified. "When music is owned by indigenous people, it is seen as 'public domain' If it becomes popular in its 'mainstream' form, though, it suddenly becomes 'individual property.'" (Seeger 1991:38). The unequal treatment given to indigenous and Western musicians is well illustrated in Seeger's following remark: "I wonder at the freedom with which Brazilian television has used [Suyá's] recordings as background music—a policy that would be rigorously policed if the music were performed by, say, the Beatles, but which cannot be policed when it is 'only' performed by the best living Suyá musicians" (37).

Here, too, the *ex situ* rationalization operates as a shield against royalties that traditional musicians may demand. Again, indigenous peoples object not to the use of cultural expressions by non-Indians, but to their commodification and the privatization of the proceeds. Hybrid pieces of music are produced with high technology: computerized samples of traditional and nontraditional pieces are mixed in a process of recontextualization that pulverizes authorship; the result is a work that then enters the market as a potentially valuable commodity (P. Harvey, quoted in Strathern et al. 1998:123). Like cell lines, sounds and images can now be reproduced and transformed *ad infinitum*, thereby attaining technological eternity.

As to pictures—be they in films, paintings, or photographs—the *ex situ* argument,

although applicable, follows a different trajectory and raises yet another set of questions about royalties. For example, indigenous pictures, taken by unidentified photographers, are used matter-of-factly in advertising: Davi Yanomami's face stamped along a row of other "united colors" on a Benneton shop window, an enlarged running Krahó youth on the wall of a Danish shoe store, illustrating the correct way to use the human foot; or healthy and handsome Kayapó men helping Anita Roddick sell her Body Shop cosmetics. Pictures of Indians are also used in other contexts, such as the Brazilian interior decorating magazine in which three close-ups of Yanomami faces, taken by photographer Claudia Andujar, are shown simply as decorative pieces on somebody's bedroom wall: neither the photographer (C. Andujar, pers. comm.) nor the Indians were ever consulted about the use of these images.

The use of authored photographs of Indians for commercial or other purposes raises a double issue: one involves the photographers' copyrights; the other, the rights of the indigenous subjects to cede or deny the use of their images. It is common practice to request permission—though not always to get it for free—from photographers to use their products; very seldom are Indians consulted about having their likenesses used for any purpose, whether commercial, artistic, academic, or philanthropic. Legislation on this matter is either inexistent or incipient, perhaps with good reason: when are photographs used for defense or exploitation? Is it possible to legislate about situations with unpredictable outcomes? What would happen to the legal status of investigative journalism if a given picture, taken to record some injustice, for instance, were to be disseminated beyond its author's control and ended up serving spurious purposes? Too self-conscious precautions might preclude documentary materials that are often the proof needed to defend indigenous rights.

Commercial film-making has consistently brought discontent to indigenous participants. Perhaps the most notorious case concerned director Werner Herzog's tragic dealings with the Aguaruna in the Peruvian Amazon during the shooting of *Fitzcarraldo*. The German movie-maker was accused of fencing out all the manual laborers, including 500 non-Indians, and protecting his professional staff in an exclusive haven within the filming area. In his quest for realism he had the Indians haul a real ship, weighing many tons, up a steep hill, causing the death of one of the men, who was crushed when the ship slipped. In 1979 Herzog had to interrupt the shooting because the Aguaruna set fire to his camp to protest maltreatment, forced labor, and ridiculously low salaries. Herzog's behavior mobilized indigenous organizations and public opinion, but there is no information to suggest that reparative indemnities were made to the Indians. On the contrary, Herzog claimed he was being persecuted, the victim of a defamation campaign (*Jornal do Brasil* 1982:B-1).

In late 1999, the all-powerful Globo television network in Brazil began negotiations with FUNAI to hire Indians from various parts of Amazonia to appear in a "documentary" feature on shamanism for the weekly program *Globo Reporter*. The network requested that logistics and provisions—boats, gasoline, lodging, and so on—be taken care of by both the Indian agency and the Indians themselves. As for paying the Indians, the producer, Camilo Tavares (1999), wrote FUNAI that "As contribution (*gratificação*), we are making arrangements directly with the leaders, given the limits of our budget for a program of journalism such as *Globo Reporter*."

Three aspects of this letter are worth pondering. The first is the producer's attempt to bypass FUNAI's fair payment requirements by negotiating directly with the Indians; apparently he expected that they would be satisfied with a bunch of trinkets, in keeping with the popular image of "Indian want whistle" (a caricature of the Indian found in an old carnival

song). The Globo crew decided to abandon the plan to film in the Upper Rio Negro region when the local Indians fixed their payment around US\$8,000. After moving the production elsewhere, the producer offered a mere US\$450 per shamanic performance.

The second aspect has to do with the use of the Portuguese term *gratificação*. Akin to a donation, it is never used in the context of payment for merchandise or services. In public contexts, interviewees do not receive a donation, contribution, or tip [very funny, but a payment, a *cachet*. The Globo producer thus tried to hide his contempt for the Indians behind a frugal budget.

The third aspect is the same double standard, but seen from another angle. It is the pretense that the performance of a shamanic session put on for the benefit of a television program is not staged, but is the same as a real shamanic session. Clearly the negotiations between producer and Indian leaders do not involve the crew's "participant observation," for which they have neither time nor know-how, but are a short-circuiting of real life, with the Indians acting as shamans in staged virtuality. To then pretend it is journalism verges on fraud. Could an autobiographical movie about and starring Frank Sinatra be classified as a journalistic documentation of his real life? Would anyone dare suggest that Sinatra be given a donation or a tip for his work in such a film? In short, the letter by the Globo producer says worlds about the disdain with which indigenous images and cultural products are treated in this ravenous New World.

### **Agents, Not Commodities**

We have seen some reactions from indigenous peoples to all this tampering with cultures and resources. The Kuna Indians of Panama provide a good New World example: they have one of the most effective systems of control over the entry and activities of foreign scientists in indigenous territory. The Project for the Study of the Management of Wildlife Areas of Kuna Yala (PEMASKY), created in 1983 to set up a forestry program, gradually devised rules and regulations about non-Kuna scientific work in the area. The Kuna require not only that researchers be briefed but also that they provide their hosts with copies of all reports, photographs, and specimens of fauna and flora. Five years after the project was created, these procedures became formalized for researchers in the manual "Research Program: Scientific Monitoring and Cooperation," which explicitly limits the geographic areas open and closed to research, encourages the transfer of results to the Kuna themselves, and urges scientists to take Kuna assistants on their expeditions. Thus, while keeping control over scientists in their territory, the Kuna do not deter scientific research (Chapin 1991:17).

It is an unfortunate consequence of genetic and resource plunder that indigenous peoples are being put on the defensive and therefore are holding researchers at arm's length (as in the Karitiana case mentioned earlier). In the Amazon, indigenous leaders are reacting more bluntly toward scientists and other professionals than are the Kuna. The Ecuadorian Shuar reject research projects that bring no clear benefit to them. Restrictions to non-Indian research activities in the Brazilian Amazon are beginning to appear. To put all research in jeopardy is to throw the honest baby out with the unscrupulous bath water. In the end, "we will all lose out" (Cunningham 1991:5). Seeger (1991) also expressed his concern "about the perception that 'someone is getting rich on our music' and the effect it has had on music research" (37).



On the brighter side, we saw research being politically redeemed when various indigenous groups became interested in participating in projects to evaluate the pressures they have felt from the world market economy. Indian researchers from Bolivia, Ecuador, Peru, Colombia, and Brazil jointly participated in research teams with national and foreign colleagues in a series of projects sponsored by COICA and Oxfam America. The projects were intended to take stock of the impact of development schemes on traditional gift economies after those economies had been bombarded with development projects imposed upon them by both national and international interests. Caught between the logic of the gift and the logic of the commodity, “the members of modern indigenous communities often get confused as to which responsibility they should attend to, and how to take care of their interests and personal security in the long run: to either accumulate wealth or strengthen the social bonds of mutual duties and support” (Smith 1996a:7). Weighing successes and failures, the researchers raised crucial questions that speak directly to the issue of productivity of indigenous lands. The pressure to produce or else lose land has been so great that many native peoples have been driven into destructive economic activities, such as cattle raising in the rain forest. The COICA research teams ask,

“Why have most projects failed? . . . Why has there been no capital accumulation in indigenous communities? Why has rubber tapping brought about a stable economy while coffee has not? How have the projects affected subsistence activities? . . . What impact have private property regimes had in resource distribution and management? . . . Is generosity still praised in local economies? Does it have any value in a monetary and market context? What happens to the traditional open access to resources when boundaries are set around properties and certain resources obtain market value? . . . What are the cultural, social, financial, and physical-biological factors that must be taken into account in future economic strategies of a developing community?”

Smith (1996b:40–41)

The newly acquired knowledge that comes from the work of these research teams stimulates the political vigor and sophistication with which regional, national, and international indigenous organizations fight to transform the Indians from commodities for the benefit of non-Indians into the agents of their own interests. To do our part as researchers in this transformation it is not enough for us simply to improve our field ethics: we must be open to having the accepted routines of our “normal science” challenged by indigenous peoples, who, as they participate in the research process and even become researchers in their own right, will no long be simply the objects of our inquiry.

## REFERENCES

- Albert, B. 1985. Temps du sang, temps des cendres: Représentation de la maladie, système rituel et espace politique chez les Yanomami du Sud-est (Amazonie brésilienne). PhD diss., University of Paris X.
- Albert, B., ed. 2001. *Research and Ethics: The Yanomami Case. Brazilian Contributions to the Darkness in El Dorado Controversy*. Brasília: Comissão Pró-Yanomami, Document No 2.
- Ávila, T. A. M. de. 2001. Biopirataria e os Wapichana: Análise antropológica do patenteamento de conhecimentos indígenas. Undergraduate thesis, Departamento de Antropologia, Universidade de Brasília.
- Arias, M. and A. López. 1995 La propiedad inmemorial y la propiedad intelectual de los pueblos indígenas. *Asuntos Indígenas*, Grupo Internacional de Trabajo sobre Asuntos Indígenas 4:19–20.
- Basso, K. 1979. *Portraits of “the Whiteman”: Linguistic Play and Cultural Symbols Among the Western Apache* Cambridge: Cambridge University Press.
- Braga, P. H. 1997. A patente que veio do índio. *Folha de São Paulo*, June 1, section 5:15.
- Buarque de Holanda, S. 1986. *O Extremo Oeste*. São Paulo: Brasiliense.
- CCPY [Comissão Pro-Yanomami] 2002a. *Boletim* 25 (available at [http://www.proyanomami.org.br/boletimMail/yanoBoletim/htm/Bulletin\\_25htm](http://www.proyanomami.org.br/boletimMail/yanoBoletim/htm/Bulletin_25htm)) (accessed December 27 2004).
- CCPY [Comissão Pro-Yanomami] 2002b. *Boletim* 26 (available at [http://www.proyanomami.org.br/boletimMail/yanoBoletim/htm/Bulletin\\_26htm](http://www.proyanomami.org.br/boletimMail/yanoBoletim/htm/Bulletin_26htm)) (accessed December 27 2004).
- CCPY [Comissão Pro-Yanomami] 2003 *Boletim* 27 (available at [http://www.proyanomami.org.br/boletimMail/yanoBoletim/htm/Bulletin\\_32htm](http://www.proyanomami.org.br/boletimMail/yanoBoletim/htm/Bulletin_32htm)) (accessed December 27 2004).
- Chapin, M. 1991. How the Kuna keep scientists in line. Special Issue: “Intellectual Property Rights: The Politics of Ownership” *Cultural Survival Quarterly* 15(3):17.
- Colchester, M. 1995. Algunos dilemas referentes a la reivindicación de los “derechos de propiedad de los pueblos indígenas.” *Asuntos Indígenas* (Grupo Internacional de Trabajo sobre Asuntos Indígenas) 4:5–7.
- Cunningham, A. B. 1991. Indigenous knowledge and biodiversity. Special Issue: “Intellectual Property Rights: The Politics of Ownership.” *Cultural Survival Quarterly* 15(3):4–8.
- Davis, S. 1977. *Victims of the Miracle: Development and the Indians in Brazil*. Cambridge: Cambridge University Press.
- Farage, N. 1991. *As Muralhas dos Sertões: Os povos indígenas no rio Branco e a colonização*. Rio de Janeiro: Paz e Terra.

- Folha de São Paulo*. 1995. A luta pelos genes do 3º Mundo. January 29, section 6:15.
- Folha de São Paulo*. 1996. EUA patenteiam vírus de índio e são acusados de ‘vampirismo’ June 16, section 5:13.
- Folha de São Paulo*. 1997a Biopirataria atinge floresta amazônica. June 1, section 1:1.
- Folha de São Paulo*. 1997b. Procuradoria no Amazonas vai investigar biopirataria. June 6, section 1:11.
- Folha de São Paulo* 1997c. Acre proíbe estrangeiros na floresta. July 4, section 1:12.
- Folha de São Paulo* 1997d Biopiratas agem livremente na Amazônia. July 13, section 1:18.
- Folha de São Paulo*. 1998. Biopirataria no país é caso de polícia, diz professor da PUC-SP. July 15, section 3:4.
- Galvão, E. 1979. *Encontro de Sociedades: Índios e brancos no Brasil*. Rio de Janeiro: Paz e Terra.
- ISA [Instituto Socioambiental]. 1996. *Povos Indígenas no Brasil, 1991/1995*. São Paulo: Instituto Socioambiental.
- IWGIA [International Workgroup for Indigenous Affairs]. 1995. *Asuntos Indígenas*, no. 4.
- IWGIA [International Workgroup for Indigenous Affairs]. 1996. *Asuntos Indígenas*, no. 5.
- Kidd, J. R., F. L. Black, K. M. Weiss, I. Balazs, and K. K. Kidd. 1991. Studies of three Amerindian populations using nuclear DNA polymorphisms. *Human Biology* 63(6):775–794.
- Kloppenburg Jr., J. 1991. No Hunting! Biodiversity, indigenous rights, and scientific poaching. Special Issue: “Intellectual Property Rights: The Politics of Ownership” *Cultural Survival Quarterly* 15(3):14–18.
- Latour, B. 1993. *We Have Never Been Modern*. Cambridge, Massachusetts: Harvard University Press.
- Lobo, M. S., K. M. P. Rodrigues, D. M. de Carvalho, and F. S. V. Martins. 2001. Report of the medical team of the Federal University of Rio de Janeiro on accusations contained in P. Tierney’s *Darkness in El Dorado*. In B. Albert, ed., *Research and Ethics: The Yanomami Case (Brazilian Contributions to the Darkness in El Dorado Controversy)*, pp. 15–42. Brasília: Comissão Pró-Yanomami, Document No. 2.
- McGou’an, J. 1991. Who is the inventor? Special Issue: “Intellectual Property Rights: The Politics of Ownership.” *Cultural Survival Quarterly* 15(3):20.
- Pinto, L. F. 1980. *Amazônia: No rastro do saque*. São Paulo: Hucitec.
- Posey, D. 1991. Effecting international change. Special Issue: “Intellectual Property Rights: The Politics of Ownership.” *Cultural Survival Quarterly* 15(3):29–35.
- Pratt, M. L. 1992. *Imperial Eyes: Travel Writing and Transculturation*. London: Routledge.
- RAFI [Rural Advancement Foundation International]. 1995. La patente de material genético humano. *Asuntos Indígenas* (Grupo Internacional de Trabajo sobre Asuntos Indígenas) 4:8–13.

- Ramos, A. R. 1984. Frontier expansion and Indian peoples in the Brazilian Amazon. In M. Schmink and C. H. Wood, eds., *Frontier Expansion in Amazonia*, pp. 83–104. Gainesville: University of Florida Press.
- Ramos, A. R. 1986. *Sociedades Indígenas*. São Paulo: Editora Ática.
- Ramos, A. R. 1991. Amazônia: A estratégia do desperdício. *Dados* 34(3):443–461.
- Ramos, A. R. 1994. The hyperreal Indian. *Critique of Anthropology* 14(2):153–171.
- Rivière, P. 1972. *The Forgotten Frontier: Ranchers of Northern Brazil*. New York: Holt, Rinehart and Winston.
- Rivière, P. 1995. *Absent-minded Imperialism: Britain and the Expansion of Empire in Nineteenth-Century Brazil*. London: Tauris Academic Studies.
- Sant'Anna, L. 1998. Brasil perde com biopirataria na selva. *O Estado de São Paulo*, August 9: A20.
- Santilli, J. 1996. A proteção aos direitos de propriedade intelectual das comunidades indígenas. In C. A. Ricardo, ed., *Povos Indígenas no Brasil, 1991/1995*, pp. 17–21. São Paulo: Instituto Socioambiental.
- Santos, R. V. and C. Coimbra Jr. 1996. Sangue, bioética e populações indígenas. *Parabólicas*, Instituto Socioambiental, 20(3):7.
- Seeger, A. 1991. Singing other peoples' songs. Special Issue: "Intellectual Property Rights: The Politics of Ownership." *Cultural Survival Quarterly* 15(3):36–39.
- Smith, R. C. 1996a. Prefacio. In R. C. Smith, ed., *Amazonia: Economía indígena y mercado: Los desafíos del desarrollo autónomo*, pp. 7–8. Quito, Ecuador: COICA/Oxfam America.
- Smith, R. C. 1996b. Introducción a los estudios de caso. In R. C. Smith, ed., *Amazonia: Economía indígena y mercado. Los desafíos del desarrollo autónomo*, pp. 39–45. Quito, Ecuador: COICA/Oxfam America.
- Strathern, M., M. C. da Cunha, P. Descola, C. A. Afonso, and P. Harvey. 1998. Exploitable knowledge belongs to the creators of it: A debate. *Social Anthropology* 6(1):109–126.
- Taussig, M. 1987. *Shamanism, Colonialism and the Wild Man: A Study in Terror and Healing*. Chicago: University of Chicago Press.
- Tavares, C. 1999. Letter to FUNAI, December 5.
- Viveiros de Castro, E. and L. M. M. de Andrade. 1988. Hidrelétricas do Xingu: O estado contra as sociedades indígenas. In L. A. O. Santos and L. M. M. de Andrade, eds., *As Hidrelétricas do Xingu e os Povos Indígenas*, pp. 7–23. São Paulo: Comissão Pró-Índio de São Paulo.
- Wapichana, C. A. 1999. Seminar panelist: Biodiversidade, Justiça e Ética *Revista do Centro de Estudos Jurídicos* 8:41–44 (Brasília).
- World Bank. 1981. *Economic Development and Tribal Peoples: Human Ecologic Considerations*. Washington, DC: World Bank, Office of Environmental Affairs—OEA/PAS.