# "They don't stop and analyse that what we're recycling is coming from their homes" Pathways of waste and autonomous waste-pickers in Santos- São Paulo, Brazil

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**Abstract**

Among the many socio-environmental issues that Brazilian cities face, one of the most pressing is the excess of waste. This article relates two poles of this problem: 1) the pathways travelled by waste in the city of Santos, in the state of São Paulo, as apprehended from institutional mapping, documentary research and interviews with those responsible for waste management in the city; (2) the vulnerability of autonomous waste-pickers from the stilt-favela of Dique da Vila Gilda. By listening and wayfaring observation, the article reports on how these subjects perceive and deal with waste and those who discard it, what difficulties they face and how they understand nature and technology. By observing them in movement we conclude that initiatives for dealing with the excess of waste must include these agents of socio-environmental protection in decision-making processes and the administration of public policies.
**Key words**: Waste-pickers; Waste; Socio-environmentalism; Santos hinterlands; Recycling.


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# “Eles não param pra analisar que isso que a gente tá reciclando tá vindo da casa deles” Caminhos dos resíduos e catadores autônomos em Santos-SP, Brasil

**Resumo**

O excesso de resíduos é um dos mais graves problemas socioambientais que impactam as cidades brasileiras. Este artigo relaciona duas pontas dessa problemática: 1) as trajetórias dos resíduos na cidade de Santos-SP por meio de mapeamento institucional, pesquisa documental e entrevistas com os responsáveis pela gestão de resíduos na cidade; 2) A vulnerabilidade em que se encontram os catadores autônomos da região da favela de palafitas do Dique da Vila Gilda. O objetivo é relatar, por meio da escuta e observação caminhante, o universo deles para analisar como esses sujeitos percebem e lidam com os resíduos e com quem os descarta, quais dificuldades enfrentam e como compreendem a natureza e a tecnologia. A observação em movimento com eles permitiu concluir que iniciativas para o enfrentamento do excesso de resíduos passa pela inclusão efetiva desses agentes de proteção socioambiental nos processos decisórios e de gestão de políticas públicas.
**Palavras-chave**: Catadores; Resíduos; Socioambientalismo; Baixada Santista; Reciclagem.

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## Motivations and methodological choices

This article harks back to 2016, when one of the authors started a community communication research and outreach project[1] in Dique da Vila Gilda (Santos-São Paulo)[2], Brazil's largest favela on stilts (Fabiano and Muniz, 2010: 233). In 2019 the opportunity arose to develop new research on the increasing presence of autonomous solid waste-pickers in the region. The precarious nature of this erratic work inspired the creation of an interdisciplinary group involving an anthropologist, a communicologist and two computer engineers, all educators[3], who arranged the project with the aim of describing, mapping and reflecting on the daily dimensions experienced by these waste-pickers. Through the method of careful listening and the wayfaring observation of the universe of the autonomous waste-pickers, we sought to analyze how these individuals perceive and deal with waste and those who dispose of it, what difficulties they face, and how they understand nature and technology.

Henceforth, this interdisciplinary group takes charge of this article, as we hope that this reflection can, in some way, contribute to the development of public policies in the future, which might somehow transform the environmental and social reality of the waste-pickers.

Among the many contemporary global socio-environmental problems, the exponential production of waste is surely one of the most serious. There is no Planet B, which leads us to ask: how might humanity avoid its own despotic collapse beneath a mountain of rubbish? While many initiatives exist, the fact is that this question cannot be answered only through technical solutions such as those proposed in the global macro-space. It needs to be urgently tackled as a systemic issue.

To this end, we first track the institutional mapping of waste in Santos, in the state of São Paulo. We make use of both personal observation and documentary research with official sources, such as those in municipal departments and agencies: Secretaria de Serviços Públicos (Seserp, The Department of Public Services),

1 The project was an initiative of the research and extension group Mediatel - Mediações Telemáticas (Telemátic Mediations) of the Faculty of Communication of the Pontícia Universidade Católica of São Paulo, in partnership with the Arte no Dique Institute, creator of the Web Radio Palafita, a form of mass community communication that sought to generate popular emancipation through the production, dissemination and reception of content of local interest. The project extended from 2016 to 2019.

2 O Dique da Vila Gilda is a peripheral área in the Rádio Clube district of the city of Santos, located in the coast of the state of São Paulo, where, according to census data, some thirteen thousand people live on stilts and precarious housing units.

3 The authors conceived of this research in order to have contact with the waste-pickers and identify what technological needs they identified that could help them improve their income in the daily action of *catação* (sorting). The idea was to prototype and test these technologies and present the results of this application. However, this proved impossible because of the COVID-19 pandemic during 2020-2021, when the University of São Paulo, the project's headquarters, was closed and no in-person activities were allowed. The unfeasibility of this technological prototyping, however, did not prevent us from carrying out field research, and building, by means of an interdisciplinary methodology and without any kind of financial support, the unprecedented results that we present in this article.

Secretaria Municipal de Meio Ambiente (Semam, Municipal Department for the Environment) and Progresso e Desenvolvimento de Santos (Prodesan S/A, Progress and Development in Santos), in the Terracom company and in social organizations (Concidadania, Sem Fronteiras, Santos Lixo Zero, Pimp My Carroça, Settaport, Instituto GEA). We also made use of interviews with agents of these organizations, all held online or by telephone and based on a preconceived script, in order to understand the specificities of the Santos context in the area of the Dique da Vila Gilda, in the Rádio Clube neighborhood.

Despite a number of important studies of waste and waste-pickers in Brazil (Demajorovic and Lima, 2013; De Paula, 2006; Guerra, 2018; Gonçalves-Dias, Sakurai and Ziglio, 2021; Lima, 2021; Rial, 2016 e *Iluminuras*, 2020 v. 21 nº 55), most focus on syndicated waste-pickers. There are few studies of autonomous and non-syndicated waste-pickers, who thus remains invisible in research.

Waste pickers are usually welded to the daily life of our city streets: they become invisible to us because they are undesirable, revealing a vulnerability that demands the attention of society. Most of them live on the streets, surviving in a socially and culturally erratic way. These are our research subjects. To choose our participants, we selected ten waste-pickers who are self-employed and commute or live in the area of the Dique da Vila Gilda and the Rádio Clube neighborhood. We sought to understand how they experience that chaotic environment, how they perceive waste, nature, and technology.

Knowledge acquired in previous research projects had taught us that waste-pickers would only participate as research subjects if we approached them during *catação* (sorting) and walked with them, since they had already told us that they would not stop to be interviewed. This condition was directly linked to the fact that their survival depends on the speed with which they can sort and gather waste: "I can't stop ma'am, I have to sort" (F.B. Jesus) and "you're going to record and film me, I can't, no" (E. dos Santos). Following discussion involving the research team, we decided to adopt the method of "wayfaring observation" (Careri, 2013: 32), wherein the method of walking emerges as "a play on space, where landscape is constructed in alignment with the historical moment to which this walking is related", in this case it was a triadic game between us, them (waste-pickers) and the environment (space), during the act of sorting – or *catação*, *catar*, 'to sort' + *ação*, 'action' – a *sorting action*.

Thus, we created a brief script of questions and themes that could flow during our joint wayfaring, divided into three small blocks. In the first, we identified the person - name, age, level of education, place where they lived, and origin, in addition to two specific questions: the places where they sorted waste and whether they preferred to pick waste at certain sites. This first block immediately made it possible to take notice of their accents and ways of speaking, to better understand their verbal and gestural encodings. It is important to say that they hardly looked at us, their eyes were always focused and attentive to the waste, which mattered much more than we did. In the second block of questions, focused on their daily work: what opinions did they have about why people discard what they do, and what would be important initiatives for the improvement of their working conditions and income generation. In the final block we turned to questions about what they understood by nature and technology. This is how we started to accompany them in their activities and, when they stopped at a certain bin to select what they would take away, we were able to more effectively engage the questions and themes of our script. This phase of the research lasted from November 2020 to June 2021.

Along with our script, the wayfaring observation methodology was characterized by careful listening, by attention to signs during sorting: the instant and attentive gaze, tactile impressions, the gesture of trained hands as they touch, feel and decide what should go into their bag or cart (many of them taken from supermarkets). The dexterity and speed of sorting is noticeable to the sharp perception of waste-pickers, who identify, select and quickly evaluate the possible price of what is gathered.

## Pathways of Waste in Santos

We start from the presupposition that there are two aspects to the socio-environmental issue that are privileged in debates and actions. The first is what we call *macro-global space* and the other the *organic space*. The macro-global space is mainly represented by environmental conferences promoted by the United Nations (UN) and global articulations between governments, large corporations and prominent civil society agents. Organic spaces are linked to territories at the micro-social level and can be informal, resilient, peripheral, and engendered by people in individual or collective acts aiming for a more balanced environment. These two spaces are not fixed constructs; no rigid boundary separates them. Instead, they are in dialogue, mutually influencing each other and their approximations or separations depend on the interests of agents that are associated with one space or the other during encounters and negotiations.

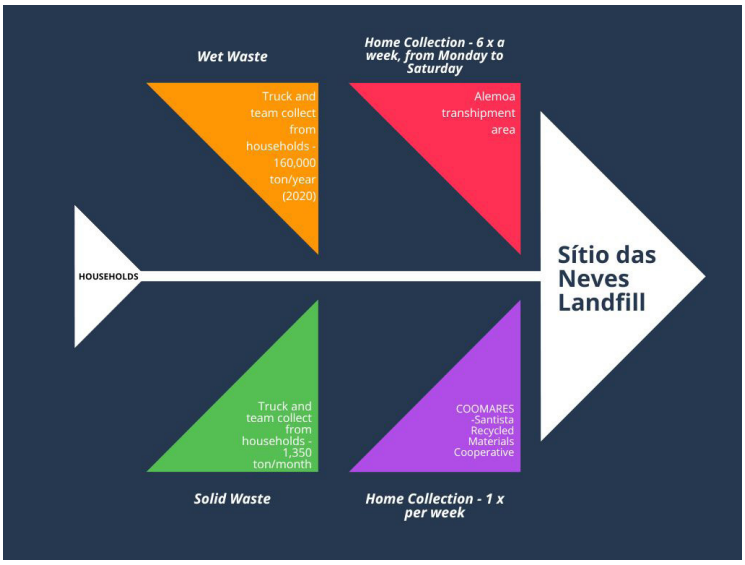
We have thus mapped the pathways of solid waste in Santos in the aim of understanding whether the actions put into effect contemplated only technical solutions, or if they included other solutions.

In the Santos municipality, two departments are responsible for waste management services: the Secretaria de Serviços Públicos (Seserp) and the Secretaria Municipal de Meio Ambiente (Semam), as is one mixed capital company, Progresso e Desenvolvimento de Santos (Prodesan S/A). Sesarp and Prodesan are responsible for collecting solid waste from urban residences or similar addresses, and collecting septic waste. They outsource these services to Terracom, a private company hired to collect, treat and transport humid and dry waste from residences to their final destination[4].

Recyclable waste is collected by the Departamento de Apoio à Limpeza Pública (DEAP) and the Prodesan, who carry out this service on behalf of the Secretaria de Meio Ambiente (Semam). Information we obtained indicate that, at present, Prodesam hires lorries from two private companies that carry out this service (the names of these companies was not informed). Along with this service, DEAP/Prodesan oversees the services carried out by Terracom on behalf of Seserp, and provides consultancy to that department in what concerns public and technical policies for cleaning public spaces.

In what pertains to selective collecting, Semam manages the collection of recyclable waste via a contract with Prodesan. The pathways of waste in Santos can be presented as in Graph 1.

**Graph 1** – Pathways of Waste in Santos




Source: Authors' elaboration

4 The classification of waste was determined by the National Policy of Solid Waste (Law 12.305/2010)

If we consider only domestic waste, Santos has had regular and selective waste collecting since 1991. The journey, which begins in daily collecting at peoples' homes and ends at the Sítio das Neves landfill, is long and includes a critical stopover at the Alemoa over area. According to information provided by Seserp, this is where we find a road scale (provided and operated by Terracom in partnership with Prodesan) where all garbage vehicles that collect waste through this contract are weighed. There is also the transference of waste from lorries to the trains that transport overflow waste to the licensed landfill of Sítio das Neves (operated by the Terreste Company, a part of the Terracom group), located on the continental part of Santos, close to the Cônego Domênico Rangoni Highway (also known as the Cubatão-Guarujá Highway). Each train transports on average the volume of four lorries that carry compacted waste. Every month, some 600 train trips traverse the 60km two-way journey from Alemoa to Sítio das Neves.

It is also at Alemoa that Comares is situated, next to the Prodesan cement plant, where solid waste is sorted for treatment by the Cooperative that sells waste and transfers the profits to the cooperative members. The residue and dejects and debris are transported to Sítio das Neves (Figure 1).

**Figure 1** – Aereal view of the Overflow area (in red) and Comares (in yellow)


Source: Google Maps

Humid and solid waste follow the same path right until solid waste reaches Comares. In 2016, the Santos mayor's office, by way of the Environment Department (Semam), signed a ten-year agreement with Comares, which operates in the triage plant in Alemoa. The cooperative has existed since 2003, and is composed of some 45 members. According to Odete Cunha dos Santos, the founder and former coordinator, who passed away in 2021, the cooperative's aim has always been to increase productivity, reducing the index of waste which, in 2016, was at about 40%. Comares denied us access to contemporary figures, so we have no way of knowing at what percentage this is today[5]. This is true for aerial surveys of the Alemoa Overflow. Nonetheless, we went to the gate of the cooperative and took the pictures featured here as Figures 2 and 3.

5 Our contact at Semam claimed that visits had been suspended due to the pandemic. This response was sent to us in March of 2021, after all of the activities of the municipality had already reverted become to in-person activities.

**Figures 2 and 3** – Comares entry gate and partial view of its front courtyard in the Vereador Alfredo Neves Avenue


Source: Author's ophoto.

The partnership between Comares and the Mayor's Office sought to incorporate waste-pickers' cooperatives in the administration of the municipal selective collecting system, thus fulfilling one of the aims set out in the National Policy for Solid Waste (Law12.305/2010), without thereby incorporating policies for autonomous waste-pickers.

A critical factor in this process is that the collection of solid waste up to the Alemoa Overflow area is done by compactor lorries, when cage lorries should be used (standard model in the process of collection of recycled materials). This is because the compaction process makes a good part of the materials unusable and hinders services at Comares. Calculations indicate that, in this way, only 30% of the residues are used. The rest becomes waste that is to be sent to the landfill. Some analysts explain that, this way, the company that will transport the solid waste to the overflow area will be the same company that will transport the waste from there to the landfill and, thus, it can earn two times over for the service.

In contrast to this view, Prodesan, when questioned, stated that at the time the licensing was approved the value for hiring cage lorries was much higher than that for compactor lorries. Semam, in turn, argues that the mayor's office had agreed to make use of cage lorries in the second half of 2022, but that the pandemic prevented this change from happening. The situation had not changed by November 2022.

According to data provided by Semam, Table 1 presents the figures for the production and selective collection of waste:

**Table 1** – Volume of waste and residue in the last 5 years

| YEAR | Humid Solid Waste | Residue |
|---|---|---|
| 2017 | 170.194 tons | 2.087 tons |
| 2018* | 164.592 tons | 3.164 tons |
| 2019* | 162.600 tons | 2.442 tons |
| 2020* | 160.407 tons | 4.681 tons |

Source: Semam and Seserp agents

After a lengthy process of consulting data and carrying out interviews with members of the public service and of companies and NGOs, it is clear that the problem of waste is complex and systemic. However, the compartmentalized way in which it is administered by officials splits services up between different departments (Semam and Seserp), involving the mixed capital company Prodesan and the private company Terracom, as well as outsourced services, all of which makes it not only difficult to understand the process, but, above all, to police it.

This fragmentation is made evident by the proliferation of service contracts for collecting waste. A further point that became clear during the interviews is the absence of waste-pickers from the whole process of collecting and treating waste, as the actions of Comares, with its 45 waste-pickers, is far too small a fraction of the number of waste-pickers and cooperatives in the municipality. Decisions regarding waste in Santos are therefore purely technical, and everything leads us to conclude that the municipal authorities envisage the environmental issue as a cost rather than an investment.

## Creation and Growth of Dique da Vila Gilda

The Northwestern Zone of the city of Santos is considered to be the least privileged area of the city. Dique da Vila Gilda is located in its southern extreme. As it is an environmental protection zone, including a stretch of mangrove, it was never meant to have been urbanized, but is today occupied by vulnerable families without access to suitable homes. When stilts began to be erected on the mangrove mud floor, using material that had been irregularly discarded, precarious hygiene conditions and the disorder of urban occupation disseminated disease and fostered environmental destruction.

The rise and growth of Dique da Vila are marked by three moments that had significant socio-environmental impact (Fabiano e Muniz, 2010). The first, in the 1950s, was caused by the construction of a dike (*dique*) and drainage canals by the extinct Departamento Nacional de Obras de Saneamento (DNOS, National Department of Sanitation Works), resulting in a large hydraulic landfill across the extent of the margins of the Rio dos Bugres, which made the first occupations possible. Starting in 1960, stilt houses (mostly made of plywood) began to expand toward the middle of the river. Since they lacked plumbing, inhabitants began to dispose of their domestic waste directly into the Rio dos Burges.

Many of these improvised residences were constructed by immigrants from the Brazilian Northeast, particularly from the state of Sergipe, who went in search of work in the Presidente Bernardes Refinery, in Cubatão, and in the construction of the Anchieta and Imigrantes highways. The third factor was the Sambaiatuba Municipal Garbage Dump, created in 1965, which occupies a large part of the banks of the river, next to the city of São Vicente. For over 30 years this was the only waste dump in the São Vicente municipality, receiving some 4000 tons of waste every day. This "mountain of trash" lacked any sort of system for treating manure, or covering or barrier for preventing the tide from taking garbage into the river.

## Dique da Vila Gilda: An Urban Anomaly?

**Figure 4** – Aerial view of Dique da Vila Gilda


Source: Lambauer, Stepan (s/d)

The historical sketch above complements our *in loco* wayfaring observation of the territory. Dique da Vila is a district of the Rádio Clube neighborhood (Figure 4), in the Northwest Zone of Santos (Figure 5), which gathers a number of micro-urban agglomerations which residents informally call Caminho São José, Caminho São Sebastião, Caminho da Capela, Caminho da Divisa, Caminho da União, Brigadeiro, Vila Pelé, Mangue Seco, Vila Telma.[6] It is these names that residents recognize as their territories of belonging. Many are not familiar with the name of 'Vila Gilda' at all, which is what the area is called in official documents. The local population has different spatial referents. The area displays a high degree of social vulnerability, with a high index of disease caused by a polluted environment.

**Figure 5** – Orthophoto of the location of the habitational nuclei in São Vicente Island


Fonte: Instituto Nacional de Pesquisas Espaciais (2006)

Dique da Vila Gilda has 13,278 inhabitants. Figure 6 shows the neighborhoods which neighbor the Dique.

**Figure 6** – Zoning map of the Northwest Zone of Santos


Source: Santos Mayor's Office (2007)

6 According to our field research, as well as the MPhil Dissertatio by Caio M Fabiano (2008) "Subsídios ao Plano de Regularização Fundiária e Urbanística da Zona Especial de Interesse Social do núcleo habitacional Dique da Vila Gilda, Santos – SP": https://www.ipt.br/pos_graduacao_ipt/solucoes/dissertacoes/292-subsidios_ao_plano_de_regularizacao_fundiaria_e_urbanistica_da_zona_especial_de_interesse_social_do_nucleo_habitacional_.htm. Acesso em: 23 abr. 2020.

There are few places in Dique da Vila with sewage and water services. What we find most are makeshift and clandestine pipes. Bath water and waste are directly thrown into the waters of the mangrove. Both marine creatures and inhabitants are thereby put at risk, since polluted water favors the proliferation of vectors of disease. Furthermore, according to the Companhia de Saneamento Básico do Estado de São Paulo (Sabesp, São Paulo State Sewage and Water Company), only 17% of the houses of Dique da Vila have running water. Figures 7 and 8 illustrate the precarious state of sewage disposal in the favela.

**Figure 7** – An alleyway which residents call 'Última Ponte' (Last Bridge), in Dique da Vila

Source: Authors' Photo

**Figura 8** – View of the tributary of the Rio dos Bugres which crosses Dique da Vila Gilda

Source: William R Schopit, Ecofaxina Institute Website (2020)

Nonetheless, residents of Vila Gilda have strong links to the community. When asked if they would rather live somewhere else, many said they would not. From the vantage point of the dysfunctional urbanization of Brazilian cities, favelas and their inhabitants are seen to be illegal, potentially criminal, social parasites, uncivilized, socially and economically excluded, sub-citizens (Souza e Silva, Barbosa, Faustini, 2012: 80).

Yet there is a movement, timidly gestated in the 1990s (as evident in the Rap da Felicidade (Happiness Rap) of Cidinho and Doca: "Eu só quero é ser feliz na favela onde eu nasci" (I just want to be happy in the favela where I was born)), and which gained traction in the first decades of the 21st Century: the resignification of how favelas are perceived. This movement included seeing, in the innovative and territorialized cultural output of favelas, a quest for creative, collective, and solidary solutions which might transmute this part of the city into a space of life, instead of the mere territories in which capital and hierarchical power circulate that they have traditionally been imagined to be.

In what pertains to waste, data obtained from Terracom reveals that the Rádio Clube and Vila Gilda regions are served daily by domestic solid waste-collectors via two 19m³ compactor-lorries, one destined for Vila Gilda and the other for Rádio Clube. Both are sent out during the daytime waste-collection period, which starts at 6:00 am and ends at 2:20 pm, and during nighttime waste-collection, from 6:00 pm to 2:20 am, from Monday to Saturday. The company also informed us that much of what is discarded is non-recyclable, with a greater volume on Mondays. These are the approximate weight for waste collected in the two regions:

# RÁDIO CLUBE – On average 12 tons of collected waste per day (22 to 23 tons on average every Monday, and on other days between 10 and 12 tons).

# DIQUE DA VILA GILDA – On average 2.5 to 3 tons per day.

When we asked Seserp if there was any sort of plan for collecting and treating specific types of waste for the Rádio Clube and Dique da Vila Gilda areas, we were told that there was not. They argued that there is no technical justification for differentiating "public" services, and that it would be far too difficult to establish this specificity by contract. The Audit Office and the Attorney General's Office of the State of São Paulo would be likely to deny in contract in these terms. A further issue is that, for the public service, there is a widespread understanding that the more services they "provide", the more they hinder public "conscience" and "education".

Seserp also reported that the Mayor's Office had been accused of privileging the Beachfront area to the detriment of the Northwest Zone, but that this is a misconception since services are provided homogeneously. According to Seserp, there are many buildings on the waterfront which have their own concierge and janitorial services, while in the Northwest Zone attention to disposal and the sidewalks is different. Seserp's position is contrary to what the waste-pickers said in the survey we carried out, and, indeed, in what is visible in the photos of the community. The excess of waste and its impact on environmental and social degradation are notorious in the region of Dique da Vila Gilda, impregnated into the very landscape.

The Rádio Clube neighborhood has undergone a process of urban revitalization in the last ten years and has become a lower middle-class neighborhood that is disconnected from the Dique da Vila Gilda in some of its urbanistic aspects. In Rádio Clube, the streets are all paved, as are the lanes, while Dique is characterized by narrow alleys of beaten soil or of wooden planks in those places where the soil is replaced by the tide. Rádio Clube has furthermore a busy commercial area with all the requisite commercial infrastructure and public equipment: schools, polyclinics and brick houses, while in Dique most of the houses are made of wood, there are stilts over the river, even though there is an increasing number of brick constructions in areas that are being filled with waste.

The geographical area where research was carried out is presented in two maps: a general view of the Northwest Zone of Santos (Figure 9) and the area within which research was carried out, circumscribed by the Jovino de Melo and Nossa Senhora de Fátima avenues and by the tributary of the Rio dos Bugres which penetrates the territory, as seen in the area marked in orange in Figure 10.

**Figure 9** – General view of the Northwest Zone of Santos and the neighboring areas of São Vicente, such as the Cidade Náutica and Jockey Club.


Source: Google Earth

**Figure 10** – Map with a zoom of the area of research, delimited by the Jovino de Mello and Nossa Senhora de Fátima avenues, and by the tributary of the Rio dos Burgres which enters into this territory.


Source: Google Earth

By mapping the role of each agent, whether associated with the public or private sectors, or with civil society, the monetary values involved, the logistics, and the sewage close to the Sítio das Neves landfill, we can only conclude that waste-pickers are the agents that are excluded from the circuit of administering and treating waste, even though they are responsible for much of the collection and recycling of reusable waste produced in the city.

## Ten Waste-Pickers (nine men and one woman): Organic Agents, Research Subjects

Through this methodology we were able to trace the socio-demographic profile of the people we interviewed: 99% of which were men with little or no formal education. Some seem to display what we understand to be mental health problems, which we assume to be the result of alcohol and/or drug abuse, considering that many of them would speak of these "vices".

We immediately noticed that waste-pickers would rarely venture into the stilt area, since they could then be confused with burglars, and all of them mentioned how dangerous that would be. According to E. P. Silva, "I don't pick in the stilts, no... There I'm taken for a thief... it's dangerous". Urban panning is mostly focused on aluminum, but this material is heavily coveted: "we get plastic bottles... They are worth much less than aluminum, but I make more than with cardboard and much more than glass", says E. L. dos Santos. Plastic bottles are also coveted, because, even though they are worth less than aluminum, they are worth more or less three times what cardboard makes, and five times more than glass.

S. M. de Oliveira is 43 years old, though he appears to be much older, and lives in the Caminho de São Sebastião. He limps: "A long time ago I got shot in the leg"; we nonetheless walk together for a whole day, covering some 4 km (Figures 11 and 12).

**Figures 11, 12** – S. M. de Oliveira


Source: Authors' photos.

S. M. de Oliveira tells us that "I only collect in the Dique region [...] I don't know why these people throw everything in the streets". We notice that he traces a correlation between formal education and trash when he tells us that "there are very few schools that separate trash".

S. M. de Oliveira considers that one of his larger problems as a waste-picker is "when there is little material to pick", along with the size of his cart which "had to be bigger because it could carry more things and serve to carry things when I'm not picking". He repeatedly complains that "a larger cart would be really good".

When we start to ask him about what is nature and technology, he provided fragmentary answers. On nature, S. M. de Oliveira simply says: "it's everything". On technology he quips, "I can't explain".

E. L. dos Santos (illiterate, no documents), known as "Crazy", 48 years old, lived on a vacant lot on the Brigadeiro Faria Lima Street when we interviewed him. During our walk, he taught us some of his picking techniques. For example, how to burn copper wires without generating smoke: "you just through a thick sponge over it". He made a point of saying that "copper wiring is one of the materials that pays the most" and "that is why it's so coveted". He then offered his own social analysis: "that's what makes people steal the wiring for electric energy and street lighting". He claims that he "only picks in the Dique region". He was also the only one to say: "I'm scared, but I pick below the stilts" (Figures 13 and 14).

**Figures 13, 14** – E. L. dos Santos

Source: Author's photo.

Regarding irregular disposal, he noted that "people aren't very aware that too much trash can cause global warming", immediately adding that "excess rain is what hampers us the most because people don't even discard anything". As to what would improve day-today conditions for waste-pickers, he was adamant: "a physical space for storing things [...]. So that I could gather, separate and sell for a better price because, gathering everything, we earn more". As for nature, he was emphatic: "to see the world always clean, nature was made to be preserved, many trees, clean streets. Farms, smell of fresh fruit. It's always keeping the world clean". But as for technology, "Ah, I don't know that!".

At every stage of our wayfaring observation, we thought: "what is the *human condition* of these waste-pickers"? Hannah Arendt (2007) claims that humans are conditioned beings, such that everything they come into contact with immediately becomes a condition of their existence within a determinate space. It can thus be said that life, natality and mortality, plurality and Planet Earth determine the human condition (Arendt, 2007) and relate to three fundamental activities that characterize life on earth: "labor", "work", and "action". Labor is every activity that corresponds to the biological process of the human body, it is related to the vital necessities that are produced and introduced in the life process. During our wayfaring observation we noticed that waste-pickers are not included within work, but, rather, within labor, as their condition as a waste-pickers only ever attends to vital needs. As Arendt (2007) observes, labor ensures the survival of the individual and the life of the species.

When we compare autonomous waste-pickers to those linked to cooperatives, we find that the latter has surpassed labor and do "work", since they benefit from an "organizational" structure for storing, processing and distributing waste. Following Arendt (2007: 16-17): "work and its product, the human artifact, lend a degree of permanence and durability to the futility of mortal life and the ephemeral character of human time"

Analyzing the shape of life, the ways of being of our research subjects through Arendt's perspective, we may say that waste-pickers can be conceived of as subjects that live only for labor, that is, to ensure their survival. We thus ask: can government and civil society organizations create the conditions for these subjects to also be included in the activities of work and (political) action?

D. de Camarrgo, the only white waste-picker we interviewed, 52 years old and resident in the Caminho de São Sebastião, is one of the veteran waste-pickers of the region, the only one to own a small deposit and a registry card with the Santos Mayor's Office (Figures 15, 16 and 17). He told us this of his life: "I have a son who is addicted to crack and we [his wife and him] take care of our grandson... Miguel... He's 7 years old [...] he has a bit of autism [...]". He says that he has "a brick house to live in". Indeed, he is the only one we spoke to who has one.

Regarding where he picks, D. de Camargo said: "I almost always pick in the vicinity of Santa Maria, close to the Horto, in Divineia and in Bom Retiro". Highly attentive to the environment, he complains that "it's these druggies who dirty the streets the most", and adds: "did you know that the police gets us [waste-pickers] mixed up with druggies? They think we're thieves [...] Oh! If we had a card that proved we were waste-pickers, I don't think the police would mix us up". They survive off labor, after all, without participating in the world of formal work.

When we ask him what would improve his working conditions, he thought for a while and said: "a government pension would be good wouldn't it?", and that "if the prices of the digital scale and the cart were cheaper, that would be even better". On nature, he ponders that it is "everything" and that he wants "the mangroves and the streets clean". On technology, his answer was: "you need to rationalize, what I do is technology".

**Figures 15, 16, 17** – Adapted bicycle, small deposit, D. in action in the patio of his house

Source: Authors' photos

W. A. da Silva, 32 years old, said he was from Peruíbe and that he was only passing through Santos. He was picking with his brother, V. A. da Silva (Figure 18), who also walked with us and answered our questions. W. A da Silva tells us that "we want to get out of here... I think we'll go to Mogi das Cruzes... We came here [to the Santos lowlands] to try something, but it didn't work out!". They claimed that "people don't think of trash, it's automatic" (W. A. da Silva), and they "get pickers mixed up with druggies", although they, the waste-pickers, "only help out". They note that "there started to be a lot of pickers in the streets, particularly after this disease [referring to the Covid-19 pandemic]... it's gotten even harder" (V. A. da Silva). On nature, V. A. da Silva replied: "we've never seen nature properly... we came from Guarulhos and now we're going to Mogi". W. A. da Silva provided a similar answer about technology: "it's what we do, look and separate material"; "that's technology, right?"

**Figure 18** – W. (striped shirt) e V. (printed shirt) A. da Silva

Source: Authors' photo.

F. L. de Jesus, 41 years old, had evident mental issues, perhaps as a consequence of drug use. He was exceptionally soliciting and provided sensitive answers. He said he lived "there at the back of the Brigadeiro Faria Lima Avenue" and that he would pick material "wherever there is a dumpster"; he explained to us that he gets more "cans, copper, cardboard, and takes it to Marcelo and Gabiru's deposit, in the Caminho de São José". He didn't know how to answer questions on the relationship between people and waste, and wanted to talk mostly of his own life: "I believe in people, they were good, I was the bad one because I was addicted to crack, I've stolen, I've been arrested, but God saved me" (Figure 19).

**Figure 19** – F. L. de Jesus

Source: Authors' photo.

During our conversation he brought up existential questions, such as when he said: "our biggest problem is inside of us" and that "money is not what's most important, living well is more important!". He reminisced of his past, laced with guilt: "I don't steal anymore... now I pick and I don't let evil into me". He could not provide an answer about technology, but said that nature "is hope". He confessed to have been happy at our conversation, since it had been some time since anyone spoke to him "like a person".

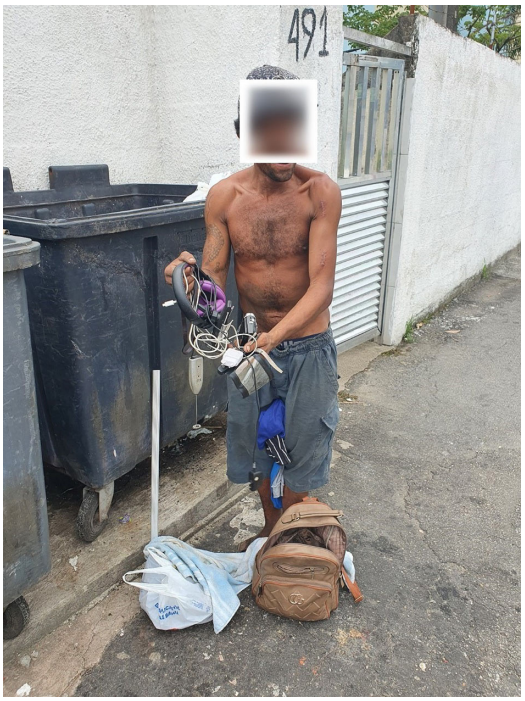
When we compare the material conditions of D. de Camargo, a white man with lighter eyes, to that of the other waste-pickers, either those considered "brown" (*pardo*) such as E. P. da Silva, M. S. Elias, and T. Ferreira, or darker, such as S. M. de Oliveira, F. L. de Jesus e the brothers W. e V. A. da Silva, we find that D. de Camargo is the only one with a fixed address, a brick house, and a small deposit. Even if all waste-pickers suffer from their historical socio-economic exclusion, the greater vulnerability of Black waste-pickers, whose biographies make evident the implications of race, is an indisputable fact. As Gonzales and Hasenbalg (1982: 15):

> The material existence of this Black population refers to psychological conditionings that must be attacked and unmasked. The different modalities of domination in the different phases of economic production in Brazil seem to converge on the same point: a reinterpretation of Aristotle's' theory of natural place. From colonial times until the present day, we get the existence of an evident separation of the physical space occupied by the dominators and the dominated. The natural place of the dominant white group is amplified homes [...] duly protected by different sorts of policing: from the old slave-owners, slave-hunters, henchmen, etc., up until a formally constituted police force. From the old plantation houses and multi-story city houses to the beautiful buildings and residences of today. The natural place of the Black man is, evidently, the opposite: from the slave quarters to the favelas, tenement houses, basements, invaded lands, waterlogged areas and "habitational" units (the model for which were the ghettos of developed countries) of today, the criteria has also been symmetrically inverse: the racial division of space [...] Within the dominated group, what we find are whole families packed into cubicles, with the most precarious hygiene and health conditions. Here, too, we find police presence: only not to protect, but to repress, to violate, to cause fear. Through this we understand that the other natural place of Blacks is the prison, the asylum [...].

Even if D. de Camargo's house is much more modest than those in the above description, the racial issue is doubtlessly explicit when his material conditions are compared to that of the other waste-pickers who participated in this research.

E. P. da Silva, 33 years old, told us: "I walk through all of the city", but he lives in the Morros region. Unlike the others, he displayed a general lack of faith in humanity. When asked why people throw thrash out in the streets, he told us: "human beings are evil, cruel, they mix food with shit" so that they [waste-pickers] could not eat it; they "cut up the clothes they throw away so we can't use them" (Figure 20). He accepted that "there are good people, but the majority is bad". He said he wandered the whole city picking material. Wherever there is trash, he goes; he said that the day before he had been in the São Bento Hill, and during the day he was interviewed he was in the stilts, and that picking is "a matter of looking, whoever looks finds it" and that "to win you have to do, you have to chase". He said that his biggest difficulty was going to the toilet: "where am I to go if I have a stomach ache?". Yet he also said that living in the streets "isn't hard, there's food, there's a lot of people who help out", there are "hostels... so much so that druggies have cash to buy drugs".

**Figure 20** – E. P. da Silva




Source: Author's photo.

Regarding the places he walks through to pick, he claims: "I live on the streets... everyone carries in their chest what they know". Today "people are paying the price". On nature, he replied quickly: "it's the air I breathe, the water I drink, and, in a way, I'm helping. How long does one of the plastic bottles I pick take to disappear?". On technology, he was direct: "appliances for me to sell". He made a point of posing for his portrait, with the chords and gadgets he had in his bag (Figure 20). For him, everything that "we" discard "they" reuse with an intelligence that is reflected in a sharp eye, in tact, and in the imaginative capacity to think through multiple forms of using electronic waste. While we, purportedly inserted in the Capitalist system of production and consumption, are, in reality, submitted to a process of "machinic enslavement", a concept coined by Deleuze and Guattari, and developed by Lazzarato (2014: 28-30):

> Enslavement works with decoded flows (abstract work flows, monetary flows, sign flows, etc) which are not centered on the individual and human subjectivity but on enormous social machinisms (corporations, the collective infrastructures of the welfare state, communications systems, etc.) [...] the individual is no longer instituted as an "individuated subject," "economic subject" (human capital,entrepreneur of the self), or "citizen." He is

> instead considered a gear, a cog, a component part in the " business" and "financial system" assemblages, in the media assemblage, and the "welfare state" assemblage and its collective institutions (schools, hospitals, museums, theaters, television, Internet, etc.). Enslavement is a concept that Deleuze and Guattari borrowed explicitly from cybernetics and the science of automation. It means the "management" or "government" of the components of a system. A technological system enslaves ("governs" or "manages") variables (temperature, pressure, force, speed, output, etc.), ensuring the cohesion and equilibrium of the functioning of the whole. Enslavement is the mode of control and regulation ("government") of a technical or social machine such as a factory, business, or communications system.

As a counterpart, this enslavement of instituted subjects, the autonomous waste-pickers, who, in the Marxist view, because of their marginal and erratic condition, make up the lumpenproletariat, configure a sort of line of flight from the system, since, while they remain at the margins, they can contribute to resetting it through their capacity to put to new uses discarded materials. Furthermore, they are able to establish the relations between humans and nonhumans, relations that go beyond the utilitarianism that is typical of the predatory relation fostered by the programmed obsolescence of the Capitalist mode of production and discard.

Are they then involved in micropolitics, even if they, themselves, remain unaware of it? Krenak (2019: 12) says: "...micropolitics is disseminating and will take the place of disillusion with macropolitics. The agents of micropolitics are planting gardens in their backyards, opening up sidewalks so that anything at all may grow". Picking and selling sold waste, it is our view that waste-pickers are bringing to light the urban environmental chaos that is relegated by macropolitics.

E. dos Santos, 44 years old, was the only woman we approached. She was with her adult son and her partner, all of whom lived in the Caminho de São Sebastião.[7] She said that they would "pick anywhere there is aluminum" and that "the bad thing is that people could gather everything to make it easier for us... but no, they throw away everything together at once [...]". She also complains that, now, "there are too many people and little material [...] people don't know how to separate things properly [...] they mix up glass and cut us... sometimes we get seriously injured".

When we asked what could improve the system of work, she was emphatic: "Ah! We need to increase the value that we get for cans and for everything". And that, "If I could I'd go pick in another neighborhood... one where people have money, because their trash is better than this one here". On nature, she said: "ah, it's life, right? Air, human beings, the environment... flower, tree, animals, good air, not polluted. It's everything...". In contrast, on technology she claimed: "It's TV, Radio, cellphone. It's where you communicate your work".

M. S. Elias, 38 years old, is from a lot places but "mostly from the Center". He has picked in the Northwest Zone of Santos for 20 years, and notes that "people throw trash away in any manner and they throw it in the streets, because they don't want it anymore, because it piles up, attracts critters, and they don't want trash nearby... who does, right?".

To improve his day-to-day activities, the waste-picker said "that it would be very good to have a place to store the material, with a lock, about 10 x 10, you know? Because, like, if I pick and fall asleep, I'll be robbed... I have been many times". On daily work, he claims: "I find everything... If I walk a lot I can make some R $100.00 a day". On nature, he underscores the idea that it is everything because it is from nature "that we live". Technology is "luxury... you don't need to make an effort for anything, it's easy, it's not having to go to the bus stop, the car comes to you right?". "You just flick it on and everything is at hand. The radio turns itself on, the car window closes by itself". When asked what he would consider to be good technology for him, he replied: "it would be good if everything were separated".

7 They did not consent to being photographed.

T. Ferreira, 23 years old, was the youngest and most literate of our interviewees. He explains that he "almost finished high school... I did wrong things but I was never arrested". He told us that "I came from the country and I don't have a definite place to live... I stay on the streets... these days I'm in front of a baker's [marquee] in the Rádio Clube neighborhood"... "I came from São Roque... I walk a lot through the Vila São Jorge... close to the scrapyard of an old friend of mine" (Figure 21).

On the problems that he faces daily as a waste-picker, he says that "the largest problem is glass... I've been badly cut up". And he takes a condemnatory tone:

> What outrages me most of all, and now I'm just venting, is that the person looks at us, we're recycling, with discrimination, but they don't stop to analyze that all of this that we're recycling comes from their homes. They just see me sorting through trash and they look at me in disgust... but, man!, this just came from his house!

And he adds: "... as if it were a crime to look at trash, of course some pickers contribute to this discrimination, because they overturn everything, throw everything on the floor. Because of the actions of a few we all pay".

As to what he needs to survive, he said: "I don't even want to make any more money... If I make little, when I'm tired I stop and that's it". He confessed that he doesn't want to make any more because "I need to pick exactly 62 cans per day... that will see to my coke addiction".

On nature, he says: "Oh! I don't know how to explain... If we open our eyes and look around us, it's there, right?". As he says this, birds start to chirp and he asks: "did you see? Birds chirping?". On technology, he claims:

> It's a great advantage for humanity, but with the country we have, the government, technology is nothing... Humans are the most intelligent beings on earth... I've seen a person get a water pipe and make a tent for their bicycle. Look! It's so much wisdom and stupidity at the same time. You have power and at the same time you throw this power to the wind. Look at the asphalt itself; it's made from car tyres...

**Figure 21** – T. Ferreira

Source: Authors' photo.

## Transversal Reflections: Humanities, Technology, Nature

As we carried out our research through wayfaring observation, an inconvenient question came up: what does our social imagination associate poverty with dirt? Where does this association come from? When we see public agents working in sanitation and waste-pickers walking the streets, the physical appearance of most of these people is that of Black workers from the lower classes. If they are always the ones cleaning our streets, why do we consider these poor people to be filthy while rich people are not? One answer might be: filthy places, filthy people, since, in order to clean, they must mix up with and be contaminated by dirt; hence, for dealing with trash and filth, there is an association between these undesired things and these people.

Reflecting on what humanity is and what are humans within this system structured by violence and destruction, Ailton Krenak (2019), starting from the cultured experience of the Krenak people, for whom nature is incorporated into being, asks himself: "How is it that, over the last 2 to 3 thousand years, we have constructed the idea of humanity?" (Krenak 2019: 10-11) [...] "Are we really a single humanity"? (Krenak 2019: 12). Answering these questions, Krenak does not spare any critique of the "more consolidated institutions, such as universities, multilateral organisms which have emerged in the 20th Century" (Krenak 2019: 12). For Krenak, throughout the last century, and even today, these institutions only validate the relation between the Capitalist system and the destruction of Gaya: "it's as if it were enough to leave a few places as free samples of Earth. If we survive, we'll fight for the pockets of the earth that we have not yet eaten (Krenak 2019: 12). For him, our descendants "will be able to travel to see how Earth was in the past" (Krenak 2019: 13). These structures and social mechanisms, which regiment the behavior of humanity through their social function, "were configured and maintained as structures of this very humanity" (Krenak 2019: 13) and we submit to their violence because they are "at the service of the humanity we think we are" (Krenak 2019: 14).

> How can we justify that we are one humanity when more than 70% are completely alienated from the exercise of being? [...] people were ripped out from their collectives, their places of origin, and thrown into this blender called humanity. If people do not have deep ties to their ancestral memory, with the references that sustain an identity, they are going to go mad in this world which we share. (Krenak 2019: 14)

When we consider what Krenak is saying, we can associate his ideas with those of the philosopher Marilena Chaui (1999: 153), who argues that there is no difference between perception and sensation, because experience always bears meaning, that is, it is perceived and attributed meaning within our life history, it is part of the world of the subject and her experiences. Perception and sensation, therefore, are always cohesive, they do not come in isolated fragments because the world is not a collection or sum of isolated things. Rather, it is organized in complex structures and forms that bear meaning.

Since perception, including filth, disturbs us most of all as a sensory violence to sight and smell, we understand that filth most be extirpated from social life. Another characteristic of filth is its ephemerality as matter, since it degrades, which is one of its defining characteristics, associated to the sensory sacrifice that is demanded if we are to live with it. Its degradation is what speeds up the process of collecting and removing waste from the vicinity of privileged spaces. As soon as we remove it from our homes, we erase it from our thoughts. We thus ask: what about those who collect this waste? These are, precisely, the vulnerable individuals who, by virtue of recovering and resignifying waste, come to be confused with it. At the end of the day, we, privileged whites from the upper classes, do not want to reflect on the importance of waste-pickers and our need for existing with them. Further reflection necessarily leads to awareness of our privilege, which causes fear in us – after all, we have constructed a humanity that we feel we are all a part of!

Ironically, the physical and mental degradation of the human being is much faster than that of solid waste, but, when we consider humid waste, the individuals who collect it can lose their dignity in the time that decomposition takes. Every day they see their condition as subjects being subtracted, until many of them

become homeless. The condition of citizenship is thus systematically denied to them, and the subject follows the path of degradation until she loses any shred of autonomy and comes to depend completely on the tutelage of other to survive. According to Santana et al (2009: 6) and Santos and Manfrim (2015),

> [...] it is within the framework of informal work that we find the waste-picker, characterized as the spare population that is unable to participate in work processes, who faces precarious and unhealthy working conditions to ensure subsistence. Lacking social protection and effective intervention by government, waste-pickers not only engage in highly dangerous work, they are also in the state of extreme poverty.

This "spare population" is made up of people who, even while they remain invisible to the eyes of the state and society-at-large, are able to survive, to resist, and to articulate empirical knowledge of the streets with a sensible perception of the relationship between nature, human beings, and technology, as glimpsed in the replies given by our research subjects.

As we can see in the pictures, there is a large concentration of waste near the stilts, accumulated in the Rio dos Bugres and the narrow alleys, a situation which residents are fully aware of. One hypothesis for understanding this excess is that human beings create dirt to appropriate the space in which they are, as Serres (2011) explains in *Malfeasance: Appropriation Through Pollution?* By claiming that "carnivorous mammals mark their territories by urine" (Serres, 2011: 11), or that "to conserve something proper to itself, the body knows to leave behind a personal fragment: sweat on clothing, saliva on food, or other indelicacies" (Serres, 2011: 14). Serres is attentive to the importance of waste as a marker: marks need to be left in the territory so that we may recognize ourselves in it, while a clean territory has no definite property. He further stresses that such markers are not only physical or durable, coming from the body, for there are also symbolic, or soft, markers, such as names, incisions, colors, flags, propaganda..." (Serres 2011: 36). That is, "the proper is the dirty", and dirt can also symbolize our memories, "each stain on the sofa, or even an old scribble in a notebook, compose the affective memories of many people" (Serres 2011: 15).

This reflection of Serres became the *parti pris* for us to think of how the most varied forms of waste express more than obsolescence, discard, accumulation: they are traces of appropriation that is characteristic of all of us in the places where we live and through which we pass; they are the most definite proof of our corporeal and cultural relation of separation from the environment that surrounds us. We establish utilitarian relations with everything that is outside of our bodies: the environment becomes the receptacle for all of our solid, liquid, gaseous, and symbolic waste which is no longer useful to us. They do not vanish, they only cease to be useful and thus come to dirty, infect and destroy the environment.

It is a fact that there are many agents of pollution: the population, companies, institutions, and governments, while only waste-pickers collect, take away, clean and resignify what everyone discards. Research carried out by the Applied Economics Research Institute **(**Instituto de Pesquisa Econômica Aplicada, Ipea) revealed that almost 90% of recycled waste in Brazil is due to the work of these professionals. According to the National Movement of Recycled Material Pickers, some 800 thousand of these professionals are active today. Yet it remains an unregulated profession, with low wages.

In fact, wages are so low that most of these people work day and night and do not even manage to secure fixed addresses. They also have to deal with a large measure of prejudice. For Professor Gonçalo Guimarães (2011: 13), member of the Incubadora Tecnológica de Cooperativas Populares (ITCP) of the Universidade Federal do Rio de Janeiro (Coppe-UFRJ), we must be attentive to the social time of each group: "it is one day at a time, the day is the biological cycle of survival. Waste-pickers are urban extractivists, panners, informal workers with an acute socio-environmental perception and a socio-technic skill" (Guimarães, 2011: 13). This partly accounts for the problem at the heart of this research, since it is not for a lack of technical skill that waste-pickers are

unable to integrate into the complex network that envelops society, technology, economy, and the environment, but because there is a systematic process that makes the invisible and disqualifies their participation in waste management policies in Brazil.

Within this symbiotic triad of "nature, technology and humanity", the human being is not only a dependent, but one who also sees herself doubly threatened: on the one hand, by extreme climate events, and, on the other, by the development of machines that eliminate jobs and make objects and knowledge obsolete at a frightening pace. It is a fact that technology is increasingly taking the place of the demiurge in contemporary society, a role that had previously fallen to nature, always treated with respect and scared admiration by ancestral people.

Having followed discussions on the socio-environmental crisis for more than twenty years, we notice that it becomes more complex and assumes the contours of the mythical Tower of Babel; that is, *a priori*, it is a crisis of communication between agents, particularly at the macrolevel. In contrast, it is in organic, resilient, often marginal spaces that Indigenous peoples, maroons, peasants, river-dwellers, sharecroppers, small-level extractivists, and waste-pickers, display a strong sense of community, of a *common* space in the etymological sense of *communication*. It is important that we pay attention to the fact that the inhabitant of the coast of the state of São Paulo, culturally and historically known as *caiçara*, has strong ties to Indigenous traditions and their symbiotic relation with nature, as analyzed by Krenak (2019: 12):

> [...] humanity is gradually detached in such an absolute manner from this organism which is the earth, that the only nuclei that still consider that they need to be attached to this earth are those that sort of got forgotten at the borders of the planet, on the banks of the rivers, the edges of the oceans, in Africa, Asia or Latin America. They are *caiçaras*, Indigenous people, maroons, aborigines – sub-humanity. Because there is a – let's call it – cool humanity. And there is a more brutish, rustic, organic layer, a sub-humanity, a people who remain attached to the earth. It's as if they want to eat the earth, suckle on the earth, lying down on the earth, wrapped in earth. The organicity of these people is something that bothers, to the extent that corporations have created an increasing number of mechanisms to separate these cubs of the earth from their mother.

For years the anthropologist Massimo Di Felice has been studying the relationship between digital media and sustainability. In an interview to the site *Ideias Sustentáveis*, Di Felice (*apud* Piche 2013) claims:

> Western man has established a separation between man and environment, man and nature, man and skill. This conception comes from Greek humanism: man as the center of society and the territory around him, as if he did not dwell in it. This is the same view that generates the destruction of the environment [...] It is a conception that man has nothing to do with the environment.

For Di Felice, this separation brought us to the Anthropocene and the internet and connectivity, since it "inverts this process" and introduces this culture that makes it so that "we perceive of ourselves not only as dependent on the environment, but also as a part of it" (*apud* Piche 2013). That is, for the anthropologist, we, contemporary citizens, know that "we are one of the nodes in a more complex network" in which everything we cause generates "an impact on the whole, which, in turn, has an impact on us". Thus, the concept of connectivity is that start of a new concept of ecology, since it moves beyond connection through technology: connectivity happens "in a culture that places us in a different relation with the environment and nature. Therefore, all of this complex represents a new type of ecology [...] it is the culture of the web and connectivity that inverts this process" (*apud* Piche 2013).

Starting from these reflections and the narratives of our research subjects, we see that waste-pickers do not perceive themselves to be part of a western system, one which separates man from nature, man from skill. When we look at waste-pickers, the way they walk amidst their deteriorated, smelly, filthy environment; how

they use their hands; the timid way they look at us and their answers to our questions (or their silence), we envisage the possibility that they understand themselves to be "not only dependent on the environment but, indeed, part of it, and, furthermore, actors in it" (*apud* Piche 2013).

It is hence urgent that we read and understand the thought of authors who have historically defended cultures and traditions will only be respected if they are ensured their right to transmit and narrate their values. If it is death which confers authority to the narrator, as Walter Benjamin (1985) noted, centuries of the extermination of Black and Indigenous peoples confer on these traditions the authority to validate the discourse that they disseminate in the contemporary world. We must listen to these narratives in movement. Hence the proposal for a wayfaring methodology, to understand the dynamic of the Ariadne's thread of the daily environmental action of these people, the so-called waste-pickers, who make possible not only their own survival, but also ours (or would we survive crushed by rubbish on all sides?).

## Final Thought (or) Which Ways Out?

Through wayfaring observation, by listening, following and interacting with waste-pickers, we see their knowledge, sensitivity and intelligence for providing original and creative input to the system or reutilizing waste, including what pertains to the relationship between technology and nature.

By tracking the path of residues in the city of Santos, with a special focus on the creation and growth of Dique da Vila Gilda, we can say that rationality, whether in business, production, government or the state, can, on their own, account for the monumental problem of waste. Even if it is the responsibility of government, without listening to society and including others, namely waste-pickers – that is, without dialogue that includes all agents in the cycle of production and discard of waste, and without sociotechnical knowledge and environmental sensibility – any policy will end up being far too costly for the public treasury and dangerously harmful to nature.

According to the 2020 Panorama of Solid Waste, produced by the Brazilian Association of Public Waste Disposal Companies (Associação Brasileira das Empresas de Limpeza Pública (Abrelpe), between 2010 and 2019 the generation of waste in Brazil increased from 67 million to 79 million tons per year, which amounts to a rise of 18% in 9 years. That is 30 million tons of waste disposed of in open air sites, popularly known as *lixões* (literally, 'big trashes'). In 2010 the National Policy of Solid Waste was sanctioned with the aim of ensuring that all *lixões* were extinct by 2014. This never happened, and, almost a decade later, there are still three thousand open air garbage dumps in the country (Abrelpe, 2017).

The mechanisms of listening to and inviting the participation of society must be perfected and effectively incorporated into public policies by administrators, so that public hearings and councils can, in fact, ensure social participation and place the interests of the public above those of finance. Non-government organizations, cooperatives and social movements, all have much to contribute in managing waste, with their socio-technical knowledge and sensitivity, since they are the closest pole to waste-pickers.

Our theoretical and affective filiation with Hannah Arendt, Walter Benjamin, Felix Guattari and Ailton Krenak provides us with a few clues, starting from the assumption that the urgent times in which we live demand changes to our mindset, if we are to face this deplorable landscape, in three ways. First, we must admit that no agent can, in isolation, provide ready-made answers. We must therefore consider collective participation in the process of organizing, developing, and implementing initiatives, accounting for the fields of self-administration, social advocacy, cultural respect, environmental care, and economic solidarity in the micro-spaces of territories (a condition, therefore, is that actions be rooted in a physical territory).

Second, we must understand technology as Guattari (1990), who claimed that it is the social machine that produces the technological machine, and not the other way around. Not all technology needs to be complex, high-tech and expensive. The concept of *social technology* was coined precisely to show that technology can be more democratic and alternative to conventional technology, as Di Felice rightly stresses, since it welds popular knowledge, social organization and technical-scientific knowledge. Waste-pickers display a particular and pragmatic view of what technology is. Indeed, certain simple instruments could help them in their daily affairs, such as signaling (intelligent clothing), metal detectors, automatic wire strippers, etc; but are these instruments enough to afford them more perspectives? Only through participative experiences, mechanisms of listening and adapting, can these hypotheses be tested.

In the contemporary context of climate emergence, the education process infers a practice that is at once cultural and communicational. It is cultural in what concerns ancestralities, belongings, symbolic universes, heritage, arts, identities, and alterities. It is communicational in the intensive and immersive use of language and media to construct a minimal common territory in which people can, in fact, perceive themselves as equal, even if diverse, considering also the important role of nonhuman beings in the current context: viruses, bacteria, intelligent machines, biodiversity.

We believe that we must overcome anthropocentrism and technocentrism, and that we must dare to give us a chance. For, if there are many parallel worlds in the contemporary Tower of Babel, it is only through education, communication, and culture that we can build bridges that link these worlds and creates equity between its agents.

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## References


ABRELPE (Associação Brasileira das Empresas de Limpeza Pública). Panorama de Resíduos Sólidos no Brasil 2017. São Paulo: Abrelpe. Disponível em: <http://abrelpe.org.br/download-panorama-2017/> Acesso em: 11 mai. 2019.

ARENDT, H. 2007. *A condição humana*. 10 ed. Rio de Janeiro: Forense.

BENJAMIN, W. 1985. Obras escolhidas: Magia e Técnica, Arte e Política. São Paulo: Brasiliense.

CARERI, F. 2013. *Walkscapes: O Caminhar Como Prática Estética*. São Paulo: Gustavo Gili.

CHAUI, M. 1999. *Convite à Filosofia*. São Paulo: Ática.

DEMAJOROVIC, J.; LIMA, M. 2013. *Cadeia de Reciclagem: Um Olhar Para os Catadores*. São Paulo: Senac/ Sesc.

DE PAULA, G. 2006. "Operação limpeza: Conscientização Popular Reverte Processo de Degradação Ambiental em Macaé." *Desafios do Desenvolvimento*, 29. http://www.ipea.gov.br/desafios/index.php?option=com_content&view=article&id=1433:catid=28&Itemid=23

FABIANO, C. M. O. 2008. *Subsídios ao Plano de Regularização Fundiária e Urbanística da Zona Especial de Interesse Social do Núcleo Habitacional Dique da Vila Gilda, Santos-SP*. Dissertação de Mestrado, Instituto de Pesquisas Tecnológicas – São Paulo. https://www.ipt.br/pos_graduacao_ipt/solucoes/dissertacoes/292-subsidios_ao_plano_de_regularizacao_fundiaria_e_urbanistica_da_zona_especial_de_interesse_social_do_nucleo_habitacional_.htm.

FABIANO, C.; MUNIZ, S. 2010. "Dique Vila Gilda: caminhos para a regularização". *Planejamento e Políticas Públicas*, 34. http://www.ipea.gov.br/ppp/index.php/PPP/article/view/173.

GONÇALVES-DIAS, S.; SAKURAI, T.; ZIGLIO, L. (orgs.). 2021. *Catadores e Espaços de (In)Visibilidades*. São Paulo: Blucher Open Acess.

GONZALES, L; HASENBALG, C. 1982. *Lugar de Negro*. Rio de Janeiro: Marco Zero.

GUATTARI, F. 1990. *As Três Ecologias*. Campinas: Papirus.

GUERRA, G. P. B. 2018. "Lixão a Céu Aberto: O Impacto dos Resíduos Sólidos no Brasil." *Politize!* Florianópolis. https://www.politize.com.br/residuos-solidos-lixao-a-ceu-aberto-o-impacto-no-brasil/.

GUIMARÃES, G. 2011-13. Projeto Economia Solidária em Desenvolvimento no Estado do Rio de Janeiro. 2011-13. http://www.incubadora.coppe.ufrj.br/

ILUMINURAS. 2020. *Antropologias do Lixo/Resíduos Sólidos: Economia Circular e Experiências Inovadoras*. 21(55). https://seer.ufrgs.br/iluminuras/issue/view/4172.

KRENAK, A. 2019. Ideias Para Adiar o Fim do Mundo. São Paulo: Cia. das Letras.

LAZZARATO, M. 2014. *Signos, Máquinas e Subjetividades*. São Paulo: Edições N-1.

LIMA, M. R. P. 2021. *O Avesso do Lixo: Materialidade, Valor e Visibilidade*. Rio de Janeiro: Ed. UFRJ.

PICHE, C. 2013. "A Rede é a Solução: Entrevista Massimo Di Felice." *Ideia Sustentável*. Acesso em: 26 nov. 2022. https://ideiasustentavel.com.br/entrevista-especial-massimo-di-felice/.

RIAL, C. (org.). 2016. *O Poder do Lixo: Abordagens Antropológicas dos Resíduos Sólidos*. Rio de Janeiro: Associação Brasileira de Antropologia.

SANTANA, C., GRANJA, G. SILVA, J., OLIVEIRA, J. e AGUIAR, T. 2009. "A Realidade das Famílias que Sobrevivem do Lixão", *ETIC: Encontro de Iniciação Científica*, 5(5): 1-14. http://intertemas.toledoprudente.edu.br/index.php/ETIC/article/view/1958.

SANTOS, A. C. A.; MANFRIN, S. H. 2015. "Proposta de Intervenção Técnico social na Cooperlix de Presidente Prudente: Autogestão, Cooperativismo e Coletividade". *Seminários Integrados*, 9(9). <http://intertemas.toledoprudente.edu.br/index.php/SemIntegrado/article/view/5136>.

SERRES, M. 2011. *O Mal Limpo: Poluir Para se Apropriar?* Rio de Janeiro: Bertrand Brasil.

SOUZA e SILVA, J.; BARBOSA, J. L.; FAUSTINI, M. V. 2012. *O Novo Carioca*. Rio de Janeiro: Morula.

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