

The Drought of 2005 in Anamã: Perception and Sazonality in the Lower Solimões

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Introduction

The present chapter focuses on the consequences of the drought of 2005 in the municipality of Anamã in the Lower Solimões River in the Brazilian State of Amazonas, particularly from the point of views of its inhabitants. In other words, it focuses on their perception of the drought and its consequences according to their understanding of what an 'altered environment' is, and according to its relation to the different scales – local, regional, national and global – in which the phenomenon was represented.

The fieldwork was carried out from June until August of 2006. It took place in the municipality of Anamã. My colleague¹ and I were based in town, mostly lodged in the local hotels and having our meals in the local restaurants, and further visited some rural communities of the municipality, specially the *terra-firme* “communities of the Lake” Arixi and Mato Grosso.² Participation in local events and formal and informal interviews were conducted in town and in the Lake in a context of daily life, following participant observation research method.³ We have also complemented this qualitative method with a questionnaire that was given to the town's teachers to answer. In total more than 25 people were interviewed, including specialists, state and local

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¹ Fieldwork was carried out, most of it, in partnership with the geographer Carolina Neri.

² We also did research in Manaus, in newspaper and television archives, and interviewing scientists who are specialists about the region (geographers, anthropologists, amongst others) and authorities of the State of Amazonas. The main subject of our interviews was the drought.

³ See Ellen (1984) and Davies (1999).

authorities, heads of local associations and of non-governmental organizations, visitors and inhabitants of the town of Anamã and of the Lake.⁴

I have mostly based this chapter on the testimonies of the inhabitants of the town of Anamã and of the Lake and tried to answer the following questions: What happened in town and in the Lake during the drought of 2005? What do the people from town, and the inhabitants of the Lake, think and say about it? Was it the biggest drought they have experience? What was different about it?

With this purpose in mind, I will begin with a physical and historical contextualisation of the municipality and the region.

Amazonia: Physical Environment

The Amazon River is the greatest river of South America and the largest drainage system in the world in terms of the volume of its flow and the area of its basin. The Amazon basin has 7 million square kilometres. It superposes the 'Amazon forest' that has a total area of 5.5 million square kilometres. 60% of it corresponds to the Brazilian *Amazônia Legal*,⁵ while the remaining 40% are distributed along Bolivia, Colombia, Ecuador, Peru, Venezuela, Suriname, Guyana and French Guyana.⁶

Around one-fifth of all fresh water that runs in the Earth's rivers is carried by the Amazon River.⁷ The flood-stage discharge at the river's mouth is about 175,000 cubic metres per second.⁸

Some authors consider two broad types of landscape in the Amazon Basin:⁹ the riverine environments, extensive lowland areas bordering the main

⁴ The interviews were recorded using a Mini Disc recorder whenever consented by the interviewees.

⁵ *Amazônia Legal* (Legal Amazonia) is a political term created by the Brazilian Government in 1953 through the Law 1.806. It comprises the States of Acre, Amazonas, Amapá, Pará, Rondônia, Roraima, Mato Grosso, Tocantins and the State of Maranhão to the west of the Meridian 44° (Agência de Desenvolvimento da Amazônia, <http://www.ada.gov.br/amazonia/legislacao.asp>).

⁶ Ambiente Brasil, <http://www.ambientebrasil.com.br/composer.php3?base=/natural/index.html&conteudo=/natural/biomas/amazonia.html>.

⁷ Moran, 1981:23-4 and Ambiente Brasil, <http://www.ambientebrasil.com.br/composer.php3?base=/natural/index.html&conteudo=/natural/biomas/amazonia.html>.

⁸ Encyclopaedia Britannica, <http://www.britannica.com/eb/article-9109565>.

⁹ See, for example, Lathrap, D., 1973, "The 'Hunting' Economies of the Tropical Forest Zone of South America: an Attempt at Historical Perspective" in Gross, D.R. (ed), *Peoples and Cultures of Native South America*. New York: Doubleday/The Natural History Press. Nevertheless, in the last decades, different authors have criticised the overgeneralization of the classification of the Amazon Basin in solely two broad types of landscape, stating that "Amazonia is a very diverse region" (Moran 1995:72). In fact, over one hundred different systems of landscapes have been recognised in the 'Amazon forest' (Ambiente

river and its tributaries, also called floodplains, and the interfluvial uplands or *terra-firme*. The lowlands occupy around 2% of the Amazon Basin; while the *terra-firme* around 98%.¹⁰ The *várzeas* are the lowland floodplains located along white water rivers, such as the Amazon, the Trombetas and the Solimões.¹¹

The climate in Amazonia is equatorial humid and sub-humid. The temperature, in average of 24°, does not vary much during the year. Humidity varies between 75 and 100 percent year round. The local people recognise two different seasons: the wet/rain season, also locally called winter (roughly from January until June) and the dry season, also called summer (roughly from July until December).¹² Typically, during the wet season rainfall can reach about 300mm/month, while on the dry season it can be near to 0mm/month.

The riverine lowlands, dry during the summer, become flooded on the rain season due to the increase of rainfall in the Amazon basin. The rivers may rise up to fifteen metres and *várzea* landscapes change "dramatically from season to season"¹³. Sedimentation and erosion occur at the same time. As an example, the difference between the highest and lowest level of water in the Port of Manaus in 2005, on the Negro River, was of 13.35 metres.¹⁴ Typically, the high water season occurs between January and July, and the low water one, between August and December.¹⁵ These do not exactly coincide with the dry and wet season.¹⁶

Furthermore, it is important to mention the complexity of the physical environment in Amazonia. For example, while the Negro River, affluent of the left bank of the Amazon River, is in the peak of the high water season, in the Madeira River, affluent of the left bank of the Amazon River, the water is already starting to lower.¹⁷

Brasil,

<http://www.ambientebrasil.com.br/composer.php3?base=./natural/index.html&conteudo=./natural/biomas/amazonia.html>

¹⁰ Moran, 1995:71 and Viveiros de Castro, 1996:183.

¹¹ Chernela, 1989:239. Here we opted to call Solimões River to the section of the Upper Amazon River flowing from the Brazilian-Peruvian border to its confluence with the Negro River near Manaus.

¹² Pace, 1998:32-35 and Harris, 2000:135.

¹³ Harris, 2000:63.

¹⁴ J. Alberto Lima de Carvalho, personal communication, July 11, 2006.

¹⁵ Lima-Ayres, 1992:20.

¹⁶ Harris, 2000:135.

¹⁷ J. Alberto Lima de Carvalho, personal communication, July 11, 2006.

White water rivers carry nutrient-rich sediments from the Andes, while black water rivers carry little dissolved inorganic material and are poor in mineral nutrients.¹⁸ The sediments are then deposited on the flooded soils and, as a result, *várzea* alluvial soils are fertile, while the flood does not increase fertility in the floodplains located along black water rivers, such as the Negro River.¹⁹

During the raining season, as a consequence, the fish disperse into the flooded forests (the *igapós*) to "feed on the abundant foods which become available (...) [some] storing energy reserves as fatty deposits which ensure survival during the food-scarce, low-water period".²⁰

Várzea systems have a high diversity of fauna and flora (of, for example, mammals, birds, fish, water turtles, insects, aquatic and flood-resistant plants, palms - including açai palms – *Euterpe oleracea*, cocoa trees – *Theobroma cacao*, and rubber trees - *Ficus elastica*).²¹

Terra-firme is upland area never inundated by water.²² It includes many different ecosystems such as well-drained and poorly drained savannas, upland forests and montane forests.²³ What links these together is the poor quality of the soils, which are thus considered non-fertile.²⁴ The reason why the forest continues to grow is because of the rapid nutrient recycling: the "forest grows, dies, decomposes, and then recycles its nutrients to the living plants with only minimal use of the soils".²⁵ Most nutrients are not stored in the soil, but in biomass.²⁶

In the Amazon the lowlands are widest along the eastern base of the Andes and narrow toward the east.²⁷

¹⁸ Chernela, 1989:239-42 and Moran, 1995:71.

¹⁹ Chernela, 1989:46. Cf. Moran, 1995:75. The new layer can be one centimetre to one metre deep (Harris 2000:129).

²⁰ Chernela, 1989:242.

²¹ Pace, 1998:32-35.

²² Pace, 1998:35-39.

²³ Pace, 1998:35 and Moran, 1995:77-83. See, as well, Moran (1981:32-35). Note that Pace and Moran consider black water basins a *terra-firme* system.

²⁴ Moran, 1995:71; Lima-Ayres, 1992:177 and Viveiros de Castro, 1996:183.

²⁵ Pace, 1998:35.

²⁶ Pace, 1998:35-6. That is, 98% of the nutrients are kept in trunks and branches of plants, roots and leaves; only 2% are stored in the soil, typically in the top thirty centimetres layer (Moran 1981:24-5).

²⁷ The floodplain of the Amazon River can be up to 48 kilometres wide (Encyclopædia Britannica, <http://www.britannica.com/eb/article-41685>).

History

According to the first European explorers, in the mid-sixteenth century, the Amazonian *várzea* was densely populated²⁸. Its native population was diverse, internally stratified, inhabiting extensive settlements (*povoados*), with complex and varied spatial organizations, and producing surplus for intertribal commerce and trade of raw materials and manufactured goods, including long distance commerce that reached the Andes. Sixteenth-century sources suggest a quasi-linear and continuous settlement pattern along kilometres of riverbanks. There existed large and continuous settled zones divided into so-called “provinces” (*províncias*) separated by unoccupied areas. Moreover, there are evidences that the inhabitants of the floodplains, on the XVI-century, were sedentary horticulturalists, engaged in intensive cultivation, some animal domestication and in intertribal relations of warfare and alliance.²⁹

The “province” named Paguana extended from above the mouth of the Purus River until 100 km above the Negro River, including the area where today is located the municipality of Anamá.³⁰ In 1542, there were, on the right bank of the Amazon River, several small settlements and two large ones in this “province”: the settlement of the “fools” (*bobos*), and the settlement of the “vicious” (*vicioso*).³¹

According to Porro, Wright and Carneiro da Cunha, this pattern of occupation suggests an economy connected to riverine resources and the fertile annually flooded plains. Furthermore, the socio-political and economic organization of the population that inhabited the floodplains was more elaborated and stratified than that of the peoples that inhabited the *terra-firme* at the time.³² The demographic density of the *terra-firme* was lower than that of the floodplains, and the settlements were typically more disperse.³³

Epidemics, the advance of spice collectors, slave hunters and of Spanish and Portuguese missionaries, resulted in the dispersion, resettlement,

²⁸ Porro, 1992:176;186 and Wright and Carneiro da Cunha, 1999:289-90;345-6.

²⁹ Wright and Carneiro da Cunha, 1999:289-90. In fact, Wright and Carneiro da Cunha refer to a “balance of power and territorial control among neighbouring provinces and with the peoples of the interior”(Wright and Carneiro da Cunha 1999:290).

³⁰ According to Carvajal, this was “another land of another lord called Paguana” (Porro 1992:185. Translation by the author).

³¹ Porro, 1992:185 and Wright and Carneiro da Cunha, 1999:348.

³² Wright and Carneiro da Cunha, 1999:345.

³³ Porro, 1992:177;194.

migration, retreat, decimation and captivity of the majority of the peoples of the *várzea* at the end of the XVII-century.³⁴

The inhabitants of Pará had no capital to pay for African slaves, so used indigenous labour for agriculture, such as for the plantations of cocoa, tobacco and sugar. In 1630, the area of Belém was running out of indigenous labourers, due to their high mortality, escapes and due to diseases. Furthermore, the ‘free’ indigenous peoples either fled the main rivers, seeking refuge in the interior, or offered resistance in their territories. So, the Portuguese “ransom troops” (*tropas de resgate*) had to travel ever longer distances to search for uncontacted groups. Between 1640 and 1720 these slave-taking expeditions exhausted the Middle and Upper Amazon and the Lower course of its main tributaries.³⁵ In the first half of the eighteenth century, Amazonian mission towns from the Jesuits, Franciscans, Mercedarian and Carmelites, which relied on indigenous labour prospered.³⁶

On the mid-seventeenth century, the “province” Paguana was inhabited by a great diversity of tribes.³⁷ By 1691, the Jesuit Samuel Fritz observed that, from the Lower Negro River to the mouth of the Purus, there were “nine days without settlements”.³⁸

At the same time, the depopulated floodplains were partially repopulated. On the one hand, by spontaneous movements of accommodation of indigenous groups previously kept away from the *várzea* and its abundant resources, by its earlier inhabitants. On the other, by the “descents” (*descimentos*) of peoples from the *terra-firme* of the interior, which resulted of the action of the missionaries and of the “ransom troops”, either in cooperation or competition.³⁹

Porro argues that the emptying of the Lower Madeira and Middle Amazon was the main reason that led, from 1723 on, to the expansion of the Mura, a minor indigenous group of simple material culture, that spoke a

³⁴ Porro, 1992:176 and Wright and Carneiro da Cunha, 1999:346.

³⁵ Porro, 1992:189-91 and Wright and Carneiro da Cunha, 1999:349.

³⁶ Wright and Carneiro da Cunha, 1999:346.

³⁷ Porro, 1992:186. The Caripuna and Zurina lived on the right bank, while a group of different peoples known collectively as Carabuyana lived on the area of the left bank that extended from the Lakes of Manacapuru to the Lower Negro River. Furthermore, the XVI-century people of the “lord Paguana”, were probably the Paguana or Pauana that lived, one century later, 400 km up the Amazon River (Porro, 1992:186 and Wright and Carneiro da Cunha, 1999:348).

³⁸ Porro, 1992:191.

³⁹ Porro, 1992:191-2 and Wright and Carneiro da Cunha, 1999:350-1.

language considered by the specialists as “isolated”, from their original territory on the Madeira River to the Middle Amazon and Solimões, in the direction of the Japurá River.⁴⁰

Between the mid-seventeenth century and until they were expelled from Brazil by Pombal in 1759, the Jesuits were present in the region of the Madeira-Tapajós.⁴¹ They had Jesuit-controlled mission settlements (*aldeamentos Jesuítas*) and increasingly descended indigenous people from upriver to mainly work in the gathering of cocoa.⁴² In 1738 and 1739, the Jesuits opened a criminal process against the Mura. Truly, missionaries and colonialists sought justification to open the Madeira region to the extraction of cocoa, by beginning an offensive war against the Mura, with the support of the Portuguese Crown. Nevertheless, only with the accumulation of accusations against the Mura as ‘heathen pirates’, who frequently stole from settlements and boats, during the 1740s (and that, from 1753 on, attacked expeditions and commercial fleets that supplied the Mato Grosso mines with manufactures goods and black slaves), the capture of the Mura was legalized, as an exception of the Indian Freedom Law of the mid-eighteenth century.⁴³

In the decades that followed Jesuit expulsion, the Mura attacks expanded to the Solimões and Negro Rivers. Mura offensives and the fear of these, justified the unproductiveness of the mission settlements. The Mura were considered an impediment to the agricultural development of the colony.⁴⁴ Chroniclers attribute to the Mura an immense territory that extended to all tributaries of the Amazon. A nomadic ‘gigantic Mura’ was formed by the agglomeration of people displaced by their expansion: groups who fled from villages, ‘civilized and Christianized’ indigenous people, deserters, escaped black slaves, etc.⁴⁵

⁴⁰ Porro, 1992:192 and Amoroso, 1999:297. See, as well, Wright and Carneiro da Cunha, 1999:347;351;361.

⁴¹ The Portuguese Crown, in 1694, determined the territorial division of Amazonia between the religious orders. So, the Jesuits were entrusted with the south bank of the Amazon, from the Tocantins until the Madeira, and the Carmelites with the basin of the Solimões and Negro River.

⁴² Wright and Carneiro da Cunha, 1999:357.

⁴³ Wright and Carneiro da Cunha, 1999:295;356;359. The Indian Freedom Law (*Lei das Liberdades*) of 6th of July of 1755 conceded total freedom to the indigenous population (Amoroso 1999:305-6).

⁴⁴ Wright and Carneiro da Cunha, 1999:360-2 and Amoroso, 1999:303.

⁴⁵ Wright and Carneiro da Cunha, 1999:360-2, Schwartz and Salomon, 1999:452 and Amoroso, 1999:304-5. This ‘assimilation’, voluntary or the result of warfare, of non-Mura, into Mura society was called ‘Murification’ (Wright and Carneiro da Cunha 1999:362).

Since the end of the XVIII-century started the inversion of the process of Mura expansion: the process categorised as “voluntary reduction”. This “reduction” occupied the authorities of the State of Grão-Pará for three years. The attraction was led by Ambrozio – the “Mura-fied” (*murificado*) – a non-Mura, brought up among the Mura and married to a Mura woman – that, between 1784 and 1789, established seven Mura settlements on the Solimões, Japurá and Madeira.⁴⁶ By the end of the “reduction”, the Mura population was of only 3,000 – the colonial war apparatus seemed to have surpassed the real threat.⁴⁷

Hunger, disease, military defeat and conflicts with other indigenous groups were reasons given to the “voluntary reduction” of groups such as the Mura, as a strategy to guarantee survival.⁴⁸

According to documentation of the Anamã and Manacapuru city halls, in 1785, it already existed, on the Solimões River, below the mouth of the Manacapuru River, a ‘fishing borough’ (*Feitoria de Pesca* or *Pesqueiro Real*) called Caldeirão.⁴⁹ This settlement aimed to supply the military garrison located in the town (*vila*) of Barcelos which was, at the time, the capital of the Captainship of São José do Rio Negro.⁵⁰ On the 27th of September, a relevant number of Mura arrived to Caldeirão, aiming to establish themselves in its vicinities.⁵¹ However, the colonial administration considered that the Mura should move to another place, in preference to a hamlet (*povoação*) called Anamã.⁵² Although we do not know for sure if they followed this advice, the fact

⁴⁶ Wright and Carneiro da Cunha, 1999:361.

⁴⁷ Wright and Carneiro da Cunha, 1999:360;362.

⁴⁸ Wright and Carneiro da Cunha, 1999:371. See, as well, Amoroso, 1999:298. On the last decades of the XVIII-century, the Mura from the Madeira and the Mundurucu from the Tapajós were engaged into conflicts with each other, as both had expanded to the Middle Amazon (Wright and Carneiro da Cunha, 1999:358-9). It was when a first epidemic struck the Mura, that these left the Madeira, heading West, and negotiated peace with the Portuguese, while the war between the Portuguese and the Mundurucu continued into the 1790s (Whitehead, 1999:432-3).

⁴⁹ Secretaria de Administração da Prefeitura Municipal de Anamã, 2002 and Delegacia do IBGE no Estado do Amazonas – Coordenação do Projecto Monografia, <http://biblioteca.ibge.gov.br/visualizacao/dtbs/amazonas/manacapuru.pdf>. A ‘Feitoria de Pesca’ was a trading post and a colonial fishing settlement where fish was commercialised and salted. It belonged to the Portuguese Crown.

⁵⁰ The captainships were administrative divisions created by the Portuguese Crown and responsible for the occupation of the land. The Captainship of São José do Rio Negro depended politically, directly, from the State of Grão-Pará.

⁵¹ Delegacia do IBGE no Estado do Amazonas – Coordenação do Projecto Monografia, <http://biblioteca.ibge.gov.br/visualizacao/dtbs/amazonas/manacapuru.pdf>.

⁵² Secretaria de Administração da Prefeitura Municipal de Anamã, 2002, Delegacia do IBGE no Estado do Amazonas – Coordenação do Projecto Monografia,

is that the Mura are related with the history and foundation of many contemporary towns of the Lower Solimões such as Anori, Anamã, Manacapuru and Codajás.

After 1786, documentation suggests a low number and a high fluctuation of inhabitants in the “reduction” villages.⁵³ The Mura refused to make gardens (*roças*) and to build the houses requested by the colonial authorities. They only visited the villages, in small groups, when the gardens were ready to harvest, to get supplies of food and tools. They were often found, always accompanied by their wives and children, in the forest, fishing for subsistence, or gathering Brazil nuts.⁵⁴

It is known that the Mura participated in the Cabanagem – a local revolt of Amazonians, including indigenous people and free black men, for regional independence – between 1834 and 1836, and suffered a violent military response.⁵⁵ Nevertheless, between the nineteenth and the twentieth century informations about the Mura and the region of Anamã are disperse.

In 1938, Anamã was elevated to district and, in 1956, was incorporated in the municipality of Anori. In 1981 the municipality of Anamã was created, incorporating the district of Anamã and some areas of the municipalities of Codajás and Manacapuru.⁵⁶

The Municipality of Anamã Today

Nowadays the municipality of Anamã, distant around 180km in straight line from Manaus, the capital of the State of Amazonas, has a total area of 2.454km².⁵⁷ Most of the area of the municipality is floodplain: the system of lakes, the Paran and the Solimes River. The small town of Anam is located on the *vrzea* on one of the banks of the Paran do Anam, the affluent of the Solimes that connects the Anam Lake to the main river and to the municipality of Caapiranga. There are four communities along the banks of the Paran, nineteen on the margins of the Anam Lake and two on two smaller

<http://biblioteca.ibge.gov.br/visualizacao/dtbs/amazonas/manacapuru.pdf>
<http://biblioteca.ibge.gov.br/visualizacao/dtbs/amazonas/manacapuru.pdf>

and IBGE,

⁵³ Amoroso, 1999:307-8.

⁵⁴ Brazil nuts are the fruits from the *Bertholletia excelsa* tree.

⁵⁵ Amoroso, 1999:309.

⁵⁶ Secretaria de Administrao da Prefeitura Municipal de Anam, 2002.

⁵⁷ IBGE – Sistema IBGE de Recuperao Automtica SIDRA, <http://www.sidra.ibge.gov.br/bda/tabela/protabl.asp?z=t&o=4&i=P>.

lakes connected to the Anamã Lake: Laguinho and Jauariá Lake (See Map 1).⁵⁸ Furthermore, along the banks of the Solimões River there are nine communities that belong to the municipality, and six more on the Solimões islands. One of these islands, named the island of the Camaleão, is a legally demarcated indigenous land (*Terra Indígena*), inhabited by Ticuna and Kocama indigenous people.⁵⁹ The municipality of Anamã has a border, to the North with Caapiranga, to the East with Manacapuru, to the Southeast with Beruri, to the South with Anori and to the West and Southwest with Codajás.

According to the census of 2000, the population of the municipality of Anamã was 6.568, totalizing 3.505 men and 3.063 women; while 2.063 people lived in the urban area (that is, in the town of Anamã), and 4.505 in the rural area (that is, in the communities of the interior).⁶⁰ The estimated population of the municipality, for 2006, was of 6.889 people.⁶¹

Despite this slow growth, the town's population seems to increase every week: the number of children in town rises continually, and new houses are always being built, as families from the rural areas, looking for school education for their children, move there, as it is the only place in the area where there are secondary schools. There are also many people from the Upper Purús, called by the locals of "landless" (*sem-terra*), who have moved to the urban and rural area of Anamã since, at least, the last 40 years, in search of school education for their children and "in search of water".

During the rubber boom of 1860s - 1910s the Purús valley became an important supplier of rubber. Settlements like Lábrea, Canutama and Boca do Acre in the Upper Purús or were established or, if already existed, grew in order to support the extraction of latex. Even today the gathering - of latex, Brazil nuts and wood – is an important economic activity in the area. Mrs A, moved with her family, forty years ago, when she was 15 years old, to the rural Anamã,

⁵⁸ I use here the term community (*comunidade*) because it is the term used locally to refer to the rural settlements. Furthermore, from now on, I will use the term Anamã to refer to the town of Anamã, and the term "municipality of Anamã" to refer to the entire municipality. I also use the term interior (*interior*) to refer to the rural areas of the municipality, in the same way it is used locally.

⁵⁹ The *Terra Indígena* Ilha do Camaleão, has been homologated and registered in Cartório de Registro Imobiliário (CRI) and Serviço de Patrimônio da União (SPU) in 03/07/2005 (Instituto Socioambiental http://www.socioambiental.org/pib/portugues/quonqua/indicadores/detalhes_ti.html?id_arp=3943).

⁶⁰ IBGE – Sistema IBGE de Recuperação Automática SIDRA, <http://www.sidra.ibge.gov.br/bda/tabela/protabl.asp?z=t&o=4&i=P>.

⁶¹ Associação Amazonense de Municípios, 2005.

“because there [in the Purús] it was very bad”. Near Lábrea, where they lived, her father was a rubber-tapper, gathered Brazil nuts and had a *roça* where he planted manioc, beans and corn, but “would not earn money”. In the interior of the municipality of Anamã he started planting and selling mallow. Another family from the Purús moved to the town of Anamã in 1993 although they “just knew its name”. Mr and Mrs B moved there in search of secondary education for their children and because where they were “there was no water”. Now they live of the fishing and of the plantation of mallow, grow a *roça* of manioc and beans, and process manioc flour. Around their house they have some fruit trees such as banana trees and Brazil nuts for their own consumption. Mr B told us that “Anamã is not good, but it is better” than the Purús.

Furthermore, the young people who finish secondary studies in the town of Anamã, either stay in town, working with their families and waiting for an opportunity to get a paid job with the city hall or the government of the Amazonas, or go to Manaus to look for a job. Few parents have conditions to pay for a faculty degree of their children in another town.

In addition, several informants suggested that, to get better medical attention, people, especially elders, move to bigger towns. In fact, according to Miss C, a non-Brazilian nurse of the only hospital of Anamã, most adults that die in the municipality, die due to accidents. Furthermore, she mentioned, “there are almost no deaths amongst the elderly in the municipality (...), maybe they go to die somewhere else”.

In order to evaluate the meaning of the drought to the inhabitants of the municipality of Anamã, mainly those who live in town, it is important to consider, first of all, different ways in which water is important to the life of people living in this environment, which are not only restricted to a basic resource to human survival or cultivations, but also strictly connected to their life histories, to transportation in the region and, as a result of it, to the supply of energy that is carried through the lakes and river.

It seems that the people from the Upper Purús go to the municipality of Anamã in “search of water”, a water that allows them to engage in different (and more profitable) economic activities such as fishing and the production of mallow, and rural people move to town in search of school education, that allows them to get paid jobs there or, in preference in bigger towns such as

Manaus. The old people also seem to move to other places. So, at the same time that many people from the rural areas of the region move to urban Anamã, many of those who live there move to other urban areas. Anamã, as many small towns in Amazonia, is a passageway.

During the drought of 2005, the inhabitants of the Lake and of Anamã completely depended on the fluvial routes for transportation and commerce. Transportation in the region is done by fluvial route. Everyday, regional boats – the “*recreios*” – travel between Manaus, Anamã and other local towns, transporting people and goods. While the surplus of agricultural and extractive products and fish is sold in Manaus and in other towns such as Anori or Manacapuru, other food items, manufactured goods and petroleum-based fuel are brought to supply the more than 100 commercial establishments (including three hotels and three restaurants, bakeries, grocery stores, bars and night clubs, drugstores, hardware and clothing stores, amongst others), the services (such as medical and educational ones, the almost inexistent local industry (constituted by four sawmills and a cabinetmaker’s shop), and the power plant and the system of captation and distribution of water, both moved by diesel, which provide the town with electricity and water.⁶² All provision of goods to the communities of the lake is also made by boat. Only some of these have schools, water wells and electricity generators pumped by diesel. Before the opening of the road that links Mato Grosso to the town of Anori, in May of 2006, the inhabitants of the lake, in order to sell their production and buy other goods, or to attend a medical appointment, for example, had to travel by fluvial route to reach Anamã or any other town in the surroundings, usually using small boats (*rabetas*) or canoes.

Although the main economic activities of the municipality are fishing and agriculture, there is a constant lack of both fish and fresh agricultural goods in Anamã. There are several reasons given by the producers and fishermen for this fact. First, some of them are already committed to sell their production or

⁶² The municipality exports agricultural products such as manioc, corn, watermelon, passion fruit, cupuaçu (the fruit of the *Theobroma grandiflorum* tree), mango, papaya, banana, avocado, açaí fruits, lemon, jute and mallow and extractive products such as Brazil nuts and timber. The water in Anamã is fetched in a well by a pump and kept in a 100m³ reservoir.

catch to a certain trader.⁶³ Second, others prefer to sell, at better prices, in other towns' markets (even in Manaus, at a 13-hours distance by *recreio*), instead of spending time and energy trying to sell it directly to the consumer on the town's "Producers' Market" (*Mercado do Produtor*) or by "picking up a wheelbarrow and selling it through the neighbourhoods". In the "Producer's Market" the producer needs to sell directly his products to the consumer, as "no one never bothered to become a fairgoer". Moreover, some of the fishermen prefer to sell all their catch to the local "cold storage plant" (*frigorífico*). *Frigorífico* is the name given to a large floating privately-owned cold storage plant, parked in the Paraná in front of town, which buys and stores fish (mostly scaleless species) in order to afterwards export it to the South of Brazil and to countries such as Colombia and Chile. Lastly, there is a seasonal variation of production, and storage facilities for products such as fish and vegetables are inexistent in Anamã. If a fisherman does not sell immediately his production, in 12-24 hours he needs to do an extra expense by buying ice. So, although Anamã is the centre of communication and of political administration of the municipality, we cannot say it is the commercial centre of the area. This seems to be a common situation for this type of small towns along the Amazon River. Wagley argued that Gurupá, a small town of the Lower Amazon with 500 inhabitants, was not, in the 1940s, the commercial centre of its area.⁶⁴ He mentioned that Gurupá, suffered, periodically, from shortage of food, as the production was directed to external demands and the basic needs of the population neglected.⁶⁵

In town most houses are stilt wooden houses (see Figure 1) and there are some floating wooden houses (*flutuantes*) as well. Only public buildings are made of masonry. In the lake, most communities are placed in *terra-firme*, most houses are made of wood, with and without stilts, and there are many floating

⁶³ These traders give, for example, to the fisherman, in advance, fishing material and manufactured goods, with the compromise that the fisherman will sell to them, with exclusivity, all his catch. Note the similarity of these social relations of production with the ones related to the system of *aviamento*, the "trade based on barter calculated in terms of monetary value" that involved an informal credit relationship, and that was common in Amazonia during the rubber boom in the end of the XIX-century (Lima-Ayres 1992:vi). The patron that provided the goods on credit was, then, called *patrão* (Lima-Ayres 1992:ix).

⁶⁴ Wagley, 1988:50. Wagley's study on Gurupá is considered the first ethnography of a Brazilian Amazonian non-indigenous community (Wagley 1988).

⁶⁵ Wagley, 1988: 63-82.

houses. In both cases, the houses are located along the banks of the Paran and of the lake. Most households are composed by a couple with their unmarried children or by an old woman or man with their unmarried children and one or two of his/her married children and grandchildren.

Inside town, when it is not flooded, people get around by bike or on foot. There are only few motorcycles, and the cars that exist belong to the city hall, police force and hospital.

Perception, Seasonality and the Environment

The people who live in the municipality of Anam, recognize two sets of basic spatial areas. On one hand, the *vrzea*, that comprises the seasonally flooded plains in and immediately around the lakes, the Paran and the Solimes, where people grow the seasonal crops and where the town is located; and the *terra-firme*, the higher lands surrounding the lakes and water courses where most rural communities are located. On the other, the inhabitants separate the urban from the rural area (the interior) of the municipality. They identify the urban area with the town of Anam. The rural area is the place where the rural settlements, including the communities of the lake or, in other words, the communities “from the inside”, are located.

They name winter, that roughly lasts from December/January until June, as the wet/rain season, “when it is cold”, and the summer, the dry season, “when it is warm”, that roughly lasts from July until December. Furthermore, they perceive four seasons according to the height of the water in the lakes and waterways: the drought (*a seca* or *vazante*), the rising water (*a subida da gua*), the flood (*a enchente* or *cheia*) and the lowering water (*a descida da gua*).

Around November/December the level of water in the Solimes starts rising, and its “clear water” (*gua clara*) starts entering the Anam Lake through the Paran. The water rises roughly until June/July. The lake may have, at the peak of the flood, a width of 2000 km. As the level of water on the Solimes lowers, around June/July, “black water” (*gua preta*) from the lake starts flowing through the Paran in the direction of the Solimes. Usually the water level in the Paran and in the lake is the lowest around October. In a big drought the lake may be reduced to a channel of 30-50 metres wide. The water is replaced by a field of mud and of wild grass (*capim*). People usually remember, for

example, the exact day in which the water in the Paraná stopped rising, during a recent flood, or the day in which the clear water from the Solimões started flowing in the direction of the lake. For example, Mrs D, a “daughter of the Lake” and a teacher in town since 1990, when talking of the flood of 2006, mentioned that “on the 10th of June the river [Paraná] started to stop [rising]”. Additionally, people often compare these dates with those of the previous year. Mrs E, born in the Lower Amazon, who lives in Anamã for 20 years, and works as a cleaner in the local hospital, added that “the water started lowering early this year, earlier than in 2005. I hope that this year the drought will not be as the one last year”.

The rising and the lowering of the water, the floods and the droughts have different consequences whether one lives in town or in the Lake (or has lived in the Lake for many years), and further depend on the activities people undertake (whether it is fishing, seasonal agriculture or simply studying). Therefore, different people (young, old, employee or fishermen) have different feelings towards each season.

Specifying, the years when there is a flooding in town, the garbage, that otherwise is collected and poured daily by a truck in an open-air dump in the centre of town, is spread everywhere in the water: Mr Q, teacher in Anamã, who moved from Camutama in the Purús to the Jarauíá Lake with his family with one year old and then moved to town with eleven, accentuated that, in town, “when it fills up, all the trash goes to the water” (*quando enche, o lixo vai todo para a água*), contaminating it (see Figure 1). In fact, it is recognized by the local authorities and the inhabitants of Anamã, that the worst problems in town are the garbage and the sewage, because, as the “Municipal Secretary for the Environment and Production” (*Secretário Municipal do Ambiente e Produção*) mentioned, the town is located in *várzea* – in a place “where you dig half a metre and you find water”. Besides, “the town grew, so did the garbage and the sewage”. The garbage is incinerated in the open-air dump, and the sewages are thrown into a small waterway (*igarapé*) near to town, in lack of better choices.



Figure 1 – The open-air dump of Anamã, located in the centre of town and where all the garbage from town is poured (Photo by Rita Pestana, July of 2006).

The old cemetery, located on the South bank of the Paran, opposite to town, is also subject to floods, which led to the construction of a new cemetery up the Paran, in a *terra-firme* area. People move around on canoes or, if they do not have them, inside the water. For children, young people and newcomers, it is a time of happiness. Mrs F that lives in Anam for 14 years, told us that the first time she saw the town all under water “it was happiness, because I was recent here, because I was single and liked to jump in the water, all that was fun, right?” For others it is a time of sadness, as higher floors of the stilt houses that were reached by the water need to be built. “Everything stops”: schools close, because they are flooded and/or students have no way to reach them as travelling in the water becomes dangerous, as “water runs a lot”, and festivities are cancelled or delayed.⁶⁶ Social life is put on hold and spatially limited. Some of those who have family and houses in other towns move there temporarily.

⁶⁶ For example, in 2006, all town schools closed for 20 days in June, the “Week of the Environment”, an activity that joins students from all the municipality in the beginning of June, was cancelled and

As the water lowers, the town is filled with mud and trash. Everything needs to be clean, and the houses need to be painted. Mrs G, a 44-year old school teacher, “daughter of the Lake” that lives in Anamã told me, when I asked her about the drought of 2005, that the lowering of the water “that yes, gives me sadness”. Soccer championships, the contest of Miss Anamã, the festivities (such as the *Festa Junina*, the Festivity in honour of Saint Francis (of Assisi) – *Festejo para São Francisco* – patron of the town, from the 24th of September until the 4th of October, and the Festivity in honour of Our Lady of the Perpetual Help – *Festejo para Nossa Senhora do Perpétuo Socorro* – patron of Arixi, on the 22nd and 23th of July), the Festiman, a regional song contest, amongst other open-air activities, all occur after the water has lowered. Young people restart rehearsing the so called traditional “Portuguese Dance” (*Dança Portuguesa*) of Anamã, the *Ciranda* and the “Street Dancing” to perform at the festivities of the region. Those who went to other towns return. People are no longer confined to their houses.

If the drought is big, the water which is “polluted” (*poluída*) and “too strong” (*muito forte*) – too hot and lacking oxygen – kills shoals of fish. Moreover, transportation of people and goods between the lake, the town and the Solimões becomes difficult, as the bigger boats are no longer able to travel.

For the people that live in the Lake, a big flood is associated with destruction, as plantations, specially the *várzea* ones, are destroyed by the water: manioc, banana, passion fruit, etc. The “riverine dweller” (*ribeirinho*) has to wait for the next drought, to start everything all over again. Similarly, the *quilombo*-dweller descendants (*descendentes de quilombolas*) of the Trombetas River in the Lower Amazon consider the winter, with its floods and “strong waters” (*águas fortes*) to be a time of potential destruction.⁶⁷ But, at the same time, it is also the flood, for the “riverine dwellers”, that makes the *várzea* land become good: “it becomes good when it floods, yes, it gives plantation”, as

substituted by a one-day activity on the 21 of June that involved only the schools of the town; and the *Festa Junina*, festivity in honour of Saint John, happened in July, instead of June.

⁶⁷ They recognize winter as the time of the floods of the rivers and summer as the time when the water of the rivers is low and the forest is stretched out. Acevedo Marin and Castro (1998; 2004). The Quilombos or Mocambos were, in colonial Brazil, the settlements organised by fugitive slaves (Britannica Concise Encyclopaedia, <http://www.britannica.com/ebc/article-9376312>). The Quilombos of the Trombetas were formed by freed black men, indigenous people, black slaves who escaped the large-scale cocoa plantations in the Lower Amazon, in the end of the XVIII and beginning of the XIX-century, seeking refuge beyond the rapids of the Trombetas River.

60-year old Mrs H, that lived in the rural area for most her life, said. Furthermore, a big flood also brings abundance of fish. As Mrs I, a 65-year old woman that lived in Mato Grosso until 1982 and that, after widowed moved with her children to town “to put them to study”, told us, “with the flood a lot of fish appears”. In fact, according to Mr J, the president of the Association of Fishermen of Anamã (*Associação de Pescadores de Anamã*), “there are lakes to which nor men nor fish have access to, but, when a big flood occurs, the grown fishes of these lakes go to the big river [the Solimões]”. Furthermore, it is during the flood season that the shoals of offspring of most species of fish migrate to the Lake.⁶⁸ A big drought, for the inhabitants of the lake, is associated with difficulty – as it is not easy for them to drain their production, which might be left in the fields, because transportation is difficult. As Mrs I mentioned “it becomes difficult, but not enough to starve and go through necessities – only if one has laziness to work”. The plantations and the breeding animals thus remain on land. The animals wander freely.

Besides these different stand points there are other feeling towards the floods and the droughts. First, both inhabitants of the town and of the Lake mention that every flood is different from the other, as well as every drought. Furthermore, they say it is more frequent to occur a big flood than a big drought. According to them, there is a big flood every 2 to 3 years.

Seasons do not follow a formal calendar. The water does not start rising or lowering in the Paraná every year on the same day, nor is the level of water in the Anamã Lake the same on every drought or flood. Every year the rhythm of the seasons changes, as does the landscape. With the floods, each year the landscape is altered. The landscape is “in constant redefinition and becoming”.⁶⁹ The *várzea*'s spacial and temporal rhythyms vary.

Economic Activities and Seasonality

According to the “Municipal Secretary for the Environment and Production”, a high percentage of the active population of Anamã, as common throughout

⁶⁸ See section **Economic Activities and Seasonality** for more details.

⁶⁹ Pestana, 2006:42. Following Harris work on the Parúarus, the riverine dwellers of the Amazon floodplain, that inhabit in Costa do Parú near the mouth of the Trombetas River, in the lower Amazon (2000:129) and Lima-Ayres work on the *terra-firme* community of Nogueira in the Middle Solimões (1992:20;165).

Amazonas, has a paid job with the municipality or with the government of the State, as a school teacher, a city hall employee or a cleaner, for example. Nevertheless, most of these people also engage in other economic activities, either for subsistence and/or for commercial purposes. These include having a business, fishing, hunting, collecting açai fruits, Brazil nuts or timber, making manioc flour, seasonally growing mallow or jute, or maintaining a seasonal *roça*, planting manioc, banana, passion fruit, tomato, watermelon, corn, etc. According to the president of the Association of Fishermen of Anamã, it is not possible for a fisherman to solely live from fishing, due to the annual seasonal variations and to the “*defeso da piracema*”.⁷⁰ People, whether they live in town or in the interior, usually combine two or more economic activities throughout the year. For example, one can combine fishing with the planting of mallow.

As the water lowers and exposes the first land, one starts sowing. Therefore, one hour each day, from around July to September, depending on the size of the plot one wants to plant, one spreads the mallow seeds on the land that has dried since the previous day. So, from around May to September one can also fish. In May and June there are usually many fish in the area, while in July, when the level of water is usually at its maximum, there are not. People say that throughout the year, the species “available to catch” vary, as the “*piracemas*, they pass by, they go away”, and “nobody can tie one [*piracema*] up”.⁷¹ In September and October one needs to take at least one month to clean the weeds, allowing the mallow to grow. Between August and October, as the water is usually low, it is easier to catch fish. In December and January, one can capture some of the twelve marketable species of fish not

⁷⁰ The “*defeso da piracema*” is the prohibition, by law, of the capture of certain species of fish during their reproductive period, in order to maintain their stocks in the wild. *Piracema* is the name given to this period in which the shoals of fish swim upstream to spawn. From the 15th of November of 2005 to the 15th of March of 2006, in the Amazonas State, the fishing of tambaqui (*Colossoma macropomum*), pirapitinga (*Piaractus brachypomus*), mapará (*Hypophthalmus edentatus*), curimatã (*Prochilodus nigricans*), sardinha (*Triportheus sp.*), pacu (*Mylossoma sp.*) and aruanã (*Osteoglossum bicirrhosum*) was forbidden by the Normative Rule number 43, of 18th of October of 2005, of the Brazilian Ministry of the Environment. During the *defeso* the “riverine dwellers” can only capture up to 10 kg of each species for subsistence purposes. Throughout the year the capture of the Pirarucu (*Arapaima gigas*) is forbidden in the State of Amazonas.

⁷¹ The *piracema* varies according to the species and to the area in question. In the Solimões region most *piracemas* occur between November and March although, for example, in August a *piracema* of pacu leaves the Anamã Lake. So, as the water lowers, the shoals leave the *igapós* and the lakes, in the direction of the “mother river” (the Solimões). The shoals that leave the Anamã Lake, pass by the Paraná, in front of the town, to reach the Solimões. They swim upstream to spawn. Around 15 days later, the shoals of offsprings start entering the lakes.

forbidden by the *defeso*, although it is more difficult to fish, as the water starts rising. Around January, the shoals of offspring start to appear, enter the Paran and go to the lake. Between February and April, as the water rises, one can reap the already grown mallow, and drown it in the water. Afterwards, the fibres of the mallow are then separated, dried in the sun and sold. Thus, one needs to judge the speed of the rising water, in order to harvest when the crop is mature, avoiding that the water ruins it.⁷² April is “the time of the fattening of the fish”.⁷³

The fishermen that live in the municipality of Anam not only fish in the lakes of the municipality, but also in the Solimes River and in other rivers and lake systems of the region, such as in the Purus and Jar rivers and in the Ayapu Lake. Fishermen may make 7-days fishing trips, and then stay home for 2 or 3 weeks. They know where to find each species, and have adequate equipment and techniques to catch the ones they want. Fishes are recognized by their way of floating (*boiada*). Nevertheless, as Mr J told us, “when the water is low, when we arrive to the lake [Anam] and there is no *igap*, only basin, only river bed, I can say (...) the all area is just one shoal of fish – there is bod, aruan, tambaqui, pirapitinga – because there is no room for them to separate. Then, when you throw a net, everything comes”.

Many other short-cycle (4 to 6 months) crops, such as jute, certain species of manioc, tomato and watermelon, are sowed and harvested in the floodplains, as the water lowers and rises. Some people also practise shifting cultivation in *terra-firme*, although to a lesser extent.⁷⁴ Most people do not have land documents and plant in the land of others, without conflicts.⁷⁵

⁷² As Harris showed for the Parurus (2000:143-9).

⁷³ This description is an oversimplification of the reality, as different species of fish have different reproduction cycles and different behaviour, not being in the same areas, at the same time. Its purpose is just to give an idea of the seasonal variations and relate them with Men’s economic activities.

⁷⁴ Shifting cultivation is necessary in *terra-firme* to fertilise the soil (Lima-Ayres 1992:21). By slashing-and-burning, the ashes act as a natural fertiliser that “releases the nutrients from the biomass onto the ground where planted crops can use them”(Pace, 1998:36). Within approximately 2 years, the nutrients are used up and the plots are abandoned. In 10 to 20 years the nutrients in the biomass can be restored and the plot can be replanted (Pace, 1998:36). Between June and August, before the end of the rain season, the land is cleared of underbrush and trees are felled; after a week without rain, the field is burned; then, between August and October the planting is done (Lima-Ayres 1992:178-9 and Lima 2004:16.).

⁷⁵ According to the Brazilian law, the *vrzea* land, as annually flooded plains, either belongs to the Federal or to the State Government. *Ribeirinhos* may only obtain the usufruct right to use the *vrzea*, not to own it. For more information see IBAMA/ProVrzea (2007).

There are two communal huts for processing manioc flour (*casas de farinha*) in town and one was recently built in 2006 in Mato Grosso, by the compensation “Program of Sustainable Development of the Gas Pipeline Coari-Manaus” (*Programa de desenvolvimento sustentável do Gasoduto Coari-Manaus*).⁷⁶ Before, manioc flour in this community was produced at home in pans, and only the raw material – the manioc – was sold. People usually also breed chickens and pigs in their houses for their own consumption, both in town and in the Lake, and some breed cattle. During the floods the animals, in the *várzea*, are confined to small places, as land is scarcer.

As in Costa do Parú, there is not, in the municipality, a rigid division of labour by age or gender.⁷⁷ Women and children also fish and participate in agricultural and extractive activities, although women’s and young girl’s work focus, mostly, throughout the year, on domestic tasks and childcare. Actually, it is common that children periodically leave school to help their families: sowing when the water starts lowering, harvesting when the water starts rising. Afterwards, they return to school. In town, many children help their parents in their businesses.

Thus, one can choose to change his economic activities from one year to the other. Not only so but, similarly to what Harris argues for the Parúarus, for most inhabitants of the municipality, economic life is informal, irregular, spontaneous and varied, ruled by people’s preferences and moods, in the

⁷⁶ A technical team from the “Secretariat of the Environment and of the Sustainable Environment” (*Secretaria de Estado do Meio Ambiente e do Desenvolvimento Sustentável*) of the State of Amazonas is the entity responsible for the implementation of the compensation program. This program aims, according to the Brazilian environmental law, to compensate and minimize the environmental and social impacts due to the construction of the gas pipeline, in the communities located within a 5 km distance from the pipeline and in the municipalities’ headquarters. The gas pipeline, an enterprise from the company Petrobrás, aims to supply Manaus with natural gas from the deposits of the Urucu River – an affluent of the right bank of the Solimões River – and crosses the Anamã Lake. Within the 10 km strip there are six communities that belong to the municipality of Anamã: Arixí, Mato Grosso, São Sebastião, Lagunho, Primavera and Socó. The environmental and social compensations vary according to “what each community decided” after several workshops with the technical team, as mentioned by its responsible. It includes, amongst others, the construction of several water wells, a school, the qualification and employment of inhabitants of the area as workers in the construction, the supply of the town of Anamã with natural gas for the generation of electricity, and the construction of an incinerator as a temporary solution for the destination of the town’s solid residues. The 3-years program will finish in 2007. In 2005 deforestation for the pipeline was taking place in the municipality of Anamã. In August of 2006 the construction of the pipeline had not yet started in the area of Anamã.

⁷⁷ Harris, 2000:142.

sense they can do as and when they please because they own their own labour.⁷⁸ As seasons, activities do not follow a formal calendar.⁷⁹

What happened in the drought of 2005?

There is no consensual definition of drought in the natural and social sciences. While in some fields of study, a drought occurs, in a certain area, when there is a deficiency of precipitation over an extended period of time, in others, it occurs when both the level of water is low in the atmosphere and there are shortfalls on surface or subsurface water supply, and even in others it solely happens when lower levels of water lead to agricultural or socio-economic consequences.⁸⁰ Besides, the characteristics of a drought may significantly vary from one region to the other. In 2005, in Amazonia, the level of water of the rivers was way below the average, while the water on the atmosphere was only slightly below its usual levels.⁸¹ And there is no consensus for scientists to whether there was a drought, or not. However, it was the 7th biggest ebb tide since 1903, as measured in the Port of Manaus, in the Negro River, the 3rd biggest one having occurred in 1997.⁸² Nevertheless, only in 2005 the media in Amazonia, Brazil, and even throughout the world, between the end of September and the mid November, were filled with headlines such as: “Amazon, the big *sertão*”, “Red Alert”, “Drought, Hunger and Isolation”.⁸³

Sixty-one of the sixty-two municipalities of the State of Amazonas declared “state of public calamity” (*estado de calamidade pública*). Tons of food and medicines were distributed, mostly by air, in October, to the isolated communities, including to some communities of the Anamã Lake. This emergency operation, called “SOS Interior”, involved the Federal Government, the Government of the State of Amazonas, the “Civil Defense of the State of Amazonas” (*Defesa Civil Estadual*), the “Military Headship of Amazonia”

⁷⁸ Harris, 2000:140;48-9.

⁷⁹ Rita, 2006:41.

⁸⁰ Ferreira, 2005:361.

⁸¹ Doctor José Alberto Lima de Carvalho, personal communication, July 11, 2005.

⁸² Source: Administration of the Port of Manaus. Note that the levels of water in the Port of Manaus are just an indication of what might have happened to the levels of the Solimões River near Anamã, as, as mentioned above, the physical environment in Amazonia is very complex (Doctor José Alberto Lima de Carvalho, personal communication, July 11, 2005).

⁸³ The term *sertão* refers to the semi-arid region in Northeastern Brazil, distinctive by its low rainfall and frequent droughts.

(*Comando Militar da Amazônia*), the “Brazilian Airforce” (*Força Aérea Brasileira*) and the municipalities. In the case of Anamá, the municipality and the group of the compensation program of the gas pipeline Coari-Manaus contributed with informations that helped plan the distribution of goods, and accompanied the action *in situ*.

Independently, also in October, a non Governmental Organization – World Vision – which is present in town and in five communities of the municipality (Arixí in the lake, and five other communities in the banks of the Solimões), working on areas such as education and health, created an emergency plan, and also distributed “basic food bags” (*cestas básicas*), water filters and hypochlorite to purify water, to the families that participated in their project “Project Children of the Amazon” (*Projeto Crianças do Amazonas*).⁸⁴

Nowhere in the municipality of Anamá one can find, for sale, a newspaper or a magazine. Only when someone travels and brings one from a town like Manacapuru or Manaus, a newspaper can be seen in one of the teacher’s room of one of the schools in town. Furthermore, there is only internet access in one computer, in one of the schools, which is used mostly by outsiders and visitors. There is a local FM radio station in Anamá, said to be communitarian, but which is privately owned, and that does not reach all communities of the municipality. This radio broadcasts mostly music, interleaved by brief periods of local information. These are mostly personal messages and errands, religious messages, information about, and advertisement of local events and Governmental programmes. For example, it is usual to hear: “go to the ‘Producers’ Market’ now, Mr T has five beautiful *curimatãs* to sell – do not lose this opportunity” or “today, 8 pm, do not miss the ‘Miss Anamá Contest’ at the Talismanos [night club], patrocinated by...”. It was this radio that played an important part, as mentioned by its administrator, during the drought of 2005, as a “vehicle of communication that warned the people of the Lake of Anamá to get ready to receive the meals (*rancho*)”.

⁸⁴ This emergency plan was repeated, in a smaller scale, during the floods of 2006. A second phase of this emergency plan will consist in the building of a hut for processing manioc flour in one community of the municipality and in the distribution of material for agriculture. For more information on the work of this organization see <http://www.visaomundial.org.br/visaomundial>. *Cesta básica* is a bag with basic non-perishable food (such as rice, beans, sugar, canned meat) and other goods such as toothpaste and toilet paper.

According to him, the radio usually also plays an important part during the floods as, for example, informs the employees of the State and of the Municipality (living in town and in the Lake) of when and where they can receive their salaries if the city hall is flooded. In sum, the radio *Associação C.A.D Anamã FM* actually functions as a vehicle of communication between the people of the municipality, and not as a source of news (local or otherwise) or as a place of discussion of regional issues.

In 2005 it was not through the radio that the news about the drought were announced to local people in the municipality. It was through media connected to a different scale of events – the national and international ones. In 2005, most inhabitants of the town, and some of those from the Lake could follow the news transmitted on television about the drought in Amazonia, as many houses have their own television antenna (see Figure 2). Thus, they came to realise and to represent what was the drought through an international and national alarmist view of a world about to collapse – when even the ‘lung of the world’ is facing a serious drought. A view that sees the drought of 2005 associated with global warming and as a tragic consequence of the deforestation of the Amazon forest and of the emission of greenhouse gases. Investigators’ opinions proliferated: “this actual scenario [the drought of 2005], tragic and surprising, gives us a slight indication of how susceptible the Amazon environment is to global changes, in the case the deforestation rates and CO₂ emissions stay at this level”.⁸⁵

⁸⁵ Greenpeace, <http://www.youtube.com/watch?v=g7gpAy4ivZ0>. Statement of Arnaldo Carneiro from the National Institute for Amazon Research.



Figure 2 – A typical stilt wooden house in Anamã, with its own television antenna (Photo by Rita Pestana, July of 2006).

So, what happened in Anamã during the drought of 2005? What do the people from town, and the inhabitants of the Lake think and say about it? Was it the biggest drought they have experience? What was different about it?

In July of 2005, the water stopped rising in the Paran, and black water started flowing in the direction of the Solimes River. By the end of August the first shoals of floating dead *mapar* were flowing through the Paran in the direction of the main river. By the beginning of October it was impossible to travel in the Paran and in the lake without a mask, as the stink was unbearable. The water was no longer flowing, and it heated. Now all species of fish could be found dead floating on the Paran and on the Lake, forming, with the trash, a mantle. Under and around the floating houses, trash and dead fish accumulated. Mr J, who lives in a floating house in town, when asked about the dead fish said “I do not even want to think about it – to lunch, to sleep,... when it dies it stays under the *flutuante*, deteriorating itself. It dies in any place. The

smell stays everywhere, just like the smell of a cattle slaughterhouse”.⁸⁶ Throughout October fishes continued to die. The inhabitants of the municipality say that the fish that tried to swim to the Solimões died with the “pollution of the water, the really strong water”. Their bodies took 2 to 3 weeks to decompose, forming an oil, further polluting the water. As the water was not flowing, there was no way to throw them to the Solimões. The Paraná channel was one meter deep, which did not allow for the *recreios* to navigate (see Figure 3). These stopped in the Solimões, near the mouth of the Paraná and goods and people had to pay to be transported in small motor boats to town. The rafts (*balsas*) that carry fuel could not also reach town and therefore the transport of fuel from the Solimões to town was conditioned. As both the power plant and the system of captation and distribution of water in town are powered by diesel, the supply of electricity and water was rationed in Anamã during the peak of the drought. The supply of water was several times interrupted during that time. As the power plant has different phases, the solution found was to supply with electricity part of town for a couple of hours each day, while the rest of town was not supplied, and then interchange. As Mr Q accentuated that, in town, “during the drought we were practically left without water, and without electricity too, because the rafts could not enter to bring the diesel”.

⁸⁶ “*Não quero nem pensar - para almoçar, para dormir,... quando morre fica debaixo do flutuante, se deteriorando. Qualquer lugar morre. O cheiro fica em toda a parte, igual a cheiro de matadouro de gado*”.



Figure 3 – The Paran in front of town in July of 2006, 35 days after the water stopped rising. In October of 2005 the channel was just a few meters wide. Only small boats and canoes were able to navigate (Photo by Rita Pestana, July of 2006).

The lake became a 30-50 meters wide and 2-3 meters deep waterway, and a large field of mud wild grass. The smaller lakes connected to the Anam Lake, that usually serve as reservoirs of fish of the lake during a drought, dried. In some places not even the small motor boats went through, only canoes. A journey that normally takes 2 hours in the lake, might take an entire afternoon. Motors constantly hit the bodies of dead fish and the bottom of the waterway, and frequently people needed to jump into the mud in order to push the boats. As Mrs I said: “and from rowing we get rage, we feel like crying of rage. Then you go in a canoe and you do not know anymore to which sides there is the canal. There are no sides. Then you look, you just see water and you do not move, the canoe gets stuck, and you fall in the water to go pulling it. It gives you rage. You risk to be stung by a stingray because there are many, right?”.⁸⁷

⁸⁷ “E de remar a gente fica com raiva, d vontade de chorar de raiva. A vai numa canoa e no sabe mais para que cantos aparece mais o canal. Cantos no tem. A voc olha, so v gua e no vai, encalha a

Although in town the prices of goods did not increase, in the lake they did, due to the difficulty of transportation between the town and the lake. In the communities of the lake which have electricity generators and water pumps powered by fuel, there were interruptions to their normal running, due to the lack of fuel.

Those who do not have access to a well, a *cacimba* or an *olho de água*, need to either walk long distances to reach one, or use the water from the lake or the Paraná for bathing, drinking and cooking.⁸⁸ As Mrs L that lives near the mouth of the Anamã Lake, said “we take a bath where the water has dead fishes, but it is cleaner because the mud settles, because it is still, but the putridity is the same”. Mrs L gets water to drink at an *olho de água* at a distance of one-kilometre from her house.

Mrs R from Mato Grosso, said that the major problem during the drought in the community where she lives, was not the water, as they have a well, but the difficulty of transportation. The Lake dried, leaving a channel, but this one was difficult to reach, as it was surrounded by a field of mud. Most people in Mato Grosso live from fishing and from the extraction of wood and the plantation of manioc, which they took by boat, at the time, to Anori, to sell. To Mr S, from Arixi, president of the “Union of the Rural Workers” (*Sindicato dos Trabalhadores Rurais*) of Anamã the major problem was also the “difficulty of transportation” as “there was no way to drain off the products of the *roça*, who got spoiled in the *roça*” (*não havia meio de escoar os produtos da roça, que se estragaram na roça*).

According to O, a fisherman from the Lake of Anamã, the “polluted water [of the Paraná and the Lake, during the drought of 2005] brought some health problems – it specially harmed the *ribeirinho* who had no choice but to drink it”. But, as mentioned by Mrs F, as the water gets polluted in a drought, “as it dries, gets more muddy, the fish rotten and further pollute the water” causing diseases, also a flood causes diseases by “causing pollution – the water rises, arrives to the open-air dump, throws the garbage into the water and

canoa, e você cai dentro de água para ir puxando. Dá muita raiva. Tá sujeito a arraiá ferrar porque tem muita, né?”

⁸⁸ A *cacimba* is a hole dug on the floor in order to reach a natural spring of water, that is, to reach an “eye of water” (*olho de água*). They may be several metres deep and have a diameter of around 1 metre. Wells are usually 50-60 metres deep, with a smaller diameter, and have water pumps powered by fuel.

contaminates everything”. Cases of diarrhoea and hepatitis, specially in children that live in the *várzea*, occur during both floods and droughts but are more common when the water is rising, than when it is lowering. Nevertheless, despite this scenario, according to the “Municipal Secretary of Health” and to the personnel of the town’s Hospital and Health Centre, there were no epidemics nor abnormal disease outbreaks in the municipality during the drought of 2005. There were some cases of diarrhoea, and some of malaria, but these last were not due to the drought, but attributed to the deforestation for the construction of the gas pipeline between Coari and Manaus.

Moreover, in the drought of 2005, crops in the lake were left on the fields, and timber could not be extracted, as people could not transport their production to sell. Consequently, people did not have money to buy commodities.

Some of the inhabitants of the town and of the lake, who had family or houses in other towns, moved there temporarily, which normally happens more often in the case of floods.

In town, no festivities or classes were cancelled, although there were less people there during the Festivity of Saint Francis in the end of September and beginning of October. In the communities, some festivities and classes were cancelled or delayed. Other than this, life in town and in the lake continued as usual. As it was difficult to travel in the lakes, the fishermen went to the Solimões to fish. Apparently, there were no long-term consequences of the drought: in August of 2006 there was, again, abundance of fish in the Anamã Lake “although the drought massacred a lot” (*apesar da seca ter massacrado bastante*), as mentioned by Mr J; and even though the crops were left in the fields, the drought of 2005 did not affect the plantation cycle which followed, as “the plantation is not delayed when the land is dry” (*o plantio não é adiado por a terra estar seca*), as referred by Mrs T from Arixí.

The inhabitants of the municipality use different physical references to consider if a drought was big or not. Moreover, there is not a consensus to whether the drought of 2005 was the biggest one that happened in the municipality. For example, M, a 22 year old boy, mentioned that the drought of 2005 was not the biggest one that happened in the area because “some beaches of the Solimões that surfaced in other droughts did not surface in

2005". Some mention the *recreio* named Evalisa, powered by wood that, in the beginning of the XX-century, shipwrecked in the middle of the Paraná, when it hit a stub, and whose debris only surface if a drought is big – the Evalisa's debris surfaced in 2005. Others talk about the wild grass that grows in the fields that surface in the lake as the indicator of a "big, strong drought" and even others of the high mortality of fish as the indicator that the drought of 2005 was the biggest one they remember. Nevertheless, Mr J mentions the quantity of fishes that die in a drought nowadays is "much less than the quantity that used to die 30 years ago, when I was a little boy and there was no commercialization of fish in the area (...) back then that mortality was every year".

In sum, while some simply say that "the drought of 2005 was the biggest drought" they remember, others, like Mrs I, say "I have gone through many and many of those droughts". In a place where the landscape continually changes, every drought is simply different from the other.

When asked about the consequences of the drought of 2005, the inhabitants of town, mostly those who lived in urban areas during their adult life, usually ended up by saying "for us here, nobody felt much, but for those who live inside there [in the Lake]...". Nevertheless, when asked, the inhabitants or "the children of the Lake" would answer something as "it gets difficult, because it gets difficult for us to move, but it is not enough to starve or go through necessities – only if one is lazy to work". This can be interpreted, in fact, having in mind the above mentioned flexibility and spontaneity of the inhabitants of the municipality. One cannot starve if one has the choice to change its activities. If it is not possible to sell the crops, one can, for example, fish for his own subsistence.

Could it then be that the inhabitants of the town be simply using their own categories when they think of the situation of the inhabitants of the Lake during a drought? As people that live in the *várzea* feel their social life limited during a flood, restricted in their movements, with trash spread all around, needing to move around in canoes and delaying and cancelling social events, even moving, temporarily, whenever possible, to other places to avoid this situation, could they be using their own values, their own vision of the world to judge the vision and situation of the inhabitants of the Lake during a big drought? In the perspective of the inhabitants of the town, the inhabitants of the Lake would be

(as them during a big flood) restricted in their mobility, surrounded by “polluted water” and trash, with their social life limited – in sum, the town’s people believe a big drought in the Lake is as disruptive as a big flood in town.

Mr P, a fisherman inhabitant and “sun of the Lake” when asked, in October of 2005, about the problems of the current drought, said: “the drought for us will be great, the bad will be when the *pasto* rises, when the wild grass gets loose, then we will not be able to sail in the river [the Parana] (...). Catching or not catching the fish they will always die, (...) [there will be] much more [mortality of fish] after the *pasto* rises”.⁸⁹ Mr J explained, in July of 2006, that when it starts raining and the water starts rising things get more complicated: “when he [the Lake] stays in the way it stayed in 2005, it even gets more complicated there, because with the rain, it sometimes dams up up there, and then it throws land and digs the canal”.⁹⁰ There will be more mortality of fish as the cold water starts entering the Lake, and the fish “will go, lets put it this way, entering into a thermal shock” (*vao, digamos assim, entrando num choque termico*). Moreover, as the water rises in the Lake, the wild grass grows. When it reaches 2-3 metres high, it gets loose in the form of *pasto* – floating balls of wild grass that can reach a diameter of 1 metre and that are very dangerous to navigation.

So, inevitably, as Mr P did, everyone, whether inhabitants of the interior or of Anama, when questioned about the drought of 2005, always end up by talking about the consequences of a big flood and of the rising water. As Mrs I said “but a flood, a big flood mistreats more than a big drought” (*mas uma enchente, uma cheia grande maltrata muito mais do que uma seca grande*). We thus cannot understand and study the consequences of a drought in a municipality such as Anama in Amazonia by descontextualising it. A drought must be understood in the continuous rhythm of seasonality. In other words, we cannot understand the drought, without understanding the flood and the rising and lowering of the water. As Mr Q warned us “there are always the two sides – the drought and the flood”.

⁸⁹ “A seca para nos vai ser legal, o ruim vai ser e quando levantar o *pasto*, o capim soltar, que nos nao vai ter como navegar no rio [the Parana] (...). Mesmo pegando ou nao pegando os peixe eles vao morrer sempre, (...) [vai haver] muita mais [mortandade de peixe] depois que o *pasto* subir”.

⁹⁰ “Quando ele [the Lake] fica do jeito que ficou em 2005, ainda complica mais ainda la, porque com a chuva, represa algumas vezes la para a cabeceira e aı joga muita terra e vai cavando o canal”.

Seasonality, Lived-World and *Taskscape*

In fact, we may argue that the people on the Amazon floodplain are continually 'attending to' the oscillations of the environment (through the perception of the rise and fall of the river and lakes, the behaviour of fish and animals, the rain and the winds, etc) by adjusting their own movements to these oscillations.⁹¹ In other words, life on the *várzea* is "regulated by a series of rhythms produced by people's [continuous] engagement with the environment".⁹² Rhythm and periodicity is intrinsic to them as beings-in-the-world.⁹³ It is through the 'lived experience' that people "situate [and constitute] themselves in the world, at the same time that they objectify their historical experience" and make sense of this world.⁹⁴ Following this theoretical phenomenological orientation of the 'lived experience', the individual is self-constituted and made real in its historical interlacing with the others and with the environment.

This view opposes the idea that floodplain peasants "merely act as part of a framework of external [economic, ecological and political] constraints to which life must respond", of authors such as Moran.⁹⁵ Moran, with an ecological and adaptationist approach, considers the rural non-indigenous Amazonian "the most important human adaptive system [to prevalent Amazonian ecological and micro-economic conditions] found in [Brazilian Amazon]".⁹⁶ The rural Amazonian is seen as the result of a complex historical process, a 'cultural system' product of external conditions. When changes are brought from outside to his/her way of life, he/she "has generally managed either to ignore or to absorb these outside factors into his own realm".⁹⁷

⁹¹ Harris, 2000:126.

⁹² Harris, 2000:125.

⁹³ Harris, 2000:139-40.

⁹⁴ Viegas, 2003:53. See, as well, Harris (2000).

⁹⁵ Harris, 2000:213.

⁹⁶ Moran, 1974:136.

⁹⁷ Moran, 1974:144. To Moran, the rural Amazonian culture is a complex system that resists to changes. When these occur, it is within the limits imposed by the system itself (Moran 1974:144). Moran follows authors such as Megger that, in the 1950s have developed adaptationist approaches for the indigenous peoples of the Americas. Megger and Evans solely recognised four different types of environments according to the agricultural potential of the soils (Megger and Evans 1954:802-806). One of them, the Tropical Forest, was considered an "area of limited agricultural potential" (Megger and Evans 1954:807-810). The soils would allow slash-and-burn agriculture, adding to the hunter-and-gathering activities of the "areas of no agriculture potential" (such as swamps, savannahs, arid uplands and sub-Antarctic forests). In the Tropical forests the potential of the soils would allow for a denser and more sedentary population, semipermanent villages and the "release of labour from subsistence activities"(Megger and Evans 1954:807); and reflected in an "expansion of all other aspects of culture" (Megger and Evans 1954:807). Socio-political organisation remained along kinship lines and the division of labour on sex

Harris goes further by challenging the view that the practical knowledge and the skills of the fishermen from the Amazon floodplain were inherited from the Amerindians and the Europeans.⁹⁸ He proposes, in a phenomenological and historical perspective, that such practical knowledge and skills are continually reinvented by each generation, and each individual. A reinvention made by the individuals, in the rhythm imposed by seasonality and the economic markets, which involves the individuals' improvisation, creativity and imitation. In other words, "traces of past actions or gestures are incorporated (actively or passively) into skills as they are imitated and recomposed".⁹⁹ In this perspective, the skills are not inscribed in the landscape, but in the *taskscape* (the ensemble of activities), as the first is continually destroyed by the seasonal variations: there is little, or no, continuity on the landscape from one season to another. Continuity is found in the practice. In this perspective, *taskscape* is to labour, as landscape is to land.¹⁰⁰ The landscape is the "accumulated imprint of the *taskscape* on the environment; it is the '*taskscape* made visible'".¹⁰¹

and age lines, the "headman" had limited authority, and shamans emerged as "a part-time occupational specialist"(Megger and Evans 1954:807). Pottery, loom weaving and woven basketry, initiation rites, deities ('mythical beings') and taboos emerged. In her theory, she sustains that "a particular habitat can be seen reflected in the subsistence pattern, the material culture, and (...) in the social and religious aspects of the culture that is exploiting it" (Megger and Evans 1954:801).

⁹⁸ Harris, 2005. Harris understands skills as the "adjusting of movements between person, technology and material", that reside in the acts, and emerge in the coordination of bodily movements (2005:199).

⁹⁹ Harris, 2005:216.

¹⁰⁰ Ingold, 2000:195.

¹⁰¹ Harris, 2005:198. Emphasis by the author. Inverted commas in the original.

Thus, in sum, we can regard the fishermen and inhabitants of the *várzea* as “active agents in the construction and reproduction of their livelihoods”,¹⁰² contrarily to what cultural ecologists and adaptationists argue.

Conclusion

So, as the division of Amazonia into two broad types of landscapes – *várzea* and *terra-firme* – may be an over-simplification of the complexity of the region, so it seems to be the idea, often expressed in literature, of a high water season where fish are scarce and difficult to catch, and of a low water season where fish are abundant and easily caught.¹⁰³

The fact that people remember and accentuate more the consequences of a big flood than those of a drought must be considered in different but intertwined perspectives. First of all, I have argued that this is not a consequence of the fact that floods happen more often, nor that *ribeirinhos* are better or worse ‘prepared’ or ‘adapted’ to a big flood than to a big drought, because it is not a question of adaptation. Both the environment (in particular the river) and the inhabitants of the floodplain are active and living elements in the constitution of the lives of the last, as we have argued. Seasonality itself “is constituted by the movements of people and the rhythmic structure of their activities, which resonate with and respond to periodic changes in the floodplain environment”.¹⁰⁴ Furthermore, *ribeirinhos* are active agents capable of greatly modifying the surrounding environment, as Mr J acknowledges by linking the increase of fishing in the last thirty years, to the decrease of the quantity of fish that die during a drought.¹⁰⁵

Secondly, it must be noticed that when asking people about an event that happened almost one year before, we are dealing with memory discourses. In this type of discourses people tend to relativize, contextualise and make long-term comparisons. They thus make contrasts that sometimes lead them to

¹⁰² Pestana, 2005:63.

¹⁰³ Cf. Chernela, 1989:242.

¹⁰⁴ Harris, 2005:202.

¹⁰⁵ Similarly to what authors such as Balée and Gély have argued to the indigenous people of Amazonia. It is nowadays believed that Indigenous Amazonian peoples were responsible for an increase of local and regional biodiversity in Amazonia, having transformed much of Amazonia over the millennia. See Balée, W., 1989, “The culture of amazonian forests”, *Advances in Economic Botany*. 7: 1-21; and Balée, W. and Gély, A., 1989, “Managed Forest Succession in Amazonia: The Ka’apor Case”, *Advances in Economic Botany*. 7: 129-158.

undervalue this drought when compared to big catastrophes (sometimes floods) in the past.

Mrs I told us:

“I watched it on television, and I was not surprised, as I went through many and many of those droughts. But they made it a big event (Oh, Holy Mary!). They were saying that [we] were going through difficulties. It is true, it gets a little difficult, right? It gets difficult, because it gets difficult for us to move around, right? But that is not enough to go through real necessities, it's not. (...) They overvalued it, made it a big event, a buzzing (...) in each and every day [that news announced the drought] (...), but I do not know if it is politics, right, also to take advantage”.¹⁰⁶

Mrs I lives, with some of her children and grandchildren, in one of those stilt wooden houses which have a television antenna, and she never misses the soap opera that passes at 6 pm. In 2005, during the drought, along with many people of the municipality, she watched on TV the news about the drought in Amazonia. Without any other source of news, the news she received about the drought were the national and international ones: news that gave to the event a meaning and an emphasis different from the regional one, an outside conceptualisation. Speeches such as that from Mrs I need, therefore, to be contextualised in order to be understood. When asked about the drought of 2005, people's answer (and, thus, the way they perceive the drought) was a reaction to a disclose they felt was too strong or out of context. That is, the fact that they lived the news of the drought through a 'scaremonger' journalism may have originated a reaction of depreciation of the event: the 'catastrophe' seems minor than it appeared in the way it was broadcasted on TV. The drought expressed on TV – the 'end of Amazonia' – did not happen.

Nevertheless and once this is understood, the drought of 2005 had several consequences in the municipality of Anamá. From these I highlight the

¹⁰⁶ “*Passaram na televisão, eu vi isso aí e não tenho me admirado não, que eu passei muitas e muitas dessas secas. Aí fizeram um assombro, o pessoal fazia um assombro que Avé Maria, tavam passando necessidade. É verdade, fica difícil um pouco, né? Fica difícil, porque fica dificultoso para a gente estar andando, né? Mas que não dá para passar necessidade, não dá. (...) Fizeram um assombro, uma zoada (...) todo o dia [a seca passava nas notícias](...), mas não sei se é política, né, também prá aproveitar”.*

difficulties in transportation and in the commercialisation of the local production, disruptions on the supply of water and electricity, pollution of the water and its unbearable smell, cancellation or low influx of people to the festivities, and even a federal and governmental SOS intervention.

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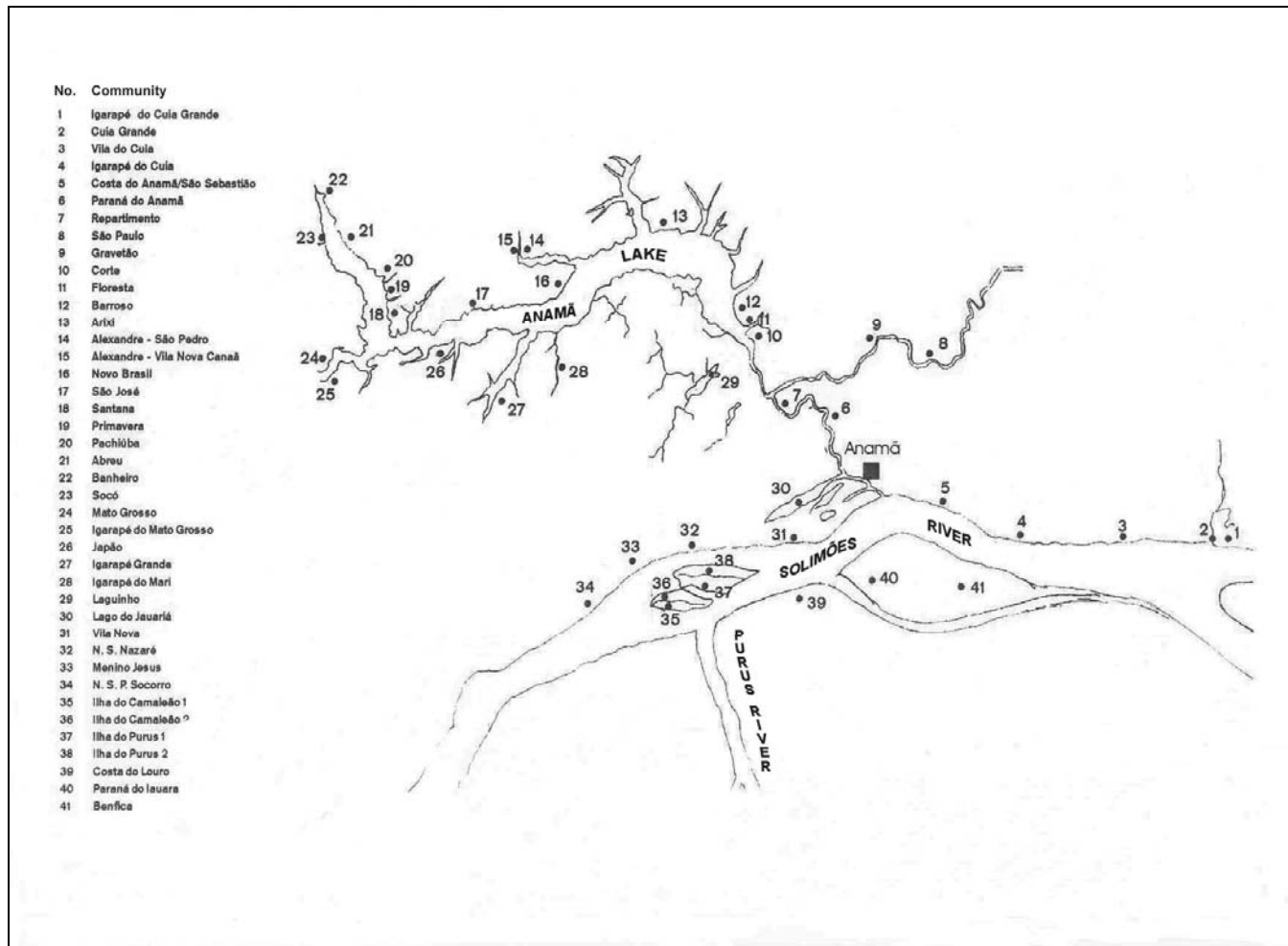
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Map 1 – Map of the municipality of Anamá. The town of Anamá is represented by a square and the rural communities by numbers. Adapted from Prefeitura Municipal de Anamá (n.d.).