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Contesting the Reservoir: Guarani-Mbya Criticisms of Zoonosis, Race, and Dirt in the Jaraguá Indigenous Land, Brazil

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ABSTRACT

In Brazil, epidemiological understandings of zoonosis have historically articulated with race and class hierarchies, placing so-called non-modern bodies at the core of etiological theories and sanitary interventions. I describe how the Guarani-Mbya people living in the Jaraguá Indigenous Land in the city of São Paulo question the racialized narratives that human-rat contact is a major driver of infections such as leptospirosis. By analyzing Indigenous concepts of body, disease, and dirt, I suggest that the Guarani-Mbya disease ontology reflects a criticism of urbanization, in that it is considered to have pathogenic effects on the lives of Indigenous peoples and rats.

RESUMO


No Brasil, estudos epidemiológicos sobre as zoonoses são historicamente articulados com hierarquias de raça e classe, colocando os chamados corpos não-modernos no centro de teorias etiológicas e de intervenções sanitárias. Eu descrevo como o povo Guarani-Mbya, habitante na Terra Indígena Jaraguá (São Paulo/SP), questiona as narrativas racializadas sobre o contato humano-rato como o principal transmissor de infecções zoonóticas, como a leptospirose. A partir dos conceitos indígenas de corpo, doença e sujeira, sugiro que a ontologia da doença Guarani-Mbya realiza uma crítica à urbanização, na medida em que reconhece seus efeitos patogênicos nas vidas de indígenas e ratos.

KEYWORDS

Disease ontologies; Guarani-Mbya; interethnic relations; Latin American metropolis; rodent-borne infections; urbanization

The intricacies of human-animal relations in the Jaraguá Indigenous Land (IL) were brought to my attention in early 2017 when I witnessed the funeral of a Guarani-Mbya child who died after being admitted in a public hospital with suspected leptospirosis – a disease that is transmitted through the urine of infected animals such as rats.¹ This diagnosis was confirmed by health professionals in the villages' Primary Care Center (*Unidade Básica de Saúde Aldeia Jaraguá*). Beyond my sense of the tragedy of this child's death, the event prompted me to recall a conversation that I had with a Guarani woman a few days before the funeral.

After being asked about human-dog relations in the villages and their associations with health and disease, this woman told me, emphatically, that the Guarani-Mbya people do not get diseases from their dogs. Spontaneously, she brought rats into the conversation, suggesting that the diseases described by epidemiologists as rodent-borne infections (RBI) affect Indigenous and non-Indigenous bodies differently. According to her, “rats carry diseases to *jurua* (non-Indigenous people). The *jurua* say that the Guarani were catching this disease, but I don't believe it.”

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Media teaser: Epidemiological theories on zoonosis have been based on racialized representations. I describe how these narratives can be questioned from the perspective of the Guarani-Mbya people.

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This event led me to enquire further about Guarani-Mbya etiological theories and zoological classification of rats. I found that my interlocutors' experiences of living in an urban context highly marked by social, territorial, and environmental conflicts with the non-indigenous society partially shaped their understandings of health and illness. The Jaraguá IL is a territory surrounded by the city of São Paulo where approximately 600 people live distributed across six villages. Here, the impacts of the urban environment on the lives of Indigenous people can be particularly observed in issues of health and disease.

I have been doing anthropological research in the Jaraguá IL since 2017. For the most part, the ethnographic data on which this article is based results from two months of fieldwork in 2020 (Silva Santos 2021). Throughout this time, I conducted participant observation in a context wherein my interlocutors were engaged in an intense struggle to guarantee their territorial rights against a construction company which intended to build a complex with 11 buildings and more than 800 flats near the limits of the Jaraguá IL. My engagement in the mobilization against the construction company and in the daily lives of the people in these villages allowed me to build trust relationships with my interlocutors and was fundamental to approach sensitive topics such as the presence of rats inside their houses, experiences of loss, and precarious housing and sanitary infrastructures. The risks of this approach reproducing stigmatizing discourses on these issues were considered, and participating in the mobilization led me to frame these sensitive subjects through the Guarani-Mbya criticism of the destructive effects of the non-indigenous way of living in big cities on their territory and way of life.

In this article, I suggest that my interlocutors' speeches enacted an Indigenous ontology "pragmatically constituted, both emergent in praxis and constitutive of it, subject to multiple influences and pressures, dynamic, flexible, yet also resistant, a force for continuity" (McCallum 2014:505). Rather than reifying contrasting ontologies, I propose a "translative comparison" (Viveiros de Castro 2004:18) in which the contrasts between Indigenous and epidemiological notions of disease, personhood, and body are highlighted in order to approach the critical ways that the Guarani-Mbya people make sense of the political, social, and environmental changes led by the urbanization process. As I will conclude, my interlocutors' distrust of zoonotic transmission and the Guarani-Mbya etiology related to the entanglements between humans and rats are connected by the broader Indigenous criticism of the urban way of life and its negative impacts on human and animal health.

"Whites know nothing"

Anthropological research on human-animal relations among Amerindians has grown significantly in the last decades, mobilized particularly around questions of hunting and pet-keeping. However, there is scant information about commensal and synanthropic animals, such as rats, living in Amerindian villages (Vander Velden 2016); a significant gap considering the wide presence of these animals in different human settlements and their relevance in public health and sanitary issues.

According to epidemiologists, rats are the most common reservoir of *Leptospira* bacteria (the etiological agent of leptospirosis) in urban environments.² Rats do not develop the disease, but rather harbor the bacteria in their kidneys and subsequently secrete them into the environment. Epidemiological studies generally conclude that leptospirosis is especially prevalent in populations living in "informal" and crowded settlements with poor sanitation and inadequate waste management. These conditions in turn foster high densities of rats, thereby producing favorable circumstances for zoonotic transmission (Khalil et al. 2021).

In humans, infection occurs when skin and mucous membranes come into contact with urine from infected animals or with contaminated soil and water, where *Leptospira* can survive for weeks or even months. Human leptospirosis symptoms can occur in two phases. In the first phase, the patient may suffer fever, chills, headache, muscle aches, vomiting, or diarrhea. In cases where the disease progresses, symptoms tend to reduce before returning with more severity, and the patients may develop kidney or liver failure, or meningitis.³

Having been strongly affected by the Guarani child's funeral, I returned to the Jaraguá IL in 2020 to deepen my understanding on the Indigenous distrust about the notion that leptospirosis is transmitted *via* rats. Most of my interlocutors are aware of the epidemiological narrative that contact with rat's urine is the principal driver of RBI. Nonetheless, they emphatically doubt the universality of biomedical knowledge, questioning if the epidemiological description of zoonotic transmission would apply to their bodies in the same way it affects White peoples' bodies. On asking Tupã Mirim, a Guarani elderly man recognized as a spiritual leader, about the occurrence of RBI and zoonosis, I received a clear response: "look, I have never seen human beings getting diseases from animals. I do not know about *jurua* (Whites), but, for us, do not." This skepticism was reinforced in a later conversation with Para, who is also a respected spiritual leader in Jaraguá IL. In our conversation about the possibility of rats transmitting diseases to Guarani people, she was even more critical. She said:

I do not know; I do not believe it. Whites are very liar, they say that there is rat disease, bird disease, swine. All this. They say, but I do not believe on it. Firstly, I believe in *Nhanderu* ["Our father," the main Guarani deity]. If *Nhanderu* says that there is this or that, it is true. But Whites know nothing.

As these quotes make evident, my interlocutors' discourses are not just about leptospirosis or RBI, but speak to the dissonance of the zoonosis concept with Indigenous ontologies of non-human entanglements. Accordingly, my main aim here is to explore how the perceptions of animal and human relations that underpin epidemiological studies on zoonosis, are unsettled when contrasted with the Guarani-Mbya etiology, in which human-rat relations are grounded in Indigenous ontological understandings of body, person, animals, dirt, and disease.

Whereas colonial and post-colonial discourses associating dirt and disease placed Indigenous bodies and environments at the core of sanitary and bacteriological theories (Kidambi 2004; Swanson 1977; Walther 2017), I suggest that Guarani-Mbya concepts of dirt (*vaikue*) draw upon an ontology where "dirtiness" can be understood as an "affect" (Viveiros de Castro 1998). This concept refers to the "affects, dispositions or capacities which render the body of every species unique: what it eats, how it communicates, where it lives, whether it is gregarious or solitary, and so forth" (Viveiros de Castro 1998:478). In the last section of this article, I will describe my interlocutors' perceptions of "dirtiness" as an affect and suggest that this is key in the Guarani-Mbya understandings of the differences between Indigenous and non-indigenous bodies and lifeways.

In the next section, I will describe how, in Brazil, medical understandings of zoonosis historically articulated with racial, class, and post-colonial hierarchies (Benchimol 2000; Hochman 1998; Lima and Hochman 2000). This continues to dominate the ways in which Indigenous alterity is perceived by non-indigenous actors in São Paulo. The historical literature on disease and dirt is mobilized in this article both to understand how the emergence of zoonosis in Brazil was attached to racial hierarchies and to provide a contrasting background against which the ethnographic data about the Guarani-Mbya etiology will be described. I will conclude by suggesting that, diverging from concepts of disease analyzed in historical literature, the etiology emerging from the Guarani-Mbya critique unsettles the idea of animal species (e.g., rats) as potential disease reservoirs.

This argument does not deny the risk of zoonotic infection associated with human-rat interactions in Jaraguá IL. Rather, my interlocutors suggest that one must understand zoonosis as emerging through the complex entanglements between non-indigenous lifeways, urban infrastructures (e.g., sewage systems and waste management), and animal behavior. This entails approaching human-rat interactions "beyond the significance of these activities for transmission" (Kelly and Sáez 2018:37) and "recognizing that the pathogens, their directions and modes of transmission, and ecological zones are variable" (Narat et al. 2017:846) as much as the "temporary convergences of people, animals and non-humans that reconfigure social, political economic and ecological relations" enabling zoonotic transmission (Narat et al. 2017:844).

Among dirt and diseases: Rats and interethnic relations in São Paulo

In the city of São Paulo there are two Indigenous Lands where the Guarani-Mbya people live: Tenondé Porã IL, a territory of 16,000 hectares located in the south of the city and where 1175 people live;⁴ and Jaraguá IL, situated in the northwest of São Paulo and wherein approximately 600 people live in a territory of 532 hectares (see [Figure 1](#)).⁵ The population living inside these two territories amounts to almost 13,000 Indigenous people from different Amerindian groups who are living in São Paulo city outside of Indigenous lands. Such demographic data represents the biggest Indigenous population living in a city outside the Amazonian region and makes São Paulo the Brazilian city with fourth biggest Indigenous population (Índio de São Paulo 2013).

The contemporary Indigenous habitation of the Jaraguá peak region began in the 1960s, when the area had not yet been reached by urban developers. The village, established by a Guarani-Mbya couple and their family, was at that time not much different from other Guarani villages far away from big cities. The local landscape was characterized by forests, streams with fresh water, and gardens where it was still possible to grow maize and sweet potatoes (two traditional Guarani foods). However, with the construction of the Bandeirantes' Highway in the 1970s and the real estate valuation and prospecting of the region in the 1990s, the landscape around the Guarani villages transformed drastically (Brasil 2013).

Nowadays, almost nothing remains of that landscape. Adults who grew up during the 1980s and 1990s keep in their memories the rural environment of farms, creeks, marshes, and forests which characterized the surroundings of the Tekoa Ytu village – the oldest settlement in the territory and the smallest Brazilian IL, whose area of just 2.5 hectares was ratified in 1987. In 2013, through a report prepared by the National Indian Foundation (FUNAI), this federal state body recognized the Indigenous occupancy of the wider territory of 532 hectares known as Jaraguá IL (Brasil 2013). In 2015, the Ministry of Justice published an ordinance recognizing the Indigenous possession of the territory delimited by FUNAI (see [Figure 2](#)). Since then, the homologation process has been stalled in the Ministry of Justice.

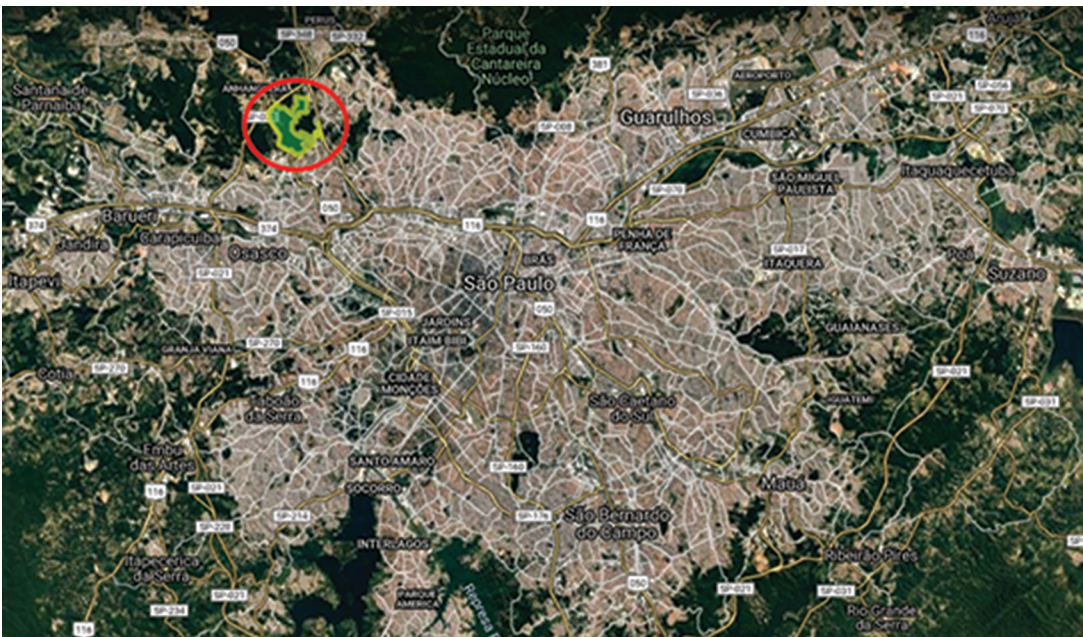


Figure 1. Location of the Jaraguá Indigenous Land in the metropolitan region of the city of São Paulo. Source: Mapa Guarani Digital.



Figure 2. Jaraguá Indigenous Land boundaries according to the report drafted by the National Indian Foundation (FUNAI) in 2013. Source: Mapa Guarani Digital.

In the beginning of 2020, the real estate pressure on the territory became a salient issue. Here, a construction company started to deforest a vast area of Atlantic Forest in order to build a housing project with 11 buildings and more than 800 flats near the limits of the Jaraguá IL. In anticipation of the severe and varied impacts of this project throughout the Indigenous community, my interlocutors were compelled to engage in intense political mobilization. As part of the struggle against the housing complex, about 40 Guarani-Mbya people went to São Paulo's downtown to attend to a conciliation hearing between them and the construction company in the federal courthouse on Paulista Avenue, one of the major commercial, corporative, and cultural centers of the city of São Paulo.⁶

While the Indigenous leaders were at the meeting, I stayed with the Guarani-Mbya community in the sidewalk in front of the courthouse. I was talking to a young Guarani-Mbya photographer when I heard two young women commenting to each other about the Guarani who were singing and dancing in protest:

“Look, how dirty they are, they look like beggars.”
 The other girl added:
 “I think they came like this, full of dirt, straight from the village.”
 They then went on their way down Paulista Avenue.

I quickly looked to my interlocutor and asked if he had overheard this; of course, he did, repeating the girls’ words with a sarcastic smile and mocking their racist comments. Later, when I arrived at Jaraguá IL, I shared this episode with another young interlocutor. In response to non-indigenous perceptions of dirt on Indigenous clothes and bodies, he emphatically stated:

The city is dirty! It’s filled with sewage, the floods come and everything floats. It’s full of rats, rubbish, air pollution. In the city, people are drinking water dirty with sewage and breathing polluted air without even realizing it. That’s why I prefer to live in the forest, drinking pure water and breathing unpolluted air.

This brief ethnographic vignette indicates that perceptions about the dirtiness of environments or bodies are significant topics in interethnic relations within São Paulo, across both non-indigenous and Indigenous perspectives. This comment on the “dirt” of Indigenous bodies is embroiled within a broader set of racialized discourses, propounded by both local and national media (Geraque 2016; Naves 2017). In these narratives, human-animal proximity in the Jaraguá IL is tied to tropes of the backwardness, precariousness, and insanitary lifeways of São Paulo’s Indigenous population. Such news often depicts images of villages with rubbish strewn everywhere, riddled with foul open-air sewers and populated by a multitude of stray dogs. A local newspaper summarizes these representations with the following headline: “Fighting for land, Jaraguá villages coexist with dirt and diseases” (Cambricoli and Carvalho 2017).

My interlocutors responded by subverting and turning these accusations back onto non-indigenous urban people. Dirtiness, rather than an element of Indigenous existence, is cast as a fundamental feature of non-indigenous urban lifeways, in which the city is represented as “full of rats, rubbish, air pollution” – as critically observed by one Guarani interlocutor. Nations and Monte (1996) have described the way that public health interventions against a cholera outbreak in Brazil during the 1990s reproduced and reinforced moral judgments of filthiness over socio-economic minorities. They documented how the stigmatized population resisted these denigrating stereotypes through practices and narratives that questioned the biomedical knowledge and contested “the inequitable social order in northeastern Brazil” (Nations and Monte 1996:1009).

Thus, understanding the socio-historical context for the emergence of my interlocutors’ criticism is key in situating Guarani-Mbya skepticism toward zoonosis as response to the violence of such racialized sanitary discourses. In addition, I will also suggest that the skepticism regarding leptospirosis is attached to wider ontological understandings pragmatically constituted in the Indigenous resistance against the racialization of their bodies by medical and epidemiological theories, which became widespread among lay people in Brazil and represents a relevant aspect of the interethnic relations in São Paulo.

As argued by Stephanie Newell (2020:11), dirt has been used as an “Eurocentric category for the negative evaluation of people, objects, and places;” a category that is frequently attached to habits of racial, class, and gendered Others through hygienic and epidemiological discourses that portray Indigenous bodies and lifeways as sources of dirt and contamination. The articulation between categories of dirt, rats, and infectious diseases have been the focus of several investigations within the medical humanities. Historians and anthropologists alike have argued that, since the end of the nineteenth century, notions of cleanliness and purity have become simultaneously invested by pre-existing sanitarian conceptions about “filth” and “miasma” and emerging bacteriological configurations of microorganisms as the causative agents of disease (Corbin 1986; Barnes 2014). Dirt has thus come to be an important element of the “sanitary-bacteriological synthesis” (Barnes 2006), which has informed public health policies in colonial (Kidambi 2004; Swanson 1977; Walther 2017), post-colonial (Benchimol 2000) and metropolitan contexts (Biehler 2013; Sayer 2019).

The medical and epidemiological concept of zoonosis, applied by scientists, doctors and health authorities in the context of the Third Plague Pandemic (1894–1959), added another layer of complexity into notions of dirt by relating new studies about the agency of animals and microbes to previous sanitary and miasmatic theories. For example, historians have argued that in several British colonial cities in Asia and Africa, the germ theory's explanation for plague did not displace theories that the poor sanitary conditions found in the Indigenous dwellings and neighborhoods were the source of the disease (Kidambi 2004; Sutphen 1997; Swanson 1977). As discussed by Nicholas Evans (2018), in Bombay in the beginning of twentieth century, the laboratory discovery of the role of rats in plague transmission contributed to an ongoing process in which colonial doctors and authorities framed Indian lifeways as the moral site of the disease by means of associating Indian cultures with filth and rats.

If in British colonial contexts the agency of animals and microbes were articulated through and reinforced racial and social asymmetries, when plague arrived in Brazil in 1899, medical and governmental responses toward disease control were articulated with the broader process of the re-invention of Brazil after the Proclamation of the Republic in 1889 (Silva 2015). The new regime and its elites mobilized the practical and rhetorical tools of hygiene, microbiology, and tropical medicine that framed dirtiness and pollution as examples of colonial, rural, and non-modern pasts that should be overcome in the constitution of the Brazilian nation (Benchimol 2003).

Historians have argued that urban sanitary reforms and the expansion of medical services toward urban and rural populations constantly affected by endemic diseases (like malaria and hookworm) were at the core of the sanitary movement in the beginning of twentieth century (Hochman 1998). In a context marked by eugenic theories about the racial “degeneration” (Stepan 1996) of the Brazilian population, the public health interventions and urban reforms demanded by Brazilian elites were an important part of Brazilian nation-building (Lima and Hochman 2000). The modern scientific and medical knowledge that emerged in the discourses of the sanitary movement was about healing bodies which were “degenerated” not by the tropical weather or racial “miscegenation” (staples of tropical medicine at the time), but by parasites that could be controlled by supposedly rational techniques implemented through a national public health policy (Lima and Hochman 2000).

Brazilian scholarship on race, miscegenation and racial inferiority had focused, above all, on the figure of Black people, and on evaluating the negative or positive influence of mixed racial types on the construction of a healthy, modern, and civilized nation (Freyre 2021). Despite not being the major focus of these racial theories, the role of Indigenous “races” (Monteiro 1996) in the constitution of a national identity were also embedded in ambiguous representations, which ranged from romantic narratives about assimilated/civilized Indigenous groups that contributed to Brazilian nation-building, to theories about the racial inferiority of groups considered hostile and uncivilized (Carneiro da Cunha 1992). The image of a modern nation that inspired the sanitary movement was also articulating the process of occupation of Brazil's hinterlands in the nineteenth and twentieth century, when Indigenous societies were seen as signs of a non-modern past that should be assimilated by the national society or eliminated (Monteiro 1996).

Even though the Indigenous populations were not at the core of public health policies defended by the sanitary movement, I suggest that understanding the emergence of discourses associating life in the hinterlands with poverty, endemic diseases, and lack of civilization (Lima and Hochman 2000) can help us to comprehend why the contemporary Indigenous existence in São Paulo is represented in non-Indigenous discourses through signs of dirt and diseases. The ontological premise of this pervasive biomedical reasoning is predicated on a nature-culture separation, which is materialized in the sanitization of human-nonhuman relationships; a supposedly fundamental way to protect humanity from diseases carried and transmitted by animals (Lynteris 2017, 2019). These racialized tropes are reproduced in contemporary visual representations of zoonosis, in which the proximity and contact between Indigenous people and animals are deployed as evidence for “nothing other than the lack of sufficient progress (or a resistance to it) – read largely in terms of animal-human or nature-culture separation or distance” (Lynteris 2017:477).

I have argued elsewhere (Silva Santos 2017) that journalistic representations of zoonosis in Guarani-Mbya villages can be challenged through an ethnography of the relations between Guarani-Mbya people and the multitude of dogs they raise after non-indigenous people abandon them in the villages' neighborhoods. Beyond the undeniable sanitary risk and infrastructural precariousness, the relationship with dogs, and other pets, represents a vital aspect of the construction of personhood through mutual relations of caring and joy that connect humans, animals, and deities in Guarani-Mbya cosmology (Pereira 2016; Pierri 2013). When I asked my interlocutors about diseases that dogs could transmit to humans, they consistently denied this was possible – attesting their perceptions with the fact that they cohabit with several pets without getting sick. This distrust toward the very notion of zoonotic transmission should not obviate the fact that, in other contexts (e.g., interviews to newspapers) my interlocutors frequently mention the risk of zoonotic infection as an argument to render the situation as an issue of public health that needs governmental intervention.

Unlike dogs, which after being abandoned by the city inhabitants are raised as pets nearby and inside Guarani houses, rats are not welcome guests within Indigenous domestic space due to their destructive and noisy habits of gnawing provisions, walls, and furniture. However, whether in relation to rats or dogs, there is a skepticism toward the supposed universality of zoonosis and the human-animal contact as a pathway of disease transmission. My interlocutors' criticism of zoonosis reveals that the Guarani-Mbya etiology does not pathologize human-animal contact, but rather, it is the dirty affects engendered by White lifeways in big cities that are a pathogenic threat to human and animal health.

The Guarani-Mbya reactions against racialized discourses must not be understood simply as a reversal, in which the city, rather than the village, is cast as insanitary space. As I will argue in the next section, through a description of Guarani-Mbya etiology and zoological classification of rats, this criticism of the urban way of living is grounded in Indigenous practices and concepts of body, disease, personhood, and dirt that are not equivalent to the epidemiological ones. Thus, instead of just an inverted discourse on disease reservoirs, the Guarani-Mbya skepticism toward zoonosis and their wider perceptions of the destructive effects of the urbanization process enact an Amerindian ontological understanding of human-animal relations and their effects on health and disease issues.

Contesting the reservoir

The Guarani-Mbya zoological classification of rats is based on animal behaviors and habitats, and draws a highly relational and transformative knowledge. This is analogous to other zoological systems described by anthropologists among different Amerindian groups (Jara 2002; Medrano 2019; Vander Velden 2010). In Guarani language, *anguja* is the word used to refer to rats (in Portuguese, *rato* or *ratazana*). To refer to specific creatures, they usually employ the term *anguja* followed by another qualifying category that may refer to the size, origin, and color, e.g., the adjective *xiĩ* (white) that qualifies the creature *anguja xiĩ* (white rat).

Even though both native and introduced small rodents are called *anguja*, the commensal habits of populations of black rats (*Rattus rattus*), brown rats (*Rattus norvegicus*), and mice (*Mus musculus*) have great relevance in the Guarani perceptions about these creatures, which foster a qualitative difference between these rodents and native ones (Silva Santos 2021). Due to the straightforward association between rats' commensal habits and the urban environment where they coexist with non-indigenous people, my interlocutors also referred to these animals as “city rats” (*rato da cidade*) – and contrasted them with “bush rats” (*rato do mato* in Portuguese or *anguja ka'aguy* in Guarani).

Rats' ability to flourish within urban environments through commensal relations with non-indigenous people is qualified by the category *anguja vaikue* – that means “bad,” “ugly,” or “dirty rat,” in Guarani. “City rats” are referred to as *anguja vaikue* because they are known to live, feed, and reproduce in the urban environment, proliferating alongside rubbish and urban-industrial pollution. There are two different kinds of rats known as *vaikue*: the *anguja ovy* and the *anguja yvy'va*. *Anguja*

ovy can be translated as “dark rat” (Dooley 2006) and refers to black rats and brown rats.⁷ These big and dark creatures are perceived to be very different from the little *anguja yvy’va* – a term that refers to mice, also known as *anguja’i* (little rat). Due to its big size and fossorial habits, brown rats could be considered the prototype of an *anguja vaikue*.

When asked about the difference between “city rats” and “bush rats,” Para emphatically stated:

there is [a difference]! Because these little rodents I know, we set up a trap and Indigenous people in the South [of Brazil] are eating it until nowadays. But not that big! This ones from here [São Paulo] are very ugly. They eat rotten things that appear around here. Then, we can’t eat them.

Her young nephew called Wera, who worked as a teacher of the Guarani language and was translating our talk, also added that rats are known to hang around graveyards and to eat the rotten flesh of buried human corpses. According to him, rats used to “feed on buried Guarani bodies, digging burrows in there, they began to eat and remove the bones.” In this context, rats’ burrows systems and their scavenging habits seems to instigate anxieties about the idea of these animals consuming buried corpses, a possibility that becomes an epidemiological issue in contexts of plague outbreaks elsewhere (Sodikoff 2019). Contrastingly, in the Guarani-Mbya perceptions, corpse consumption seems to be quoted by my interlocutor as just another example of rats’ taste for rottenness – a limit of consumption for humans in Amerindian cosmologies (Lévi-Strauss 1983).

Wera explained that *vaikue* is an adjective that qualifies a kind of bodily dirtiness related to dangerous affects associated with soil, blood, excrements, and rottenness – classical substances of power, fertility, and danger among Amerindians (Overing 2003). He mentioned that animals like worms, bats, and rats are not essentially *vaikue*, rather, their *vaikue* condition is related to what they feed on, what they do, and where they live. For example, according to Karai, a middle-aged man who worked as an elementary school teacher in the villages, if *anguja vaikue* changes their habitat and behavior, migrating from urban sewers and living in forests away from the city, they then will be considered “less dirty” because “in the forest they do not have contact with sewage.”

As remarked by Karai, the major cause of rats’ dirtiness is their relation to human waste – be it produced by Indigenous or non-indigenous people. He concluded that “the problem with these city rats is that they are very dirty, but they are dirty because of us, because of sewage and rubbish.” It should be highlighted that my interlocutors’ oppositions between forest and city through the *vaikue* concept do not encompass romantic representations about forests and Indigenous villages as idyllic and pristine environments – which do not correspond to Amerindian cosmologies (Carneiro da Cunha 2020). Instead, as narrated and lived by Guarani-Mbya people (Macedo 2009; Pierri 2013), dangerous and powerful affects dispersed throughout the world in the mythical time can be found everywhere and is enacted by humans and nonhumans beings alike. Whereas the *vaikue* are harmful to Guarani-Mbya bodies, non-indigenous people and rats are not affected by the dirtiness of the urban environment. White people seem to be already used to *vaikue* because – as one of my interlocutors said: they are “drinking water dirty with sewage and breathing polluted air without even realizing it.”

In the Guarani-Mbya language White people are also referred as *hetava’e kuery* (those who are many) (Macedo 2009), referring to how the non-indigenous are greedy and have prolific breeding powers. The non-indigenous lifeway is also apprehended through its destructive potential. The origins of White people are not in the deities, who Guarani people consider to be their “fathers” and “mothers;” rather myths tell that the *jurua* were born from *mbi’i* (caterpillars) which destroyed the original tree created by *Nhanderu* (Our Father, one of the most important Guarani deity) in the First Earth (Pierri 2013). Furthermore, White people’s ancestors made several mistakes and bad choices in the mythic past, like choosing to use destructive technologies (e.g., firearms) instead of following deities’ wisdom and advices – as the Guarani people have been doing.⁸ The non-indigenous way of living, according to my interlocutors, reifies the destructive behavior of those mythic caterpillars, because just as *jurua* exploit and destroy Indigenous territories – as is exemplified by the real estate venture quoted in the previous section – caterpillars devour plants until nothing remains.

At the same time my interlocutors question human-animal contact as a zoonotic driver, Guarani-Mbya etiology acknowledges that urban rats can cause illnesses in Indigenous bodies. *Mba'eaxy* (illness, disease) can result from the consumption of *anguja vaikue's* meat, which introduces into Indigenous bodies the *vaikue* associated with rats' eating habits and their urban habitat. According to Tupã Mirim, the same elderly man who said that he never saw "human beings getting diseases from animals," "city rats" cannot be eaten because they would cause "strong flu, fever, stomach that does not bear to eat, headache, and dizziness" in those who eat their meat. He adds that the city rat has a very "strong meat," once it is a "creature that cannot see rubbish and it already goes rummaging and eating. There are rats that are inedible, they are scavengers, they eat what they see."

It is widely recognized by anthropologists that, among Amerindian societies, human-animal relations are gateways to understanding the production of human personhood and that food and eating habits are known to engender health and disease in human bodies (Fausto 2007; Seeger et al. 1979; Vander Velden 2010). Expanding on Tupã Mirim's comments on the effects of rat meat in human bodies, I will conclude this section describing how the *mba'eaxy* caused by rats' *vaikue* affects enact understandings of disease that display the current challenges lived by my interlocutors in the process of production of the Guarani-Mbya personhood in a territory surrounded by the largest South American city. Whereas the *vaikue* affects of rat meat generate unwanted bodily conditions in Indigenous bodies, other foods and bush meats are considered *porã* (good and clean), being associated with healthy and wellness. For example, even though city rat meat is considered inedible due to rats' diet and habitat, there are some kinds of *anguja ka'aguy* (bush rats) whose meat is considered *porã* (Silva Santos 2021).

In the Guarani cosmology the *vaikue* concept is conceived, above all, through the opposition and contrast with the *porã* concept – which encloses cosmological meanings about "beauty," "good," "celestial," and "imperishable." This contrast between *porã* and *vaikue* is analyzed by several anthropologists of Guarani people and is recognized as a fundamental aspect of the construction of the Guarani-Mbya bodies and personhood (Macedo 2011; Pierri 2013; Pissolato 2019), for it structures the elementary distinction between the two complementary vital principles that sustain the Guarani person: *nhe'ẽ porã* and *nhe'ẽ vaikue*.

These animating principles are not conceived in opposition to the body and are strictly bonded to bodily dispositions and substances. One of the main focuses of both ordinary life (cooking and child care) and shamanic practices is to strengthen (*-mbaraete*) and produce joy (*-vy'a*) in the person by enacting an approximation between the human body and the celestial affects elicited by the *nhe'ẽ porã* (Macedo 2011; Pierri 2013). On the other hand, the *vaikue* principle of the Guarani person enables dangerous, but also powerful, connections with the dead, animals, and spirits – connections that are both the source of the shamanic healing power and the cause of illnesses and death in persons affected by sorcery or whose *nhe'ẽ porã* was seduced or captured by an animal or a spirit that appears as human (Macedo 2011). In this sense, the human condition and the production of personhood in the Guarani cosmology can be described as an "unstable" (Vilaca 2005) process resulting from the agency of celestial deities and telluric animals and spirits (Clastres 1978; Pierri 2013).

In the Jaraguá IL, the territorial restrictions caused by the urbanization process impose several challenges to the production of the Guarani-Mbya personhood, especially when it comes to food sovereignty and eating habits. For example, due to the lack of land to grow crops and hunt, my interlocutors complain that they can no longer live on a diet based on the *tembi'u porã* (live foods) which were given to them by the deities in the mythic past (Macedo 2019) – such as different kinds of bush meat, sweet potato, and maize. In this context, Macedo describes how food bought in supermarkets is potentially pathogenic for Guarani-Mbya bodies, because they cannot track how and by whom such *tembi'u re'õgue* (dead food) was produced. This lack of information means that nobody knows whether the pathogenic qualities of White people's production techniques have polluted the food or not. The food of non-indigenous people, especially ultra-processed food, is considered to be *tembi'u vaikue* because it has too much salt, sugar, fat, and spice. Consuming these foods makes the Guarani-

Mbya bodies “heavy” (Pierri 2013). This does not refer to body weight, but to the dirtiness that hinders the person’s capacity to connect and communicate with the deities (Macedo 2019).

Although White people’s existence is framed by the Guarani-Mbya people through its pathogenic powers of reproduction and destruction, the ambivalence of the *vaikue* principle as a source of danger and power is also present in the way that the Guarani people engage with non-indigenous society. As argued by Macedo (2019), the *tembi’u vaikue* (dirty and bad food) bought in supermarkets can have its pathogenic potential neutralized if properly prepared by a Guarani person and eaten according to Guarani manners, between kin in the villages. In the same way that *tembi’u vaikue* can be neutralized, the city is also seen as source of desirable manufactured goods and services, and White people can also socialize in the villages and marry with Indigenous people.

The pathogenic potential attributed to processed food is related to the very distinction between how White and Guarani bodies are produced through alimentary practices. In the same way that “city rats” have a *vaikue* existence characterized by their ability to live in a dirty urban environment, eating rotten things and proliferating in the rubbish and sewer lines, the *jurua* are also habituated to living in the dirty environment that they themselves have created. The commensal coexistence between rats and White people within cities is perceived by my interlocutors as *vaikue* because humans and rats produce their bodies by sharing foods seen by the Guarani-Mbya people as “dead food” (Macedo 2019). In this sense, “city rats” are *vaikue* because the food that nourishes them is considered, from the Guarani point of view, “dead,” “bad,” “dirty,” and “perishable.”

The Guarani-Mbya etiology and conceptualization of personhood should not be understood as an Indigenous “interpretation” of biomedical knowledge about zoonosis. This would assimilate, collapse, and reduce the complexities of Indigenous cosmologies in the form of a proto-sanitary epistemology (Douglas 2005). In addition, one may argue that the *mba’eaxy* caused by the “strong meat” of rats can be framed as a kind of epidemiological evidence about the transmission of zoonotic diseases in Indigenous villages. Such argumentation, however, would produce an “ontological and epistemological enclosure” (Lynteris 2022) of the Guarani-Mbya etiology, in which the complexity of human-rat relations in the Jaraguá IL is reduced in order to fit into an alien category: zoonosis. Rather, my approach to this subject is aligned with the Guarani-Mbya criticism toward the non-indigenous way of life; and, by contrasting these disease ontologies through their differences, my aim is to allow the Guarani-Mbya concepts to unsettle the biomedical conceptual framework on human-animal relations and disease reservoirs.

It is important to highlight the relations between my interlocutors’ perceptions of the pathogenic potential of city rat meat and their skepticism about leptospirosis and RBIs. It is precisely the Indigenous criticism of the pathogenic potential of urban lifeways that connects my interlocutors’ distrust of explanations of disease that rely on zoonotic transmission and the *mba’eaxy* caused by *anguja vaikue*’s meat. While the epidemiological link between humans, animals, microbes, and diseases that emerged at the end of the nineteenth century transformed rats into the quintessential “reservoir,” my interlocutors’ criticism points to understandings of disease in which the pathogenicity of rats is attributed to the ways that Whites produce and live in urban environments. At the same time, I described the Indigenous criticism in relation to the historical, social, and environmental changes caused by the urbanization process, I argued that the concepts of dirt, disease, health, and body enacted by my interlocutors’ speeches are also grounded in dynamic, flexible, and resistant Amerindian ontological understandings (McCallum 2014).

As said by a Guarani-Mbya elderly woman, “Whites know nothing” about human-animal relations because they are not aware that pathogenicity emerges in the multispecies entanglements through which bodies and persons are produced. Considering that the differences between habits and lifeways engender distinct bodies, the Guarani-Mbya configuration of disease reservoirs could be said to focus on what affects, substances and habits emerge as pathogenic and harmful to each kind of body, rather than a reified locus of ill health and pathogens. Whereas my interlocutors question the universality of the biomedical knowledge

and ontologies, on the other hand, they propose an Amerindian etiology in which the Indigenous body can become ill due to the *vaikue* affects present in the urban environment and embodied by rats.

Differently, White people do not seem to be impacted by *vaikue* affects because they are already used to it, i.e., their bodies are already constituted by the dirty affects present in their food, environment, and destructive lifeway. However, this does not mean that they are immune to animal to human infections described by epidemiologists. Alternatively, the higher incidence of leptospirosis among populations living in “informal” and crowded urban settlements can be understood from the Guarani point of view as another pathogenic effect of the urban lifeway on the health of humans and animals. In this sense, the Guarani-Mbya disease ontology could contribute to expand biomedical approaches on RBI by highlighting that the source of ill health within human-rat relations are not the bodies of *anguja vaikue* alone, but the *vaikue* aspects of multispecies entanglements (Nading 2014) in urban environments.

Conclusion

The ethnographic vignette about the girls’ comments on the dirtiness of the Guarani-Mbya bodies and the media focus on the precarious sanitary conditions of the Jaraguá IL have showed that understanding the racial and social hierarchies articulated in the emergence of the sanitary movement in Brazil provides important insights to comprehend the asymmetries embedded in the interethnic relations in São Paulo nowadays. While non-indigenous discourses and journalistic representations reproduced these asymmetries by framing the Guarani bodies and villages as sites of dirt and diseases, on the other hand, the Guarani-Mbya concept of *vaikue* enacts a disease ontology in which dirtiness is an affect (Viveiros de Castro 1998) that arise in the interfaces between the destructive potential of White people’s way of living, urban infrastructures, and rats’ behavior. In other words, at the same time my interlocutors’ skepticism regarding leptospirosis transmission is a reaction against the racial legacy of zoonosis, the Guarani-Mbya zoological classification and etiological theories emerging from human-rat relation also extend the meanings of Amerindian concepts of body, disease, and dirt toward a broader critique of the pathogenic effects of the urbanization process.

The criticism embedded in the Guarani-Mbya concepts of *vaikue* and *mba’eaxy* aligns with the “shamanic critique of the political economy of nature” proposed by Davi Kopenawa and Bruce Albert (Kopenawa and Albert 2013) in the context of the Yanomami people struggle against mining inside their territory. Whether in the struggles against mining in the Amazon Forest or against the real estate capital in São Paulo, the global and local effects of the exploitation of natural resources are framed by Amerindians through a complex criticism of White economic activity and its pathogenic effects in humans and non-humans lives. Rooted in the relational process of personhood production, wherein illnesses and diseases are bodily effects of the engagements between humans and non-humans, the Guarani-Mbya critical perceptions of the commensal relations between rats and non-indigenous people draw attention to the “long temporality of ecologies” (Keck 2020) sustaining human-rat entanglements in Brazilian big cities.

In sum, by investigating the human-rat relation in the Jaraguá IL it was possible to comprehend that multispecies entanglements are relevant aspects of how Guarani-Mbya perceive and engage in the political mobilizations against the destruction of their territory and lifeways by the urbanization process of the city of São Paulo. In that politically charged framework, it is the gargantuan metropolis of São Paulo -- the richest, biggest, and most “modern” Brazilian city -- that emerges as the source of disease from the Guarani-Mbya perspective. Thus, my interlocutors rise against the construction of a large residential complex near their villages because, among several other impacts, this real estate venture would bring even closer to the villages the dirty urban conditions in which rats and non-indigenous bodies emerge as *vaikue* ones: conditions of existence that the Guarani-Mbya people refuse to accept.

Notes

1. This article is part of ongoing doctoral research entitled “Zoonotic Divergences: Humans, rats and micro-organisms in Guarani-Mbya villages of Jaraguá Indigenous Land (São Paulo/SP, Brazil).”
2. <https://www.cdc.gov/leptospirosis/infection/>.
3. <https://www.cdc.gov/leptospirosis/symptoms/index.html>.
4. <https://terrasindigenas.org.br/pt-br/terras-indigenas/5248>.
5. <https://cpisp.org.br/jaragua/>.
6. Due to further Indigenous mobilizations, a couple of weeks after this event, work on the real estate project was halted by the federal court indefinitely (this decision was still standing when this article went to press in March 2023).
7. Following this Indigenous classification, in this article I will refer to *Rattus rattus* and *Rattus norvegicus* as “rats.” These taxonomic terms are not employed to refer to Guarani zoological classification of rats because I do not assume that there is a direct correspondence between Indigenous zoologies and scientific ones.
8. Ontological transformations entailed by bad choices made by characters in the mythic time are a classical theme in Amerindian myths which were deeply analyzed by Lévi-Strauss (Lévi-Strauss 1983).

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