

Public policies for solid waste management and the occupation of areas near water in Manaus and Recife

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Abstract

This article presents research experiences that examine water and solid waste in two Brazilian capitals: Manaus (AM) and Recife (PE). Contrasts, differences, and intersections between public policies on waste management, sanitation and housing are the points that sew this text together, as well as socio-environmental issues emerging in the ways of life related to water, whether along rivers and streams, tidal areas, or oceans. With converging scenarios – including the dumping of waste in water, and the lack of rights to decent housing - the people who live on the banks of watercourses and flooded areas are held responsible for dumping the waste that overflows onto streets, invading their homes. However, these dwellings receive floods of garbage from all over the city, invading their territories. A multi-sited look at these populations, based on street ethnography, visual registers, and comparative studies, combines with studies that produced in our research network on the anthropology of waste in Latin America and Europe.

Key words: Manaus-Recife; Solid waste management; watery regions.

Políticas públicas de gestão de resíduos e o processo de ocupação de áreas alagadas em Manaus e Recife

Resumo

Este artigo apresenta experiências de pesquisa entre as águas e os resíduos sólidos de duas capitais brasileiras: Manaus (AM) e Recife (PE). Contrastes, divergências e intersecções sobre políticas públicas de gestão de resíduos, saneamento e habitação são pontos que costuram este texto, além das questões socioambientais emergentes nos modos de vida relacionados às águas fluviais, salobras ou oceânicas. Com cenários convergentes, que incluem o despejo de resíduos nas águas e sem direito à moradia digna, as populações que habitam às margens de cursos d'água e áreas alagadas são responsabilizadas pela deposição do lixo que transborda sobre as vias, invadindo suas casas. Todavia, essas habitações recebem enxurradas de lixo de toda a cidade, sobrepondo-se sobre seus territórios. O olhar multissitiado sobre essas populações, pautado na etnografia de rua, registros visuais e estudo comparativo, soma-se aos estudos que compõem nossa rede de pesquisa sobre Antropologia do Lixo/Resíduos na América Latina e Europa.

Palavras-chave: Manaus-Recife; Gestão de Resíduos Sólidos; Áreas Alagadas.

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Introduction

This article¹ is the result of ethnographic research carried out in the realm of the «Anthropologies of Garbage/Solid Waste» network of researchers, which joins people from Brazilian and foreign universities (The Netherlands, Argentina, Uruguay) to build a theoretical and ethnographic framework that allows us to reflect on the subject of «waste» in a comparative way. From the outset, anthropology has used comparative methodologies to think about the particularities and differences established about a single object or category of analysis. As Evans-Pritchard (2021)² said at a conference at the London School of Economics and Political Sciences in 1963, at least since Aristotle, theorists from other fields of knowledge have sought comparative configurations that compose the trajectory of thinking in the human sciences. In this sense, through comparative and multi-sited ethnographies (Marcus, 1995) carried out with six eyes, six ears and six hands, we sought what from a Latournian point of view is configured as a socio-technical network (Latour, 2012), to understand how relationships are established between people living in flooded areas and how solid waste management affects housing issues in two Brazilian capitals: Manaus (AM) and Recife (PE).

Both cities are surrounded by large bodies of water, with communities built on stilts known as *palafitas*, which delineate insurgent social contours about different ways of living and inhabiting between, on and with the waters. The socio-environmental repercussions of these ways of life, especially issues of waste disposal and sanitation policies that include specificities related to waters as protagonists of these housing scenarios, are points of encounter and distance that permeate our research, or as proposed by Ingold, our trails of entanglement, in the sense that «it is within such a tangle of interlaced trails, continually ravelling here and unravelling there, that beings grow or 'issue forth' along the lines of their relationships» (Ingold, 2011: 71).

In our discussion circles, where the interlacing of waters and solid waste was the guiding focus for a comparative proposal between the two cities and a theme we had been discussing for some time, a structural aspect confronts the focus we highlighted in our observations: the demand for decent housing in these communities. We believe this is a point that can make interesting contributions to the field, beyond the reflections and analyses proposed in comparative categories concerning the method of these studies. It is a result that emerges from the voices we heard about the precariousness these communities are relegated to, driven by exclusionary housing policies and marginalization of these ways of life.

¹ The studies on which this article is based were conducted with support from CNPq, the National Council for Scientific and Technological Development, - Brazil; FACEPE, the Research and Technology Support Foundation of Pernambuco; and FAPEAM, the Research Support Foundation of Amazonas.

² In Amazonas, we participated in the Project «Avaliação de Tecnologia Social – O Programa Revolução dos Baldinhos e a replicação da gestão comunitária de resíduos orgânicos em comunidades de Florianópolis (SC) e Iranduba (AM)», coordinated by Dr. Carmen Rial (UFSC), and financed by CNPq (IRIBARREM, C.; RUFINO, M. C.; ALMEIDA, C. 2020).

This text is composed of two fronts. The first concerns the «social uses of water» (Bastos, 2003)³. In this sense, in our individual and collective experiences as researchers in networks and projects⁴ that incorporate intersections on the anthropology of waste, in research involving cities such as Florianópolis, Manaus, Recife and Amsterdam, water emerges as a category of analysis for reflection on the circularity and destination of various wastes produced by the processes of human occupation. These are participatory investigations and observations on how, at present, public policies, and relations of ageing between selective solid waste disposal collections and individual initiatives produce a circular movement and a slow but upward trajectory of awareness about the environmental impact of sanitation and the relationship with the social conjuncture observed in these regions. The second front concerns the implementation of waste management policies, and housing policies, and how they affect people living in areas touched by waters. As Colombijn and Rial (2016: 26)⁵ discuss from a symbolic perspective, «waste is not a self-evident object, but a socially constructed category», which corroborates what Maria Raquel Passos Lima (2021) observed. For this anthropologist, when triggered, the analytical category «garbage» operates as a moral definition, which should therefore be hidden. «Residue», however, removes the negative meaning of the word garbage.⁶ Residues can have other destinations and, obviously, other mediations (Lima, 2021). A residue is not an end [product], it is a state of matter that has the potential to be reinserted into a production chain. The character of dirt, of something polluting, attributed to the perspective of Mary Douglas (1985) is thus re-signified. In this text we address the two symbolic perspectives - «garbage» and «residue» - by activating practices that conceal this material or make it visible (Lima, 2021).

With this, we intend to present some reflections that contribute to an agenda that is currently fundamental: the treatment of solid waste in large Brazilian cities, considering its environmental impact and the improvement of quality of life in urban spaces – at times revealing forms of segregation. This is an essay that highlights established analytical approaches and a first experience of writing at the intersection of themes that we have researched collectively and/or individually. Our observations have made us think about our understanding of recycling and the extent to which what exists in Manaus and Recife in terms of Social and Environmental Program for the Igarapés of Manaus, linked to the office of the state governor, which in partnership with the participation of civil society and the various sectors involved, began its urban interventions in 2006, encompassing various areas of the city. The treatment and proper disposal of waste requires the intense participation of its inhabitants.

These peculiar ways of living and inhabiting these areas are therefore often denied by local public policies that seek to homogenize urban landscapes, reconfiguring them in a strategy to produce an ennobled city, in which «modernization is symbolized by cleanliness and vice versa» (Colombijn; Rial 2016: 26). In⁷ this case, low-income populations living in areas considered environmentally fragile are removed to support urban requalification and resolve socio-environmental problems (Oliveira 2003).⁸

3 Residue is the word used in Brazilian law, as in the “Política Nacional de Resíduos Sólidos” [National Solid Waste Policy]. In English, these laws usually use the word “waste”, as in the “Municipal Waste Management Association” of the US Conference of Mayors. The English version of this article uses the word “waste”.

4 Contrary to the classic concept from Robert Park (1967), in Brazil, urban peripheries are characterized more by a symbolic than geographic distance from a city center.

5 The forums are always held on the last Friday of the month, in the auditorium of the Recife Urbanization Authority (URB).

6 Igarapé is a regional term for creeks, streams, tributaries, or small arms of rivers that cross areas of cities and territories in the Amazon.

7 It is important to note that these data are from the 2010 census, given that the COVID-10 pandemic and negligence by the Bolsonaro government delayed the 2020 census.

8 Social and Environmental Program for the Igarapés of Manaus, linked to the office of the state governor, which began its urban interventions in 2006, encompassing various areas of the city.

Considering this theoretical framework and the experience of working in a network, the next step was to observe municipal management of solid residues in peripheral ⁹ locations bordering rivers and mangroves - as well as the scope of other urban sanitation services - and the housing policies adopted to mitigate the problems generated by the occupation of housing in areas subject to flooding. Field trips were therefore made to locations in Manaus; including Educandos, Polo Industrial de Manaus, Japiim, Parque do Mindu, the central waterfront and Selective Collection Points; and in Recife, including Afogados, the central region, and the Prezeis¹⁰ forums and the 1st International Solid Residues Conference (CIRSOL). These incursions took place between December 2021 and April 2023. Preference was given to street ethnography, a method advocated by Cornelia Eckert and Ana Luiza Rocha (2013), which allows for the exploration of broader areas through the idea of *flânerie*. They affirm:

Street ethnography is an adherence to the classical method of anthropology, but more than this affiliation, it is a dialog with new interpretative times in anthropology in its critical paradigms. Thus, alterity here is not located in a strange space, nor is it the distanced Other. The challenge is to let ourselves flow reflexively, and why not in body and spirit, in the city. Our provocation to the reader is to let ourselves be guided by conceptual shifts led by the images that shape the city we look at, listen to and interact with. [...] The street, in ethnographic exercises, appears to us as a space-time arrangement where social life takes place in its most diverse forms (Eckert; Rocha 2013: 13).

It also helps us think about the precautions that should be taken with the use of images considering the production of divergent meanings, as well as other temporalities than those defended and presented by the public administrators of the two cities related to waste management models, sustainability and consumption standards. All of this reveals the great social inequality in which these municipalities are inserted. We therefore use two types of language: writing, through bibliographical references and ethnographic experiences from field observations in Manaus and Recife; and images. In this sense, we were inspired by Achutti (1997), an anthropologist and photographer who developed the concept of photoethnography in a study carried out with women who pick waste in the Vila Dique neighborhood of Porto Alegre. For Achutti, images emerge as «an autonomous narrative resource with the function of converging meanings and information about a given social situation» (Achutti, 1997:13). Bateson and Mead (1942) also not only consider the complex relationship between written texts and images, but the way photographs are presented – and their systematic organization when published. This corroborates Etienne Samain's (2000) observation about the classic study *Balinese Character*, in which photos are sometimes sequential, sometimes structural. Samain, alongside André Alves in *Os argonautas do mangue* (2004), used a similar resource for the arrangement of images. On the relationship between text and photographs in the work of Bateson and Mead, Samain affirms:

An innovative experiment, but one that does not intend to break with anthropological tradition. This leads Margaret Mead to sign, immediately after this «introduction», 48 other pages of other texts, this time referring to the contextualization of the hundred photographs organized around ten chosen themes. In reality, this long «note» on Balinese character represents more than the (necessary) effort to ambient the reader for what they are about to discover and go through, verbally and visually. At the same time, it expresses what Margaret Mead will always advocate: caution as much as affirmation of the signifying (and significant) power of photography in the field of human sciences. In other words, these 48 written pages respond to a double imperative: on the one hand, the defense of the photograph's claim to be able to express something that text does not know and will never know

⁹ There are currently 67 Zeis (Zones of Social Interest) type 1, which are spontaneous occupations such as slums, and seven Zeis type 2, underutilized housing or vacant land that can receive residences and land regularization.

¹⁰ In partnership with the participation of civil society and the various sectors involved.

how to achieve and, on the other, the need to confess that, in the absence of a commentary, the future «reading» of the photographs will remain fragile or, at least, problematic (Samain 2000: 71).

We are obviously considering the Brazilian anthropologist's warning about the dominance of writing in relation to the visual. Here we highlight the «polysemic» and «vulnerable» character of the «awakening of meanings that are not necessarily codified (i.e. defined by the codes of graphic reason)» (Samain, 2000: 87). Furthermore, still drawing on Samain (2012), we consider the capacity for ideation that images give rise to, in the same way that the composition chosen for their presentation also does.

Another relevant aspect that deserves to be explained in this introduction concerns the fieldwork in Manaus. The methodological approach of the research sought to «follow the garbage», something similar to the strategy employed by Maria Raquel Passos de Lima during her doctoral research with waste pickers in Jardim Gramacho published in *O avesso do lixo* (2021). Maria Raquel chose as her theoretical tool the precepts of Arjun Appadurai (2008) - «Follow the things themselves» - and Alfred Gell (1991) - attributing agency to the object. Thus, the object «garbage» was observed through its collection at various points in the city, such as on the waterfront, along¹¹ the igarapés, in the center or downtown neighborhoods and at sites for collecting separated recyclable waste in institutional actions by the Manaus municipal government.

A bit about urban contexts and housing policies in the two cities

In terms of population,¹² Manaus has around 2.25 million inhabitants, while Recife has 1.66 million. Despite having a smaller population, the city in Pernambuco has a higher demographic density, at around 7,604.2 inhabitants/km², making it the fourth highest among Brazilian capitals. The city in Amazonas has 197.9 inhabitants/km². A comparison of the population areas and their demographic formation suggest divergences in the conjuncture of their urban-geographic formations. But the peripheral realities of residences bordering waters, or that emerge from waterways and establish particular ways of life on the water's edge, meant that our starting point was found in the *palafitas* [stilt houses] and other modes of occupation in flooded areas common to both cities.

Precarious housing is historically associated with processes of urban transformation through spatial redistribution that displaces populations from areas that have come to be valued over time. Teresa Caldeira (2000) calls these processes «Brazilian methods of segregation».¹³

Segregation - both social and spatial - is an important characteristic of cities. The rules that organize urban space are basically patterns of social differentiation and separation. These rules vary culturally and historically, reveal the principles that structure public life and indicate how social groups interrelate in the city space (Caldeira, 2000: 211).

This is true in Manaus and Recife, the capital cities of Amazonas and Pernambuco, when residents from the lower/subaltern classes began to settle in the most inhospitable parts of these cities, such as the mangroves and rivers. The ways of living on the water generate a differentiated relationship between the people who live there and the environment - a relationship that is not always understood by the government when it implements public policies.

The removal of the population from the central area of Manaus began at the end of the nineteenth century, when there was the first boom in urbanization brought about by the accumulation of capital, mainly from the production and export of latex (Dias, 2007). The transformation carried out in the central area of the

¹¹ The PNRS has a total of 15 objectives.

¹² The shared responsibility for the life cycle of a product involves holding producers and not just consumer's responsible.

city by Governor Eduardo Ribeiro prioritized landfilling *igarapés*, the construction of public buildings, road infrastructure, as well as sanitary projects, lighting, and public cleaning, as the author notes. The ideology of modernity, civilization and progress led to the removal of impoverished and despised populations who lived in houses on the banks of *igarapés*, which were then landfilled. Economic growth and the aim of making the city a place befitting the elite that was being formed, brought about a sanitary vision based on great works, such as imposing buildings, boulevards, and bridges. From 1912 onwards, with the fall of rubber production, the «city of Fausto» became an illusion (Dias, 2007; Oliveira and Schor, 2008). As a result, the different appropriations of the city became evident:

Then the city of the defeated, of contradictions and conflicts comes to the fore, and the spatialities of the grottos emerge, on the other side of the *igarapés* and on the other side of the river, with the Educandos, Curre, Plano Inclinado, Matinha, São Raimundo, Morro da Liberdade neighborhoods emerging, where residents seek to be the new subjects of the production of urban space. For these people, the city's crisis has a different dimension, because it doesn't fit into the determinations of the extractivist elite or those of the state (Oliveira e Schor, 2008: 68).

In his novel *Dois Irmãos* (*The Brothers*), Milton Hatoum tells the story of a family of Lebanese origin and the quarrel between twin brothers in the capital of Amazonas in the mid-20th century. He describes the urban transformations that led to segregation models in the city, linked to forms of housing built over water.

Halim's life had improved in the post-war years. He sold a bit of everything to the residents of Educandos, one of the most populous neighborhoods in Manaus, which had grown considerably with the arrival of rubber soldiers from the farthest rivers of the Amazon. With the end of the war, they migrated to Manaus, where they built stilt houses on the banks of the *igarapés*, on the banks and in the clearings of the city. Manaus grew like this: in the tumult of the first to arrive (Hatoum, 2006: n.p.).

Between the central area and the Educandos neighborhood was the floating city: a group of buildings that floated on the Rio Negro. The floating houses represented another Manaus. A residential area, with small businesses, completely different from today's landscape, but which connected almost harmoniously with the city, according to Hatoum. The historian Barata Souza affirmed:

The «floating city» represented a model of occupation of river spaces that grew in Manaus from the end of the 1950s onwards, when several of the cultural meanings specific to a city began to be experienced on the city's urban waters, namely on the southern banks of the Rio Negro, the Centro [downtown], the «front of the city» and on the *igarapés* that rise from the river into Manaus. Among these meanings stands out the densification of floating houses, the population increase and commercial dynamism, which in addition to reshaping the place, began to determine new forms of sociability rooted in a daily life of their own (Barata Souza, 2016: 118).

Floating houses can now be found in communities around Manaus and rarely on its waterfront. Some of the reports presented by the author state that since the 1960s, with urban reforms and a policy to make the floating city extinct, some of the families moved to houses on stilts (Barata Souza, 2016). Although they are different types of construction, both floating and stilt houses share complex techniques for working with wood in constructions built to withstand the aquatic environment, and are exponents of the disorganized urban expansion that afflicted Manaus during the 20th century. Life lived on the water generates a different relationship between people and the river.

In the wetlands of Manaus, Rufino (2017) observes the plurality of perspectives on their uses and the logics of occupation as visions that overlap, intersect and, in certain aspects, dialog. The author states that the waters are disputed by different projects that struggle to assert their interests and a public image of the city that

projects it globally. In this sense, a large-scale project like Prosamim¹³ brought significant transformations to urban life, in that it removed some of the residents from the igarapés and riverbanks, moving them to housing developments in the periphery of the city (Meneguini, 2012). As Junior and Nogueira (2011) point out, when they analyze the landfills of the igarapés over more than a hundred years, the model for intervention of this program is characterized by the landfilling and canalization of igarapés, continuing processes that began in Manaus in the late 19th century, altering the watercourses and distancing them from the population, in environmental and cultural terms.

As Iribarrem and Rufino (2020: 13) point out, the specificity of the set of floating dwellings and stilt houses that persist in urban spaces «constitute forms of resistance and insurgency in the ways of living and inhabiting that go against a sanitary logic» that is still in force in the large projects underway in Manaus that produce cemented canals, asphalted streets, open sewers.

The central regions of Recife also underwent urban reforms that pushed the low-income populations who lived there into *mocambos* [shacks] and *palafitas* in increasingly peripheral and inhospitable areas. This was very similar to the pattern of segregation that affected other parts of the country (Caldeira 2000). Rogério Proença Leite (2001; 2006),¹⁴ for example, likens these reforms in the capital of Pernambuco to the application of the “bota abaixo” [tear it down] policy in Rio de Janeiro, which marked the government of Pereira Passos in the early twentieth century. His research focuses on the changes in the Recife neighborhood, a central and port area that underwent a major gentrification process during the 1990s.

It is worth noting that the urban occupation of the region long predates the Manauara occupation, which began in the 16th century when Recife was the port of Olinda. Gilberto Freyre (2003) used the term “Olinda-Recife area”, a name created by sociologist Donald Pierson to spatially designate the patriarchal-slave relationship established by the sugarcane plantation system in northeastern Brazil. Thus, Olinda served as the political-administrative region of the sugar mills, while Recife was the outlet for production. The city, now the capital of Pernambuco, was originally made up of islands and was expanded through the construction of bridges and landfilling processes during the various urban reforms (Bezerra, Melo, 2014).

The first of these reforms took place during the Dutch domination (1630-1654), in the areas where the central neighborhoods of Recife Antigo, Boa Vista, São José and Santo Antônio are located – the latter two arising, in part, from landfills on the Capibaribe and Beberibe rivers (Bezerra, Melo, 2014; Pacheco de Souza, 2021). We highlight that part of the Através da Lei Estadual Nº 4457 DE 12/04/2017. Through State Law No. 4457 OF 04/12/2017, landfilling of the São José neighborhood occurred not only through planned actions at different times in history, but also through the occupation of areas subject to flooding, in the “spontaneous construction of mansions and *mocambos*” (Pacheco de Souza, 2021: 18).

Another factor that contributed to the degradation of the Capibaribe River was the expansion and intensification of the occupation of its banks, which began at the end of the 19th century with the migration process from the countryside to the city. The migrant population, unable to access urban land, settled in the mangrove and wetland areas, less valuable land, building their *mocambos* there, using fishing as a means of subsistence (Bezerra, Melo, 2014: 99).

13 The Relatório Luz 2021 [The Light 2021 Report] involved different civil society organizations to assess the progress of government plans to comply with the UN 2030 Agenda. For more information: AGÊNCIA CÂMARA DE NOTÍCIAS. The report indicates that Brazil did not advance in any of the UN's 169 sustainable development goals. Available at: <https://www.camara.leg.br/noticias/784354-relatorio-aponta-que-o-brasil-nao-avancou-em-nenhuma-das-169-metas-de-desenvolvimento-sustentavel-da-onu/>. Accessed: 20 November 2022.

14 According to the map provided by the Programa Lixão Zero, most of the 33.1% of the municipalities without information are in the North and Northeast (Brasil, 2019:35).

At the end of the 20th century, the tourist potential began to be exploited by the proliferation of bars and commercial establishments opened after the restoration of the buildings in the region. According to the author, the first trace of post-gentrification segregation in the region was the collection of waste and urban cleaning of the Rua do Bom Jesus, which was different from the rest. In fact, there are reports that consider what is now the capital of the state of Pernambuco to be the first Brazilian city to have a landfill, built in the 17th century during the Dutch occupation (Rezende, Heller, 2008).

On the other hand, Recife has a national milestone in terms of urban occupation and land regularization with the creation of the Plan for the Regulation of Special Zones of Social Interest (PREZEIS), which was launched in 1987 and has served as a model for other Brazilian cities. It consists of a participatory tool aimed at planning and implementing urban policies. All decisions are taken by vote of representatives from each of the Zeis¹⁵ in the forums. Most of these areas have houses in areas touched by waters - between rivers and mangroves.

Data from the National Household Sample Survey (PNAD/IBGE), collected in 2021, shows that the Greater Recife region has the highest percentage of people living in extreme poverty among all the country's metropolitan regions (Salata, Gomes, 2022),¹⁶ with 39% of the local population living in extreme poverty - which is when the per capita income in the household is less than R\$465.00 (1/4 of the Minimum Wage at the time). Thus, the capital of Pernambuco is characterized by social inequality stamped on the urban landscape of a city that is verticalizing in condominiums, while simultaneously maintaining the Zeis. It should be noted that the same profusion of river waters that places Manaus at the confluence of two major Amazonian rivers: the Amazon River and the Negro River, also points to Recife as a coastal capital intersected by rivers - the Capibaribe, Beberibe and Tejiþiþ - with incursions of ocean tides and dense mangrove formations. In both cities, tangles of life are woven along the water's edge, whether fresh or salty, with Amazonian floods or ocean storms invading portions of land. The contours of tides and floods directly influence the ways of life, spatiality, and urban formation of the two cities, influenced by the distinct cultural formations that have emerged at these points that are equidistant to the waters.

Public Waste Management Policies

The National Solid Waste Policy (PNRS), created in 2010, established instruments and guidelines for the preparation of integrated solid waste management plans by Brazilian states and municipalities,¹⁷ which must consider local peculiarities, including coastal and riverside areas. Its objectives¹⁸ also include encouraging environmental education and raising awareness among the population, in an effort to change behavior and promote good environmental practices (Brasil 2010). The document also establishes shared responsibility¹⁹ for discarded waste and sets deadlines for states and municipalities to meet the targets, and was reinforced by the commitment signed in the United Nations 2030 Agenda. However, a report²⁰ presented in the Chamber of

15 Através da Lei Estadual Nº 4457 DE 12/04/2017. Through State Law No. 4457 OF 04/12/2017.

16 The authors define collection routes as «micro-areas that comprise neighborhoods, partially or totally, through which pass collection trucks that carry out urban collection and cleaning» (Silva et al., 2020: 823).

17 Its area is estimated at 66 hectares and it is located at km 19 of the AM-010 highway, which links the capital to the municipalities of Rio Preto da Eva and Itacoatiara, with a length of 265 km. According to information from the Secretariat, the landfill has an environmental operating license from the Environmental Protection Institute of the State of Amazonas - IPAAM.

18 This is research carried out by Camila Iribarrem and Márcia Calderipe within the scope of INCT Brasil Plural, an institute with general offices and coordination at the Federal University of Santa Catarina (UFSC) and the project «Evaluation of Social Technology - The Revolution of the Buckets Program and the replication of community management of organic waste in communities in Florianópolis (SC) and Iranduba (AM)», linked to NAVI/UFSC.

19 The waters of the igarape's that cut through the city discharge into the Rio Negro, which, due to its volume of water, acts as a self-drainage system (Machado et al., 2019).

20 This services costs about R\$50,00.

Deputies in 2021 showed that of the 169 targets in the 17 Sustainable Development Goals (SDG/UN), 54.4% are retroceding, 16% are stagnant, 12.4% are threatened and 7.7% show insufficient progress. These are some of the consequences of the neoliberal policies adopted over the last four years under the Bolsonaro government. It is also important to mention that the evaluations and analyses provided for in the «social control» objective of the National Solid Waste Policy, if carried out, were not presented to civil society during the period - given the difficulties in finding data for the last four years on federal government portals.

In addition, a recently published audit by the Comptroller General of the Union (CGU) analyzed the accounts of the Ministry of the Environment (MMA) over a two-year period and revealed that only 7.11% of the available budget funds were actually used during the period analyzed (Brasil, 2022). The «Lixão Zero» [No Garbage Dumps] program (Brazil, 2019), whose action plan only includes short-term goals, was not able to reduce the number of clandestine garbage dumps across the country. According to the CGU, the number of dumps and controlled landfills increased in 2020 – there are no MMA records for the situation in 2021 and 2022. The results of the program to remove solid residues from waters also fell far short of demand.

In another assessment, this one of water management between 2018 and 2022, the CGU's Federal Secretariat for Internal Control (Brasil, 2022) found that municipalities in Brazil's Northeast and North regions were less involved in collecting data²¹ that had an impact on the Diagnoses of Urban Solid Waste Management and Urban Stormwater Drainage and Management. The regions are also highlighted in the document launching the National No Garbage Dumps Program (Brasil, 2019):

According to the National Basic Sanitation Plan (PLANSAB, 2010), in both relative and absolute terms, the Northeast is the region in Brazil with the most precarious sanitation conditions in terms of household waste collection coverage and the North is responsible for the second highest number of residents who throw their waste into water bodies, highlighting the shortcomings in these regions (Brasil, 2019).

It should be noted that, although the program was launched in 2019, the data for the North and Northeast regions corresponds to a study carried out during the Lula administration, which gave rise to the National Basic Sanitation Plan in 2010. Therefore, there is an information gap of at least a decade. The No Garbage Dump Program website also does not present management reports. The «data blackout», as this practice of the Bolsonaro government was dubbed by the press, was aggravated by the delay in conducting the demographic census.

Since the launch of the National Solid Residue Plan, Brazilian states and municipalities have been in the process of implementing waste management plans and strategies to mitigate the impacts caused by the consumption and disposal of products in keeping with the 2010 law. Pernambuco approved its state policy in the same year. The state of Amazonas, in 2017.²² Data from the Pernambuco State Government's Department of Cities a year after the launch of the national plan showed that 84% of household waste in the Recife Metropolitan Region (RMR) was destined for controlled and sanitary landfills. In 2016,

Conventional waste collection is predominant in the city, with a coverage rate of around 100%. However, selective collection of the dry recyclable fraction is limited, corresponding to 0.5% of Sectorization of the solid household waste collection routes by multivariate techniques in 2016, and there is no differentiated collection for household organic waste (Silva et al., 2020: 822-823).²³

21 Secretaria Municipal de Limpeza Pública [Municipal Secretariat for Public Cleaning].

22 In addition to this collection, merchants downtown are informed about collection points for residue. We were not able to examine this specific situation, but intend to in the future.

23 The term *bodozal* portrays an emic category. According to Vieira Souza; Silva Souza (2020: 5), «it is derived from the name of the acaribodó fish that inhabits and breeds in the muddy bottoms of Amazonian lakes. The word is used pejoratively to refer to occupations on the beds of igarapés».

The discrepancy between collection coverage – selective and ordinary waste – has been a challenge for the current administration. The Recife municipal government is responsible for planning and managing organic solid waste in the city through the Autarquia de Manutenção e Limpeza do Recife (EMLURB) [The Recife Cleaning and Maintenance Authority]. Collections are carried out regularly. In 2014, the municipality, through EMLURB, launched the EcoRecife project, which sought to bring together:

all the public policies and urban cleaning equipment that operate in the city, as well as the environmental education actions undertaken by the municipality, seeking to improve household collection, encourage the correct disposal of recycled waste and launch the Ecoestations project, which provides auxiliary equipment for receiving waste (Prefeitura do Recife, 2014).

The creation of the project is part of the Metropolitan Solid Residue Plan (PMRS) drawn up jointly with the fourteen municipalities that make up the Recife Metropolitan Region in 2013 - and in line with the national, state and Metropolitan Solid Residue Plans.

In July 2020, the Metropolitan Solid Residue Plan was reinforced with the launch of the Recycle More program by Recife's Urban Innovation Secretariat in July 2020. So far the services have been maintained by the new municipal administration.

On the other hand, the project advocated by the Recife Municipal Government involves a major urban overhaul which, in a way, has been carried out since October 2022 with the launch of Recife Limpa. However, what has been implemented so far doesn't seem to integrate the center and the peripheries, given Vice Mayor Isabella Roldão's discourse focused on the middle and upper classes and the lack of coverage of the initiatives pointed out by Mayor João Campos in the total area corresponding to the city.

A case study on the sectoral model of solid residue collection routes in Recife (Silva et al., 2020) revealed that household and per capita income are correlated with per capita waste generation. The research analyzed 31 Household Solid Waste (HSW) collection routes²⁴ used by the company responsible for the service in 2013, which covered 30% of the city's total population. The assessment considered the correlation between population, income, generation and gravimetric composition of the waste collected. The results led to the classification - according to the table below - of this sectorization into two groups (A and B) and five subgroups (A1, A2, B1, B2 and B3), where A is related to the lower and lower-middle classes, in which the areas covered include the Afogados and central communities observed in this study, and B, to the upper (B1), and middle classes (B2) and commerce (B3).

Table 1 – Summary of the characteristics of the subgroups by similarity

G	SG	Rotas	POP	DD	CE	RMD	RMPC	GR	GRPC	RE	PU
A	A1	10	16.459	164,26	Baixa	1.046,50	318,68	255,50	0,54	43,26	32,77
	A2	7	23.830	224,31	Baixa	587,84	169,59	301,62	0,44	36,21	37,41
B	B1	6	9.565	176,28	Alta	5.490,41	1.907,56	249,40	0,89	42,54	36,69
	B2	7	9.024	129,92	Média	2.165,05	737,37	249,76	0,99	41,36	37,64
	B3	1	3.926	53,53	Média	2.146,67	901,10	373,95	3,17	45,56	43,43

Groups: Subgroups; Routes; POP population; DD demographic density (pop ha.) CE economic class, RMD Avg. household income (R\$ month); RMPC monthly per capita income; GR avg. generation of residues per month (ton. month); GRPC: per capita generation of residues (kg. person day); RE recyclables; PU. Perishables)

²⁴ Bags made of polypropylene to imitate natural raffia or palm fiber. The bags are recyclable or reused as raw material (Moreira, 2019).

Thus, as household/per capita income increases, more solid waste - including recyclables, perishables and others - is generated per person. The study concludes that this correlation should be used as an auxiliary tool in the construction of public waste management policies, with regard to «proposing sectoral solid waste models that consider the socio-economic particularities of the areas studied» (Silva et al., 2020: 821). This panorama suggests that greater access to the consumption of goods and products, as well as the waste of perishable products, is associated with the wealthier sections of the population and, consequently, with the generation of waste - which can be seen in the gravimetric composition of the material collected. With the exception of sub-group B3, which is linked to a commercial area (large generators), the difference in per capita waste generation (GRPC) between the other sub-groups is over 55%.

In Manaus, the Municipal Urban Sanitation Department (SEMULSP) is responsible for the collection, transportation, and disposal of solid waste and for public cleaning services. The former is an outsourced service, while public cleaning services are carried out partly by the secretariat and by contracted companies.

The city has the «Manaus Solid Waste Landfill»²⁵ which receives solid waste from household collection. According to SEMULSP's Activity Report - 2021, solid waste made up 67.85% of the materials collected in Manaus in that year, totaling 567,842 tons, a daily average of 1,555.7 tons, and is the main form of targeting and treatment of the collection carried out in the city. Other significant collections are mechanical removal, manual removal, and pruning. Mechanical removal, which refers to waste removed by cleaning crews in neighborhoods, igarapés or public thoroughfares, represented 13.66% of the waste collected in 2021. Manual removal, when collection by truck is impractical, especially in alleys and areas that are difficult to access, accounted for 15.70%. The two add up to 29.36% and, if we consider the percentage collected in household collections, 97.21% of solid waste is sent to the municipal landfill.

In addition to landfilling solid waste, there are two other ways of disposing of it at the municipal landfill: recycling, by sending materials to waste pickers' sheds, which represents 2.2% in 2021; and the production of organic compost carried out by the Composting Plant, located at the landfill. The aim of the plant is to reduce organic waste in the landfill and provide organic compost for public squares, schools, plant nurseries, etc. It preferably uses material collected through pruning collection (SEMULSP, 2021).²⁶

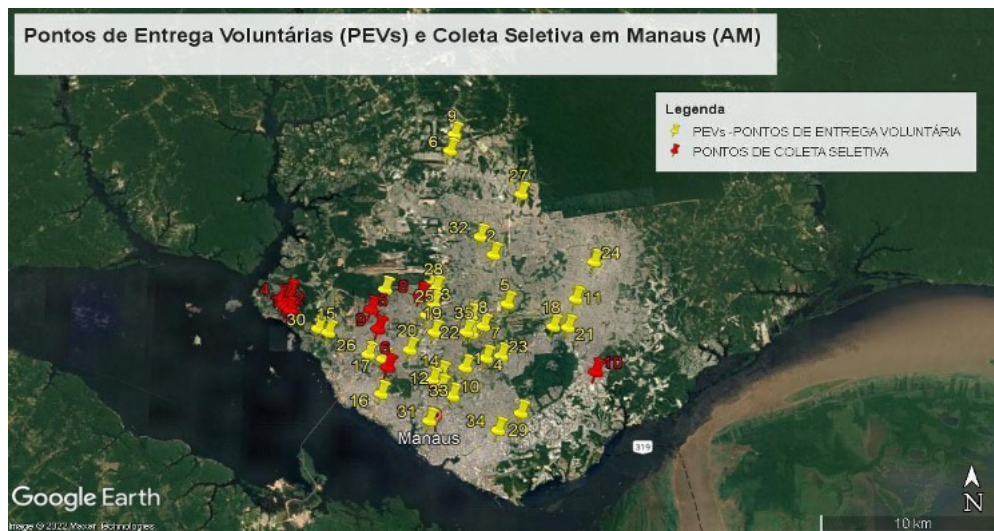
In November 2011, the Manaus municipal government approved Decree No. 1.349, the Manaus Municipal Solid Waste Master Plan - PDRS, also in line with the National Solid Waste Management Plan and Federal Law No. 11.445/2007, which establishes national guidelines for basic sanitation, including solid waste.

With regard to institutional action on selective collection or the separation of waste that has potential for recycling, the current municipal administration of Manaus, which took office in 2021, modified this in 2022. In 2021, selective collection corresponded to only 1.47% of total collection, totaling 12,320 tons per year and 40.1 tons per day. The selective collection method consisted of using a truck to collect separated waste (plastics, metals, paper, glass) from residents in certain neighborhoods in the city. According to information on the official website of the Municipal Department of Public Cleaning (2016), eight neighborhoods were served, with 60 collection points, from Monday to Friday. However, it should be reiterated that the dissemination and implementation of this practice was incipient and little recognized among the city's inhabitants, and it gave priority to only a few neighborhoods.

²⁵ LIXO NÃO VIDA SIM: [NO TO GARBAGE - YES TO LIFE] Social movement in the municipality of Iranduba (AM), in the metropolitan region of Manaus that opposes the installation of a giant private landfill in an area of Amazonian forest located at kilometer nineteen on the interstate highway AM 070.

²⁶ Available at: <https://amazonasatual.com.br/as-mortes-em-manaus-com-as-chuvas-e-a-falta-de-politica-urbana/>. Accessed 04/05/2023.

Figure 1 - Voluntary Delivery Points (PEVs) and Selective Collection in Manaus (AM) - Google Earth/ SEMULSP - Manaus municipal government.



Currently, the structure of selective waste collection has been transformed, and this service is maintained with institutional trucks only for condominiums located in the Ponta Negra neighborhood, on the west side of the city, a region that concentrates much of the capital's economically privileged elite. Only three public schools are served by this type of collection, the Maria do Céu Municipal Children's Education Center in the Planalto neighborhood, the Raquel de Queiroz Municipal Children's Education Center in the Paz neighborhood and the Terezinha Almeida Silva State School in the Alvorada 2 neighborhood, regions adjacent to the Ponta Negra neighborhood, even though their structural characteristics differ in terms of economic privilege and income concentration. The points that include selective collection are marked in red, where there is a significant agglomeration, as can be seen in the satellite image that shows the areas favored by selective collection.

As of 2022, Semulsp has created 36 Voluntary Collection Points (PEVs), 35 of which are intentionally located at retailers and wholesalers of food and products in general, such as medium and large supermarkets in different areas of the capital, although most of them are concentrated in the central-southern areas of the capital, in neighborhoods that serve both the economic elite and the local middle- and low-income populations. These voluntary drop-off points consist of placing a cart, of approximately 1.5m², with a written inscription on the box highlighting conscious disposal and selective collection.

In this way, the general population can leave materials that have already been previously sorted, such as plastics, glass, paper, and metals. These materials are collected daily by two outsourced companies, Tumpex and Marquise, which distribute them among fifteen cooperatives and associations of waste pickers, according to data provided by CEDOLP (2022). According to a technical report that included the first six months of operation of the PEVs in 2022, a total of 321.47 tons of materials were collected for recycling (CEDOLP, 2022).²⁷

²⁷ This study is funded by the Research Support Foundation of the State of Pernambuco (FACEPE/PDCR) and the National Research Council (CNPq), as a DCR grant. It corresponds to the initial aspects of Caroline Almeida's current post-doctoral research in the Graduate Program in Anthropology at the University of Pernambuco, entitled «Popular experiences in waste management and the UN 2030 Agenda: perspectives and partnerships between Social Technologies and the UN 2030 Agenda».

Manaus over the Waters

In Manaus, over the last ten years, we have observed the general situation of the city and especially of its urban waters in relation to occupation, sanitary conditions and solid waste.²⁸ The encounter between these studies, the growing dialogues with the anthropology of garbage research network and the intersections that permeate this problematic in relation to solid waste and socio-environmental issues, led us to the situation permeated by waters, above which are constructed dwellings that densely accumulate on the banks of the Negro and Amazonas rivers, between their tributaries, known in the region as *igarapés*. The waterways cut through this area of central Amazonia where the capital of Amazonas is located, establishing the structure of its urban fabric.

The waters in Manaus are divided into four watersheds, two of which are entirely urbanized, São Raimundo and Educandos, and the other two only partially urbanized, Puraquequara and Tarumã, according to Ferreira et al. (2012: 534). The authors distinguish the region where the city is located as areas of *várzea* (floodplains) and solid ground, adaptable to the regimes of flooding and ebbing characteristic of the Amazon forest. In terms of Manaus' urban expansion, Ferreira et al. (2012) note that the city spread out horizontally from the central metropolitan region, towards the north, east and west, limited by natural barriers – the Negro, Amazonas and Tarumã rivers – and public areas, such as the Adolpho Ducke Forest Reserve and the lands of the Brazilian Army.

The urban contour reveals this specificity through the fluidity of its waters, which establish the borders of its land portions and are a marker of the city's socio-cultural constitution. Lyrics by Celdo Braga and Osmar Oliveira, from the regionalist musical group *Raízes Caboclas*, portray this poetic ontology of the waters and ways of life that evoke a permeable conjuncture of human relations among the waters:

Brown Amazonas, your sacred waters, are beautiful roads, fairy tales, oh my sweet river...The canoe that passes by, the flight of the heron, the seagulls singing in you leave the taste of love...Ehh the *caboclo* dreaming, and then casting away his sad sorrow... In this poem of bubbles, which resonates in the leaves of the beautiful forest of my river-sea... In this beautiful flow, my infinite desire to plant my cry in the waves of the sea... (Braga; Oliveira, 1992)

The poetics that we hear in the music and idyllic stories of leisure and proximity to the waters told by the city's older residents has been transformed into the sad landscape we see with an excessive volume of waste in public spaces, in poorly maintained garbage cans and especially in the conditions of the *igarapés*. On these waterways spread throughout the city, the houses built on the slopes and banks form a non-linear layout, divided into alleys where only pedestrians can circulate, where garbage accumulates in the passageways and in the waters below and between the houses. The situation is no different on the Rio Negro, which flows through the city and is impacted by garbage that «comes from everywhere». The river, possibly because it has a greater flow of water,²⁹ hides some of this waste, while also circulating it, until it reaches the sea, for example.

During our research we have observed different areas of *igarapés* in the Educandos watershed (Rufino, 2017; Iribarrem and Rufino, 2020). These places are characterized by dense occupation and for most of the year have stagnant water highly polluted by waste discarded by companies and the population. When walking through its alleys, especially during the dry season, we notice an extremely strong odor and lots of garbage accumulated in the water.

²⁸ The «Documenting» workshop took place during the 6th Environmental Film Festival of Recife, from November 29 to December 7, and was taught by documentary filmmaker Marlom Meirelles (2021).

²⁹ Afogados is a heterogeneous neighborhood on the west side of Recife, 4.5 kilometers from Marco Zero. It has a population of around 36,200 inhabitants in an area of 3.69 km², bathed by mangroves and the Tejipió and Capibaribe rivers. It has four Special Interest Zones (Zeis): Afogados, Vila do Siri, Mangueira (part) and Mustardinha.

In the neighborhood of Educandos, along a small fragment of the igarapé, we conducted our observation at the beginning of the dry season and saw a huge amount of garbage under the houses, bridges and in the surrounding area. Residents are unable to do the cleaning that had been the job of the city government. The option is to do it themselves, which is risky and dangerous, or to hire someone else to do it.

With regard to removing garbage from homes, there are difficulties due to the topography of the site, as the houses on the igarapé were built at a level lower than the avenues that surround them and residents have to climb up to take their garbage to the location where urban collection takes place. Given the difficulty of doing this, many bags of garbage are seen along the alleys, with a high risk of ending up in the water. Residents usually pay someone to carry their waste uphill, depositing it at the intersection of a street that has no suitable place to store it until the collection truck passes by.

Other sites where we conducted observation were the Sharp igarapé and Avenida Manaus 2000, located in the Armando Mendes and Japiim neighborhoods respectively, areas in the city's industrial zone. Houses in both locations had been removed by the PROSAMIM program, but there has been new occupation of the banks and beds of the igarapés. Although there are differences in the topography of these igarapés, we observed in both solid waste accumulating on the banks, stuck in trees and bushes, and along their courses. There is also what the Manaus municipal government calls *lixearas viciadas* [literally addicted garbage receptacles], which receive waste that is poorly packaged and thus allow it to spread onto the dry land and into the water.

These observations instigated us to return to the field in the igarapés of Manaus and analyze the institutional strategies that have been adopted to dispose of urban waste. Our effort to «follow the garbage» through a street ethnography began with interlocution with the institution responsible for garbage collection and public cleaning in the municipality, SEMULSP.³⁰ We contacted the Special Commission for Dissemination and Guidance of Public Cleaning Policy (CEDOLP), and the institutional agents and administrators of the sector, who explained to us the institutional action of the secretariat, the implementation of new organization methods and waste collection practices, selective or not, in addition to the socio-environmental actions proposed by the current institutional management. The civil servants interviewed referred us to their colleagues who work in the downtown areas of Manaus, on the waterfront and in the igarapés.

In downtown Manaus, we also observed and followed selective waste collection, which is carried out daily «door-to-door» in one of the commercial districts near the port. The workers are organized into teams, mostly composed of women, who walk the streets, talk to the shopkeepers and check on the disposal of solid and organic waste. Two mini-collector trucks drive through the streets, one with a closed body for collecting organic materials. The coordinator of the work pointed out the difficulties in getting merchants to participate and disputes with waste pickers who rummage through the garbage looking for materials they prefer such as cardboard. The solid waste is sent to a cooperative that also prefers materials that are easily sold, according to the interlocutor. So they do not welcome small plastics items and packaging, for example.³¹

Collection for large objects has also been implemented by Municipal Secretariat for Public Cleaning. Those who need can contact the Special Commission for Dissemination and Guidance of Public Cleaning Policy CEDOLP to set an appointment for pick up. According to the employees in this sector, this method of collection helps ensure that objects such as furniture and electrical appliances are not disposed of in the igarapés, a relatively common practice in the city, considering that the waters that bathe the urban territory are inhabitable borders, from the Ponta Negra neighborhood, a high income district with luxury housing,

³⁰ Document signed by all of the event organizers.

³¹ Prefeito de Recife apresenta a CIRSOL - 1ª Conferência Internacional de Resíduos Sólidos. Available at: <https://www.youtube.com/watch?v=GirD3beKrUk>. Accessed 20 November 2022.

to the more peripheral areas of the city, pejoratively called *bodozal*. The urban areas of the *várzea* – which flood when the Amazon rises and are dry when the rainy season ends – are included among the peripheral areas of Manaus, where stilt houses are usually built on the beds and banks of these waterways.

In an effort to understand how these institutional waste disposal actions affect Manaus as a territory closely related to water, we sought to observe the economic bases directly involved in the industrial center and the river traffic of goods from the port of Manaus. We also looked at the various relationships of sociability and ways of life peculiar to this region where the giant Rio Negro and Rio Amazonas meet, forming a profusion of waters and micro-basins that overflow into *igarapés* that spread throughout the city. This allowed us to record two specific practices related to river waste collection.

One of the actions, the collection of garbage on the banks of the Mindu River, located in a municipal park in the Parque Dez neighborhood in Manaus, was undertaken in partnership with an Asian multinational company in the industrial district with Semulsp. It was an environmental awareness-raising activity in which guests and company employees, approximately one hundred people including ourselves, participated in environmental education activities. These included a thematic presentation on the environmental issue of garbage by employees of the municipal institution, with talks and songs about sanitation and collecting garbage, with artists, musicians and circus activities produced by Semulsp's own employees, as well as interactive physical warm-up activities for the participating public with a specialized physical education professional, to prepare for the vigorous garbage collection later undertaken on the banks of the Mindu stream inside the park.

The area that is now Mindu Park was used, until the 1970s, as a beach where the people of Manaus could relax and bathe in the stream. It is now completely unsuitable for bathers, as dumped garbage and sewage accumulate between the water and the native forest, and entry for bathing is forbidden (Ribeiro; Vieiralves, 2012).

In 2007, the Mindu Urban Ecological Corridor was created under the city's Master Plan (Law 671/02), article 56 of which deals with the creation of ecological corridors. The policy of preserving riparian forests adjacent to watercourses was instituted on July 18, 2000, through the National System of Conservation Districts (SNUC), which defines ecological corridors as:

portions of natural or semi-natural ecosystems, linking conservation districts, which allow the flow of genes and the movement of biota between them, facilitating the dispersal of species and the recolonization of degraded areas, as well as the maintenance of populations that require areas larger than those of the individual districts for their survival (Brasil, 2000).

To reach the *igarapé* during the collection actions on its banks, we walked through the forest along a trail approximately 800m long, in a clean area with signs about wild animals and precautions about alligators that may appear, especially at the water's edge, as shown in the photographs:

We wore repellent and were equipped with helmets, gloves and large plastic raffia bags to collect garbage. The need for the warm-up became clear during the journey, considering the difficult work of collecting materials, especially plastics stuck between the roots, which was compounded by the insalubrious environment and foul smell. Collecting garbage among the stones of the stream, combined with the dangers of encountering aggressive and venomous animals, as well as the large number of insects, indicated the challenges of this type of socio-educational practice.

Shoes, bags, Styrofoam, various plastic materials and even an inflatable mattress were removed from an area of approximately 200 meters, just a small portion of the bank of the *igarapé*. A lot of material remained buried amid the trunks and vegetation. The action affected us because of the understanding we gained in loco about the degradation caused by dumping garbage and the lack of public policies to address the distinct

conditions that require specific cleaning methods in riverbeds and watercourses. The scenery of a putrid stream running through the forest seems to be a dystopian vision of a not-too-distant future with the extinction of the element most essential for human life.

Plate 1: Cleaning activity of the Igarapé do Mindu – register of the group, (Camila Iribarrem, Nov/2022)



At another occasion we also accompanied a cleaning of the waterfront in the central region of the city, where the Port of Manaus, the Adolpho Lisboa Municipal Market and the Modern Manaus Market are located. Because the municipal market was built in 1880, during the Belle Époque period, and because its main entrance and façade is in front of the Rua dos Barés, with its rear portions facing those arriving to the city via the Rio Negro, Manaus became known as a city built «with its back to the river», as anthropologist Sérgio Ivan Gil Braga (n.d.) pointed out on the website of the Instituto Nacional Brasil Plural, a research network between the Federal University of Santa Catarina (UFSC) and the Federal University of Amazonas (UFAM).³²

The methods for cleaning and maintaining the waterfront, which are the responsibility of the municipality, consist of collecting and sweeping up all the garbage produced within the main street grid that crosses the bank of the Rio Negro and gives access to the street fairs, the market and the floating port. The port floats on iron buoys below the structure that gives access to the river. They are suspended across 18m and are part of the contiguous structures of the surrounding area.

Much of the garbage collected along the waterfront is carried on a large ferry that docks daily on the riverbank to collect the waste, where there is no separation of materials for recycling. Even so, during the interview with the person in charge of cleaning the waterfront, one person picking waste was seen on the ferry on the banks of the Rio Negro. The accumulation of garbage is noticeable in this area, considering the intense movement of people, boats, and cars and, even with continuous sweeping, along the streets, buildings and the beach that emerges during the dry season, the presence of plastic and paper is constant. In this area, which the local population calls “a beira” [the front], there is an intense fish trade, on the beach sand and in the markets of Manaus Moderna and Mercado [Big Market], as the Adolpho Lisboa Municipal Market is popularly known.

Our interlocutor, a Semulsp employee who works in the igarapés sector, explained that there are also other small boats that enter narrower riverbeds. However, this service is not carried out daily and mainly responds to specific requests to clean the streams. He made recurring complaints about the improper disposal of waste by the population, and mentioned the environmental education work carried out by teams that travel around the city. We did not meet any members of these outsourced teams, but this practice was also discussed by other Semulsp employees. According to them, these actions are taking place under the current municipal administration.

In mid-April, after a torrential storm on March 12, 2023 left hundreds homeless and at least eight dead, the Manaus city government promoted billboards at strategic points in the city, with the following phrase: «GARBAGE KILLS». We heard from an interlocutor, a campaigner against the installation of a landfill in Iranduba: “with this propaganda, that garbage kills, now they’ll really want to dump their garbage far away from Manaus, and they’ll gain support from the population to send it here.» The catchphrase used by municipal communication networks can be characterized as a dangerous instrument for disguising responsibility of government authorities for the lack of infrastructure and sanitation that plagues homes on the banks of Manaus’ igarapés, transferring responsibility for the accumulation of garbage to these places and their inhabitants. The garbage is also carried away from various other parts of the city by the waterways that criss-cross the urban region.

With the occurrence of fatalities and the collapse of hundreds of houses in different areas of Manaus during this seasonal rainy season, also called the Amazon winter by the local population, some data on access to infrastructure and sanitation in the city have been published on regional news sites such as Amazonas Atual. The site mentioned a survey carried out by the Trata Brasil Institute, which ranks Manaus 89th of Brazil’s 100 largest cities in terms of basic sanitation in 2022. The report presented other statistics, including those about

32 BRAGA, S. I. G. s.d. “Outras imagens, paisagens e histórias de Manaus e suas águas”. Available in <https://brasilplural.paginas.ufsc.br/redes-de-pesquisa/outras-imagens-paisagens-e-historias-de-manaus-e-suas-aguas>.

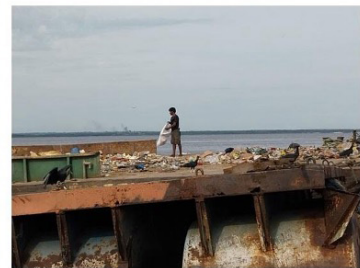
sewerage, reporting that according to data from the National Sanitation Information System (SNIS), 78% of Manaus does not have sewage collection. The question that remains is: Is it really garbage that kills or the policies for handling this waste and the urban infrastructure? But any clarification is certainly not part of the municipal administration's visual communication and advertising program.

Figure 2: Advertising campaign posted on the Viaduto do Coroado (Camila Iribarrem, Apr/2023)



Plate 2: Garbage carried on ferries, docking in the riverside communities at the port of Manaus (Camila Iribarrem, 2022)





Recife under the tide: aspects of housing and waste management among the local population

This issue, The tide, the mangrove is very hard work, right? Very difficult, very heavy precisely because of this battle that we fight, which is a daily struggle, right? You have to survive on the tide, knowing that the tide is where you receive all the effluents. Which is the sewage that isn't treated and is thrown straight into the river, into the canals and ends up on the beach, in the sea. So the mangrove filters all kinds of garbage. It always comes and sticks to the mangrove roots. So today you see an ever-increasing amount of garbage in the mangroves, right? Whether it's plastic, Styrofoam or pet bottles, right? Or household appliances? (Cássio)

There are people who throw animals there [...] I found a dead horse behind the navy. A lot of people go fishing, I just don't. All this generates bacteria, rats, everything. [...] It's been difficult, right? Because at times we have, and sometimes we don't. When the tide is good, you can fish, but when it's not, you have to collect cans and recycle. But even so, sometimes I try, you know? (Maria do Carmo)

These comments were taken during a field trip for an environmental documentary workshop, in which I, as an anthropologist, was responsible for interviewing people who live from fishing in the downtown area of Recife, between the Maurício de Nassau and 12 de Setembro bridges. The idea of the documentary was to find out what the tide signifies and what it means to live off the tide at this point on the River Capibaribe. Cássio and Maria do Carmo's stories converge on some of the daily problematics that affect those who live in this city: knowledge about the tide and water pollution. It serves as a source of income and food. When the tide is high, it allows navigation, but it also transports the waste dumped in the water. Which becomes more apparent at low tide. On the other hand, for Maria do Carmo, for example, when the tide doesn't allow fishing, her livelihood becomes recycling, especially aluminum cans.

About the degradation of the Capibaribe River in the past decade, Bezerra and Melo (2014) affirm:

Throughout the city's development, by being treated as a waste receptor due to the lack of sanitary sewage systems, the degradation of the Capibaribe River becomes explicit. The public sector has not invested in improving these systems, nor in improving the quality of the city's water. Only around 33% of the city of Recife has basic sanitation, highlighting the fact that companies also cause water pollution, since the end of the 19th century when sugar mills were built (Bezerra; Melo, 2014: 99).

The authors identified that the landscapes of both the Capibaribe and the mangrove areas represent historical and cultural landmarks in Recife. However, when asked about the meanings of these landscapes, lower class residents point to the importance of these areas as responsible for survival, since they are a source of food. Rivers and mangroves are also places for housing:

Where the village began there on the water, today there are brick houses. Where they want to go, take away our homes, pay what they want. Where you and I who have children [...] I don't even know if she's here, but her daughter fell into the tide and got cellulite on her face. So lots of people think it's bad, because today we're here, wanting our rights to be able to vote. And who is going to be our volunteer leader? How do we vote? Do we fit in? Who will be able to vote? Or is it just people appointed by you who can vote? The community came here today to fight [...]. Because houses are collapsing. You're talking about other communities, but go to Vila Itapuú, where houses are collapsing. We walk there, when it rains, the tide comes in, the houses are flooded with water and this has been going on for more than 40 years, I'm 29 years old, because I grew up in that sea (Speech by a resident of Vila Itapuú in the Fórum Prezeis - 31/03/2023).

The resident's indignation concerns the difficulties faced by the population living in a locality in the Pina neighborhood, bordered by the Tejipió River. She highlights the community's lack of recognition as a Special Interest Zone (Zeis), which is essential for inclusion in housing programs. She argues that the houses have existed for at least forty years and that residents suffer from the effects of the tide, the constant danger of flooding and water pollution that can cause disease.

When you visit the homes in flooded areas, you realize that some of the waste that surrounds the different landscapes comes from other places, carried by the tide and floods. This information was repeated by residents of the localities surveyed here, when they mentioned the «garbage that comes from the river». At the same time, these people end up creating ways of managing this waste.

In the Afogados neighborhood, near Largo da Paz, there is an organization of residents and waste pickers who try to mediate the conflicts generated by the lack of selective waste collection. All the waste pickers with whom I had contact also lived in the neighborhood. This form of waste management is seen in various parts of the city, where the presence of people who push carts with recycled material and other waste pickers, together with the residents organization, contributes to urban cleanliness in the area. In the same neighborhood, the Bueiro community sells shrimp for their subsistence. There is a shrimp farm there, in a mangrove area, where the residents themselves have installed an artisanal solid waste containment network to reduce the impact of pollution on the farm.

Still in Afogados, in the São Miguel Housing Complex, which was delivered in 2009 and built to house people who had been living in stilt houses in the former Marrom Glacê community on the banks of the Tejipió River, we perceive the abandonment by public authorities also in terms of waste management. The area has garbage collection twice a week. There has been no environmental education program, and no one to encourage the separation of waste in the space destined for disposal - which is a place conducive to the proliferation of animals and insects that carry disease. At the same time, when these residents recall their memories of the environment of the stilt houses they lived in before moving to the housing complex, concerns about waste disposal are raised as a problem linked to the social vulnerability of living on stilts. However, when transferred to a region with planned buildings and spaces, this concern doesn't seem to be so present. One of the residents, a community leader and former Zeis representative, who took part in the entire transfer process since the 1990s, highlighted the feeling of social class ascension generated by the move as the main factor for this lack of concern.

In all of these areas, the lack of coverage of the city waste management policies can be seen. In March 2022, the city of Recife hosted the First International Solid Residues Conference, which brought together government institutions, private companies, representatives of the United Nations Development Program (UNDP), the scientific community and civil society. The event, aligned with the Sustainable Development Goals (SDGs) proposed by the UN's 2030 Agenda, featured several round tables, conferences, meetings, workshops, and cultural attractions that stimulated important debates on residue management and global warming in different dimensions. At the closing ceremony, the Pernambuco Charter was signed by all the I CIRSOL co-chairs, to «promote awareness of environmental sustainability, universal respect for fundamental human rights and freedoms, and exert efforts to implement the 2030 Agenda and achieve the Sustainable Development Goals». Both the state government of Pernambuco and the Recife municipal government (PMR) signed the document - the municipal administration went further. In a speech at the opening Deputy Mayor Isabella Roldão announced the intention to make the capital of Pernambuco a national example in residue management:

I have to say that, despite all the challenges, we have managed to implement a pioneering action. I don't know if you're aware, but at the beginning of 2021, Mayor João Campos decreed an absolute ban on the purchase of disposable plastics inside the City Hall building. [...] But we still go to institutions that naturally still use disposable

cups. That's an outrage. And we need to understand that a cup like that takes as much as it leaves. And where does it all go? We also have a great example within our home, our offices: all the organic waste generated within Recife City Hall is composted. I even invite you to do this. It's a very simple action. I compost at my house and I invite anyone who comes by to smell it. You can get close to my buckets. There's no smell. And we can really make a big impact if we start, each and every one of us, to build this within our homes, to bring it into our condominiums, to make Recife something we dream of. Recife should be recognized as the capital of sustainability and we've been moving towards that.

In her full speech, the vice-mayor announced her intention to turn the capital of Pernambuco into an example of sustainability, considering the 17 SDGs of the UN's 2030 Agenda. Although he did not attend the opening of the event in person, Mayor João Campos took a similar position in an institutional video presented on the I CIRSOL YouTube channel:

It's going to be a very important moment for us to be able to present Recife's good practices and bring organizations from throughout the country, from academia and the private sector, to learn about initiatives that could be of interest to our city in the coming years. And we invite you to take part and follow this whole discussion. [...] Recall that Recife already has a very strong structure in this area. We have a monitoring center that is a reference for all of Brazil, where we can use georeferencing to accompany, monitor, and coordinate all the urban cleaning actions in our city. In addition to RECICLAMAIS, ECORECIFE, there are various actions aimed at constantly modernizing our city when it comes to solid waste.

However, when we traveled around Recife, as in most Brazilian municipalities, we noticed that the population's access to the state apparatus differs according to geographical location and social stratum. There is a discrepancy between the discourse of the municipal administration, which is considered official, and the narratives of residents of peripheral locations, as well as the landscape itself. The production of this segregation, to return to Teresa Caldeira's (2000) concept, generates various conflicts, forming borders that divide areas of the city not only by state coverage (Feltran, 2010) but, in this case, also by the targeting of environmental education campaigns. These areas of tension were evident during the floods that afflicted the city between May and June 2022. A few months ago, during the first precipitation that began the rainy season, the city government's Instagram profile had a post in which it blamed the population for the flooding, which mostly affected socially vulnerable populations.

A few months later, as mentioned, the city government announced the launch of Recife Limpa on Instagram as well. The program aims to expand waste collection and encourage conscious disposal. As a result, the number of workers and the fleet of trucks were increased. In addition, the cleaning of streets, rivers, canals, conduits, and gutters has been included in the planning. In the first week of the program, more than 4,100 tons of irregularly disposed solid waste were removed (Prefeitura do Recife, 2022).

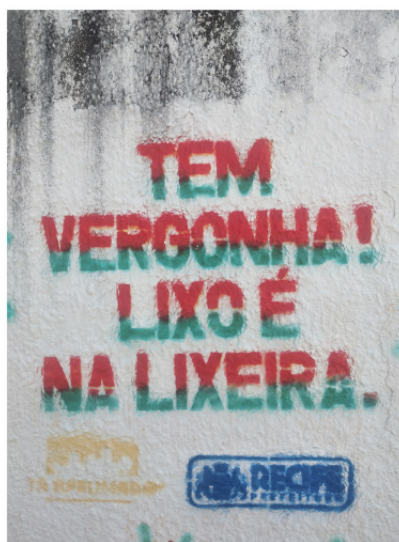
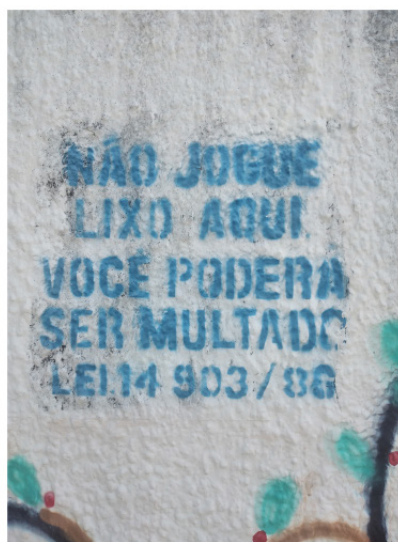
If we go beyond institutional discourse to see how public policies are present in peripheral regions, in flooded areas, the landscape presented by the municipal administration – and the discourse produced by it – changes. We find a language that seems to blame the population despite the fact that access to urban cleaning services is scarce. No data was found on the removal of improperly deposited waste in the neighborhoods analyzed, but a large part of the actions planned in the recently created Recife Limpa program are still concentrated in tourist areas and the city's main transport routes, as well as portions of the Capibaribe River. The Jordão Canal, for example, located on one of the access corridors between the Boa Viagem neighborhood (South Zone) and the North/Center Zone, had its second clean-up of the year carried out in December 2022 (Prefeitura do Recife, 2022).

Therefore the Recife municipal government has different relationships with the city: on one hand, it welcomes people who can compost, choose what they can eat and separate food waste from recyclables; on the other hand, those who do not have access to selective collection are excluded and blamed for the inconvenience caused by the irregular disposal of this waste. This is the population that is most affected by these problems. In this second case, it generates relationships of conflict and alliances among residents when the problem of waste is addressed.

Plate 3: Flooded and downtown areas – Recife (Caroline de Almeida 2022/2023)







Between the tides and rainy seasons

Based on the concept of environmental memory (Devos, 2008; Soares, 2016), which integrates the perspective of political ecology to the agency of memory, we came across narratives about living on the water and social injustices and urban inequalities in historical processes. These narratives emphasized how these processes developed from housing policies of segregation, under a sanitary logic, constituting urban processes in which part of the population is left out. We are referring to urban segregation triggered by mechanisms of social discrimination, intersected by markers of race and gender, which fall on residents of peripheral areas near waterways, who are usually excluded from urban planning in cities. In Manaus, they originated from the migration of riverside populations from the interior of the Amazon, as well as some traditional peoples. In Recife, they are associated with the historical exclusion of residents of *mocambos* and *cortiços* [tenements] from central areas. Manaus and Recife are capital cities where there is a profusion of waterways and, in the case of Recife, seawaters as well, with specific forms of occupation along the beds and banks of rivers, igarapés and mangroves. Along the waters, communities and relationships are built and seasonal changes produce moments of risk and uncertainty when Amazonian floods or ocean storms consume their homes, producing different spatialities and requiring survival strategies that are poorly supported by public authorities. Devos (2009) in his research on the environmental crisis and urban trajectories of residents of the Arquipélago neighborhood on Ilha da Pintada and Ilha Grande dos Marinheiros, in Porto Alegre/RS, discusses how local populations live and use natural resources in urban areas and the socio-environmental conflicts that arise from these relationships:

Today, a series of institutions and norms have come to constrain social relations related to the use of natural resources, in contrast to the global process of development of urban-industrial societies. Urban and non-urban populations have had to rethink their daily practices based on these constraints. It's not just the «traditional populations» who occupy forests and coastal areas that need to be thought of in terms of their trajectories of rootedness in a natural landscape, but above all the large numbers of people who have left natural areas and the countryside to settle the peripheries of urban centers, most often occupying the unbuilt space, what remains of the «natural» environment in metropolitan regions (Devos, 2009: 305).

For more than a century, the low-income populations of Manaus and Recife from these areas have experienced processes of gentrification and segregation due to urban reforms in the central areas that denied their presence in floating cities, *mocambos* or *palafitas*. They were pushed to peripheral and inhospitable areas, to housing projects built to house them, or had to find new housing on their own. As we have pointed out in our work, this pattern of segregation is also common to other Brazilian metropolises (Caldeira, 2000) and shows us the precariousness and contradictions of urbanization plans that disregard local populations.

Meanwhile, in the circumstances observed in Manaus and Recife, water is practically devoid of life and its quality as an environmental asset (Devos, 2009). The rivers, igarapés, and seawaters are transformed into garbage dumps and sanitary sewage, subject to the contradictions and missteps of public interventions and their countless urbanization or requalification projects. As we have seen, the interventions distance the waters from the population and further exacerbate the lack of care and recognition of their importance as finite and unsustainable assets and that their preservation is not part of a broad and fair socio-environmental policy.

In Manaus, actions by institutional bodies are inconsistent, with no continuous and effective programs for cleaning and conserving the waters. We observed that elite areas, such as the Ponta Negra neighborhood, have waste recycling, but not those areas of the city where the movement and disposal of waste is even more intense. Environmental awareness programs could be more effective in these regions, especially on the banks of the city's waterways and streams, where peripheral neighborhoods are located and where sanitation practices are sometimes non-existent.

In Recife, the current municipal administration focuses on the problematic of irregular solid waste disposal in its struggle for sustainable development. However, as noted by Silva et al. (2020), effective waste management models must consider the socio-economic aspects of the various social sectors. The municipality's seems to have great difficulty in communicating with and raising awareness among people living in the peripheral and low income neighborhoods of the city, which is even more aggravating in areas with houses built along waterways. The municipality blames the residents of these areas for the pollution of rivers and mangroves. On the other hand, these blamed residents claim that much of the waste that is deposited in these places, which causes disease and aggravates flooding during the rains, comes from other regions of the city, or even from other cities.

This aspect, which discriminates against and marginalizes residents of flooded areas due to the concentration of waste deposited on the water, is the point of encounter and convergence in the research between Manaus and Recife. The two capitals have quite different socio-cultural backgrounds and regionalities, which is reflected in the actions of their waste management policies. Beyond the differences in the magnitude of their waters and the different ways their populations live with the waters, the problematics identified in this article are the dark side of solid waste management policy, present in an invisible «modus operandi» in both cities.

This action by public management, which converges on the agencing and produces a public expression of sustainable action to achieve the goals of the National Solid Waste Policy Law, hides the perversity behind the propaganda that holds residents living on the banks of watercourses responsible for occupying these areas and for being the producers of the largest concentrations of waste in cities. However, what is hidden behind the images attributed to these groups is the absence of respect, basic sanitation, decent housing, and recognition of human complexities that are needed to present a fair socio-environmental policy for these individuals. After all, it is precisely because they find themselves between the boundaries of solid land and watercourses that these inhabitants become recipients of the waste that circulates through the cities and that the waters carry to their shores, whether by rain, floods or tidal currents.

Meanwhile, the study made explicit the hierarchical way solid wastes are managed, by privileging economic power and aggravating in segregated services the denial of the right to equal access to municipal public cleaning and sanitation services. Under the capitalist reproduction of waste, compounded by the distorted use of public policies to promote recycling, sustainability, and compliance with national solid waste policy laws, the false utopias of recycling are revealed in Manaus and Recife. In these cities, the waters, which are protagonists of ways of living and inhabiting, carry garbage like shipwrecks that flow into the oceans of life on the planet.

Received: January 10, 2023

Approved: October 20, 2023

Translated by: Jeffrey Hoff

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