

Is the indigenous common resource management system resilient in the North-western Amazon? The case of urbanisation in Rio Negro Indigenous Lands (Brazil)

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Abstract

In the Brazilian Amazon, governance and sustainability of Indigenous Lands are threatened by deforestation and urbanisation, even in the most remote areas. In this study, we analyse the transformations in indigenous common property resource management due to urbanisation. Data were obtained from ethnographic and agro-economic interviews (n=75), combined with a GIS analysis of population, land tenure and landscape distribution in the periurban zone of São Gabriel da Cachoeira, the main town of Upper Rio Negro.

In the region, members of a community usually share a territory composed by a large range of resource use rights, ranging from exclusive ownership to common property. Ethnic specializations and individual mobility ensure complementarities in time and space among production activities. Urbanisation was stimulated by missionary, military and trade activities. Private ownership has become the main land-use right in the periurban area. Recognition of the Rio Negro Indigenous Lands, which occurred in 1998, did not, for the most part, question individual rights. Currently, 80% of the 13,000 inhabitants of the town of São Gabriel are indigenous. Because of increasing scarcity of available resources, they have to negotiate land-use rights within their large kinship networks. 73% of the urban families have a multilocal strategy. Due to circular mobility, they have various residences and production units, which are distributed in the urban, periurban and forest areas. They have different land-use rights, including access to communal territory. Diversification of land-use arrangements provides the necessary leeway to guarantee food security in a context of income variability. This multilocal land-use system is an indicator of the resilience of indigenous common property regimes. Since urbanisation processes are intensifying all over Amazonia, sustainable resource management in remote areas depends on the participation of indigenous populations in both urban and forest planning.

Key-words: common property regime, Indigenous Land, urbanisation, multilocal strategy, resilience, Brazil

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Introduction and presentation of the problem

In past decades, a significant process of urban expansion has been under way in the Brazilian Amazon. Parallel to proliferation of new small and mid-sized towns, areas on the outskirts of established urban centres of importance have grown in a disorderly manner. Meanwhile, vast areas surrounding urban centres are undergoing economic, territorial and cultural transformations even in regions which are distant from the sites with most active frontier settlement (Browder and Godfrey 1997).

Common resource management is a characteristic of the livelihoods of rural Amazon peoples. Kinship relations play an important role as principles for territorial organisation (Almeida, 1989; Benatti, 1999; Cunha and Almeida, 2001; Diegues, 2001; Ribeiro, Galizoni et al., 2000). Nevertheless, in several of these areas, greater demographic density and local struggles for power generate competition over access to and control of natural resources, often leading to socioenvironmental conflicts (Sirén, 2007; Eloy and Le Tourneau, 2008, Alencar, 2004). Comprehension of the urbanisation process in the Amazon requires careful analysis of the spatial distribution of local social processes (Barbieri et al, 2007). In Indigenous lands, in spite of relatively sparse settlement in periurban areas and deforestation, sustainability of common resource management is of paramount importance. It should be noted, however, that this issue is not limited to debates about conservation, but also permeates demands by native Amazon groups for protection of forest resources within areas under collective tenure, which has been an important component of their political and commercial strategies (Albert, 2000; Leitão, 2004).

This article has the objective of discussing new socioenvironmental configurations resulting from movement of families in the Upper Rio Negro, North-western Amazon, towards the town of São Gabriel da Cachoeira, which is the most important urban centre in the region. We intend to demonstrate that by creating new forms of appropriation of natural resources which are alternative to official land tenure regulations, the historic process of occupation and exploration of periurban areas creates various situations involving collective management, in spite of bringing forth inequalities among social groups. This article thus contributes to understanding of a specific local urbanisation process in the Western Brazilian Amazon and its socioenvironmental consequences.

From a conceptual standpoint, it is essential to pay attention to the complexity of transformations taking place, since they do not lend themselves to simplistic dichotomies between traditional and modern practices (Ostrom *et al.*, 1994). Capacities for innovation by the stakeholders and the transformations taking place in their environment must be considered together (Chauveau, 1999). The concept of resilience, applied to complex collective management systems, provides an appropriate analytical framework (Berkes and Turner, 2006). From an anthropological standpoint, this means observing appropriation and re-signification of elements of the white man's world by indigenous populations in specific local contexts, based on their own cultural logic (Sahlins, 1997). It requires establishing appropriate links between new sociospatial organization strategies and local relational dynamics, i.e. between indigenous groups/families on the one hand and indigenous and white people on the other.

A. Materials and methodology

1. Study area

The Upper Rio Negro region is inhabited by a multiethnic population, made up of groups belonging to the Eastern Tukano, Aruak and Maku³ linguistic families. It includes five Indigenous Lands, all created in 1998: Médio Rio Negro I, Médio Rio Negro II, Rio Téa, Rio Apapóris and Alto Rio Negro. All together, the five lands cover an area of 106,103 km². It is a military zone, on the border of Brazil with Colombia and Venezuela (Figure 1).

The study area is in the outskirts of the town of São Gabriel da Cachoeira, seat of the municipality bearing the same name. The town, located 900 km northwest of Manaus, on the left bank of the Rio Negro, has a population of approximately 15 thousand, 80% of whom consider themselves indigenous (ISA/FOIRN, 2005). The inhabitants of the town and its surroundings are undergoing transformations in their livelihoods, which mainly translate into changes in the sociability regimes, residential patterns and strategies for natural resource use (Eloy and Lasmar, 2006). Although the town itself is outside the demarcated territory, the influence of the urbanisation process looms over Indigenous Lands, creating a dynamic relationship between both domains. Therefore, before focusing on the specific case of the town, a brief description of territorial organization in the Upper Rio Negro region as a whole is necessary.

Tukanoan and Arawakan groups interact in an open-ended regional system of exchanges of women and goods. A number of sociocultural resemblances led Berta Ribeiro (1995) to speak of a 'rio Negro culture', for example, matrimonial exogamy and patrilineal descent. Local communities are built upon the agnatic principle. Ideally, the local group is composed of men belonging to the same clan (*sibs* in the anthropological literature of the region) and their 'foreign' wives. Local groups (clans or parts thereof) are scattered along the rivers according to hierarchical distinctions. Those of superior clans inhabit the lower parts, which are more abundant in fish, while groups of inferior origin generally inhabit headwaters. The economy of riverine communities is based mainly on slash-and-burn agriculture, fishing and handicraft production. Each community is associated with a traditional territory, within which there are areas under control of domestic groups (gardens and productive backyards), areas appropriated by patrilineal and patrilocal groups (secondary growth or fallows) and common use areas (dense forest).

2. Hypothesis and Methodology

Based on our analysis of socioenvironmental characteristics in the Upper Rio Negro, and on bibliography consulted regarding family-based multiple use systems in Latin America (Mesclier, 2006 ; Toledo *et al.*, 2003), we suggest in this article that resilience of common resource management in periurban areas depends on sociospatial complementarity of land and resource appropriation practices. This complementarity is related to complex systems which include production, extraction and paid labour.

Our data were obtained from three sources:

- Ethnography of transformations in the livelihoods of families originating from Indigenous Lands and residing in São Gabriel, with emphasis on their own perceptions about this process.

³ Among groups in the Eastern Tukano linguistic family, the following can be listed: Desana, Tukano Kubeo, Wanana, Tuyuka, Pira-tapuya, Miriti-tapuya, Arapaso, Karapanã, Bará, Siriano, Makuna, Tatuyo, Yuruti, Barasana, Taiwano. The Aruak family includes the following groups: Baré, Tariana, Baniwa, Kuripako and Werekena. The Yuhupde, Hupda, Dâw and Nadöb are examples of groups in the Maku family.

- Spatial investigation of periurban agriculture⁴ and land tenure regulations, by means of landscape reading, participative mapping and remote sensing with satellite images, complemented by systematic GPS assessments. Data were compiled in a Geographic Information System (Arcview 3.2), which enabled production of thematic maps.

- Socioeconomic interviews about production systems, migratory flows and forms of access to and appropriation of natural resources by families. First, a sample determined by the location of the household in the study area was used (n=210). Interviews were more detailed with 75 domestic groups, by means of a sample based on various parameters (ethnicity, origin, time living in town, main source of income, location of household and production). Of all interviews, 55% were carried out with families residing in town and 45% in communities in the outskirts.

This study was performed in close partnership with the Socioenvironmental Institute (*Instituto Socioambiental* - ISA) and the Rio Negro Federation of Indigenous Organizations (*Federação das Organizações Indígenas do Rio Negro* - FOIRN), since the topic of relationships among changes in livelihoods, natural resource management and urbanization is common in projects and programs of these institutions.

B. Results and discussion

1) Use and appropriation of natural resources in remote communities

Before the process of colonization of the region by white men, the most commonplace situation was for each *sib* or portion thereof to live in one longhouse and control an expanse of territory with a stretch of river as its boundary (Hugh-Jones, 1979). Crops and recent fallows were managed by domestic units individually, while dense forest areas were collectively managed (*ibid.*).

In contemporary communities in Indigenous Lands, largely due to the influence of Salesian missionaries, the traditional occupation standard, in which the entire local group inhabited one longhouse, has been replaced in recent decades. In its place, a new standard has been adopted, in which a nuclear family (a couple and their single or newly married children) lives in a smaller house.

Boundaries for the community are imprecise, albeit invariably including all sections of the physical landscape in one area: shoreline, rocks, waterfalls, springs. Areas used for planting are not usually continuous for one family. They alternate according to the different environmental niches, which serve simultaneous purposes of providing food, medicine and fuel. Due to the itinerant nature of swidden agriculture, families tend to shift and/or build new households and cooking houses (Meira, 1997). Spatial dispersion of residential and productive units generates daily and weekly mobility. Furthermore, indigenous inhabitants of the Rio Negro basin travel the rivers and forests on countless occasions, to make use of certain resources or visit relatives (Oliveira and Peres, 2000).

The closer a family is to its household and cooking house, the greater the expression of its rights over the area. An individual who is compelled to move farther from his or her house and crops is prone to have his or her individual rights diluted among the set of families in the community or the set of families in neighboring communities. Likewise, natural resources in

⁴ Periurban agriculture, here, is that which is carried out in a space with predominance of both agricultural and non-agricultural use of resources (soil, water, labour, fertility) (Temple and Moustier, 2004). A radius of 25km around the town of São Gabriel da Cachoeira was considered.

these areas range from exclusive use by domestic groups (fields and productive backyards), to appropriation by patrilinear and patrilocal groups (fallows) to common use (dense forest, timber, fibers).

Being a member of the community, commonly through inheritance, entitles one to use of goods, resources and opportunities of the territory. Therefore, if a family no longer practices agriculture and/or spends a large part of its time in town, the bonds and feeling of belonging can still be maintained via participation in the social life of the community (collective work, religious cults, festivities, etc.). Generally, use of forest resources is allowed, but under collective use rules, i.e. limits are set for amount/value and only non-commercial use is permitted. In these cases, families often keep on taking care of their fruit trees in the community centre inherited from parents and grandparents. Fallow areas and fruit trees may also be entrusted to other inhabitants, in exchange for services and/or products. The important role of this flexibility in periurban communities, facilitating mobility of individuals between town and forest, is shown later.

2) Occupation of the periurban area

a. Current urban growth

Although over 40% of the approximately 35 thousand inhabitants in the municipality are concentrated in São Gabriel da Cachoeira, it is not the sole location with high population density in Upper Rio Negro. Among the approximately 700 communities and farms scattered along the riverbanks, five large centres can be found: Assunção do Içana, Taracuaá, Pari Cachoeira, Iauareté and Cucuí. The first four originally grew around missionary centres. Existence of other locations under urbanisation processes intensifies the problem of environmental, social and cultural sustainability in this vast territory.

Recent data indicate that 44% of all São Gabriel da Cachoeira inhabitants originate from other locations in the macro-region formed by the Rio Negro Basin, be these locations riverine communities or missionary centres, such as Santa Isabel do Rio Negro and Barcelos. Denizens born locally add up to 42.6%, while those born in other regions of the country account for a mere 13.6% of the urban population (ISA/FOIRN, 2005).

The most common reasons, according to the indigenous population, for moving to São Gabriel are still the search for education and work (ISA/FOIRN 2005). The image of the town as a place of relative abundance keeps enticing entire families to migrate. They generally settle in the neighbourhoods in the outskirts of town, distant from the commercial centre, meaning fewer urban benefits, e.g. paved streets, electricity, plumbing, garbage collection and public leisure areas. The two most recently created neighbourhoods, Dabaru and Areal, established in the 1980s and 1990s, respectively, are home to 53% of all São Gabriel inhabitants (ISA/FOIRN, 2005).

Population in the periurban area grew by 12% between 1996 and 2003, while population growth in town was 32.5%.

b. Affirmation of individual property in the urbanization process

Establishment and growth of towns in the region, parallel to waning riverine communities, should be analysed in the context of the long history of contact between indigenous communities and white men in the Upper Rio Negro, starting in the 17th Century. The process was marked by episodes of slavery, semi-compulsory labour in *piçava* groves and rubber forests, and more recently by the systematic relationship with Salesian missionaries. Between the 1920s and 1970s, Salesians maintained a program emphasizing education for children and young adults in boarding schools located in the mission headquarters.

Prior to the 1960s, some farms and communities could be found in the outskirts of São Gabriel, occupied mainly by Baré families, an ethnic group which traditionally lived in the territory which is now the town. Some descendants of military personnel and white merchants already owned land along the riverbanks, in addition to their homes in town. Since the start of the century, the Salesian mission took over a large plot of land in town, which is now farmed by town-dwelling indigenous families. It is currently almost entirely surrounded by urban settlement. These families were not authorised to build houses and transfer their use rights to others, and as a result, a mosaic of swidden plots, fallows and fruit gardens are owned by the Diocese.

The growth of towns at some points of Upper Rio Negro was also encouraged by a number of government programs that aimed at geopolitical integration of the region, e.g. the National Integration Plan (*Plano de Integração Nacional – PIN*) designed by the Federal Government and implemented in the 1970s. Military presence on the border zone and infrastructure works fostered heavy in-flows of outsiders, mainly from the Brazilian Northeast. The Army and Air Force took control of large stretches of land on the western border of town, expelling indigenous households and farms.

Meanwhile, the non-indigenous military personnel, merchants and gold prospectors started settling in town. Most acquired land along newly-built roads, where cattle ranches were established. Others married indigenous women and started using land along the river. A wave of gold prospecting instilled fear in indigenous families of a white man's "invasion", which led many to seek regularisation of land tenure rights by means of a title issued by the National Institute of Colonisation and Agrarian Reform (*Instituto Nacional de Colonização e Reforma Agrária – INCRA*).

During this same period, migration of indigenous people from communities in the countryside into town became more intense. An important reason for this was the shutting down of Salesian boarding schools in the early 1980s, and the subsequent need for families to move to São Gabriel in order for their children to finish their schooling. Furthermore, although possibilities for paid labour were already relatively limited for the indigenous population, the growing town had considerable allure for those who dreamt of getting a job, particularly in the context of falling prices of products originating from extractivism (Emperaire, 2000). Thus, the migratory in-flow became an important trait of sociodemographic dynamics in Upper Rio Negro (Lasmar, 2002).

Newly arrived indigenous families began to clear fields on the shores of the Rio Negro. This explains current presence of pluri-ethnic communities (with populations ranging from 30 to 170 inhabitants) made up of Baré or Tukano family groups (Figure 2). Demand for land was met by distribution of plots in an agricultural settlement created by the Municipal Government in

the northern part of town in 1995 (Teotônio Ferreira Agricultural Settlement). This settlement covers an area of 35 km², divided into 10-hectare lots. Families which benefited gained exclusive use rights over forest resources for agricultural purposes, although the municipal government kept ownership of the land. This agricultural settlement is currently located between large private roadside estates and areas reserved for the Federal Government, with a tendency to expand northward (Figure 2). Thus, as time went by and population grew denser, available land became increasingly remote, forcing some families to walk upward of four hours to reach their swidden plots (Eloy, 2003).

The Indigenous Land is no farther than the riverbank opposite town. Nevertheless, although land tenure titles no longer hold official value, there are “functional” estates, i.e. circumscribed land units in which natural resources are appropriated exclusively and individually. In most cases, families which “own” these plots have lived in town for over 20 years, and are made up, at least partly, of members (head of household, spouse and/or parents/in-laws) who label themselves either Baré or Oriental Tukano (Tukano, Tariano, Pira-Tapuya, etc.). Generally, they have a source of income in town (job, trade). Most undertake productive activities with “assistance” from a “caretaker”. The caretakers are authorised to farm the lands of the owner by means of various types of agreements, as shown later in this study.

The region of São Gabriel, and even the Indigenous Land itself, may be said to have urbanisation taking place parallel to affirmation of private land tenure, as in other regions of the Amazon and Brazil (Alfredo 2003; Becker, 1990). Due to this tendency, as one moves closer to the urban centre, the territories of communities become smaller in size, fragmented and/or with strict boundaries (Figure 2).

c) Periurban communities

Many communities are located in the periurban area, i.e. houses built around a chapel and a school. These *communities* coexist with the *sítios* (small *farms*), which, in turn, are composed of one or two isolated houses (on an island, on the riverbank or on the side of the road). The *sítio* is generally a place of residence, be it principal or secondary. *Sítio* dwellers may be part of a community, taking part in its routine of activities and managing common property areas.

The opposite may also be true. Starting in the 1970s, for instance, some members of older communities came to town and stopped “participating”, and were adamant about setting the boundaries between their property and the rest of the community, using fences and signs, and acquiring an individual tenure title. Due to successive movements of adhesion and separation of families, these communities have traits of partial heterogeneity in ethnic and residential composition (partly gathered in groups, partly scattered in *sítios*).

Meanwhile, since the 1980s, recent communities, mainly inhabited by families originating from the Içana Basin⁵ (Baniwa and Kuripako), have been created and have expanded (Table 1).

⁵ Affluent of the Rio Negro on the right margin, upstream from São Gabriel.

Main ethnicity	Number of locations	Population (inhabitants)
Baniwa	11	145
Kuripako	3	78
Baré	11	62
Belonging to Oriental Tukano linguistic family (Tukano, Tariano, Piratapuya, etc.)	11	75
Mixed	1	9
“White”	4	6
TOTAL	41	375

Table 1: *Sítios* and communities created in the periurban area between 1996 and 2004

Source: Field data (2003/2004) and 2003/2004 DISEI/FOIRN census.

This recent population densification is concentrated around two points: along the Camanaus road, which connects the town to the port bearing the same name, located downstream, and on the riverbank opposite the town’s main shoreline. The group of families makes use of a reduced territory, with clearly defined boundaries (under 20 hectares), since it is surrounded by individual estates. In some cases, e.g. virgin or abandoned sites, the title was acquired from the municipal government. In others, negotiations were started with the former owner (usually one or more Baré and/or Tukano families). Due to high population density, this type of community has conditions imposed on production systems by the scant land, lack of access to fishing resources and degraded forest cover (Eloy, 2005).

Generalisation of private property as a form of access to land, as well as reduced community size, lead families establishing themselves in the São Gabriel region to adopt one of two types of strategies: 1) pluriactivity (i.e. intense agricultural activity associated with paid labour); 2) indirect access to land.

The third part of this article shows that most families combine the two strategies in order to sidestep the scarcity of natural resources, re-creating a kind of common resource management, via networked territorialities.

3. Territorial innovations: incorporating the town into community-based natural resource management

a. Circular mobility and multilocality

Despite the fact that the migratory flows largely determined the historic urbanization process, it would not be entirely correct to speak of ‘rural exodus,’ i.e. a generalized movement or definitive transfer of residence from communities to the urban centre and its outskirts. Movements polarized by the town may be either definitive or temporary, reversible or circular (Dureau, 2002; Domenach and Picouet, 1987) and are combined with seasonal mobility between town and forest, the pace of which is set by school and agricultural calendars. Over a third of all domestic groups residing in the urban area own one or two productive swidden plots

in the periurban zone. Furthermore, 13.5% of all families claim that they hunt in areas surrounding the town and 23% report that they fish regularly (ISA/FOIRN, 2005).

It is commonplace for a part of the domestic group to study or work in São Gabriel, while the other part takes on responsibility for production of food. On the other hand, inhabitants of communities and *sítios* in the periurban zone own or use, for the most part, a household in town. Thus, regarding organization of living spaces of indigenous families, there is a continuum between the urban and forest domains. High spatial mobility of individuals and multilocality of residential and productive sites are therefore characteristics which define relations between the two domains. In other words, it can be said that the particular dynamics of the periurban area are delimited by multipolar residential systems (Le Bris et al, 1985) which are coordinated by the mobility pattern between urban and rural areas, not unlike what happens in other towns of Latin America (Barbary et al, 2004; Cortes, 1998).

In the case of São Gabriel da Cachoeira, prevalence of the multilocality pattern is strictly associated with the fact that shifts to the urban centre generally take place in a gradual manner. Initially, only a part of the domestic group moves into town or communities located in the periurban area, until conditions favouring appropriate installation of all members have been met (Figure 3).

b. Exchanges of use rights

As shown earlier, the main motivations stated by families which leave their communities to reside in the town of São Gabriel are education and paid labour (Lasmar 2002). Access to merchandise is also an important factor in this decision, as is the increased ability to afford this merchandise, which constitutes an important way to gain social recognition.

In the urban and periurban spaces, the standard means of access to land is purchase of exclusive use rights. Ironically, another very frequent means of land acquisition is grabbing (illegal occupation) in cases of prolonged absences, representing precisely the negation of the right to ownership.

The process of settlement in the perirurban zone generated inequalities in access to employment, land and capital, which is highly dependent on the period of residence in town and the pattern of incorporation in the urban socio-economic system. This can lead indigenous families to prolonged periods of temporary residence in town awaiting possibilities for this access. Whites generally hold privileged positions in the urban social system, with better access to paid activities and, consequently, to merchandise. Most indigenous families who come to town lack the means, at least at first, to afford farmland, considering their need to invest in acquisition of an urban plot on which to build their homes.

“How does agriculture change in town?”

Pedro Garcia, Tariano leader from Iauaretê (04/02/05)

“Nowadays, agriculture is safe, because even if people come to town looking for work, they keep farming, and do not change their healthy dietary habits. [...] The main difference lies in the form of getting land. You need to have cash or acquaintances... and since the preferred style here is grabbing, indigenous people are at a disadvantage, since they always ask for permission first. It took me nine years to find and negotiate my current plot of land!”

Families tend to sidestep the difficulty faced when looking for agricultural land by means of strategies of indirect access to land, mainly via negotiations with partners belonging to their kinship and acquaintance networks. In this context, marriage with white men is also an important means of access to land. Women married to white men in town more often than not own plots of land in the periurban area, thus ensuring subsistence in São Gabriel to their relatives⁶.

In addition to matrimonial strategies, a large variety of arrangements favouring indirect and temporary access to land and resources can be found. Several factors can be mobilized, be they quantitative (food, equipment, merchandise) or not (prestige, knowledge, security, services). They are more complex than classic partnerships or leasing and are therefore worthy of more in-depth studies.

According to Lavigne-Delville *et al.* (2001), a process of delegation of land tenure rights is defined as the set of mechanisms which lead an individual or group to negotiate and obtain from another individual or group the right to exploit, in a non-definitive manner, a part of their estate or territory. These rights are not limited to soil, but also other spaces and resources, with predetermined restrictions (period, type of use, etc.)⁷. According to the nature of arrangements, as well as presence of paid labour, families adapt their production system. The types of concession which mobilize resources used in production of food in São Gabriel and the surrounding area are presented next.

- **Limited-time loan**

This arrangement is aimed at immediate resolution of the problem of access to land. A mutual assistance and reciprocal exchange relationship is established among relatives. A family “loans” a plot of swidden plot or fallow area to a newly-arrived family, in order to enable temporary fulfilment of needs.

⁶ For an analysis of the network of social and economic relations generated by marriage between indigenous women and white men in São Gabriel, see Lasmár (2002).

⁷ For fishing resources, see Sobreiro (2007).

Case study 1: A limited-time loan example (2003)

Raimundo Baniwa lived with his siblings in the Jacaré Posso *sítio*, south of the Santa Rosa community, in Mid-Içana. In 2002, his first son, aged 19, came to live in the community of Nova Vida, on the Camanaus road, in order to study in São Gabriel. Raimundo's uncle Felipe lives in Nova Vida. The other children studied in Santa Rosa, but, according to Raimundo "this had to be interrupted, because they had to paddle their canoes over an hour and a half to get to school." In March, 2003, Raimundo came with his four other children to Nova Vida, where they were able attend school in the community. "There, in Jacaré, my brothers and my sister will look after our swidden plots. We shall go back during vacations to make toasted manioc flour. We still have some of the manioc flour we brought [...] and my uncle Felipe has granted me a piece of his swidden plot where we can make our own, while my swidden plot here is ripening. To get by, we make *arumã*⁸ handicrafts to sell in town."

- Right to cultivate and harvest in exchange for labour or products

This second type of arrangement takes place between a person/family with exclusive rights for use of a plot of land, made legitimate by means of a land tenure title and/or political and economic sovereignty, while the other person/family receives authorization to cultivate this plot. Usually, the couple which owns the land lives in town, has a business or paid employment and/or receives retirement pay, and spends weekends and holidays on the farm. The landowner invariably gives an oven or canoe to the caretaker, who tends to offer agricultural products in return. This, however, is not a partnership in the strict sense of the word, since rules are not apparently clearly defined or fixed. The caretaker may be in charge of clearing the land and watching over fruit trees, while farming his own plots, picking fruit, fishing and hunting, always respecting certain limits⁹.

The caretaker's wife generally has her own swidden plot, but may occasionally pick manioc from the landowner's plots, if she gives him part of the meal produced from it. It is also common for one of the children to live in the landowner's house in town, in order to attend school. In some cases, the caretaker is required to contribute with payment of annual levies, if there are any.

Case study 2: a landowner/caretaker relation example (2004)

Maria lives in the Praia neighbourhood, in São Gabriel, and owns a large estate of 3000 meters wide, by the river shore, facing the town. The estate was inherited from her grandfather, son of a Cucuí soldier. The land title dates back to the beginning of the century, and ownership of the land by the family was not questioned during creation of the Indigenous Land in 1998. Eight years ago, Maria and her husband "authorized" a Baniwa family, coming from Upper Içana, to clear the fields and establish their community on the estate. According to Maria, "I pay them to clear the fields for me [...] they may farm wherever they like [...] when we come to visit, they often offer us manioc flour and fruit [...] The opposite shore does not belong to indigenous people. Beyond the limits of our land is where the Indigenous Land starts."

⁸ *Ischnosiphon polyphyllus*, Marantaceae

⁹ The arrangement may be breached if, for instance, the landowner becomes aware that the caretaker has been selling locally grown products.

- **Long-term loans with restrictions on use**

In this case, farming and harvesting rights for forest products are granted with no expiration date, but perennial species cannot be grown and neither can permanent housing be built (only a manioc cooking house). The landowner possesses a large estate, close to town, as is the case with the land owned by the religious group or lands owned by merchants who keep their influence in town by means of these "favours." Farmers usually grow small amounts of manioc, and their rights cannot be transferred to third parties without prior consent from the landowner.

4. Migrating into town: diversification of activities and land property rights

If, at first, the possibility of temporary use of a swidden plot or fallow area belonging to a relative already residing in town is an important means for sustenance of newly arrived families, in time, progressive insertion into social networks and reaffirmation of partnerships may facilitate acquisition of permanent use rights on an individual plot of land or that of a community. However, joining the periurban community is not always easy or desired, since, as previously mentioned, community life has its obligations, such as participation in events and community work. Therefore, many recently installed families avoid this type of arrangement, doing whatever they can to get their own land, particularly those whose immediate cause for leaving the community of origin was a conflict. If the head of the household fails to get a lot from the municipal government (settlement, road), he may become a caretaker for a limited time. In fact, it is commonplace for the first son, who came to town before the parents (for military duty, marriage or school) to start negotiations. In addition to making their manioc cooking houses available to new occupants, the landowner couple always plays an important role in diversification of the caretaker's family crops.

In the course of migratory trajectories, families often go through various types of indirect access to land. At a first stage, short-term restricted loans are combined with frequent returns to the community, where the family still owns productive fields. In this initial phase of insertion in urban life, becoming a caretaker is a means of exchanging labour for access to merchandise and education for children.

As the domestic group gets accustomed to its new living conditions, acquisition of its own plot becomes an objective. Relations with the landowner often deteriorate and the caretaker tends to start feeling exploited. The uncomfortable situation which arises between caretaker and landowner (gossip, misunderstandings) leads to shifting fields or abandonment of agricultural production in favour of paid employment.

If on the one hand private property (legal or functional) is the dominant type of land tenure in the outskirts of town, migrants, on the other hand, make use of multiple arrangements to ensure access to natural resources. Relations between landowner and occupant determine the types of exchange and margin for activity by partners. The following are examples: cooperation (commensality and sharing) with close relatives, asymmetrical relationships with more distant relatives living in town and paternalistic exploitation. The monetary level of the arrangement and its flexibility are reflections of the types of relations involved in the exchanges with usage rights (Colin, 2002).

Thus, due to the lack of available plots of land near town, indigenous families find means of spatial diversification of use rights and partnership modalities, which makes possible access to natural resources, income and family labour which is distributed unevenly in space and time, between urban centres and forests. Furthermore, mobility between production sites enables maintenance of space-time complementarity among swidden-fallow practices in the periurban landscape, which contributes to sustainability of slash-and-burn agriculture (Eloy, 2008). The “multilocality” strategy may be regarded as a manifestation of resilience of indigenous territorialities which guarantee control over and collective management of natural resources.

C. Conclusion: territorialities and social networks linking town and forest

In tropical forest regions and particularly in the Amazon, conceptual opposition between town and forest is often related with two main regimes for appropriation of natural resources and land: private property vs. common property usufruct. In fact, these norms induce transformations in composition and functions attributed to croplands and fallow areas (Eloy, *op.cit.*). In the Upper Rio Negro, the forms of urban territoriality generally lead to dispersion of former inhabitants of a given community and intensification of the atomization process in families. Albeit present in some neighbourhoods of town, short stretches of a given street inhabited by relatives of an extended family do not change the fact that in São Gabriel the nuclear family (couple and children) becomes the relevant unit from a sociological standpoint. This is true in spite of the fact that the number of families living in the same household is relatively larger than in communities in the Indigenous Land (due to difficulties in finding living spaces) (Lasmar, 2002).

Nevertheless, even in these urbanized regions of Upper Rio Negro, indigenous families have networked migration and territoriality systems, i.e. they coordinate different living spaces and means of natural resource appropriation, with accumulation of land tenure rights acquired during the migratory trajectory. Diversification strategies of families meet simultaneous goals, primarily food security and obtaining merchandise, in addition to land capitalisation around a relatively stable urban residence. Thus, growing legitimization of private property, associated with the urbanisation process, does not lead to linear individualisation, but rather to a reproduction of the collective resource management regime at the scale of a more restricted family unit (the domestic group or the extended family) (Le Roy, Bertrand *et al.*, 2006).

It may be concluded that in Upper Rio Negro, the territorial innovations described in this study tend to reduce inequalities in access to land and production factors. This configuration seems to permeate the relationship between indigenous people and their territory in the Amazon. Throughout their interaction with national society, and even with clearly defined and extensive lands, they seek to interact with urban contexts by means of extended social networks, reaching beyond the local and regional domains (Moreira, 2003; Robert, 2004). It is not, therefore, a process of substitution of “traditional” territorialities by “modern” territorialities, but rather a dynamic system in which both forms of relationship with the territory are complementary to each other.

Lastly, it is worthy of note that recomposition of territorialities, the main element in resilience of indigenous management systems, is not evenly distributed, since certain segments of the population are more privileged than others in the urban context (social, environmental and economic capital). Institutional arrangements in the form of property rights are continually established and redefined in order to determine (and modify) the scope and nature of the

natural resource governance regime. An approach of Environmental Entitlements (Leach, Mearns *et al.*, 1999) should provide a rich analysis by highlighting the dynamics of such highly complex commons.

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Bibliography

Alfredo, A., 2003. A Constituição do Espaço Urbano de São Paulo (Brasil). Aspectos sobre a Problemática Indígena na relação contraditória cidade campo. *GEOUSP*. 13 [on line].

Alencar, E. F. 2004. Identidade, territorialidade e conflitos socioambientais : alguns cenários do Alto Solimões (AM). In: Esterci, N., Léna, P., Lima, D., *et al.* (Eds.), *Boletim Rede Amazônia: diversidade cultural e perspectivas socioambientais*. Rio de Janeiro/Belém, IRD, PPGSA/UFRJ, NAEA/UFPa. Vol Ano 3, nº1: 67-76.

Albert, B. 2000. Associações indígenas e Desenvolvimento Sustentável na Amazônia brasileira. In: Ricardo, C. A. (Ed.) *Povos Indígenas do Brasil, 1996-2000*. São Paulo, Instituto Socioambiental: 197-207.

Almeida, A. W. B. 1989. Terras de preto, terras de santo, terras de índio: uso comum e conflito. In: Hebette, J. and Castro, E. (Eds.), *Na trilha dos grandes projetos*. Belém, NAEA/UFPa.

Barbary, O., Dureau, F. ; Hoffmann, O. 2004. Mobilités et systèmes de lieux. In : Dureau, F., Barbary; O., Goueset, V. and Pissoat O. (Eds) *Villes et sociétés en mutation. Lectures croisées sur la Colombie*. Ed Economica. Collection villes: 69-122.

Benatti, J. H. 1999. Unidades de conservação e populações tradicionais. *Novos cadernos do Naea*, II (2): 107-196

Becker, B. K. 1990. *Amazônia*. São Paulo, Ed. Atica. 112 p.

Berkes, F.; Turner, N. J. 2006. Knowledge, Learning and the Evolution of Conservation Practice for Social-Ecological System Resilience. *Human Ecology*, 34 (4): 479 - 494.

Barbieri, A. F., Monte-Mór R. L. M., Bilsborow, R.E. 2007. Towns in the jungle: exploring linkages between rural-urban mobility, urbanization and development in the Amazon. *Urban Population, Development and Environment Dynamics in Developing Countries*, Nairobi, Kenya.

Browder, J. O.; Godfrey, B. J. 1997. *Rainforest Cities. Urbanization, Development and Globalization of the Brazilian Amazon*. New York: Columbia University Press. 424 p.

Chauveau, J.-P.; Cormier Salem, M.-C.; Mollard, E. (Eds.). 1999. *L'innovation en agriculture : questions de méthodes et terrains d'observation*. Paris, IRD (Coll. A Travers Champs)

Chauveau, J.P., 1999. *La diffusion de la problématique de l'innovation dans l'étude des systèmes agraires*. In: Chauveau, J.-P., Cormier Salem, M.-C., and Mollard, E. (Eds.) *L'innovation en agriculture : questions de méthodes et terrains d'observation*. Paris: IRD (Coll. A Travers Champs). p. 10-31.

Colin, J. P. 2002. *Eléments de méthode pour une recherche empirique compréhensive sur les contrats agraires*. Document de travail n°5 de l'UR 095. URL: <http://www.mpl.ird.fr/ur168/resultats/Documents%20de%20travail%20UR/5Colin.pdf>

Cortes, G. 1998. Migrations, systèmes de mobilité, espaces de vies: à la recherche de modèles. *Espace géographique* 27(3): 265-275.

Cunha, M. C. d.; Almeida, M. W. B. 2001. Populações tradicionais e conservação ambiental. In: Capobianco, J. P. R. (Ed.) *Biodiversidade na Amazônia brasileira: avaliação e ações prioritárias para a conservação, uso sustentável e repartição dos benefícios*. São Paulo, Instituto Socioambiental / Estação da liberdade: 184-193.

Diegues, A. C. S. A.; Moreira, A. d. C. (Eds) 2001. *Espaços e Recursos Naturais de Uso Comum*. São Paulo, USP/ Núcleo de Apoio à Pesquisas sobre Populações Humanas e áreas úmidas Brasileiras. 294 p.

Domenach, H.; Picouet, M. 1987. Le caractère de réversibilité dans l'étude de la migration. *Population* 42(3): 469-484.

Dureau, F. 2002. Les systèmes résidentiels : concepts et applications. Levy, J. P. ; Dureau, F. (Eds) *L'accès à la ville. Les mobilités en question*. Paris, L'Harmattan: 355-382.

Eloy, L. 2003. "A cidade cresceu, minha roça virou quintal". Le système agraire de la zone periurbaine de São Gabriel da Cachoeira, Amazonie brésilienne. *Cahiers des Amériques Latines*, 42: 103-122.

- Eloy, L. 2005. *Entre ville et forêt : le futur de l'agriculture amérindienne en question*. Thèse de Doctorat en géographie. Paris: Université de Paris III/ IHEAL. 408 p.
- Eloy, L. 2008. Dynamiques et adaptation des systèmes agroforestiers périurbains dans le nord-ouest Amazonien. *Bois et Forêts des tropiques* : 295(2): 45-55.
- Eloy, L.; Lasmar, C., 2006. A urbanização no alto Rio Negro: as dinâmicas socioculturais e agrícolas em jogo. In: Ricardo, F., Ed. *Povos indígenas no Brasil 2001-2005*. São Paulo: Instituto Socioambiental. p. 237-242.
- Eloy, L.; F. M. Le Tourneau, 2008. L'urbanisation provoque-t-elle la déforestation en Amazonie? Innovations territoriales et agricoles dans le nord-ouest Amazonien (Brésil). *Annales de Géographie* : In press.
- Emperaire, L. 2000. Entre selva y ciudad: estrategias de producción en el Río Negro medio (Brasil). *Bulletin de l'Institut Français des Etudes Andines* 29(2): 215-232.
- Gallois, D. T. 2004. Terras ocupadas? Territórios? Territorialidades? In: Ricardo, F. (Ed.) *Terras indígenas e unidades de conservação: o desafio das sobreposições*. São Paulo, Instituto Socioambiental: 37-41.
- Hugh-Jones, C. 1979. *From the Milk River: spatial and temporal processes in the northwest Amazonia*. Cambridge: Cambridge University Press. 332 p.
- ISA/Foim 2005. *Resultados da Pesquisa Socioeconômico-demográfica da cidade de São Gabriel da Cachoeira*. São Gabriel da Cachoeira. 25 p.
- Lasmar, C. 2002. *De volta ao Lago do Leite: a experiência da alteridade em São Gabriel da Cachoeira (alto rio negro)*. Thèse de Doctorat en anthropologie. Rio de Janeiro: UFRJ, PPGAS-MN. 281 p.
- Lavigne-Delville, P., Toulmin, C., Colin, J.-P., et al. (Eds) 2001. *L'accès à la terre par les procédures de délégation foncière (Afrique de l'Ouest rurale): modalités, dynamiques et enjeux*. Paris, GRET-IRD- IEED. 207 p.
- Leach, M.; Mearns, R.; Scoones, I. 1999. Environmental Entitlements: Dynamics and Institutions in Community-Based Resources Management. *World Development*. 27(2): 225-247.
- Le Bris, E. ; Marie, A. ; Osmont, A et al. 1985. Résidence, stratégies, parenté dans les villes africaines. *Les Annales de la recherche urbaine*, 25: 13-30.
- Leitão, S. 2004. Superposição de leis e de vontades. Por que não se resolve o conflito entre terras indígenas e Unidades de conservação? In: Ricardo, F. (Ed.) *Terras indígenas e unidades de conservação: o desafio das sobreposições*. São Paulo, Instituto Socioambiental: 17-23.

Le Roy, E.; Bertrand, A. ; Montagne, P. 2006. Gestion locale des ressources renouvelables et sécurisation foncière à Madagascar. In: *L'Etat et la gestion locale durable des forêts en Afrique francophone et à Madagascar*. Paris: L'Harmattan. p. 368-396.

Meira, M., *Índios e brancos nas águas pretas. Histórias do Rio Negro*, in *Seminário Povos Indígenas do Rio Negro: Terra e Cultura / FOIRN*. 1997: Manaus.

Mesclier, E. 2006. Agribusiness et paysanneries dans la nouvelle donne mondiale. In : Dureau, F.; Gouëset V.; Mesclier, E. (Eds). *Géographies de l'Amérique latine*. Rennes, Presses Universitaires de Rennes: 171-188.

Moreira, E. L. 2003. Amazônia em movimento: Redes e Percursos de Desenvolvimento dos Índios Ye'kuana, Roraima. *Cadernos de Campo (USP)*, Volume 11.

Oliveira, A. G. d.; Peres, S. 2000. *Relatório sobre a identificação da população indígena ribeirinha do Baixo Rio Negro - Município de Barcelos/AM*. Brasília, ISA/Foirn. 29 p.

Ostrom, E., Gardner, J.; Walker, J. 1994. *Rules, Games & Common Pool Resources*. Ann. Arbor The University of Michigan Press. 369 p.

Ribeiro, B. G. 1995. *Os índios das águas pretas: modo de produção e equipamento produtivo*. São Paulo, Companhia das letras, Edusp.

Ribeiro, E. M., Galzoni, F. M.; Calistro, J. S. 2002. *Regulação, normas e técnicas de extração de recursos naturais em áreas comunitárias do Jequitinhonha*. XIII Encontro Nacional de Estudos Populacionais, Ouro Preto. In: *Anais do XIII Encontro Nacional de Estudos Populacionais*. Belo Horizonte, ABEP: 507-523.

Robert, P. D. 2004. "Terre coupée" Recomposition des territorialités indigènes dans une réserve d'Amazonie. *Ethnologie française*, XXXIV (1).

Sahlins, M. 1997. O "pessimismo sentimental" e a experiência etnográfica: por que a cultura não é um "objeto" em via de extinção (parte I). *Mana* 3(1): 41-73.

Sirén, A. H. 2007. Population Growth and Land Use Intensification in a Subsistence-based Indigenous Community in the Amazon. *Human Ecology*, 5(6): 669-680.

Sobreiro, T. 2007. *Territórios e Conflitos nas Pescarias do Médio Rio Negro (Barcelos, Amazonas, Brasil)*. Manaus, Amazonas, brasil, INPA/UFAM. Mémoire de master: 154 p.

Temple, L.; Moustier, P. 2004. Les fonctions et contraintes de l'agriculture périurbaine de quelques villes africaines (Yaoundé, Cotonou, Dakar) *Cahiers Agriculture* 3(9): 15-22.

Toledo, V. M. ; Ortiz-Espejel, B., Cortes, L. *et al.* 2003. The multiple use of tropical forests by indigenous peoples in Mexico: a case of adaptive management. *Conservation Ecology*, 7(3): 9.

Figures

Figure 1: Location of São Gabriel da Cachoeira in Upper Rio Negro

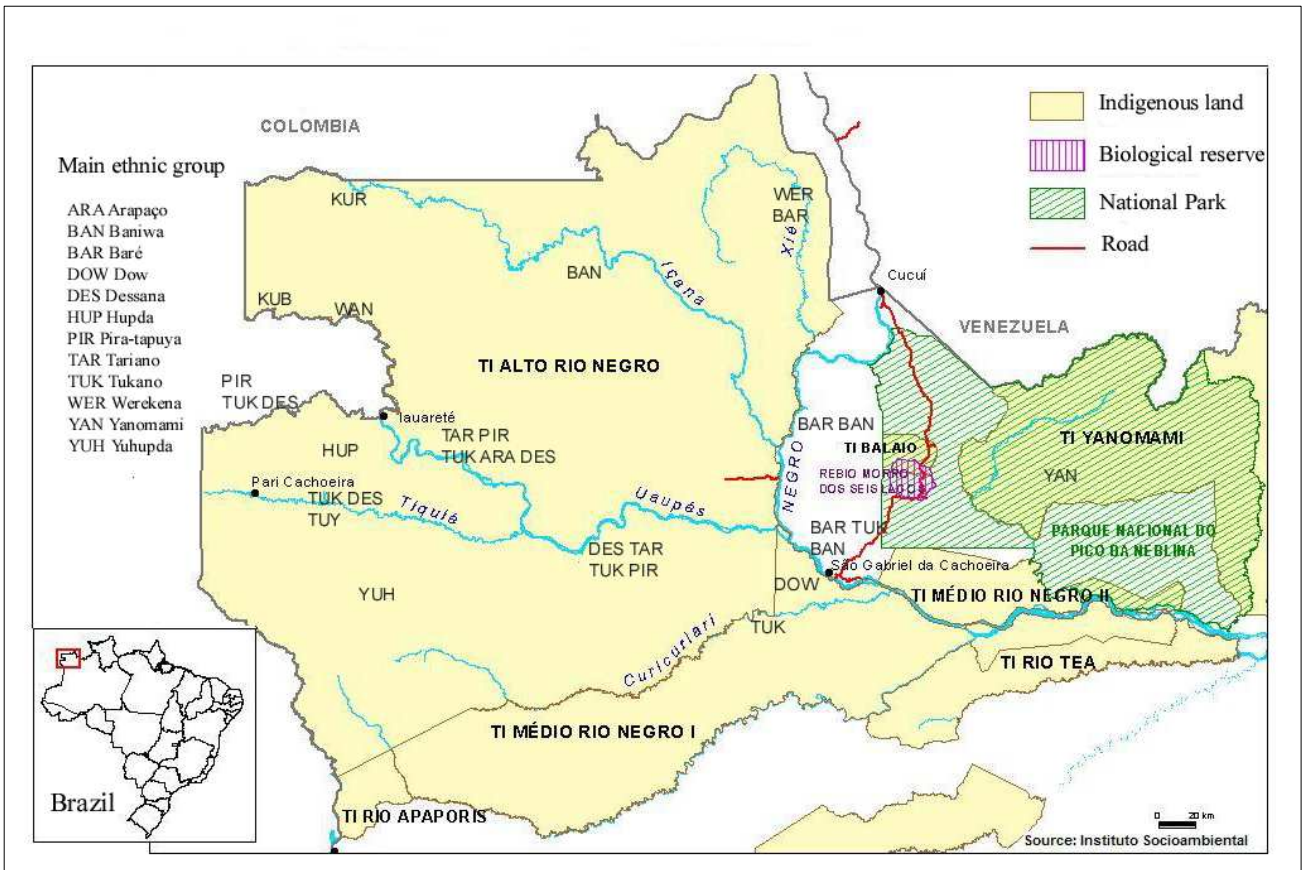


Figure 2: Land tenure rights in the region of São Gabriel da Cachoeira

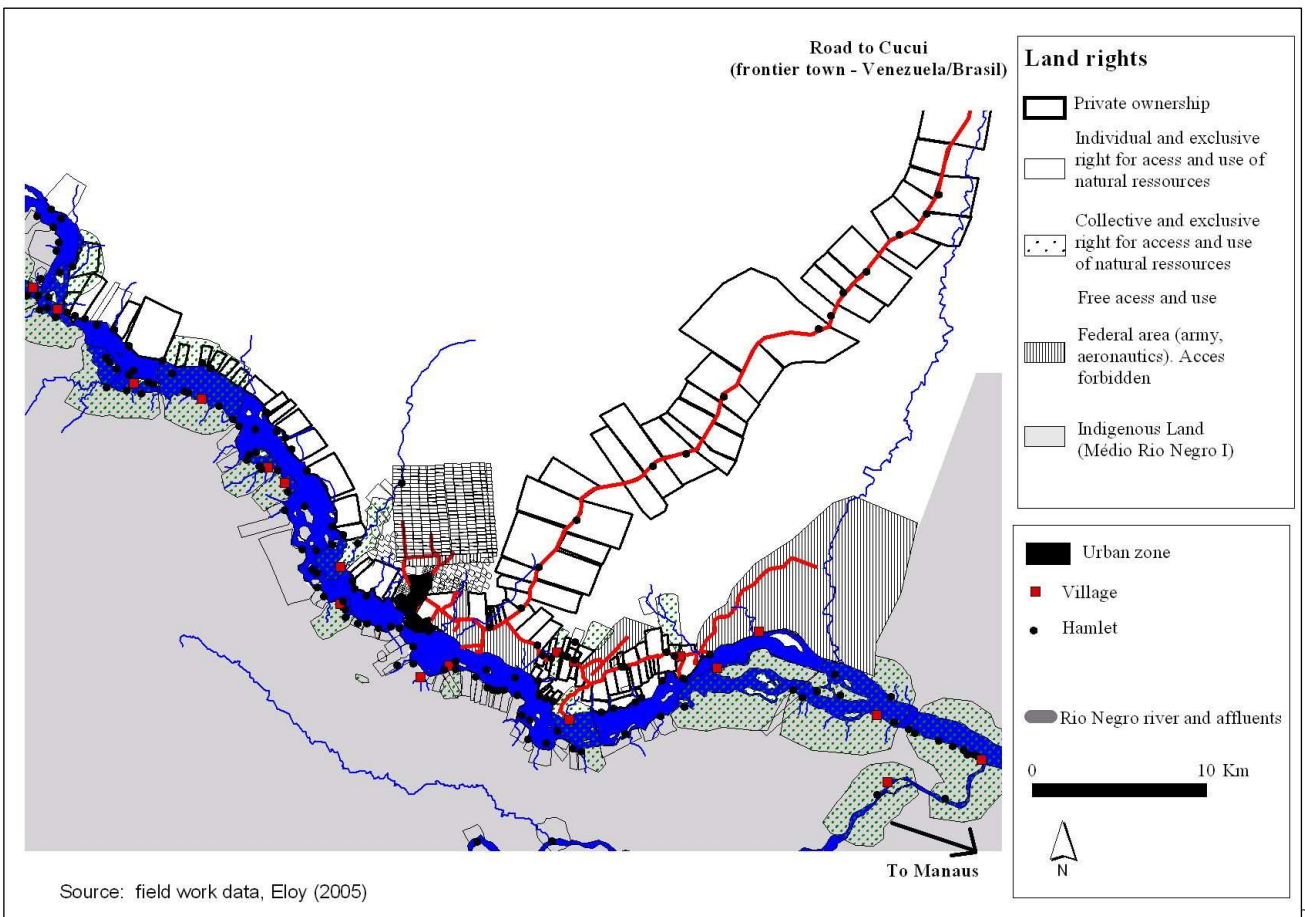


Figure 3: Multilocality and circular mobility (domestic group or extended family)

