MYTHOLOGY, SHAMANISM AND EPIDEMIC DISEASES: A VIEW FROM THE UPPER RIO NEGRO REGION

Dominique Buchillet

IRD French Institute of Research for Development

Abstract: According to the ethnographic literature, South Amerindian peoples conceive of diseases brought by contact with non-indigenous peoples as resulting primarily from human sorcery (by village members, foreign indigenous groups or non-indigenous peoples) or from the attack of malevolent spirits, demons or gods. This paper explores the variety of perceptions about smallpox, measles and malaria among various indigenous groups (Desana, Tukano, Tariano and Baniwa) of the upper Rio Negro region of the Brazilian Amazon. Drawing on data from historical narratives, myths and shamanic lore, it shows how the historical, socio-political and environmental contexts of emergence of these three infectious diseases, their clinical manifestations, their natural history and patterns of spatial and temporal diffusion, and their possible

resemblance to indigenous illnesses have contributed to the range of indigenous perceptions related to them.
Keywords: Epidemic diseases; historical narratives; shamanic lore; mythology - Upper Rio Negro region

Resumo: De acordo com a literatura etnográfica, povos sul ameríndios concebem doenças decorrentes de contato com povos não-indígenas basicamente como um resultado de feitiçaria humana (de membros da própria comunidade, outros grupos indígenas ou não-indígenas) ou de ataques de espíritos, demônios ou deuses malevolentes. Esse artigo investiga um conjunto de percepções sobre varíola, sarampo e malária de vários grupos indígenas (Desana, Tukano, Tariano e Baniwa) da região do alto rio Negro na Amazônia brasileira. Com base em narrativas históricas, mitos e saber xamânico, mostra-se como o contexto histórico, sociopolítico e enviromental de emergência dessas três doenças infecciosas, suas manifestações clínicas, sua história natural, seus padrões de difusão espacial e temporal bem como suas possíveis semelhanças a doenças indígenas têm influenciado sua interpretação.
Palavras-chave: doenças infecciosas; narrativas históricas; saberes xamânicos; mitologia - região do Alto Rio Negro

INTRODUCTION[1]

Epidemic diseases have exerted wide influence on human history throughout the ages. Some have wrought havoc on affected lands, defeated armies, disrupted cities, transformed state structures, accentuated political and social classes and/or exacerbated antagonisms. The great destruction they caused in Amerindian populations cleared the path for Western conquest, expansion and colonisation of the New World. Some of these diseases (smallpox, measles and influenza, in particular) are considered by scholars as major killers of indigenous peoples. Moreover, malaria, by its debilitating effects, makes the host more receptive to other diseases (Dobyns 1983:11-23). In this paper, I analyze the indigenous perceptions of smallpox, measles, and malaria which, according to historical records,

1. The data on which this paper is based were collected in the upper Rio Negro region during the years 1980-1981 and 1984-2004. My fieldwork in 1980-1981 was financed by a doctoral grant from the French Foreign Office, and in 1984-2004 by IRD (ex-ORSTOM, Research Institute for Development, France) and the Brazilian CNPq (National Council for Scientific and Technological Research) and carried out in various Brazilian universities and research institutes (Museu Paraense Emílio Goeldi, University of Brasília, University of São Paulo and Instituto Socioambiental). The author of this chapter is a member of the UMR_190 "Pathologies Virales Emergentes" (Aix Marseille Université, IRD French Institute of Research for Development, EHESP French School of Public Health, 13005, Marseille, France).

have had a deadly impact in the upper Rio Negro region, in the north-west of the Brazilian Amazon.[2]

According to ethnographic literature, South Amerindians conceive of epidemic diseases as resulting primarily from human sorcery (by village members, foreign indigenous groups or non-indigenous peoples) or from the attack of malevolent spirits, demons or ghosts. This article explores the variety of perceptions on epidemic diseases among various indigenous groups of the upper Rio Negro region. By drawing on data from historical narratives, myths and shamanic lore, it shows how the historical, socio-political and environmental contexts of emergence of these three infectious diseases, their clinical manifestations, their natural history and patterns of spatial and temporal diffusion and their possible resemblance to indigenous illnesses have contributed to the range of indigenous perceptions related to them. In this paper, I primarily use the data I have collected with various Desana shamans or *kumua*[3] (or 'blowers

2. This article draws from Buchillet (1995, in French) on Desana shamanic representations of epidemic diseases, but incorporates new data and adopts a comparative perspective.

3. Plural form of *kumu*. The Desana language has twelve consonants (/p t k b d g s h r w y '/) and six vowels ([a e i ɨ o u]). The consonants /p/, /t/, /k/, /b/, /d/, and /s/ are pronounced as in English; /g/ in ga, ge, go or gu is pronounced as in the English 'gas', 'get' or 'guest', 'gossip' and 'guttural' but as ng [ŋ] when accompanied by a nasal vowel (as in the English 'tongue', see below). The alveolar flap /r/ may be pronounced as [ɾ] or [l] according to the various dialects. The consonant /w/ is pronounced [v] when followed by the vowels /e/ or /i/ as in English the words 'veil' and 'vigilance'. The consonant

of spells'), with whom I have carried out the main part of my fieldwork. I also refer to other groups (the Tukano[4] of the same linguistic family and the Arawak Tariano and Baniwa), using my own data[5] and that drawn from the ethnographic literature.

/y/ is pronounced as [j] or [ia] as in 'IATA'. The glottal fricative /h/ and the glottal stop indicated by an apostrophe /'/ occur intervocalically, as in *yoho* 'diarrhea' and *wi'í* 'house', respectively. The vowels which precede a voiceless consonant (p, t, k, s, h) have an aspired pronunciation as in *dipari* 'headwater' or *api* 'other' which are respectively pronounced [dihpari] and [ahpi]. Nasalization is indicated with a tilde (˜) above the vowel(s) affected. It affects the entire morpheme. The consonants /b/, /d/, /g/ and the approximant /y/ are affected by the nasalization: /b/ is pronounced [m], /d/ is pronounced [n], /y/ is pronounced [ɲ] (as in the Spanish '*mañana*') and /g/ is pronounced [ŋ] (as in the English 'tongue') when they occur before or after a nasal vowel. There is also the acute accent (´) which indicates the tonic ascendant melody (see, for example, *diá* 'river'). The orthography of Desana is currently under discussion with the Indians. On Desana language, see Kaye (1970), Miller (1999) and Rocha (2012).

4. Other East Tukano groups who live in the upper Rio Negro region and in the Colombian Vaupés include Tuyuka, Wanano/Kotiria, Karapanã, Bará, Barasana, Arapaso and Miritítapuyo.

5. I carried out the most part of my fieldwork on shamanism and traditional medicine with Desana *kumua* of various sibs living along the Tiquié, Umari, Cucura, and Urucu Rivers. In 1991, I had the opportunity to work briefly with a Tukano *kumu* of the Tiquié and from 1999 to 2001 with two Tariano *kumua* of the sib *Kabana-idakena-yanapere* in Iauareté. I would like to express my profound respect and admiration for the great knowledge of my informants as well as my gratitude for their patience in handing on their knowledge to me.

Desana Indians (or *Ɨmɨko masã* 'people of the Universe') are an East Tukano group who reside in the upper Rio Negro region (Brazil) and in the Colombian Vaupés[6] with peoples of the same and different linguistic families (Arawak and Nadahup/Makú). Numbering approximately 1,460 individuals in Brazil, they live along the Vaupés River, an affluent of the upper Rio Negro, its tributaries the Tiquié and the Papuri Rivers, and also along some of their navigable streams (Umari, Cucura and Castanha of the Tiquié and Urucu of the Papuri). East Tukano peoples are subdivided into exogamous units with patrilineal affiliation, differentiated by language, historical occupation of a specific territory, and a specialization in material culture. Desana peoples are related to the other groups of the region through a complex system of matrimonial alliances and/or economic and ceremonial relations. Their subsistence is based on shifting cultivation of bitter manioc (*Manihot esculenta* Cranz) combined with fishing, hunting, and gathering (of fruits and insects).

1. THE EPIDEMIOLOGY OF CONTACT IN THE UPPER RIO NEGRO REGION

The Indians of the upper Rio Negro region probably had their first contacts with the Portuguese during the 1730s when the government of the former State of Maranhão and Grão Pará sent slaving expeditions (*tropas de resgate*) into the region to secure an Indian labour force.[7] It is possible, however, that the Rio Negro Indians had already been in

6. See the works of Reichel-Dolmatoff (1971; 1976; 1978; 1979a; 1979b; and 1989, etc.) on shamanism, cosmology, ritual, mythology, etc., among the Desana Indians of the Colombian Vaupés.

7. On the history of contact in the upper Rio Negro region see, for example, Sweet (1974); and Wright (1981).

indirect contact with Western goods and diseases through trade exchanges with other indigenous groups who were already in contact with the Portuguese, or through slave raids into their territory by Manao Indians of the middle Rio Negro on behalf of Dutch colonizers. In 1740, an epidemic of smallpox ravaged the upper course of the Rio Negro, killing numerous Indians (Rodrigues Ferreira 1885-1888). It probably reached remote parts of the region via contacts with infected Indians or through clothes and linens contaminated with pus or scabs.

From 1749 to 1763, recurring epidemics of smallpox and measles struck the upper Rio Negro region. The 1749 measles epidemic was so virulent that it was referred to as the '*sarampo grande*' [the great measles] (Rodrigues Ferreira 1885-1888). From 1763 onwards, Portuguese military expeditions began to relocate Indians into colonial settlements established along the middle course of the Rio Negro, forcing them to work in plantations and to collect wild products (*drogas do sertão*). Portuguese troops, travelers and scientists subsequently penetrated deep into the upper course of the river and its main tributaries. Their reports mentioned the devastating effects of recurring epidemics of smallpox and measles in indigenous communities and colonial centers, which led the Indians to abandon them. They also cited the Indians' fear of intermittent fevers that were plaguing the region. These fevers seemed to affect indigenous and non-indigenous peoples indifferently. Characterized as quartan, tertian, or pernicious,[8] they were said to appear at the beginning

8. It is impossible to affirm that these fevers refer exclusively to malaria. Various acute febrile diseases present similar clinical manifestations, at least initially. Moreover, it was only at the end of the 19th century that the etiology of malaria

of the overflow of the river and to vary in severity (see, for example, Sampaio 1826; Rodrigues Ferreira 1885-1888; and Chaves 1886).

Throughout the nineteenth century, upper Rio Negro Indians continued to provide forced labor for the building of colonial settlements, plantations, and the collection of forest products. Epidemics of smallpox, measles, and of intermittent fevers devastated large parts of the region, causing the Indians to flee the colonial settlements, and resulting in more Portuguese-ordered slave raids in order to replenish their population.

From 1872 to 1920, the rubber boom set up a new cycle in the labor exploitation and decimation of the Indians. In October 1888, a virulent smallpox epidemic struck Manaus, the capital of the Province of Amazonas, prompting the government to interrupt all communications with the mission settlements of the Rio Negro and leading the Indians to desert them for fear of the disease. A month later, a measles outbreak swept various indigenous communities and, along with an epidemic of fevers 'of a bad character', caused a great number of victims.

From 1915 onwards, Catholic Salesian missionaries began to settle mission centers along the middle and upper courses of the Rio Negro. Their Chronicles abound in references to epidemics of influenza,

was discovered. However, it is now known that *Plasmodium vivax* causes benign tertian malaria, *P. malariae*, quartan malaria, *P. ovale*, ovale tertian malaria, and *P. falciparum*, malignant tertian malaria, also called before 'subtertian', 'aestivo-autumnal', 'tropical', or 'pernicious' (Bruce-Chwatt 1980).

measles, whooping cough, and malaria that struck the region every year. In 1932, for example, a malaria outbreak killed 70 people of the village of Taracuá-Ponta (on the upper Rio Vaupés), leading the survivors to desert it (Brüzzi 1977). In March 1936, a measles epidemic caused the death of 11 children of the mission boarding schools in Iauareté and Taracuá before spreading to the adjacent communities and killing 26 people in less than one month (Blanco 1935-1936). From November 1942 to April 1943, an outbreak of malaria caused the death of 27 individuals in Iauareté and adjacent communities. During the 1960s, the SUCAM (Superintendence of Public Health Campaigns) carried out repeated campaigns to control malaria and considered the region to be free of it in 1970. From 1974 onwards, however, malaria has made a comeback in the region. This resurgence is associated with the construction of the North Perimetral Road, the invasion of the region by gold miners coming from malaria-endemic areas, the building or extension of airstrips, and the implementation of the Calha Norte Project, a military project of development and colonization. Since then, malaria has been an important factor of indigenous morbidity and mortality.

As it can be seen in this brief review, upper Rio Negro Indians have had extended experience with smallpox, measles, and intermittent fevers (malaria?), with smallpox having made its last appearance in the region in the early twentieth century.[9] Whereas the post-contact origin of smallpox and measles in the New World is well established, the pre- or post-contact origin of malaria is still a matter of debate.[10] In the

9. Smallpox was declared eradicated from the world in 1980.

10. See, for example, Bruce-Chwatt 1965; Dunn 1965; and Wood 1975.

following pages, I review the natural history of these infectious diseases, which, I argue, has contributed to the indigenous understanding of their emergence and spread.

2. NATURAL HISTORY OF SMALLPOX, MEASLES AND MALARIA

These three infectious diseases differ according to their patterns of transmission and propagation, and the modalities of perpetuation of their viruses or parasites. Smallpox is caused by an orthopoxvirus which is transmitted through infected droplets or via cloths and linens contaminated with pus or scabs (Hopkins 1983). Measles is caused by a paramyxovirus, which is also transmitted via infected droplets and respiratory secretions and, in addition, through ocular secretions. Face-to-face contact with an infected person and/or with infected clothes and linens (in the case of smallpox) is necessary for the transmission of the disease. Both diseases are very contagious and a single case may engender an epidemic. As they produce a lifelong immunity in their survivors, and there is no animal reservoir for their viruses, they depend on a certain number of persons to persist in an endemic form (200,000 to 300,000 people are necessary, for example, for the endemicity of measles) in a given area. Below this critical threshold, infection is extinct. The occurrence of an epidemic thus depends on the reintroduction of the virus and of the number of susceptible individuals in a given community or city (children born after the last outbreak, unexposed immigrants, etc.). Consequently, epidemics may explode every two years in big cities and four to five years in small communities (Black et al. 1974). It is obvious that the small size of indigenous communities and their geographic dispersion within the upper Rio Negro region did not allow the endemization of both

diseases, requiring their viruses to be re-imported through contact with infected persons and/or their goods.

The case of malaria is different. The disease may present itself in an acute or a chronic form. It is caused by a parasite of the genus *Plasmodium*, which is transmitted through the bite of the Anopheles mosquito. Inter-human contamination is impossible. Three of the four species of malarial parasites[11] are present in the Brazilian Amazon: *Plasmodium vivax*, *P. malariae* and *P. falciparum*. *P. vivax* and *P. falciparum* have a variable period of longevity (from two months to one year for *P. falciparum* and two to three years for *P. vivax*). Moreover, the host remains infectious from 6 to 21 days according to the parasite involved and the severity of the infestation (Gentilini 1993). In tropical America, the Anopheles mosquito *darlingi* is the main vector of malaria parasites. It breeds in a variety of habitats (excavations, canals, ground depressions, etc.) and in the vegetation of riverbanks (Ferreira 1981). These characteristics explain why malaria may persist endemically in small populations. Focal outbreaks may occur when favoured by unusual rainfalls and climatic conditions which increase the breeding sources of disease vectors, population mobility from and within malaria-endemic areas, ecological changes due to human activities (such as road building, agriculture and irrigation works), or the establishment of new settlements and development projects in malaria-endemic areas.

11. The four species of parasites responsible for malaria in humans are *P. vivax*, *P. malariae*, *P. ovale*, and *P. falciparum*. *P. ovale* is present in Africa.

3. INDIGENOUS REPRESENTATIONS OF INFECTIOUS DISEASES

Upper Rio Negro Indians have varied perceptions about the etiology of the infectious diseases that have plagued them since the early phases of interethnic contact. While they link the emergence of smallpox and measles with contact with non-indigenous peoples, they show some divergences regarding the origin of malaria in the region as it is shown below. They have various terms to refer to illness. Desana Indians, for example, distinguish between *pũrĩri*, *doreri* and *bẽhari*. *Ɨmiko pũrĩri* 'illnesses of the universe' (literally, 'pain of the universe') refers to those illnesses that 'just happen', which may appear at any time and affect everyone without any reason. *Doreri* (from *dore* 'to send', 'to give an order') refers to illnesses attributed to the aggression of nature spirits or other humans. Illnesses due to nature spirits (*wái yuki masã doreri*, literally 'illnesses of water and forest peoples') generally result from an error made by the sick person (dietary transgression, overhunting, etc.). Sorcery, e.g. an act intended to cause harm to a person or a community, is usually the consequence of envy, jealousy, revenge for conflicts, anger, disrespect of a knowledgeable man (a headman or a shaman, for example), etc. It can be brought about through the use of poisonous substances (*nima tiãri*), the projection of a magical weapon (dart, thorn, cotton, tiny stone, etc.) into the victim's body by a shaman-jaguar (*ye wẽhẽri*), or though the casting of evil spells by a *kumu (dohari*). *Kumu* and *ye* also have the capacity to cause an epidemic within a community (*birari*) (Buchillet 1990; 2004). Illnesses due to the aggression of nature spirits or humans are considered 'indigenous illnesses' (*dipari maharã doreri*, literally 'illnesses of the inhabitants of the river headwaters').

Illnesses (individual cases or epidemic outbreaks) attributed today to evil spells (e.g. *dohari* and *birari*) have mythical origins; they are believed to result from the transgression of a social or cultural rule by primordial ancestors, from their out-of-context experimentation with spells to check their therapeutic or evil power or, additionally, from their revenge against enemies. Primordial ancestors were not themselves victims of the afflictions they helped to create. Instead, these illnesses were inherited by humanity. In fact, every illness has one or more specific myths which relate its creation in mythical times. This knowledge is traditionally secret, being part of the training of the *kumu*. Ideally, each sib has specific knowledge in matters of therapeutic and evil spells, including the mythic origin(s) of illnesses which are attributed today to the casting of evil spells (Buchillet 1990; 2004).

Finally, *bẽhari* ('transitory' and 'contagious') refers to those illnesses that Indians associate with contact with non-indigenous peoples and goods and which differ from indigenous illnesses by their virulence, contagious nature, and sporadic character. According to Desana, Tukano, Tariano and Baniwa peoples, smallpox (*bisika*, from the Portuguese *bexiga*, in Desana and Tukano; *ibichikan* in Baniwa), measles (*sarapo* in Desana and Tukano, from the Portuguese *sarampo*), influenza (*giripi*, from the Portuguese *gripe*, in Desana and Tukano; *hfétchi* in Baniwa), whooping cough (*wa'u* in Desana and Tukano, *waaki wesi* in Tariano, *iitsipemi* in Baniwa), chickenpox (*diki sũmuri* in Desana; *karaka ibichikan* in Baniwa) and diarrhea (*yoho* in Desana and Tukano; *iraithuli* in Baniwa) belong to the category of 'illnesses of non-indigenous peoples' (*peamasã bẽhari* in Desana; *ialanawi idzmikathi* in Baniwa). Epidemics attributed to collective sorcery (*birari*

in Desana) differ from those associated with interethnic contact by their contiguity, both spatial and temporal. While the first ones are localized, affecting at the same time three or more persons of a given community, the second ones spread from a starting point and gradually affect all communities along the same river (Buchillet 1995).

In contrast with the majority of indigenous illnesses, illnesses of non-indigenous peoples are not attributed by Desana Indians to human malevolence. As I have shown elsewhere (Buchillet 1995; 2004), they are instead associated with certain characteristics (nature, form, smell, reproducibility, etc.) of non-indigenous goods (manufactured items, food) that offend indigenous peoples. Moreover, they are seen as particularly virulent and contagious. Their contagious nature recalls an ontological difference between indigenous and non-indigenous peoples which is registered in the myth of the creation of the world and humanity. This myth is common to East Tukano groups and shared with some Tariano/Arawak groups, but with variation in details (names of mythic heroes or places, etc.) according to the group or sib identity of the narrator.[12] In a version of the myth collected among various Desana sibs, when *Suribo Goãmi*, who was to become the ancestor of non-indigenous peoples, seized without fear the gun offered by *Boreka* (the major Desana ancestor) to the other ancestors of the humanity, he gained technological power

12. For the Desana, see, for example, Lana and Lana (1995); Fernandes and Fernandes (1996); and Galvão and Galvão (2004). For the Tukano, see Gentil (2000; 2005); Azevedo and Azevedo (2003); and Maia and Maia (2004); for the Tariano, see Barbosa and Garcia (2000); and Tariano (2002).

– that is, the capacity to produce manufactured items. Moreover, as he did not vacillate in taking the 'coca of immortality' (also called 'coca of multiplication of people') from the coca gourd despite the threatening presence of poisonous animals and insects on its margins, he also got the capacity to 'change his skin',[13] that is, the power to multiply and live for a long time. This capacity of reproducibility is also attributed to non-indigenous goods and diseases (Buchillet 1995).

In a way similar to the origin of indigenous illnesses, various myths account for the origin into the indigenous world of illnesses brought by interethnic contact.

3.1. SMALLPOX AND MEASLES

Smallpox and measles are acute eruptive diseases, their main characteristic being the presence of a rash which colonizes the body in a few days. Various clinical forms have been described for smallpox, including the confluent form in which lesions touching one another are separated by areas of unaffected skin. In its early stage, the rash of smallpox may be confused with that of rubella, measles, erythema multiform, etc. (Dixon 1962). Cutaneous manifestations of measles consist in the appearance of pink or red spots (*erythemathous maculo-papules*) from various millimeters

13. According to the Desana, to 'change his skin', like snakes do, is a symbol of renewing, reproduction and longevity. Women naturally 'change their skin' each month through menses. Men 'change their skin' through rituals. This conception is shared with other indigenous groups of the Northwest Amazon (see, for example, Hugh-Jones (1979) for the Barasana Indians of the Colombian Vaupés).

to one centimeter of diameter which are generalized on the patient's body. The rash may be itchy and becomes brownish before fading away.

Desana myths link the exanthematic manifestations of these two diseases with glass beads, which were an important foreign exchange item between Indians and non-indigenous peoples during the early phases of interethnic contact. In a myth collected in the sib *Bitiri Niãri* (located on the Urucu stream), the ancestor of non-indigenous peoples was cooking colored beads in order to make collars. While he was removing the cooking foam, it fell on the ground, and gave origin to the measles rash: the maculo-papules represent the cooking foam which goes out of the victim's body in the form of beads. In a variant of the Desana sib *Kẽhíriporã* (located on the Tiquié River), the first non-indigenous women of the world exchanged bead collars with the first indigenous women. When the latter used them, however, the beads turned into the maculo-papules characteristic of measles. Moreover, a myth collected with a Tukano *kumu* of the Tiquié established a relation between the rash of smallpox and measles and the size of beads: small beads were transformed into the maculo-papules of measles while big beads gave origin to the rash of smallpox. The assimilation of the smallpox rash with beads of big size demonstrates the accuracy of indigenous perception. In fact, the rash in smallpox usually evolves in four stages over four to five days: first macule, then papule, then vesicle filled with a colorless fluid, and, finally, pustule surrounded by an inflammatory halo (Gentilini 1993). Big beads may thus refer to the halo surrounding the pustule, which gives it the form of 'a big pustule' (Buchillet 1995) or to the confluent form of smallpox in which, as mentioned above, lesions touching one another (e.g. giving the aspect of big beads) are separated by areas of unaffected

skin. Moreover, the potential confusion, at least initially, between the rash of smallpox and measles is well illustrated by the distinction made by a Desana informant between two forms of measles: *sarapo* and *sarapo ñiiri*. In some cases, the measles rash looks like that of smallpox. This is what he calls *sarapo*. 'Dark measles' refers to the measles rash which resembles the bite of a *pium*, a tiny mosquito, e.g. the erythematous maculo-papular rash which becomes brownish before fading away.

Interestingly, the Arawak Tariano and Baniwa associate the measles rash with the teeth of the manioc grater. According to a Desana informant who learned the myth from a Baniwa, while the ancestor of non-indigenous peoples was cooking beads, the ancestor of Baniwa people (probably *Yapirikuri*) decided to fabricate a manioc grater.[14] While he was inserting small sparkles of quartz stone into the grater board to make its teeth, these turned into the measles rash. This is why Desana *kumua* always recall the manioc grater in their therapeutic spells against measles because it may add pathogenic elements to the disease process. Moreover, when the rash does not come out, they symbolically press, via the therapeutic spell, the manioc grater on the patient's skin to make the rash come out. Finally, dreaming about colored beads and manioc graters is a harbinger of a measles epidemic.

14. The manioc grater is made from a piece of wood of various trees of the family *Laureaceae* (laurel tree, *louro* in Portuguese). While metal-covered graters are common today, they were originally studded with small sharp quartz stones that served as grater teeth. Manioc graters are traditionally made by the Baniwa/Arawak who trade them with the other peoples of the region.

The Tukano and Desana myths cited above make clear that the main characteristic (the rash) of smallpox and measles came from non-indigenous goods, especially bead collars. This association is also explicit in a Desana account of the millenarian movements[15] that took place into the region from the mid-nineteenth to the early twentieth-century. Maria, a young Desana girl, was said to have the power of vision and cure. Non-indigenous peoples, who wanted to check her power, sent her a box full of jewels:

> There were a lot of things: bead collars, ribbon, crowns, and flags. They also put smallpox. When Maria received the box, she immediately knew that they had also sent her smallpox: 'These doctors sent a disease to us. They sent us smallpox', she thought. She then prayed on water and poured the holy water upon the box. Thinking that the disease was over, she opened the box. Unfortunately, through her prayer, smallpox had turned into measles (Wenceslau, Urucu River, 1992).[16]

Today, measles is said to reach the region through the smoke of industries, which thus serves as a vehicle of disease transmission. Desana informants have noted the cyclic nature of measles epidemics. According to them, measles rolls for a while over cities, taking strength, before coming

15. On millenarian movements in the Rio Negro, see Wright (1981; 1998); also Wright and Hill (1986).

16. My translation. From a myth I have collected in 1992 with Wenceslau, an old *kumu* of the Urucu River. See also Galvão and Galvão (2004).

back to attack them. In periods of measles epidemic, in order not to be contaminated, Indians use a defensive shamanic spell to symbolically 'hide their life' (e.g. their soul) in the smell of an ox or a dog. The rationale behind this practice is that as these animals were domesticated in the past by non-indigenous peoples who are immune to measles, domestic animals are also immune to this disease. Thus, by hiding one's soul into the smell of a dog or an ox, one is not attacked by the disease.

3.2. MALARIAL FEVERS

Symptoms of malaria typically consist of a fever with a variable periodicity and flu-like symptoms such as chills, headaches, muscle aches, and fatigue. Vomiting, diarrhea and abdominal discomfort are also reported.

Desana Indians attribute malarial fevers to various causes according to their season of occurrence, periodicity, severity, extent (individual cases or epidemic outbreak) and the place where the first symptoms appeared. They may be conceived as 'illnesses of the universe' or belong to the category of diseases due to human sorcery or to water spirits. The Desana distinguish two forms of malaria: *nimakiri* and *nimakiri bigi* 'old malaria', the latter being more severe and with vomiting (*falciparum* malaria?). *Nimakiri* (lit. 'that which contains a poison') is the name of the vegetal poison used in hunting, the *curare*. Malaria is thus seen as a poisoning of the person. Other groups of the upper Rio Negro region, such as the Baniwa/Arawak, for example, also conceive malaria as a body poisoning (see Garnelo and Wright 2001; and Garnelo and Buchillet 2006).

In a myth collected in various Desana sibs, *Sɨ̃ Gõamɨ* was poisoned by a curare arrow sent by *Deyubari Gõamɨ* who punished him for having destroyed part of humanity through a flood. Wishing to take his revenge before dying, *Sɨ̃ Gõamɨ* flew to the periphery of the world (where the ancestors of non-indigenous peoples were living) where he vomited malaria. When he fell dead onto the ground, his bones full of curare exploded and contaminated the world with malaria. He fell near the 'Hill of Malaria' (*Nimakɨri suriru*, in Colombia), where the ancestors of the present-day Barasana, Tatuyo, Kubeo and Karapanã Indians (East Tukano linguistic family) were living. They wanted to keep his feathers, bones, beak, crest, nails, tail, etc. to use during rituals and ceremonies. However, *Deyubari Gõamɨ* took them back because of their poisonous nature. According to another Desana myth, the shaman harpy-eagle *Gaye* was poisoned by a curare arrow sent by *Ɨmɨko ñekɨ Bupu*, 'Grand-Father Thunder', as retaliation for him having killed his sons. In order to castigate humanity before his death, he also flew to the edge of the world where he vomited malaria. These two myths establish two important facts: the existence of malaria in the human world, and its similar effects on indigenous and non-indigenous peoples (a fact well established by historical records, as seen above). On this endemic background, individual cases or epidemic outbreaks may occur, which the Desana attribute to various causes. As the following discussion shows, these explanations are shared in part by other indigenous groups of the region.

1. Ohoka masã frogs, umari fruits, and malaria

Individual cases or epidemic outbreaks occurring during the blooming period of the *umarizeiro*[17] (November) and at the end of the *umari* fruit harvest (the second half of April) are associated with the *ohoka masã* frog (not identified). According to a myth (collected in the sib *Kɛ̃híriporã*, located on the Tiquié River), a Desana man who was living in the underwater world with his wife, a frog-woman, died from malaria after drinking the *caapi*[18] of his parents- and brothers-in-law and touching the gourds they used to blow spells. Today, anyone may catch this form of malaria during these two periods. Called *ohoka masã ya nimakɨri* (e.g. 'malaria of the *ohoka masã* frogs'), it belongs to the category of 'illnesses of the universe'. In the past, *kumua* used to make a ceremony of protection before the blooming of the *umarizeiro* and at the end of the harvest of its fruits. As I have shown elsewhere (Buchillet 1995), these two periods correspond to the phases of transition between the wet and the dry seasons; to the time for gathering 'summer fishes' (*bohori wái*) in the stagnant water of streams and for opening manioc fields, which creates artificial breeding habitats for the *Anopheles* mosquito.

2. Malaria pots, wet and dry seasons

According to Desana Indians, the rocks of the rapids enclose 'pots' which contain the malarial poison. These pots are natural holes in the rocks which *kumua* perceive as malaria pots (*nimakɨri sororí*). They are said to have existed since the creation of the world, and different myths account

17. *Poraqueiba sericea* Thul.

18. Made from the hallucinogenic vine *Banisteriopsis caapi*.

for their origin. For example, when the bones of *Sɨ̃ Gõamɨ* exploded, they contaminated the world with the malarial poison. *Kumua* gathered the malarial poison disseminated into the upper Rio Negro and put it into the pots. However, as the pots remained open, malaria epidemics were frequent in the region, as seen above. Later, *kumua* invented the means to close the pots, putting an end to the recurring epidemics related to them.

The existence of malaria pots in the rocky rapids and the presence of malaria in the entire upper Rio Negro region are recognized by other indigenous groups. According to a Baniwa/Arawak myth which also gives the origin of the *timbó* (a fish poison), for example, the mythic hero *Kunáferi* (*Yapirikuli*'s father-in-law) was killed by the harpy-eagle *Kamáthawa* as a revenge for the death of a member of *Yapirikuli*'s family.[19] His body was broken to pieces, which were then scattered in various parts of the Vaupés River, south of the Baniwa territory, where they eroded the stones, giving origin to the so-called malaria pots. However, a shaman of the Vaupés opened the pots to avenge the murder of his son by non-indigenous peoples, in this way disseminating the malaria disease in the upper Rio Negro region (see Garnelo and Wright 2001; and Garnelo and Buchillet 2006). One Tariano/Arawak informant also referred to these malaria pots, adding that their content is the drink of fish and water spirits. That is why their closure by *kumua* put an end to the recurring epidemics of this form of malaria – and also to the fish in the region, which are said to be scarcer today than they were in the past.

19. See Wright (1998), Wright ed. (1999); and Garnelo ed. (2001).

Although malaria pots have been closed by *kumua*, epidemics may occur today during the wet and dry seasons. During the summer, according to the Desana, the sun beats on the pots, causing their content to ferment. At the beginning of the high water season, they are continuously washed through the water flow and recede. They may explode, consequently releasing the malarial poison into the river. Called 'malaria of the river' (*mɨ̃ nimakɨri*) or 'malaria of the rapids' (*ɨ̃tãmuri nimakɨri*), this form of malaria belongs to the category of 'illnesses of the universe'. It can affect every person living near the rapids during this season. On the other hand, epidemics occurring in summer are attributed to specialized sorcery. Through a lightning bolt or an evil spell, the *ye* or the *kumu* may open the pots, releasing the malarial poison into the river. Individual cases or epidemic outbreaks occurring in summer in the proximity of rapids may be associated with this cause.

The danger represented by the damaging or opening of malaria pots explains why upper Rio Negro Indians fear the destruction of the rocks of rapids. For example, they attribute the 1932 epidemic of malaria in Taracuá-Ponta to the fact that missionaries had taken stones from the Cassava Rapids (Brüzzi 1977). In fact, all pots of malaria are tied together by a kind of invisible thread. Thus, the damaging or opening of one of them leads to the damaging or opening of the others. This linkage explains the occurrence of malaria epidemics in various parts of the upper Rio Negro region at the same time. Furthermore, each pot is tied via an invisible thread to *Ɨmɨko ñekɨ Bupu* who, for mythological reasons, is considered by the Desana and other East Tukano Indians to be the father of sorcery (Buchillet 2004). Thus, when a *kumu* wants to provoke an epidemic, he invokes *Ɨmɨko ñekɨ Bupu*, who then sends a lightning bolt

against one pot, provoking its explosion and the consequent release of the malarial poison into the river.

3. Malaria pots and mosquitoes

Malaria pots are also the habitat of malaria mosquitoes (*nimakiri mirea* in Desana), which are said to be different from the mosquitoes living in the proximity of households. These mosquitoes are under the control of *kumua* who, at their will, may send them to bite people and, in this way, propagate malaria. The role played by malaria mosquitoes in the transmission of the disease is, however, secondary. When one lives near the rapids, drinking water or taking a bath in the river contaminated by the malarial poison is sufficient to catch the disease (Buchillet 1995).

4. Malaria, water spirits, gold and precious gems

As some upper Rio Negro Indians put it, holes in the rocks of rapids also contain gold and precious gems. As they belong to water spirits, in the past nobody dared to touch them, fearing the retaliation of the water spirits through a malaria epidemic. According to Desana informants, Manuel Albuquerque (known as Manduca in the upper Rio Negro region), a Director of Indians of the former SPI (Service of Protection of Indians), famous for the abuse of authority and the bad treatment he inflicted upon indigenous peoples of the region, stole gold and precious gems from a rapid, causing a virulent malaria epidemic. Interestingly, upper Rio Negro Indians attribute the high incidence of malaria among Yanomami Indians of the Rio Negro and Roraima to the dynamiting of the river rocks and stones by gold miners.

5. Malaria and places

Some places in the upper Rio Negro region are known as malaria-endemic areas for mythological reasons. In a Tariano myth (that I collected in the sib *Kabana-idakena-yanapere* in Iauareté) which presents some similarities with the Desana myth of *Gaye*, the eagle *Pisiri* was killed by an arrow poisoned with curare sent by an ancestor of the Arapaso Indians (an East Tukano group). Before dying, *Pisiri* intended to poison the world with malaria. He fell to his death in the Solimões headwaters where the ancestors of the Tikuna and other indigenous peoples were living. These wanted to use his feathers, bones, beak, crest, nails, tail, etc., during their ceremonies and rituals but the Arapaso ancestor took them back because of their poisonous nature. He then put *Pisiri*'s remains into a box that he sent, through the power of his thought, to the headwaters of the Xiê River where it still is.[20] That is why, according to Tariano informants, malaria is endemic in this place. Anyone going there may be its victim. Likewise, anyone who goes to the Hill of Malaria where *Gaye* died without a shamanic defensive spell against malaria may fall victim to the disease. Only those peoples who permanently live in the places in question and are used to it are not affected by this disease. The Desana Indians call these groups *Nimakiri Masã* 'People of Malaria'. Other places in the upper Rio Negro region are also known by Indians as malaria-endemic areas, likewise for mythological reasons.

20. See also Barbosa and Garcia (2000).

CONCLUSION

Of the three infectious diseases which, according to historical records, have had a deadly impact in the upper Rio Negro region since the early phases of contact with non-indigenous peoples, the Desana Indians only recognize the post-contact origin of smallpox and measles. Malaria, for which a pre- or post-European contact origin into the New World is still a matter of debate, is considered an indigenous disease. Some characteristics of its natural history, such as its endemic or epidemic potential, vectorial transmission, chronicity, seasonal fluctuations, links with the environment, and absence of pathological selectivity (e.g. it affected Indians and non-indigenous peoples indifferently, in contrast with smallpox and measles which mainly afflicted indigenous peoples), have certainly contributed to this etiological conception (Buchillet 1995).

Ethnographic references to South Amerindian conceptions of diseases brought by interethnic contact are relatively scarce. Variously labeled ('epidemics', 'diseases of White (or civilized) peoples', 'infectious diseases', 'contact diseases', 'non-indigenous diseases', 'exotic (or epidemic) diseases', 'White man illnesses'), they seem to be mainly conceived as resulting from human sorcery (Xingu Indians; Marubo; Kaiapo) or from the attack of malevolent spirits (Yanomami; Warao), demons (Matsigenka) and/or cardinal gods (Warao). Human sorcery may be attributed to village members (Xingu Indians), foreign indigenous groups or non-indigenous peoples (Marubo; Yanomami; Guajá; Kaiapo). Spirits and demons may attack on their own or through their manipulation by shamans, local and foreigners (Yanomami; Warao). Wind (Warao; Guajá), smoke (Yanomami; Kogi; Yora; Yaminahua) or a foul vapor 'falling from the sky' (Matsigenka) is seen as a pathogen or as a vehicle of disease transmission. Commonly

recognized characteristics of illnesses of non-indigenous peoples include their severity (they are often fatal) and high contagiousness. In some cases, indigenous etiological conceptions evolve according to the phases (e.g. indirect, direct, intermittent, and permanent) of contact with non-indigenous peoples (Yanomami; Yora; Yaminahua).[21]

This paper shows a certain degree of homogeneity in the representations of diseases among the various indigenous groups of the upper Rio Negro, in particular, the mythic origin(s) of the diseases which have afflicted them since the creation of humanity (including illnesses of non-indigenous peoples) and which are seen as by-products of the actions of primordial ancestors; the perception of their virulence and contagious character as primary characteristics of illnesses of non-indigenous peoples; the association of smallpox and measles with interethnic contact and, also, the existence of malaria pots in the rocky rapids of the region and the danger associated with their damaging or opening. Important discrepancies exist, however, regarding the mechanisms of production of smallpox and measles and the etiological conception of malaria. The Desana and Tukano (East Tukano linguistic family), for example, created myths to explain how smallpox and measles were the involuntary by-

21. On Yanomami, see Albert (1988); on Matsigenka, see Shepard (1999); also Rosengren (2002); on Yora and Yaminahua, see Shepard (1999); on Warao, see Wilbert J. (1996); also Wilbert W. (1987); on Guajá, see Cormier (2003); on Baniwa, see Garnelo and Wright (2001); also Garnelo and Buchillet (2006); on Xingu Indians, see Heckenberger (2001); on Kaiapo, see Verswijver (1992); on Marubo, see Montagner-Melatti (1985).

products of the fabrication by the ancestors of non-indigenous peoples of glass bead collars (an important foreign exchange item during the early phases of interethnic contact) which turned lethal only to indigenous peoples. Although the Baniwa and Tariano (Arawak linguistic family) also associate these two infectious diseases with the effects of interethnic contact, they nevertheless attribute them, through the recourse of myth, to the teeth of the manioc graters which are produced by indigenous peoples (e.g. by the Baniwa Indians). The same apparent contradiction regards the origin of malaria in the upper Rio Negro region which, although considered by Baniwa Indians to be a non-indigenous illness, is said to originate from the smashed body of a Baniwa cultural hero. In fact, these apparent discrepancies in the Baniwa representations of infectious diseases and with East Tukano indigenous perceptions may be related to the origin and place allocated to non-indigenous peoples in the indigenous world. According to the various East Tukano versions of the myth of creation of the world and humanity,[22] the ancestors of humanity shared the same history until their emergence on land on the Ipanore beach (located on the middle Vaupés River) where the Creator – whose identity differs according to the group identity of the narrator of the myth - asked them to choose between the gun and other hunting artifacts and also to eat the 'coca of immortality' (see above). After one of the ancestors seized the gun and chewed the coca, thus becoming the ancestor of non-indigenous peoples, he was expulsed from the indigenous world by the Creator who asked him to live on the other side

22. See, for example, Lana and Lana (1995); Fernandes and Fernandes (1996); Azevedo and Azevedo (2000); Maia and Maia (2004); and Galvão and Galvão (2004).

of the ocean, far from indigenous peoples. In contrast, according to the Baniwa/Arawak conception, the ancestors of non-indigenous peoples were created by *Yapirikuli* from the larva coming out of the rotten body of *Oliámali* whom he killed for impregnating his wife. Non-indigenous peoples are also considered potential brothers-in-law and classified by Baniwa people among their aggressive relatives (Garnelo and Buchillet 2006). This may explain why, differently from the East Tukano perspective, illnesses of non-indigenous peoples do not constitute a distinct class of illnesses among the Baniwa. In any case, the data analyzed in this paper substantiate the remarkable insights of upper Rio Negro Indians into the natural history of the three infectious diseases which have plagued them since the early phases of contact with non-indigenous peoples.

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HIERARQUIA E HISTÓRIA: NOTAS SOBRE A DESCENDÊNCIA ENTRE OS TARIANO DO RIO UAUPÉS[1]

Geraldo Andrello
Universidade Federal de São Carlos/UFSCar

Resumo: Os diversos grupos exogâmicos – atualmente referidos como etnias – que formam o sistema social do rio Uaupés (noroeste da Amazônia) são compostos por um número variável de clãs patrilineares, dispostos ao longo de uma série hierárquica que corresponde à ordem de surgimento de seus ancestrais nos tempos míticos. A inexistência de conhecimento genealógico profundo é paradoxal, tendo em vista tratarem-se de sociedades em que o pertencimento a clãs patrilineares

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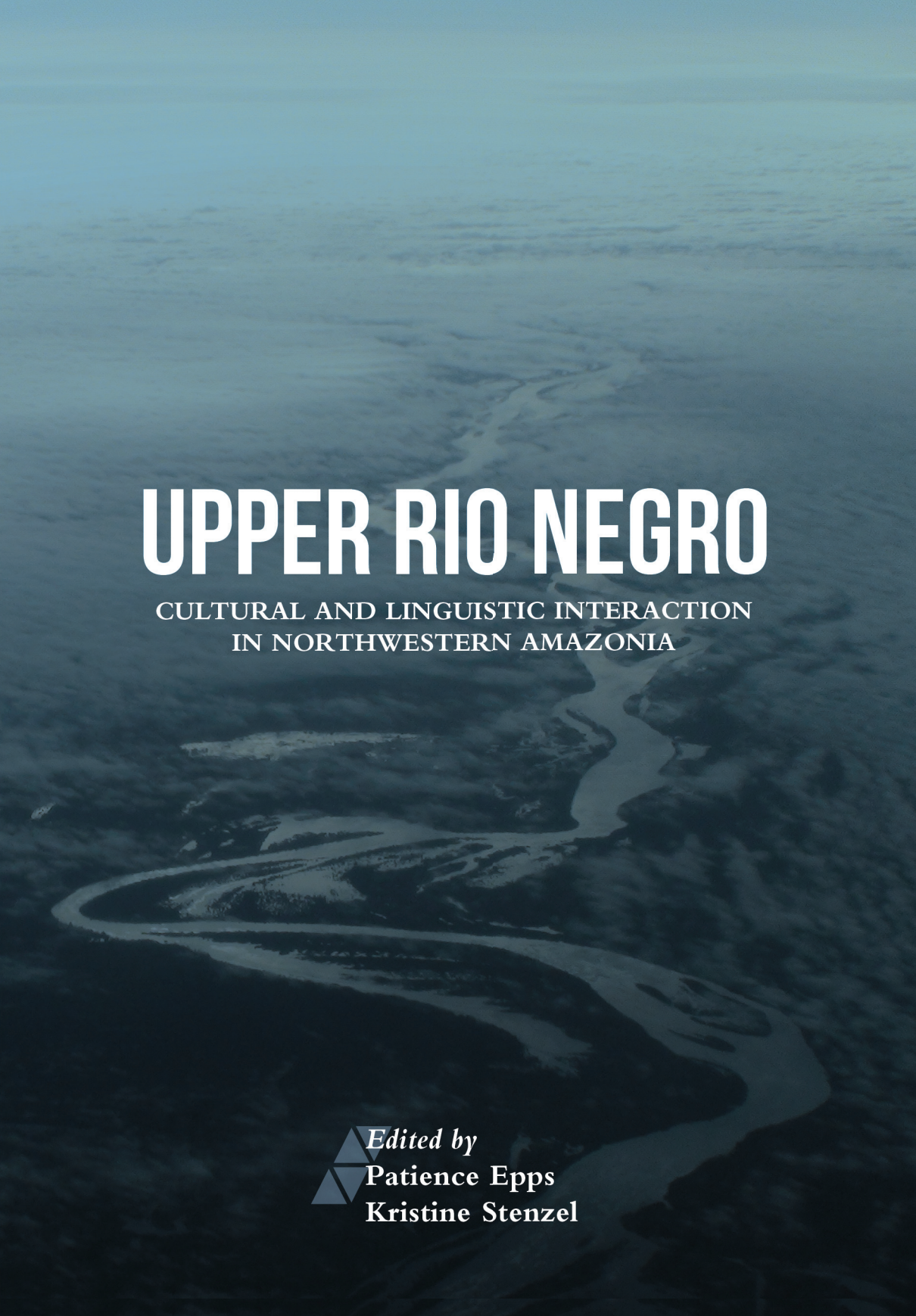

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