kaya lazarini

the struggle of piquiá: habitat self-management in a mining hub of the brazilian amazon

pss

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production studies series

This booklet is part of the *Production Studies Series* - a set of 12 publications, each introducing a case central to the formation of this new field of studies and exemplifying its concerns. The series has been created as part of the research project *Translating Ferro/Transforming Knowledge in architecture, design and labour for a new field of Production Studies* (TF/TK). Funded by the Arts and Humanities Research Council and the Fundação de Amparo à Pesquisa do Estado de São Paulo, the project was led by Professors Katie Lloyd Thomas and João Marcos de Almeida Lopes. From 2020 to 2024 TF/TK has brought together dozens of researchers, practitioners and activists from across various countries and institutions.

Sérgio Ferro's writings provided the common theoretical and critical ground for discussions within the project. His work, first presented to an English-speaking audience in 2014 during the 11th Architectural Humanities Research Association conference[1] at Newcastle University, has since gained international recognition, the singularity and analytic power of his work resonating beyond its native sphere of circulation in Brazil and France. A key achievement of TF/TK is precisely the translation and publication in English of a substantial part of his writings.[2] Each of these critical editions, overseen by Silke Kapp and Mariana Moura, have been meticulously carried out, through successive bilingual sessions, open to all affiliated researchers within the project and to guest collaborators, aimed at a collective reading of the translated pieces, text by text, chapter by chapter. From the beginning of the project, Ferro's writings have been a cornerstone of the research network, vital to the maturation of the field, stimulating debates and collaborations.

It was in this environment of intercultural and interdisciplinary exchanges that each of the volumes in this collection was produced, from its editorial conception to its circulation. Together with an edited collection, *Building Sites: Architecture, labour and the field of production studies*,[3] which features chapters by the research team, with many crossovers of concerns with the *Production Studies Series*, they form part of a broader effort to define and structure a field of studies that we have been calling 'Production Studies'. Production Studies (PS) undoubtedly refers to already established interests, although often dispersed across studies of architecture, construction,

self-building, cultures of construction, and participatory design. The PS field is proposed here as an axis which is both methodological and empirical, capable of bringing together objects apparently as diverse as cooperative, participatory and collaborative practices of design and work; processes that connect and separate design and the building site; agents and relationships directly involved in the formal and informal production of space; public policies for habitat design and production, in the countryside and in cities; pedagogical and disciplinary experiences that privilege forms and relations of production in the built environment; technical experiments or formal dilemmas capable of interrelate to 'situations in conflict' relating to production, from traditional practices and forms of knowledge, to actors external to academic, scientific or technological institutions.

Production Studies (PS) provides an empirical axis revealed in the study of specific cases located in time and space, which illuminate methodological, theoretical and political concerns. Inspired by the work of Karl Marx, William Morris, Sérgio Ferro, ProBE (the centre for research into the Production of the Built Environment), Peggy Deamer and the Architecture Lobby, amongst many others, the aim of the *Production Studies Series* is to promote the study of architecture/construction at the clash of various dichotomies: labour and capital; production and consumption; knowledge and power; technology and domination; autonomy and heteronomy. It seeks to overcome the design 'of' production through a shift to design 'for' more equitable and joyful forms of production. PS proposes a methodological approach that examines conflicts within architectural works: in their built materiality - visible or indexical; within work processes and relationships; within construction sites; and understands design creations, or ideas and solutions for construction as material productions. It views them in their mediations with political economy, labour history, the social history of culture, the anthropology of technique, the sociology of labour and not least with the know-how of construction workers. This intellectual endeavour is inherently a political ambition, in an understanding of theory, technique, art as types of practice, as part of the praxis of production and, therefore, as a form of action in reality. As weapons of class struggle, these forms of practice either work for its reproduction or for its transformation and overcoming; we recognise that while all too often production functions as a weapon of domination, it can also be a means of emancipation.

The booklets published in this series stand independently, each with its own institutional, theoretical and empirical backgrounds, expressing authors' prior research and experience. But it was amidst the constancy and intensity

of face-to-face and remote meetings within the TF/TK network; in the influx of and contentions between different methods, interpretations and references; in the sharing of various practical experiences, that the relevance of each of them might be appreciated in the context of the Production Studies we set out here.

The cases in this collection each focus on the 'production' aspect of the built environment, aiming to expand our traditional methods of studying and understanding architecture and construction, thus emphasizing the material, practical, economic, social and even bodily dimensions of work involved. They are not interested in supposedly original or paradigmatic architectural forms. Nor are they distinguished by a peculiar attraction to the nature, advancement or particularity of construction techniques. Neither do they assume the existence of a pure, universal rationality of construction sites. Their purpose is instead to illuminate their contradictions and conflicts, to review productive and political experiments capable of facing the deterioration of working conditions in contemporary construction sites across the planet. Ultimately, it is about observing, from an architectural point of view, in its broadest sense, the effects of the social division of labour - including divisions of gender, race, nationality and class - in the production of the built environment and natural resources.

josé lira
katie lloyd thomas
will thomson

notes

1 Katie Lloyd Thomas, Tilo Amhof and Nick Beech (eds), *Industries of Architecture*. London: Routledge, 2016.

2 Sérgio Ferro, *Architecture from Below*; *Design and the Building Site*; *Construction of Classical Design*. Translated by Ellen Heyward and Ana Naomi de Sousa; edited by Silke Kapp and Marianna Moura. London: MACK, 2024.

3 Matt Davies, Will Thomson, João Marcos de Almeida Lopes, Katie Lloyd Thomas (eds). *Building Sites: Architecture, labour and the field of production studies* London: Routledge, forthcoming.

Fig. 1: Construction site of the resettlement of Piquiá de Baixo, the future Piquiá da Conquista, in September 2020.

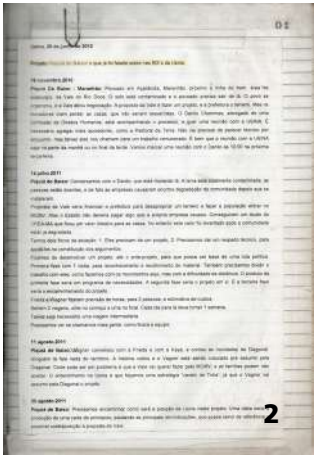
Piquiá de Baixo is a rural district in Açailândia municipality belonging to the state of Maranhão, in the extreme northeast of the Brazilian Amazon. Crossed by the Carajás Railway (EFC), since the mid-1980s it has suffered the impact of the steel industry activity established in the region. Between 2012 and 2020, the Community Association of Piquiá Residents, the Justiça nos Trilhos (Justice on the Rails) network of Açailândia, and the Usina technical advisory of São Paulo carried out the work of self-managed habitat production alongside the community affected by the mining industry. The neighborhood for resettlement came to be called Piquiá da Conquista.

In the context of Production Studies proposed by TF/TK, the report on the resettlement process will be treated as a "reflection site." I will present the case in three moments: *context*, *project*, and *construction site*, based on my own memories as the architect from Usina responsible for the design project and the construction. Recognizing gaps and the need to resort to documentary sources, I revisited the *minute books*, material that Usina uses as a record of its advisory activities[1]. We reported team meetings (including the recording date, participants, agenda, referrals, pending issues, and impressions), meetings with various agents (partners like associations and movements, or public authorities like technicians and politicians, and private agents like landowners, construction companies, etc.), as well as assemblies and activities with families (covering both planning and execution), besides contacts, emails, business cards, flyers, drawings, and sketches. The minute book served as a space for ongoing consultation and evaluation, where we exchanged messages within the team, as well as shared thoughts and feelings.

During the rereading of the minute books, I was filled with joy as I remembered the start of the process, with daily victories and learnings, and a genuine pride in being part of the project. At the same time, it evoked an uncomfortable feeling of powerlessness, the result of many situations that seemed meaningless to us, with a physical memory of growing anguish in the face of the political dismantling of the experience, especially during the construction work. In the numerous letters that make up this part of the story, there are countless moments of courage and hope within the group. The Usina team that worked directly on the resettlement changed over the course of almost a decade of advisory services, and the first conversations were initiated by Pedro Arantes, Beatriz Tone, Frieda Nossack, and Wagner Germano, who was also part of the collaborative project team alongside Ana Carmona, Cecilia Lenzi, Kaya Lazarini, and Sandro Barbosa. In addition to the project team, Isadora Guerreiro, Gabriel Delduque, Israel Pacheco, Adriana Martins, Leonardo Nakaoka, and Danilo Eric took participated in the pre- construction

stage. On the worksite, besides Wagner and Kaya, the team also included Flávio Higuchi, João Marcos Lopes, Isac Marcelino, Alessandra Iturrieta, Noemi Rodrigues, Lucia Lotufo, Tiago Bento, Carolina Guedes, Marcos Bros, Giovana Martino, and Fernanda Neves.

This short book aims to reflect on this story from the perspective of a technical advisory that, since the late 1980s, has been working with social movements linked to the right to land and housing. I hope to do justice to the participation and dedication of each person who has paved and continues to pave this path.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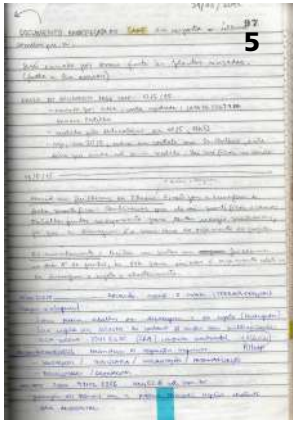
Figs. 2–9: Reproductions of a few pages of the Piquiá minute books. Source: Usina. 9Reproductions of a few pages of the Piquiá minute books.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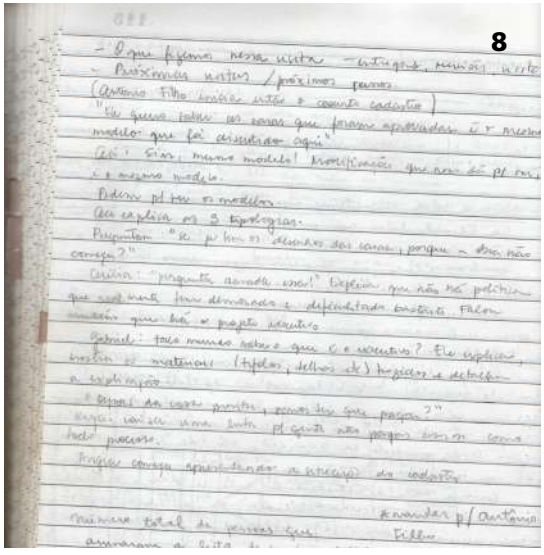
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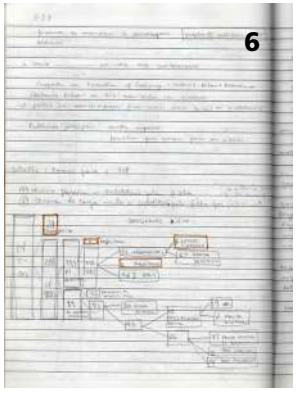
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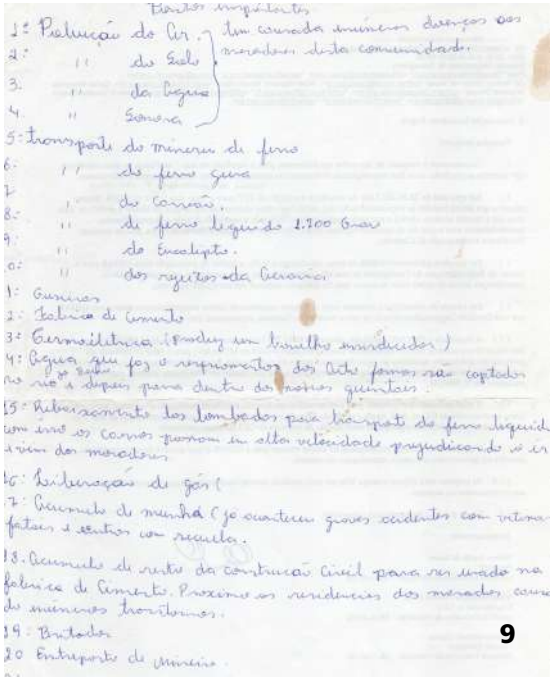
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the community

> The Carajás Railway stretches in front of our houses; in the surrounding area, there are pig iron industries, and next to them is Vale's ore depot. It is disheartening to live in a place where virtually the entire population faces the probability of developing lung and throat diseases, as well as respiratory problems.[2]

The name Piquiá de Baixo alludes to two elements. Piquiá is a large native tree known as "piqui tree," abundant in the region. It identifies the Piquiá River and another neighborhood, known as Piquiá de Cima (Upper Piquiá). The second element is the location of the settlement, on a valley floor, that is, "down below." Land, territory and location constitute the community's identity. The site had been occupied in the 1960s as it offered waterways (Formiga Creek, Açailândia River and Piquiá River) and fertile lands where small plantations and fruit trees could be cultivated, as well as spaces for carrying out reproductive activities such as washing clothes and fetching water to supply homes.

Figs.10–12:
Piquiá de Baixo and the industrial plants in the background; an aerial view of Piquiá cut through by the BR-222 highway, with the EFC Railway on the left; a Piquiá resident with iron dust on her hands.

Figs.13, 14: A map of Piquiá de Baixo drawn by residents during an activity with Justiça nos Trilhos (JnT), 2012; BR-222, 2018.

> I came to the region with my father and brothers, traveling on the back of a truck from Bahia, and we arrived in Açailândia in 1962. We later moved to Piquiá in 1964, and the forest was all around. The hunters were along the Açailândia River and discovered this Piquiá River, then they told people who wanted to own land that it belonged to no one. We came from Açailândia by opening a trail. My father took a piece of land there, and we kept working. In 1964, Mendes Júnior [a heavy construction company] arrived and was going to build this highway here, from Açailândia to Santa Inês [BR-222], and they camped for three years on our land. At that time, I was 17 years old.[3]

Consisting of informal workers, small rural producers, domestic workers, and retirees, the residents of Piquiá de Baixo belong to poor families who live off what they plant and the jobs they get in the city. Based along the BR-222 highway, they maintain permanent ties with Açailândia's urban center, using health, social assistance or education services while also working, selling a portion of their crops, or providing services in the local commerce. BR-222 – built by the large Mendes Júnior contractor, the main responsible for the construction of the Transamazonian Highway – connects Piquiá de Baixo to the city, and the distance from the urban center ensures the preservation of a rural way of life in the community.

> We led a quiet life here. Neighbors would sit in front of their houses every afternoon to share stories under a tree, and everyone was happy because we bathed in the river, fished there, and lived off agriculture. We could plant anywhere, and we lived well because there was enough food. Not today; everyone is being harmed.[4]

Today, Piquiá de Baixo's landscape is mostly comprised of houses self-built with reused materials such as wooden boards or low-cost scraps purchased from junkyards. Most of the streets are dirt, there are no sidewalks, curbs, or gutters. There is no water, sewage or drainage infrastructure. The precariousness of Piquiá contrasts with the Carajás Railway, a major infrastructure construction from the end of the last dictatorial period in Brazil, which runs a few meters away from the community on a tall, recently expanded viaduct.

> I remember the time when they came to do the deforestation, in July 1975, for the train line (the works began in 1982). I knew that progress would come, but I didn't know they were so irresponsible as to provide no protection or guidance for us. When [the companies] came to buy the land here, they only talked about the benefits, saying that work and development would come.[5]

The houses do not follow a planned spatial arrangement or conform to defined lots; instead, they constitute neighborhood centers, typically linked to residents' familial networks. The houses were positioned in an arrangement centered around the football field, which raises a lot of criticism from residents. As we enter the neighborhood, we observe children bathing and women washing kitchen utensils in the weir, in waters that are now polluted.

Fig. 15: Piquiá de Baixo and the Carajás Railway in the background, 2018.

Figs. 16–19: Piquiá de Baixo, 2018.

Fig. 20: Young people swimming in Formiga Creek, in Piquiá de Baixo, 2015.


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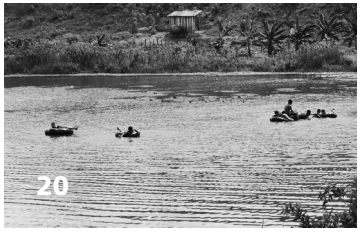
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> At the time, the river was really nice. There was lots of fish, lots of açaí berries, and clean water, but when the companies arrived, the açaí trees started dying and disappearing; they threw all the junk into the river, and the fish started dying and disappearing. Once these companies arrived and began working, no one would swim in the river anymore because you'd come out of it itching.[6]

With the implementation of industrial plants in the area, the companies and residents share the same neighborhood, albeit with a changed meaning. Piquiá no longer signifies a tree but rather and industrial-chemical hub.

> When they arrived, they said they were going to give jobs to people, and we even got excited, only we didn't know how that would happen. But they didn't hire anyone. They hired some for cleaning tasks and others to keep watch... but for other jobs they said no, they said people from Maranhão didn't know how to deal with a steel company, only people from Minas, São Paulo, Rio, and so on. Then people were left jobless and had to put up with their mess.[7]

Now it is not possible to breathe clean air or grow food, for the wind spreads fine mineral particles everywhere, contaminating the lungs, land, and crops. Fishing and bathing in the ponds were also affected by the contamination of water, which is used to cool down the furnaces and then released back into the environment dirty and at high temperature, polluting and killing the fish. Accidents on BR-222 have increased due to the intense flow of trucks and heavy vehicles, and there are frequent road accidents on the Carajás Railway – facts that are usually hidden by the mining company. In the backyards of houses, the tailings of pig iron production – known as *munha*, which is the slag from blast furnaces – are heaped, still glowing. This not only leads to numerous burn injuries but has also resulted in the death of a child.

> We think the house is clean, but as soon as you set foot on the floor and run your fingers on things, it all turns black. You finish cleaning and immediately everything gets dirty. You need to cover everything because otherwise dust falls on hair, food, and clothes.[8]

Figs. 21–23: A Piquiá de Baixo resident shows her hands dirty with iron dust; the location where the stream water is captured; a sign with the warning "Danger, stay away, risk of burn injury" and the munha in the background. Photos taken during the shooting of Aconteceu d'eu Sonhá, a film by Felipe Duran and Gabriela Nunes (2015).

the mining

The arrival of industrial plants was accompanied by expectations of development and progress for the municipality as well as work and income for the population. Over time, however, the reality has shown that the companies' production logic did not prioritize work for the local population as it offered few jobs, with the most qualified positions filled by "outsiders." The local population was left with the least skilled and most arduous jobs in the blast furnaces, or as doormen, cleaners, etc. Although the discourse was centered on development, the legacy was one of pollution and a predatory understanding of the meaning of land and water: as resources to be used and discarded.

Implemented during the military dictatorship, in the heart of the eastern Amazon, the Grande Carajás program promised to boost regional development and improve the quality of life for the local population[9]. The project occupies 895 thousand km2, about 10% of the national territory, in a region cut through by the Xingu, Tocantins and Araguaia rivers, encompassing land in the states of Pará (PA) and Maranhão (MA). It houses the gigantic reserve of iron, gold, tin, bauxite, manganese, nickel, copper, and rare ores of Carajás/PA, the Carajás Railway, and the Itaqui/MA port complex, besides the Tucuruí hydroelectric plant and an extensive highway system. The development of this gigantic private economic enclave translates locally into territories that are polluted, expropriated, plundered, divided, and exhausted to their limit.

Extracted from Carajás, the ores are transported via the railway for export at the Ponta da Madeira Maritime Terminal, located in the Itaqui Port Complex, in São Luís, the capital of Maranhão. As the ore reaches Ponta da Madeira, remotely controlled forklifts carry it from the yard to the ships.

The Carajás Railway (EFC) is 892 km long, and almost its entire length has been either upgraded or expanded with additional, parallel tracks. Operated by the mining company Vale S.A., it simultaneously runs 35 trains, each with a length of about 3 km and 330 wagons. With the capacity to move 310 million tons of ore per year (as of 2022), its primary destinations are China and the United States[10]. The railway crosses 27 municipalities and 28 Conservation Units between the states of Pará and Maranhão, impacting more than 100 communities or 2 million people. This includes peasants, *quilombolas* (descendants of African-Brazilian runaway slaves), Indigenous people, and residents of urban peripheries.

Between Carajás and Porto da Madeira is Açailândia municipality, located 564 km away from São Luís, with about 110 thousand inhabitants (according to the Brazilian Institute of Geography and Statistics – IBGE in 2020)

Fig. 24: An aerial view of the Piquiá de Baixo community, crossed by BR-222, with the surrounding industrial plants, 2023.

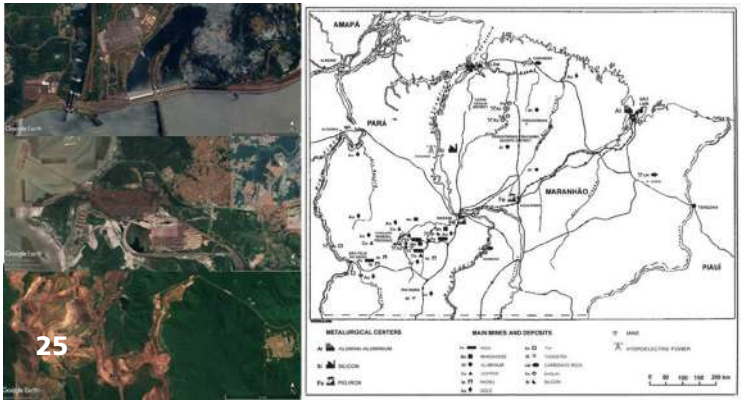


Fig. 25: A cartographic montage featuring infrastructures of the Grande Carajás project.

and the fourth GDP of the state of Maranhão, only surpassed by the capital, Imperatriz (the second most populous municipality), and Balsas (due to its agribusiness). All the ore extracted from Carajás is transported through the city, where EFC connects with the North-South Railway (FNS), a 2.2-thousand-kilometer federal railway that runs from Açailândia to Estrela d'Oeste, in the interior of São Paulo state, in the southeast of Brazil. In addition to the railway network, the infrastructure also comprises two major federal highways: Belém-Brasília (BR-010), whose construction gave rise to the settlement of that territory; and the BR-222, which connects Fortaleza, the capital of Ceará, to Marabá, in Pará.

The municipality's strategic position as a junction of railway and highway networks for transportation, coupled with the abundant presence of streams and waterways, shaped the Açailândia steel hub. In 1984, the first steel industrial plant was established in the region. Named Viena Siderúrgica S.A., it belongs to the Valladares group and currently has five blast furnaces. In 1989, Gusa Nordeste, a company belonging to the Ferroeste group, was installed with three blast furnaces. Simasa (Siderúrgica Maranhão S. A., currently known as Guarany Siderurgia e Mineração S. A.) arrived in 1993, and in 1995 it was

Fig. 26: An aerial photo showing infrastructures that cross Açailândia.

Fig. 27: An aerial photo of the steel industrial complexes, cement plant, steel mill, railway, and community.

the turn of Fergumar (Ferro Gusa do Maranhão), each with two blast furnaces. In 1997, the establishment of Companhia Vale do Pindaré (a subsidiary of the Queiroz Galvão Group, alongside Simasa), with three blast furnaces, completed the array of steel mills comprising Açailândia's industrial hub. In total, five industrial complexes operate fifteen blast furnaces to convert the iron ore into pig iron ingots[11] for export.

The extractive model is part of the process of accumulation by dispossession[12], characteristic of the period of finance capital domination, which creates new fronts for the expansion of capital by expropriating populations from their territories. Also characteristic of this process is the "commodities consensus",[13] which reaffirms the vocation of countries of the global south as exporters of agrominerals – products regulated by the international commodity market. At the same time, the modern colonialist reality has created a permanent state of exception in this area, where human rights are violated with no repercussions. The consolidation of this model changed the way of life for the Piquiá population.

Faced with a situation of permanent violations, the community of Piquiá de Baixo had three options: they could fight to remove the companies from the area; seek to ensure a feasible coexistence by demanding a reduction in pollution; or even fight for a collective resettlement in a location far from the pollution. The third option was considered the most viable.

collective mobilization

The Community Association of Piquiá Residents was created in 1989 as a form of autonomous organization of the families in Piquiá, and its provisional headquarters were established in the home of Mr. Edvard Dantas Cardeal, one of the founders and president for many years.

It was in 2008 that the community made the decision to look for a new place to live with dignity. At a general meeting, the majority of residents stated that the only way to survive would be to relocate collectively, away from the steel mills and the pollution resulting from their activities. That same year, Edvard wrote a letter to the then-president Lula, in which he explained the situation that families were facing in Piquiá and asked for help. In response, the presidential advisory team recommended that they contact the Carmen Bascaran Center for the Defense of Human Rights, in Açailândia.

When community representatives contacted the Center for the Defense of Human Rights, they met the Comboni priests[14] and members of the Justiça nos Trilhos association, which played a crucial role in building the resettlement.

Figs. 28, 29: Edvard's house, the provisional headquarters of the residents' association (ACMP); and a meeting at a church in Piquiá de Baixo, 2012.

Justiça nos Trilhos (Justice on the Rails) was founded in 2007 by the Comboni Missionaries of the Northeast, initially as a campaign for the articulation of communities affected by the Carajás Railway. Then, it evolved into an organization providing legal advice, communication support, and accessible education for these communities.

With their decision to resettle, a series of mobilizations, initiatives, and negotiations ensued. One of these manifestations took place on December 7, 2011, when approximately two thousand Piquiá residents, supported by the Landless Rural Workers' Movement (the local arm of the Landless' Movement – MST), blocked the BR-222 highway and presented authorities with a document outlining their claims. Days later, on December 13, they held a new event with the presence of the state governor, Roseana Sarney, who was briefly in the municipality. At the time, the governor made the promise that she would "resolve the issue this year, and we will begin the construction of houses next year."

> – After years of struggle, our new land and our future are in the hands of three judges from São Luís. A trial is about to take place and will decide whether the land goes to 50 cows, whose owners have plenty of other lands, or if it goes to us, a group with more than 1,100 people with no other option.
>
> – For 7 years, our 21 compensation claims have been awaiting judgment from the Judiciary! Why must the poor always wait so long?

> – The state government made many promises, sent state secretaries and even the vice-governor to visit us... But to this day, they have not formally committed to disbursing even 1 *real* for our homes!
>
> – The municipality has (finally!) expropriated a plot for us, only because it was forced to do so. But when it comes to defending its own initiatives in court, it remains silent and even obstructs the process. Whose side is the municipality on?
>
> – Reports and international studies denounce the serious health situation in Piquiá de Baixo. But the municipality shut down the health center in our neighborhood more than a year ago and provides us with water only a few hours a day. Recently, a woman died from lung cancer, and no one cares about our health!
>
> – Steel mills continue to pollute our air, water, and soil. The noise won't let us sleep. Our claims are blocked by bureaucracy and the lack of resources. But neither the Public Prosecutor's Office nor the environmental agencies have ever ordered the interdiction of a furnace out of respect for our lives!
>
> – The Vale mining company witnesses all this and deems itself in the clear. But it was Vale that brought these steel mills here and supplies them iron and distributes their production. If it had any real interest in finding a solution for this issue, the company would have already demanded it from the steel producers. But no: it wants to double down and build a new Carajás cutting through this area. And we can't even bear the first one!

In the midst of flagrant human rights violations, and among numerous manifestations by the community and its supporters, the Vale S. A. mining company offered a project for resettling the families. However, once the population realized it would not have the right to choose a location, nor the characteristics of the neighborhood and houses, it decided to fight for its own project, with autonomous technical advice. Between 2010 and 2012, Justiça nos Trilhos contacted Usina with an invitation to participate in the bidding process for work in Piquiá, alongside other Brazilian consultancies. After analyzing the proposals presented and the characteristics of the advisory services, the State Prosecutor's Office approved the selection of the proposal with the lowest budget, in this case, Usina's.

Figs. 30, 31: The pollution in the Piquiá neighborhood and a manifestation for the resettlement of the community on BR-222.

the work of usina

USINA (Centro de Trabalhos para o Ambiente Habitado/Center for Works on the Inhabited Environment – Usina-CTAH), founded in June 1990 in São Paulo, is a non-profit association that provides technical advice to popular movements and social organizations in the self-managed production of space. In the context of redemocratization and the resurgence of social movements and the creation of the Workers' Party (PT), Usina and other technical advisories received a boost from the housing policy established by the city of São Paulo's mayor, Luiza Erundina (PT), between 1989 and 1992. The FUNAPS community program fostered the adoption of collective efforts, based on the experience of FUCVAM (Federación Uruguaia de Cooperativas de Vivienda por Ayuda Mútua – Uruguayan Federation of Housing Cooperatives for Mutual Aid), which is responsible for much of the habitat production in Uruguay since the end of the 1960s, following the principles of self-management, mutual aid, and collective ownership. Alongside the Uruguayan cooperative model at that historical moment, important foundations were laid through the emancipatory pedagogy of educator Paulo Freire, the experiences of Housing Laboratories linked to universities, and the Liberation theology with its Base Ecclesial Communities.

Usina collaborated in the design projects and construction of more than five thousand housing units, mostly in the metropolitan area of São Paulo, especially in the 1990s, its first decade of existence. Examples of this first phase include collective efforts at the former Fazenda da Juta in the East Zone of São Paulo, in collaboration with MST Leste 1[15] (namely União da Juta, Juta

Figs. 32–34: Copromo, 2022; União da Juta, 1998; and Juta Nova Esperança, 2001.

Figs. 35–37: Paulo Freire Collective Effort, 2005 and 2010; urban commune Dom Hélder Câmara, 2012.

Figs. 38–40: The Cinco de Dezembro Collective Effort in Suzano, São Paulo, 2015; and construction work conducted by the Carolina Maria de Jesus Collective Effort, São Paulo, 2023.

Nova Esperança, and 26 de Julho), as well as initiatives organized in São Paulo by Talara and Casa Branca, and the Copromo condo in Osasco.

Between the years 2000 and 2010, it was possible to carry out design projects and construction works through the initiative of two collective efforts. The Paulo Freire Collective Effort, also in collaboration with Leste 1, in Cidade Tiradentes, São Paulo; and the urban commune Dom Helder Câmara, a joint construction with MST in Jandira, in the metropolitan area of São Paulo.

Between 2010 and 2020, which was the resettlement period, the main driver of the housing policy for providing new units was the Minha Casa, Minha Vida (PMCMV) *Entidades* (social organizations) modality[16]. Since 2010, Usina has conducted numerous feasibility studies alongside social movements or residents' associations for projects linked to PMCMV, completing some collective projects and initiating two constructions, both of which were later interrupted. In 2015, the Cinco de Dezembro Collective Effort, alongside the Association of Jardim Miriam Residents, in Suzano municipality (metropolitan area of São Paulo), was halted after a year due to a lack of resources; and,

in 2018, the resettlement plans of Piquiá faced a similar fate. As this text is being written, between May and July 2023, a construction site marks a new chapter in Usina's history with a collaborative plan to be executed by the Carolina Maria de Jesus Collective Effort and MST Leste 1 in the Belém neighborhood of São Paulo, through the municipal public program Pode Entrar (You Can Enter). The project, conceived by Usina in 2016, is set to take place on a plot of land in the city center, previously disputed and occupied by a popular movement for more than three decades.

In more than 33 years of existence, Usina has approached its work in various ways but has always sought to put into practice the principles it advocated in conjunction with social organizations. In the most recent period, we have strived to implement self-management internally and aimed to establish horizontal relationships despite certain limitations and contradictions, acknowledging specialized skills without that entailing more power or privilege. We also have strived to implement radical democracy, using our general weekly meetings as a tool, where everyone has a voice and decisions are made through consensus.

who will pay for the resettlement?

As there are no public policies in Brazil designed for populations forced to resettle, our solution was to "fit" resettlement into the *Entidades* modality of the Minha Casa, Minha Vida (PMCMV) housing program. In this context, *Entidades* refers to social organizations, such as residents' associations and popular movements, which were established as program recipients. This allowed them to outline the request, prepare the project, and manage the necessary resources for the execution of construction work. I used the term "fit" because PMCMV was designed for individuals without housing, who would be required to pay monthly installments for ten years to own a home. However, this does not apply to Piquiá's residents, who should be compensated for being displaced from their territory. Since then, conversations – and disputes – have begun in order to overcome bureaucratic procedures and develop a financing package for the construction of the neighborhood.

Part of the solution was based on the judicialization of the conflict, with legal advice from Justiça nos Trilhos. Two Terms of Conduct Adjustment (TAC) were signed between the Public Defender's Office and the Union of Pig Iron Industries of Maranhão (Sifema); one stipulated that Sifema was to cover the costs of land expropriation, while the other pertained the expenses associated with collective and basic resettlement projects.

The main source of funds for the construction works would be PMCMV, which allocated R$70 thousand *reais* (US$21,875 by then) per housing unit in that region. In addition to this resource, the project received R$20 thousand *reais* per unit due to the Urban Quality Seal, created by the Vale Foundation[17]. According to state technicians, this resource (R$90 thousand *reais* per housing unit, or a total value of R$28 million *reais*) should be sufficient to build 312 houses, along with the urban infrastructure of the neighborhood – drinking water supply networks, sewage systems, paving, and landscaping, as well as a community center.

While the resettlement issue was apparently resolved by the program, some matters remained unresolved: who would be responsible for paying the monthly installments demanded by PMCMV from residents? Who would be responsible for the compensation for their homes? How could companies be held accountable for environmental disasters and compelled to change their production systems to prevent pollution?

the project's collaborative process

> The project, in architecture, involves various different levels. It is a specific solution to an immediate problem, and it is a reflection of the author's general stance, and thus of the times in which they live.[18]

In the process of acquiring knowledge through self-management, the collaborative project is one of the most inspiring steps that we have adopted at Usina in partnership with social movements and future residents. Self-management is understood as a joint construction of another form of social and political interaction, in which the advisory and the population dialogue without denying their differences but rather sharing them. As a joint practice, it depends on a context of popular organization prior to such partnership.[19]

Our starting point was the understanding that the work, with the immediate goal of building the resettlement, was formative in itself. Using the production of a resettlement as a "generative theme" – a concept of the emancipatory pedagogy formulated by educator Paulo Freire – and the shared project process as a practice of popular education, the population conceives, produces, and uses the territory. Therefore, the moments dedicated to the project, work, and occupation, which configure the whole process of self-management, are inseparable.

The project methodology for resettlement was conceived based on its external determinants, which were mainly: the urgency of the community to leave their current location due to pollution – and the physical distance from the advisory headquarters in São Paulo. We compressed the time for discussion activities with the population into two weeks, one in October and the other in November 2012, and the preparation of the preliminary architecture and urbanism project to three months.

The first activity aimed to reach an understanding of the area where the resettlement would be built and to picture what the new neighborhood would look like. We divided the group of about 300 families into four smaller groups, each with one architect, while the social worker would circulate through all the groups. With two blueprints hanging on the wall, one from the aerial photo and the other of the land contour lines and perimeter dimensions, we located what was familiar to the residents. We realized the importance of BR-222 for the organization of social, productive, and reproductive life in the community, hence our choice favoring an area away from pollution yet alongside the road. Next to the land was the New Horizon neighborhood, with simple houses, a few commercial establishments, and poor infrastructure.

Then, we distributed images printed on A4 paper, which featured various housing groupings and projects around the world showing forms of territorial organization, at times different from what was familiar. We questioned the group about how each space might work. At that point, in response to an example of *kibbutzim* in Israel, a question arose about the need for delimiting the space into private lots. One of the residents mentioned that people from Piquiá knew the area and were aware that they could be entitled to individual 400-square-meter lots. He added he wasn't familiar with the lot division in São Paulo, but, locally, "back-to-back" lots were the standard configuration. This debate revealed a dichotomy between the modern and the traditional, arising from the contradiction between the way of life of families in Piquiá and what was considered desirable as an improvement. The residents expressed a general preference for the familiar form of land relationship–private individual ownership–despite the fact that the territory was not organized into lots. That, coupled with our limited time for debate (which would involve questioning private land ownership), was enough for us to establish the neighborhood design, organized and divided into lots.

After the debate on spatial references, we returned to the blueprints on the wall and surveyed the community's needs in the new neighborhood, listing the main facilities to be built and signaling them on the blueprints with colored post-its. One of the first elements addressed by all groups was the general water reservoir, which should sit on the highest point — a small hill — enabling water

distribution by pressure, while also providing a viewing platform. Water is deemed the central element organizing life. The groups also proposed a common solution for the football field, which in Piquiá de Baixo was situated in the middle of the community. In the new neighborhood, it would be positioned in an area at the back of the plot, near the hill with the water reservoir, so as not to disturb anyone. In parallel, smaller courts in squares were proposed, allowing each family to have a safe space for children to play close to home. To ensure that streets were safe for children to play outdoors as they did in Piquiá, the women suggested planning a larger street for buses and trucks, intersected by medium-sized streets, which, in turn, would be crossed by smaller streets connecting to the houses. Thus, stemming from the need for a safe space, the concept of a "caring city"[20] started to take shape in the design of the new neighborhood.

Figs. 41–44: Debates on the plot of land with each group, complemented with an aerial photo and planialtimetric survey, 2012.

Figs. 45–46: A division by gender for discussing each area of the house, 2012.

The potential social and public facilities of the neighborhood were listed and discussed: a basic health unit, elementary school, high school, daycare center, reference center for social assistance, public market, headquarters for the Defense of Human Rights Center, sports square, and a square with a memorial to their fight. The residents proposed that the facilities be located in the vicinity of the nearby neighborhood, also serving its residents.

The next day, we began planning the housing units. Our starting point was how domestic spaces are used daily, addressing the specific needs of each area in a house. The four groups were subdivided into new groups of children, elderly residents, adult men, and women. Our goal was to highlight how each gender and age group utilized different spaces in the house, while stressing women's needs.

Being the majority in the room, women discussed among themselves the uses of each area of the house, so many began to effectively participate in the discussions and spoke for the first time in this smaller, more welcoming group. Understanding the needs of each area in the house is very different among men

and women, which became apparent when the subgroups were dispersed and their discussions merged into a collective debate. Issues such as the gendered division of household tasks, as well as spatial hierarchies for care and reproductive demands, became more relevant at this stage and were requested to be included in the project.

After collectively assessing the priorities of each space in the house, all residents regathered into a larger group and filled a house with furniture printed on a 1:10 scale. The residents organized the space with the furniture arrangement and created the different areas in the house — still lacking walls — as they considered their uses. They discussed the possibility of having the bathroom outside, a common feature in Brazilian rural tradition; however, the option for a bathroom indoors represented a step toward modernization, not to be dismissed. Given the restrictions imposed by the MCMV housing policy rules, which allowed only one bathroom per unit, it was decided to keep it indoors. The groups designed large kitchens with room for a dining table and connected to an outdoor laundry. All houses should have a porch, a traditional space for socializing between public and private areas.

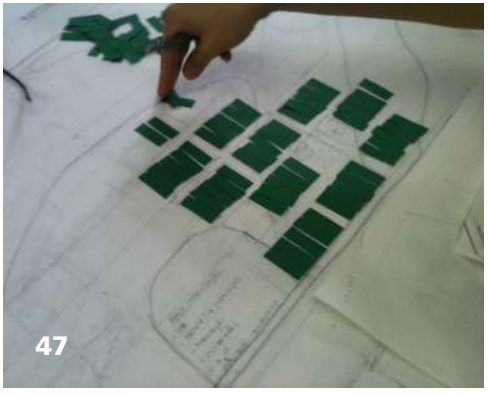
After this initial cycle, we returned to the office and worked on several studies based on the discussions. We intended to include in the next activity the systematization of these collective ideas, taking into consideration the shape of the lots, their combination into blocks, and the allotment organization, as well as house typologies characterized by modular rationalization.

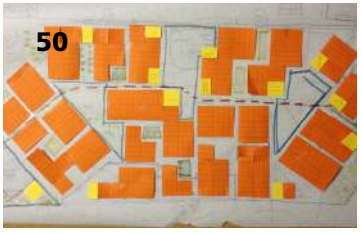
On the second trip for the collective project, we developed activities for the community to discuss the layout of the lots. These activities challenged the concept of back-to-back lots, which promotes an individualistic approach to space appropriation. Instead, a proposal was introduced that enabled backyard sharing, thus expanding the possibilities for the use of such a fundamental space for reproductive life. The proposal for sharing backyards, while maintaining the defined limits of each 4 x 28 m lot and their configuration in small 7-lot blocks, allowed families and friends to organize themselves spatially and cultivate small gardens collectively without compromising individual ownership.

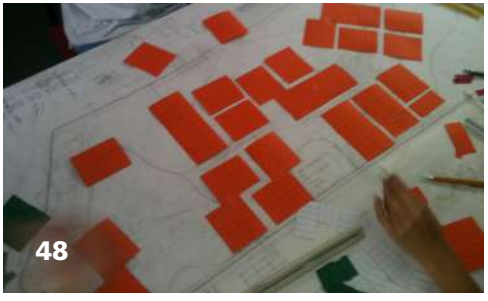
During this second trip, in addition to the lot configuration, three housing typologies were presented and discussed, based on ideas generated in the first activity. With an area of approximately 70 square meters each, the houses were designed to meet common needs: a living room with a balcony, a kitchen with a dining table connected to the laundry area, two bedrooms, and an indoor bathroom, all arranged in various configurations. Each house featured a connection between the living room and kitchen, among the living room, kitchen, and bedrooms, and among the bedrooms and bathroom.

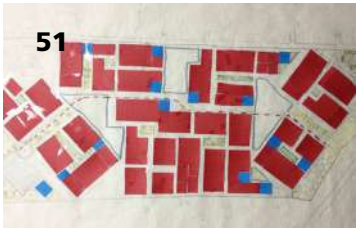
The resettlement project received an honorable mention at the Regional Competition of Alternatives for Popular Housing during the Alternative and Popular Urban Social Forum in Medellín, Colombia, in 2014:

> The AIH awards an honorable mention, [...] to "Resettlement of Piquiá de Baixo" [...], since it is a very important initiative that links the Zero Evictions Campaign to alternative popular housing and political advocacy led by residents, supported by international solidarity.









Figs. 47–51: Studies prepared by the architects of Usina after the first trip for the collaborative project, 2012.

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Figs. 52, 53: Sketches created for a collective discussion on the possibilities of sharing backyards, 2012.

between the drawing board and the worksite: how disenchantment is built

With the conclusion of the collective project at the end of 2012, we initiated the stages of approvals and negotiations to gain access to PMCMV. This stage lasted approximately six years until construction finally began at the end of 2018. The delay led the community to perceive the process as excessively long, and the prolonged timelines were attributed to the choice for self-management or to architects coming from afar who did not understand local urgencies. Although such hypotheses cannot be ruled out, the main reasons for the delay are primarily rooted in two causes: the operational structure of PMCMV, meaning the steps that *entidades* must follow to carry out construction work, and the program's logic, which favors standard projects while rejecting different proposals deemed unnecessarily complex.

To gain access to PMCMV and reach the construction stage, *entidades* invest not only time but also significant resources, energy, and organizational and mobilization capacity over several years. The process begins with the *entidade* gathering a group of families and collecting data on each member, including information about their income, profession, and family characteristics. The *entidade* then prepares a folder for each family with copies of the required documents and a completed form. Moreover, the *entidade* is responsible for hiring a technical advisory and, in collaboration with it, finding a plot of land, analyzing its feasibility, conducting tests to ensure there are no obstacles to construction, and negotiating its value or its expropriation with the owners or public authorities. Finally, the *entidade* must develop the project using its own resources for submission to PMCMV. With the project in hand, the *entidade* then submits all the paperwork for a selection process conducted by the National Housing Office under the Ministry of Cities. Following the selection process, technicians from the public bank Caixa Econômica Federal carry out the analysis phase for the execution project, memorials, and budgets in accordance with the program regulations.

In relation to the rationale of PMCMV, studies have shown that the construction industry was heavily influenced by the program, particularly in terms of productivity control[21]. This aligned with a logic of housing standardization as a commodity to be negotiated as an asset in the financial market[22]. The productivity requirement was the same for both construction companies and *entidades*: implemented with norms and economic conditions, it limited a house unit to a fixed budget with no possibility of adjustment for inflation. Even if work was delayed, the budget could not be adjusted. The project rationale must adhere to this model, creating monofunctional spaces (as only

housing and a community center were financed) with a denser layout (as building more units meant greater resources available to the entrepreneur) and in less than ideal urban locations to minimize costs, since the program is not coupled with a land policy. The projects of the *entidades*, centered around a rationale of necessity and use, were deemed too complex by the bank's analysts. Furthermore, their counter-hegemonic nature often elicited discomfort and distrust, leading to successive boycotts and embarrassments.

At the budgeting stage, the impact of urban infrastructure on the overall construction cost was higher than in a typical social housing project, as the land for resettlement was located in an area without water supply, sewage, or drainage. Therefore, the budget had to incorporate these facilities for installation in the neighborhood. In April 2017, upon budget approval, the construction cost seemed fair. However, over a year later, when construction work began, the budget showed a deficit. From then on, various actions were undertaken, including changes to the project and worksite, additional stages performed through collective efforts, and international networking to gain public sympathy and support for the completion of the construction.

In parallel, the political context in Brazil was substantially changing. In 2012, Dilma Rousseff, a member of the Workers' Party (PT), served as the president of the country, while Inês Magalhães held the position of National Housing Office secretary, both being high-ranking figures in the PT hierarchy. With Rousseff's impeachment and removal from the government in 2016, and the election of Jair Bolsonaro from the Liberal Party in 2018, there was an increase of conservatism in the country. This led to the strengthening of sectors tied to international capital, particularly agribusiness and commodities, along with ongoing financial crises. At the local level, changes in both technical and political personnel had a profound impact on the resettlement process, as key advisors were relocated to other locations. Danilo Chammas, a lawyer employed by Justiça nos Trilhos, moved to the city of Brumadinho, in Minas Gerais, after its dam broke. As for the Comboni priests and missionaries, they would engage in a mission in a given area for a period and then relocate, following the guidance of their superiors. Hence, Brother Antonio, Father Dario, Father Massimo, among others, who played crucial roles, eventually had to leave.

Although the difficulties escalated, the perspective of beginning work soon was comforting in spite of certain contradictions that emerged along the way. Unable to solve them, we figured that the dynamics on the construction site would help build a sense of work and self-management. In parallel with the meetings and negotiations for project approval, we

conducted numerous training activities to prepare for the construction work and to keep the group mobilized. There were various trainings, covering topics such as self-management, practical differences in construction carried out by companies versus an organized population, project experiences from around the world, financing arrangements, ways of organizing construction work, roles of each agent, and physical and financial flow of each measurement.

In one of these training sessions, held in October 2016, we initiated a debate on leadership and coordination by discussing the roles of each agent in the construction work. This followed the "island dynamics" exercise, where groups of 10 to 15 people were divided into smaller groups; by answering questions such as "what to do when facing rain and hunger?" or "how to organize work and priorities?" participants imagined that they were lost on a desert island and needed to survive. Usina had initially proposed several activities, each written on a piece of paper, and the group collectively came up with other possible activities. Then, we listed the agents involved in the construction work and pasted their names on the wall as follows: ACMP Board, Community (families in assembly), Comboni Missionaries, Justiça nos Trilhos, Usina, Socio-Legal Team, Defense of Human Rights Center, Caixa Econômica Federal, Landless Rural Workers' Movement (MST), Public Ministry, and others. Once all the agents' names were pasted on the wall, each participant would stand up, choose an activity, and read its description aloud. We would then discuss who should be responsible for it. Once that was decided, the person pasted the paper in the column corresponding to the agent in charge of that activity. Some tasks generated a lot of debate, especially those related to the role that the ACMP board should play. It was unclear whether the board of directors of the Association would only monitor the construction, make decisions concerning it, organize and prepare activities, or actively participate in them. The vagueness regarding responsibilities revealed how unclear the training hierarchies were and how difficult it was to build trust, especially in the case of an "outsider" advisory. How could Usina, hired by ACMP, coordinate the tasks at each construction step? After activities were placed in the agent columns, the training wrapped up with a lengthy debate on work, self-management, and the distinction between hierarchy and complementary knowledge. This discussion emphasized what Paulo Freire referred to as "dialogical construction," leading to the conclusion that work should be adapted to the reality of Piquiá. Therefore, it would be essential for the group to be politically strong.

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Figs. 54–59: The presentation of the project at the Municipal Hall of Açailândia (2013); another project presentation at Caixa Econômica Federal in São Luís, Maranhão (2014); a meeting at the Comboni priests' home in Piquiá de Cima, Açailândia; a group training activity on dependence and autonomy; a separate training session focused on agents; and another dedicated to the construction work.

the construction site

> Architecture forms part of a larger whole — that of the entire scope of construction. In turn, construction forms part of an even larger whole, which is that of the political economy. We believe that it is only by analysing construction within its broader context of the political economy, and subsequently analysing architecture as a part of construction, that we can fully grasp the true nature of our profession: designing, drafting.[23]

Construction began in November 2018, and the work was self-managed until October 2020. ACMP signed the contract with Caixa to receive funds from PMCMV, then hired the technical advisory, workers for project management (buyer, financial, and storekeeper), and workers for the construction site (foreman, safety technician, and assistants). Certain community members, who had the right to resettlement and were elected in assembly, would be in charge of making purchases and contracting services, as well as handling financial demands and storekeeping. The Usina advisory would be present as the technical organization responsible for guiding the works, while the foreman, Ataíde Lima Sobrinho, would come from São Paulo, referred by Usina, due to his extensive experience with both the construction technology of structural ceramic blocks and self-managed work. ACMP also formed the commissions designated by Caixa, CAO and CRE, which were, respectively: the Work Monitoring Committee, responsible for overseeing measurements with Usina and Caixa; and the Committee of Representatives of the Enterprise, responsible for monitoring and providing financial supervision of the construction, in addition to being present at coordination meetings for the project. A member of the Comboni Missionaries/Justiça nos Trilhos would supervise the management team. The role played by the construction site in the self-management process consisted of placing work and its relations at the center of the planning for building the houses and the neighborhood. Dealing with the PMCMV *Entidades* mode posed a significant challenge, not only for constructing the resettlement but also for cultivating more dialogical production relations and, consequently, testing alternative social dynamics.

> These are the conditions of the means of production that the architect manipulates, determined and superdetermined by the fundamental contradictions of contemporary political economy. In the face of the relentless demands of capital, the role of architecture — this superstructural, manifestly fragile component — is determined objectively.[24]

The first major determinant external to the Piquiá construction site was the socio-political context in Brazil at the time. With the victory of a right wing candidate in the 2018 presidential elections, we experienced an escalation of individualistic logic and violent practices. The *motivation behind entrepreneurship* was decisive in Piquiá, and the violence to which the population was subjected daily was also replicated on the worksite.

This circumstance dictated by the external socio-political context led to another and overlapped it (or was overlapped by it). Although we sought to practice self-management, the operation of the construction site was also externally determined by the logic of capital. Although the goal of self-management is to handle resources, traditional companies are also hired in the process (they could have been cooperatives in our case, but none was available in the region). These companies, in turn, employ workers under exploitative regimes, subjecting them to conditions akin to conventional employment. Hence, there is no free labor. There may be more dialogue, but the traditional construction site relationships are replicated within the self-managed process.

> We tried to modify our design, to modify our relationship with the building site, etc. Nevertheless, as long as labour-power was up for sale, there seemed to be no viable alternative relation between design and building site.[25]

Finally, another important determinant impacting Piquiá's worksite was the program Minha Casa, Minha Vida itself. As a national program, its regulations were generalized, thus often inadequate to regional specificities. Among its rules, it is worth stressing the imposition of a working schedule of up to 24 months. ACMP would receive an installment in advance, and at each percentual stage of work completed — the equivalent of 4% of the physical-financial execution — a Caixa technician would carry out measurements in order to approve the next installment. Materials for construction were industrialized, with no room for exceptions to use technologies considered alternative, even though Usina had already implemented them in other government-sponsored social housing projects. An example of these restrictions was the mandatory application of external cladding to housing units. The rule prevailed even as practice showed that, when using the structural ceramic block, a material with high thermal inertia and excellent finish, the coating — consisting of roughcast, undercoat, finishing coat, and painting — such external cladding was unnecessary and could be replaced with a simple application of water-repellent varnish, maintaining the bricks visible, an effect much appreciated by the families.

In parallel with the structural determinations for the construction site, other external forces, albeit local or within the community, were also decisive. We mention two factors that we deem central for understanding the construction site: the resistance to the work performed by the construction management team, and the manner in which the process was conducted through ACMP.

In the following subchapters, the italicized excerpts provide an account of each stage in the production processes of the Piquiá resettlement construction site, based on my personal memories and notes.

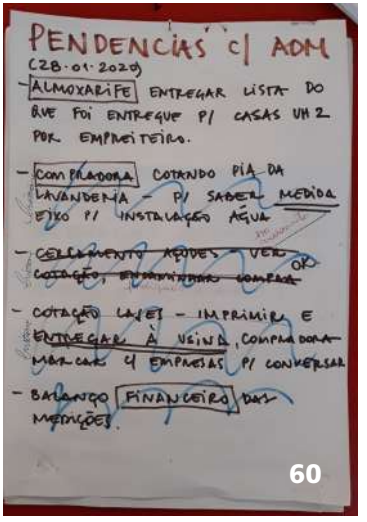
everyday tensions in self-management

We would arrive just before 7 a.m. Sometimes the coordinator was already there, sometimes we opened the construction shed. We would leave our backpacks in the consulting room, read the log from the previous day, and then grab a helmet, tape measure, and portable radio. First, we walked around the shed to greet the women from the kitchen and the workers who were drinking coffee. Next, we would leave to the worksite, across which we walked long distances on soft sand and under the bright sun, discussing the priorities of that day. Then we would split up. One of us stayed on the site and started the inspection work, while the other headed to the office. We had daily support from the São Paulo team to take care of the construction notebooks with the drawings that went to the worksite; these were not limited to the schematization of what was visible, quite the contrary. Soon after, the buyer and the financier arrived, already accustomed to delays. When we asked the storekeeper to keep track of the materials and calculate what was in stock and what would need to be purchased according to the plans for the working day, we hardly received conclusive information. In the administration office, we guided the buyer with the shopping lists in hand, detailing each item or material, its specifications, the deadline for it to arrive to the site. We showed her the available funds in the budget for that order and emphasized the necessity for extensive research and negotiation with suppliers. We also assisted the financier in filling out the daily spreadsheets of financial flow control. Between providing guidance to the management team and overseeing the construction site, we usually concluded the working day after 5 p.m., when all the workers had already returned to their homes. Unfinished tasks piled up daily, and their volume increased with the complexity of work. The labor required to complete 4% of the construction monthly was greater than the capacity demonstrated by the group on a daily basis.

According to the advisory's guidance, the construction management team was to receive the shopping lists, prepare budgets, make purchases, receive materials, organize them in the storage facility, control their flow, make payments, issue invoices, perform monthly accounts, among other tasks. The construction site team, on the other hand, consisted of the foreman, a laborer, and the occupational safety technician, all hired directly by ACMP; the team also included workers hired by the construction companies, which, in turn, were hired by ACMP. Following the approved project, workers carried out the required tasks for the construction of the resettlement. Some of them, mainly those in the positions of laborer or helper, were community residents. Usina performed part of the work in the office (with the management team, guiding and supervising their work) and part of it on the construction site (guiding and supervising the works). Its role as a technical manager was to ensure that projects, budgets, and deadlines were met.

One of the first activities for starting the construction work involved the search for, selection, and training of community residents for the contract positions of buyer, financier, and storekeeper. Then the first problem arose: the brother of one lady in the ACMP board of directors applied for the storekeeper position, while she, herself, applied for the financier position. Usina explained that this could cause issues in the future, as people from the same family tended to protect each other, but not everyone in ACMP agreed.

As time passed, the team became increasingly complacent: the buyer undertook fewer budgets and negotiations, purchasing instead directly from suppliers she already knew; the financier did not complete the spreadsheets nor present the balance sheets, impairing our ability to plan work; and the storekeeper did not monitor the storage facility, control the loaning and return of equipment, or flow of materials, and constantly ordered items that had already run out of stock, causing delays in the work. The coordinator would often arrive before the team and stay until after everyone had left, doing others' work on their behalf. The three management employees frequently expressed frustration when Usina pointed out tasks that they hadn't performed. Conversely, Usina was also frustrated, unable to comprehend their lack of interest in building a resettlement where they themselves would eventually reside. It was necessary to manage approximately $1.2 million *reais* monthly, preparing budgets, purchases, and contracts in order to execute the 4% portion of construction determined by the program. Difficulties inherent to the process of managing a project of this magnitude were compounded by difficulties of cultural, regional, or local nature, including differences in administrative approach and in the understanding of the meaning of the work.


PENDENCIAS c/ ADM
(28.01.2020)
- ALMOXARIFE ENTREGAR LISTA DO QUE FOI ENTREGUE P/ CASAS UH 2 POR EMPREITEIRO.
- COMPRADORA COTANDO PIA DA LAVANDERIA - P/ SABER MEDIDA EIXO P/ INSTALAÇÃO ÁGUA
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- COTAÇÃO LAJES - IMPRIMIR E ENTREGAR À VEINA, COMPRADORA MARCAR 4 EMPRESAS P/ CONVERSAR
- BALANÇO FINANCEIRO DAS MEDIÇÕES
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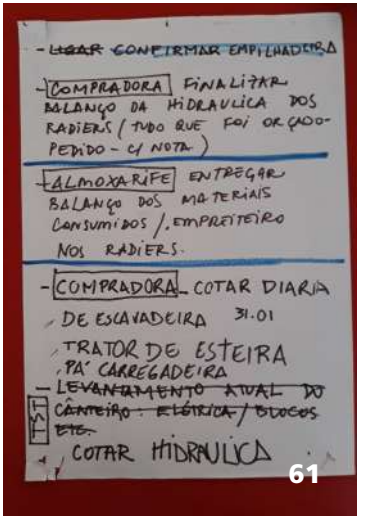
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- ALMOXARIFE ENTREGAR BALANÇO DOS MATERIAIS CONSUMIDOS /. EMPREITEIRO NOS RADIERS.
- COMPRADORA COTAR DIARIA
DE ESCAVADEIRA 31.01
TRATOR DE ESTEIRA
PÁ CARREGADEIRA
- LEVANTAMENTO ATUAL DO CANTEIRO - ELÉTRICA / BLOCOS ETC.
TSI
COTAR HIDRAULICA
61


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Figs. 60–74: Notes for the management team with pending tasks; a sketch of the slabs; coordination meetings; an architect receiving suppliers at the construction office; training on the site; the work of the advisory with the management team; a training session on the structural block with community members; a sketch for the execution and finishing of masonry; an online project meeting; the celebration of the last measurement, with the advisory staff, management team, and board; a training activity during the pandemic, 2020.

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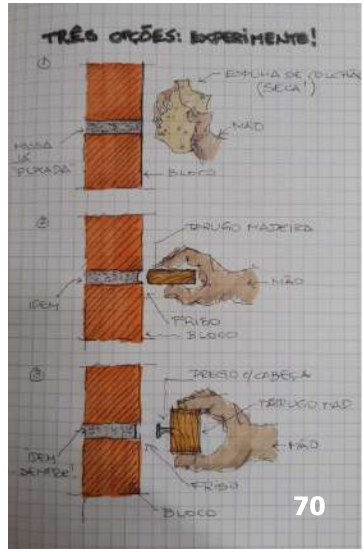
TRÊS OPÇÕES: EXPERIMENTE!
BLOCO
MÃO
IDEM
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BLOCO
TARUGO MADEIRA
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PREGO C/ CABEÇA
MÃO
FRISO
BLOCO

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A CAIXA TEM
2 BURACOS
MAS OS DUTOS
NÃO PRECISAM
FICAR "DE PÉ"!
E A
CAIXINHA
É PONTUAL!
7,5cm
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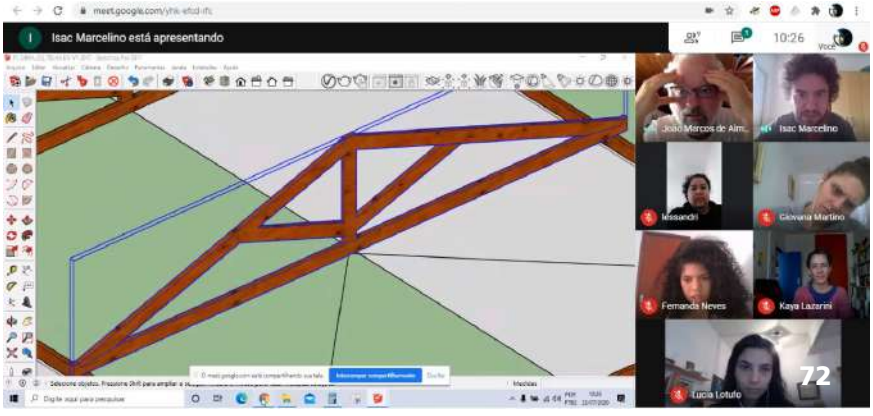
Isac Marcelino está apresentando
10:26
João Marcos de Alm...
Isac Marcelino
Iessandri
Giovana Martino
Fernanda Neves
Kaya Lazarini
Lucia Lotufo
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earthworks

In the first days, two or three tractors cleared the land, removing trees and shrubs, as well as a layer of about 20 cm of topsoil, a material that would be discarded on the plot of land itself, in an area behind the hill opposite the highway. After clearing the land, the surveyor and his assistants marked the points indicated on the land blueprints, positioning posts with indications of the desired heights for the plateaus. Loaders, patrols, tractors, and bobcats took turns performing cuts and fills, shaping the terrain according to the project. Bucket trucks circulated amid the earthwork activity, taking the excess material to the designated dumping area. When opening the streets, a sheep foot roller compacted the soil, which later received a layer of iron ore slag — a byproduct of pig iron foundries, which replaced crushed stone and was used for temporary paving in Açailândia. The neighborhood was beginning to take shape. When it rained, the job was interrupted. And when it rained heavily, days passed before people could return to work, as everything got soaked.

The earthworks were the group's first experience in construction work self-management, since it involved a contract with an outside company and a large amount of resources. Budgets and interviews were conducted with several companies in the municipality and the region, involving not only management and advisory personnel but also Association members. After lengthy evaluations, it was decided to hire a local company. Even though the first activity took place in a dialogical manner and the exercise of self-management was carried out as planned, a second issue was noticed, little discussed, and not resolved: information restricted to the coordination staff, such as the sums available in the budget, was shared with the owner of the earthwork company. The latter, detecting the weaknesses of ACMP and those managing the construction, carried out the work with minimal machinery, taking twice as long as the established time and charging a 20% surcharge over the contracted sum due to his own surveyor's mismarking. In one of these miscalculations, the size of a street exceeded what was intended in the project layout – generating a large volume of dirt, which the company owner charged as additional earthwork. ACMP questioned whether the responsibility for such errors should fall on the company executing the work or on Usina, which supervised the construction. This was the first instance of breach of trust within the construction coordination team.

Another significant conflict occurred with the families of the nearby neighborhood. With the removal of the vegetation layer from that 38-hectare area, a huge amount of sand was washed away by rain into the neighborhood, situated on a lower level. The neighbors then took initiatives to damage the construction, while we tried to dialogue and contain the sand by building small dams. We also contacted the municipality, requesting drainage work in the surroundings.

Figs. 75–83: The clearing of the land (drone photograph); construction site sign; sheep foot roller; earthworks and land cuts; rain arriving at the site; excavation of a weir to retain sand and water during rain; surveyors and the advisory team; leveling of the terrain by a patrol; a view of the earthwork hill and heaps of slag for temporary pavement of the streets, 2019.


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the construction shed

The surveyor marks the reference points to identify the position of the shed. The backhoe and the patrol level the terrain. A container, rented from a small local supplier, is placed near the site for the temporary storage of tools and equipment. Following the foreman's guidelines, carpenters and helpers build a wooden framework, placing supports every 1.5 m into the soil mixed with gravel and a 20-centimeter board along its perimeter. They pinpoint the axes with a pencil to indicate the walls according to the drawing printed on an A4 sheet, and after the foreman checks their marking, they secure the nylon line with a nail and stretch it to mark the points on the ground. With a manual digger, they excavate holes for the pillars made of seized illegal wood, on which beams and rafters will be installed and treated with concrete to support the roof, comprised of fiber-cement tiles fastened with screws. Rafters are secured with concrete prepared in the concrete mixer. For the subfloor, workers create a wooden mold with a 10-centimeter board, mark the position of and assemble the sewage system that will be buried, spread coarse gravel, and, without reinforcement, pour the ready-mix concrete. This is followed by leveling with an aluminum straightedge. The shed enclosure is constructed using plywood sheets, which are nailed to the structural rafters. Windows and doors are also crafted with plywood, like the wooden tables and benches to be assembled next. Hydrosanitary facilities are built last.

The construction of the shed began with the donation of a truckload of illegal wood seized by ICMBio from Açailândia, resulting from the deforestation and smuggling common in the region. This donated wood, utilized for the shed structure, was crucial for constructing the temporary facility within budget. The individuals hired to build the shed were Piquiá de Baixo residents working in construction as carpenters and masons. The foreman played an important role in teaching the workers how to assemble the template, as well as how to use quality measurement tools such as the plumb bob, level, square, etc.

The shed was a large facility, serving as the administration center for the worksite and accommodating the construction office where the coordinator, buyer, and financier performed their duties. It also housed Usina's office, where drawings and daily logs were kept, as well as the infirmary equipped with first aid items, and restrooms for the team. Additionally, the shed included the storage facility, kitchen, dining area, and dressing rooms. The kitchen staff consisted of a group of women from Piquiá de Baixo, some of whom were members of the Association. They planned menus, purchased

groceries, prepared and served food, as well as being responsible for cleaning the cafeteria and kitchen. Moreover, they received and managed resources from contractors and the Association. For training, the women were assisted by an educator from MST, who carried out activities focused on cooperativism, solidarity economy, and self-management. They named their kitchen "Sabor da Conquista" (Flavor of Conquest).


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Figs. 84–95: Seized wood; the template for the construction of the shed; wooden structure; initial work on the roofing; concrete treatment of the subfloor; subfloor curing; wooden enclosure; cafeteria tables; storage facility shelves; advisory office; shed built; shed with a coat of paint, 2018-19.

water supply and well drilling

Earthwork machines clear an area on top of the hill where well drilling will take place. The drill rig arrives, along with a shipment of pebble no. 1. A mini digger excavates a large tank where the dirt and mud coming out of the drilling will be deposited. The well is prepared and the submersible pump installed. The helper and the foreman build a housing for the pump, as well as a base for the two 10-thousand liter water tanks that will function as temporary reservoirs on the worksite. The helper installs a black hose made of reinforced PVC to connect the water tanks to the shed. A mini backhoe, equipped with a 50-centimeter bucket, excavates the ditches. These will house pipes for the drinking water supply, to be installed in the main branches (down the hill and under some of the main streets) and the distribution branches in the perimeters of the blocks, which have already been modeled by the earthworks. Storage receives the shipment of PVC pipes of various sizes, along with fittings, valves, and faucets. Young residents of the community — pon completing a course promoted by the Social Work entity in partnership with SEBRAE — assemble the neighborhood's water supply system under the supervision of technicians from SAAE and Usina. The main branch starts on the hill, where the reservoir will be built, and descends along the main avenue of the complex. Secondary branches are carefully installed, pipes are sanded and glued with precision. Precast concrete inspection boxes are manufactured outside the site, then installed at the points indicated in the project for network maintenance. The taps are installed, two per block, to ensure water availability during the construction of the houses. Backfilling is carried out and compacted as each branch is completed, protecting the PVC from sunlight. The same young people who executed the construction are responsible for looking after the system when something breaks.

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Figs. 96–104: Drilling rig for well implementation; construction of the base for provisional reservoirs; hydraulic installation of provisional reservoirs; ditches for the supply network; pipeline loading by residents under the supervision of the SAAE technician; installation of the supply network by future residents 2019.

The drilling service for the artesian well was performed at the project's outset, reached a depth of more than 200 meters. According to the drilling company, it would be the largest well in Açailândia. The symbolic implication of this was a source of pride among the families. Once the well was completed, we started preparing the budgets for the implementation of the supply project; however, the costs rose two to three times higher than what we would have available. It was necessary to fully revise the project, based on updated calculations of demand and flow, which generated another project with new pipe sizes. Also confronted with the limited resource, the Social Technical Work team offered a plumbing course in partnership with SEBRAE from Açailândia, attended by young residents of Piquiá de Baixo. In order to simultaneously practice and apply their newly acquired knowledge to benefit the community with their labor, the students undertook a collective effort to implement the entire water supply system of the new neighborhood, under the supervision of Usina and a SAAE technician.

It was an important moment for strengthening ties and friendships, as well as invigorating the fight for the resettlement. As residents participated in the work, especially the young ones, they also experienced the worksite routine and understood its challenges, solidifying their confidence in the process. When we experience, observe, and analyze such moments, we must carefully reconsider the "less collective efforts, more self-management" approach, which is often advocated by social movements and technical advisors to alleviate strenuous weekend work and enhance individuals' capacity to manage processes. The complete separation between management and on-site construction work can pose a potential pitfall.

model house

The backhoe and patrol level the lot. The surveyor marks the eight points defining the perimeter of the house. Following the foreman's directions, residents of Piquiá and the general construction assistant carry out the tasks required for building the model house. They mark the location of the foundation with a bit of cement, in continuous footing. Part of the template is dismantled, and the Bobcat excavates trenches for the foundations. While the mechanized excavation is being completed, workers perform the reinforcement by cutting, bending, and assembling steel bars and their longitudinal supports. In the meantime, others prepare the wooden molds. Crushed stone is laid on the bottom of the trenches, and the wooden molds are installed. The latter must be sturdy enough to withstand the weight of the poured concrete without disassembling

or breaking. With all molds ready and reinforcement installed in the footings, additional residents are mobilized for the pouring of concrete. The truck arrives, concrete tests are collected, and then concrete is poured into the molds, vibrating each section, spreading, and leveling the surface. After a week, the footings are removed from the molds, and a new marking is applied, and the base masonry is executed with two rows of ceramic blocks. Volunteers connect the sewer pipes running through the floor, while carpenters shape the subfloor in the perimeter of the house. The foundations and base masonry are waterproofed with a mix of Bianco resin, cement, and water. After the completion of the subfloor molds and the assembly of the floor sewer, the area is backfilled and leveled. It will receive the ready-mix concrete and then become the subfloor of the house. The template is reassembled, the axes of the walls are re-marked, and the position of the first row of blocks is indicated, always starting from the corners. The foreman checks internal, external, and square measurements, and then authorizes the execution of the remaining rows. Construction begins at the corners, and the residents carefully follow the foreman's instructions. At every step, he verifies the plumb, level, mortar plasticity, and the laying procedure to ensure the house will showcase exposed blocks. Counter lintels are installed in the sixth row using U-shaped channel blocks and two 8-millimeter reinforcement bars, and then filled with concrete. Also in the sixth row, half of the grout cores are filled with concrete, incorporating a 10-millimeter reinforcement bar at the points indicated in the project. In the twelfth row, the lintel band (a band that also serves as a lintel) is prepared using the same U-shaped channel blocks. Before concreting the lintel band, the grouting is completed up to the twelfth row. The construction of the gables and eaves then begins.

When the first shipments of ceramic blocks arrived, we decided to build a model house as a prototype for one of the housing typologies. It should be located near the construction shed and the future community center, serving precisely as a model for the houses to be built next. We intended to have this first model constructed by the residents of Piquiá themselves, under the foreman's guidance, to establish an educational worksite. The foreman played a central role in instructing the residents, as none of them had prior experience working with structural ceramic blocks, and some had never erected a wall. The workers who built the construction shed, along with others who joined later, learned how the ceramic structural masonry system operates. They also learned to use quality measurement equipment such as plumb and square, as well as finishing techniques to showcase the blocks. As structural elements,

these blocks eliminate the need for pillars and beams, enabling a lighter foundation due to the distributed load. Although structural masonry includes grouting, counter lintels, and lintel bands to ensure rigidity through reinforcement and concrete, it is not as commonly used in Brazil as the concrete pillar and beam system, either in the construction industry or in self-building. Because it lacks pillars and beams, relying only on grout and girders, it also eliminates the need to build wooden molds. The construction system is more rationalized compared to the independent structure system, allowing the project to be modulated per block type and preventing breakages and losses over the course of construction. Despite similarities with the structural concrete block, the particularities of ceramic block make it a much more suitable material for housing construction. Produced from clay, it features high thermal inertia, and its manufacturing and firing processes ensure resistance, resulting in a material that can be left exposed and dispenses unnecessary finishes. The construction of masonry with ceramic blocks requires some care that sealing masonry does not: as the wall is structural, it demands attention to plumb and square. Likewise, horizontal cuts cannot be made on the walls, as they compromise stability.
After the conclusion of the experience with the model house, foreman Ataíde returned to São Paulo due to his partner's health problems.


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Figs. 105–115: Marking for the excavation of the foundation; supports for continuous footing; concreting of continuous footing; concreting of the subfloor; execution of masonry; quality assessment (plumb) under the foreman's supervision; execution of the eave; drone photo of the model house; the children in front of the model house during a tree planting activity, 2019.

foundations

From the points marked by the surveyor, workers stretch lines to define the section of the ground that needs to be leveled. Two laborers then "adjust" the level of the radier foundation using hoes. If the ground is significantly uneven, a machine may assist in the process, but it will always be completed with hoes. Once the area is satisfactorily leveled, carpenters and helpers construct a mold using 10-centimeter struts and boards (to match the height of the radier foundation). The mold follows the shape of the construction perimeter for each housing typology, with an additional 50-centimeter sidewalk. Next, the plumbers assemble the sewage system running through the floor, marking the position of the drains and siphon boxes in the areas where the bathroom, laundry, and kitchen will be installed. The conduit for the power input and the supply pipe for the water box are also installed. A laborer backfills the pipes, and other helpers spread a tarp that will help waterproof the foundation. Then, steelworkers and assistants cut and bend the 8-millimeter steel bars to assemble the reinforcement for the radier foundation — a mesh of 20 x 20 cm could be prefabricated and simply installed, but the budget didn't allow it. The reinforcement structure is put together on-site using wooden molds. Subsequently, it is suspended with spacers, known as "cocadas," which are also crafted on-site by the general helper. The concrete truck is then called to pour approximately 8 m3 of 30 MPa concrete into each radier section. Before concreting starts, specimens are molded, and the concrete slump is checked by a testing company. Meanwhile, a helper wets the entire radier foundation with a hose to improve concrete adhesion. Concreting is done using a pump, always under the foreman's supervision. Helpers utilize vibrators to consolidate the concrete, spread it with hoes, and, with skill and an aluminum straightedge, ensure the correct leveling of the floor.

The project involved the construction of continuous footing as the foundation system of the houses. As we estimated the costs for labor and materials, they added up to twice as much as was available in our budget. The soil was reanalyzed, compaction tests were performed, and the project was revised, replacing the continuous footing system with radier foundations (reinforced concrete slabs) to save on both materials and labor. We decided to hire three companies, two of which were contractors from Açailândia, while the third was from another city in Maranhão and had prior experience working with Usina on construction projects in São Paulo.

One of our conflicts was with the concrete supplier company. After a few weeks of ordering concrete from the same plant, they began sending trucks

with a smaller volume than requested. The company claimed the molds were opening and required more concrete than the project indicated. The newly hired foreman suspected the concrete was sinking into the ground, so he insisted on a greater volume. After proving that none of these explanations were correct, we contacted other suppliers, and one of them suggested setting up a concrete mixer on-site to avoid the fuel costs associated with concrete mixer trucks. Hence, sand, gravel, cement, and water were delivered to the worksite, weighed and proportioned, then tested. Following that, concrete mixer trucks were loaded to transport the concrete to each of the foundations. As the foundation work progressed, the influx of shipments of ceramic blocks increased, signaling the start of the masonry stage.

The day we began the masonry work was marked by the loss of one of those responsible for the fight for resettlement, Mr. Edvard Dantas Cardeal, the founder and president of ACMP, who passed away on January 23, 2020, due to lung problems. We closed the construction site that day, mourning the loss of yet another victim of pollution.

Figs. 116–127: Execution of radier molds; sewer piping; installation of the tarp; execution of the concrete spacers; installation of reinforcement; removal of reinforcement after rain; concreting; radier curing; concrete testing; installation of the concrete mixer on the site; generator for the concrete mixer; drone photo of the foundations and weir, 2019.


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masonry

Over the radier foundation, which currently serves as a template, the foreman and helpers mark the position of the blocks to mark the first row. They adjust potential deviations in the piping — sometimes breaking the block, the pipe, or the radier if necessary — to ensure that sewage and water are in the correct places according to the project. While some helpers prepare the mortar with cement, sand, and water in the concrete mixer, following the mix provided by the advisory team, others sweep the radier surface and wet it with a hose, getting ready to begin the installation. For the first row of blocks, the foreman and masons check internal and external dimensions, squareness, and level. (After working on the initial houses, laborers stopped calling the foreman and the advisory team to check the first row of blocks.) Once the first row is approved, workers begin constructing the masonry from the corners, focusing on the specific locations where the water and sewage pipes will be installed. With the scorching heat, the mortar dries quickly, or the block won't absorb the water well from

its composition, causing it not to adhere. It is necessary to wet the blocks by dipping them into a 200-liter drum or using a hose. In the sixth row, workers install counter lintels using U-shaped channels reinforced with two 8-millimeter steel bars and filled with grout, extending 30 cm beyond the window opening. Also in the sixth row, they perform the grouting using a 10-millimeter reinforcement bar in the wall junctions, corners, and around doors and windows. Plumbers and assistants work on the bathroom, kitchen, and laundry, installing pipes with their connections and valves for both water supply and sewage. In the twelfth row, the lintel band is installed, made with the same structural elements as the counter lintel, but extending throughout the house and supported by wooden shoring. Above it, a J-shaped channel, also reinforced with two 8-millimeter steel bars, supports the panel slab and will be filled with concrete next to it. Scaffolds are set up for the laborious task of constructing gables and eaves, in which cutting the blocks at the correct angles proves to be a challenge.

When defining the construction system for the houses, the ceramic block had emerged as the most suitable option. At the time of project development, there were at least five ceramic block factories within a 150-kilometer radius of Açailândia. When construction work started, many of these factories had closed for various reasons (such as the economic crisis and customers' lack of interest in adopting the structural ceramic block system for their projects). We considered the possibility of a complete change in the structural system to concrete pillars and beams with ceramic bricks for infill walls; however, the costs exceeded the budget significantly. After extensive research, visits to ceramic plants, and commercial negotiations, it was necessary to procure the blocks from a factory in Castanhal, in the state of Pará, located 550 km away from the construction site. In May 2019, the contract with Cerâmica was signed, and in June the first delivery truck arrived.

> Architecture only possesses an aesthetic dimension when a design's coherence is profoundly anchored in a practical commitment. That is, when a design responds, in technical terms, to the objective necessity that impels its existence. The aesthetic dimension is the recognition of the design's dense and authentic synthesis, or rather of the assisted articulation that proposes to amplify the situational information to the full extent of its possibilities. The aesthetic dimension is the result of the immense human implications that a technique might possess. [26]

On the construction site, only one of the three construction companies responsible for executing the radier foundations, and later the masonry, was familiar with the structural ceramic block. However, this did not prevent them from working with the material – despite some difficulties that were eventually overcome. The current foreman was not acquainted with the construction system, and Usina's familiarity of it was often perceived as a threat. One of the companies had a female supervisor, which eased the communication with the technical advisory team, also headed by women.

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Due to the COVID-19 pandemic, the work was interrupted from April to June 2020. When construction activities resumed, it was under precarious conditions. Following two workplace accidents, a violent conflict broke out — triggered by the misunderstanding of each agent's role — which finally severed the relationship between ACMP and Usina.

After Usina's withdrawal from its role as technical advisory, ACMP sought a new partner and, upon evaluation, chose to collaborate with an


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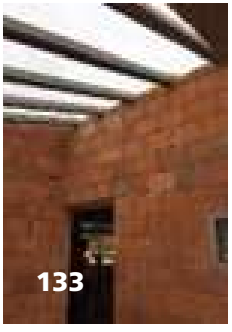
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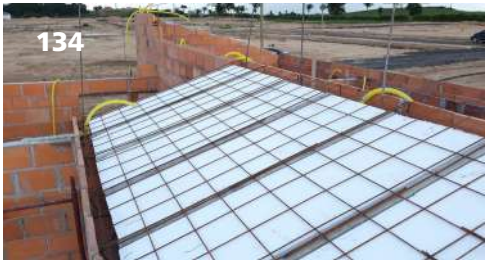

Figs. 128–137: The first row; adaptation of blocks according to the sewage piping; masonry installation; water supply piping; masonry installation and inspection by Usina; assembly of joints; assembly of slab using Styrofoam; installation of the eave; cutting of block to finish the eave; the first house built by the contractors, 2020.

advisory linked to social movements. This contact was established through consultation with UMP do Maranhão and resulted in hiring the same engineer already overseeing the project of the São José do Ribamar movement, specifically in the Magno Cruz I and II subdivisions. The new advisory staff consisted of two engineers and an architect, who took turns visiting the construction site three times a week. Initially, they faced the challenge of familiarizing themselves with the project and understanding the logic of the process, which had been created collaboratively. The weekly coordination meetings were maintained, which now included the new advisory team, and the strategy of splitting responsibilities among different companies continued to be followed.

In January 2021, due to concerns about the budget deficit threatening the construction completion, Caixa accepted a budget revision, albeit with no commitment to provide additional funds. This required transitioning from the Self-Management to the Global Contracting modality, in accordance with the program's legislation, yet allowing EO to remain as a contractor. It was agreed that the difference in cost resulting from this review would be covered by Vale. From then on, ACMP contacted approximately 25 contractors and builders with a proposal for them to carry on the project execution. Only four responded, and only two were considered eligible by Caixa. One company was from Pará and the other from São Luís, the capital of Maranhão. After checking the history of the companies, the construction work coordination decided to hire CAP Engenharia, from Maranhão. In July 2021, the company began work, under an agreement that Vale would complement the available budget during the transition period, until the change to the Global Contracting regime was formalized to Caixa.

There were a few changes to the original project. The water tank, originally planned as a metal or concrete-framed belvedere-tank, was modified to consist of four modules made of reinforced fiber with a capacity of 80 thousand liters each; during execution, this configuration was once again changed to 16 vertical modules with a capacity of 20 thousand liters each. The drainage project was modified to deep drainage using concrete pipes, with completion planned at two points on the border with the nearby neighborhood, where the municipality is responsible for extending the drainage to the outlet location. In April 2021, a new planialtimetric survey and budget revision were carried out in order to resolve some of the earthworks pathologies. To cope with cases of great unevenness, the position of the lawn and sidewalk on the street was adjusted, leaving the grassy segment only on one side to create a less steep access ramp to the houses. For situations where automobile access to the houses would not be possible, they considered creating communal parking areas in the internal squares near the houses. As the sewage system was assessed, it was determined that the original project using collective biodigesters would be too expensive due to the length of the pipelines, excavation depth, and the need for rework in areas already completed, such as sidewalks and paving. In addition, having the municipality manage the system would be challenging. They implemented septic tanks and evaluated the possibility of installing individual biodigesters in the houses, taking advantage of the pits already dug. As a test, biodigesters were included in two houses and the

Community Center; the latter has already begun producing biogas. In the houses, entrance doors and windows were replaced with aluminum frames.

Several conflicts with the construction contractor ensued. Initially, there were problems with the occupation of spots on the site for unauthorized temporary installations. Other conflicts included limitations on decision-making regarding materials and unforeseen changes on the site, service outsourcing without prior notice to ACMP, and problems in the relationship with the Sabor da Conquista restaurant (managed by the women of the community) due to issues with food quality, price negotiation, and menu variety. Furthermore, there were disputes for space in the construction shed, with the occupation of rooms and use of the cafeteria for serving meals from external vendors. There were also problems with the improper disposal of construction debris within the site. Sabor da Conquista's kitchen was moved to the Community Center after much debate, and still against the desires of some.

The contractual delivery of the construction work by the company had been scheduled for November 30 of 2023, with the inauguration expected to take place at the beginning of 2024. The work on the public facilities is expected to be completed by the first half of November, except for the nursery/school, which should be delivered at the beginning of 2024.

The environmental situation with polluting companies still persists. Gusa Nordeste's furnaces in Piquiá de Baixo were deactivated, leaving only the cement production active. However, measurements conducted after the pandemic indicated higher pollution levels. In Piquiá de Cima, there was a significant increase in pollution. AVB is building an institute and seeks to become a carbon neutral steelmaker. The Viena company bought the Pindaré plant in Piquiá de Baixo and is reactivating its operation, raising concerns in the community.

The physical presence of the coordination staff at the worksite decreased over time due to reduced demands. Measurements were not always followed by the community and ACMP, as the Caixa technician interacted directly with the company, not informing the community. On the other hand, the company demonstrated financial capacity for investment, acquiring machinery and a concrete plant. The reduced involvement of ACMP in decision-making caused discomfort among the Board, as they were often uninformed about events on the construction site. There was waste of materials and a lack of involvement from outsourced workers in the project. Turnover was high, and most workers were unaware of the project they were executing. Attempts to establish dialogue were limited.

a worksite of reflections

> Observing architectural work is not easy, as it involves complex and diverse determinations that resist hasty syntheses. [...]
>
> In short, the world of construction resembles more an ever-precarious amalgamation of heterotopic forces than a coherent 'productive body.'
>
> Nevertheless, architectural work truly exists, bearing a set of achievements, more or less chaotic, that constitute a field, an object of study. Appropriate theories and specific methodologies should articulate its reasoning. As with all studies of problematic fields, the fundamental step is determining the approach angle to such an imprecise complexity.[27]

The implementation process of the Piquiá de Baixo resettlement is an experience of resistance and adaptation by a community against the dispossession and expropriation of their land (Harvey, 2004). It brings with it several emancipatory possibilities, such as community organizating practice, territorial and environmental advocacy, self-management of work, and collective projects. However, it simultaneously faced significant contradictions, typical of any experience that seeks to sever its ties with the hierarchies imposed by capital.

Initially, we considered an urban form that would signify the political structure that was being developed for its realization. The project would present what popular organization is capable of accomplishing. The interests of both sides converged: Usina believed in transformation through work and in the self-management potential; aligning with that, the residents and their supporters were involved in a collective and autonomous endeavor. To bring this form into reality, self-management was a necessity. The self-management political structure proposed by the advisory was fundamental to that specific urban form, even though it contradicted local practices, as it did not involve the relationships of cronyism, favoritism, and familial connections commonly practiced in the area. When the initial urban form took shape (reaching 30% of construction, with houses completed up to the 12th row), the project had already materialized, making it difficult to modify. That entailed the demarcation of the dwelling areas, lot sizes, and layout of the blocks. With the urban form consolidated, the political form was no longer necessary.

> A completed work of architecture both hides and reveals a project; and like anything executed in practice, it deforms — attenuating or altering — its

> initial proposal, nevertheless sticking to the basic guidelines. A work of architecture therefore enables us to reconstitute quite accurately the most significant features of that project's structure.[28]

One of the central points that exposed the contradiction between self-management and local practices was expressed by the relationship between the local management team and the technical advisory. Since Usina was responsible for planning the schedule and preparing the purchasing lists, it played a role of service coordination, whereas the management workers had to meet the demands. As the program required that the work advanced 4% of the schedule at each monthly stage, the management team was often overwhelmed with the volume of demands to be fulfilled in a short time. On top of that, there was an increasingly pressing need to negotiate, caused by the gap between the project budget and market prices, which increased over time. In this ambiguous relationship between the advisory and management teams – that is, between coordination and management, specialized knowledge and hierarchy – the emancipatory potential of cooperative work was gradually replaced with restrictions that limited autonomy and self-management practices. Demands were often perceived as forms of oppression and measures that restricted management work in situations of dependence or subordination. Gender barriers also carried a weight: when a female architect gave instructions, local resistance was even greater, accompanied by more instances of disrespect than were addressed to men. The coordination tasks were regarded as affirmations of superiority, autonomy was confused with individualism, and responsibility was equated with duty or, otherwise, infraction. The concept of "commanding while obeying" turned into "being bosses of themselves," and over time no one submitted to any coordination whatsoever. A neoliberal rationality of sorts was growing.[29]

The work coordination meetings, which should offer a privileged space for the practice of self-management, became increasingly conflict-ridden. Distrust among the members was increasing; however, as problems arose, most were resolved by internal efforts. This was achieved either by the technical advisory, through many design and specification revisions, or by the community, as seen in instances like the installation of the water supply system, which was carried out through collective efforts. Nevertheless, as prices rose above the reality of the market, work became harder and relationships were strained by the search for those responsible for budgetary problems. There was growing distrust toward the advisory staff, as well as annoyance on the part of the Association's board toward the alternation of architects

and the internal differences among them. Not only were there many biased relationships among family members benefiting them, but also among companies and the board.

On the construction site, the relationship between the technical staff, mostly women, and the construction team — consisting almost entirely of men hired by the construction companies and, therefore, not adhering to the self-management rules for work — was sometimes less ambiguous, although the gender issue was still latent. The advisory's role seemed more acceptable to the workers on the construction site, since relationships there tend to be highly hierarchical. The work supervision approach based on dialogue, proposed by the architects, brought positive changes such as adjustments to the work regime and suggestions that rationalized labor. The self-management practice potential, represented by the dialogue among people with different knowledge yet not hierarchically unequal, was present even in relationships where work was not organized by self-management principles. That did not prevent the gender bias that permeated such relationships from becoming a permanent part of daily work, as is typical on every construction site. It was common, especially among men in positions of command, who would raise endless doubt when a solution was proposed by a woman.

Finally, the relationship between the community and the coordination staff also became conflict-ridden as the budgetary demands grew. Most residents did not participate in the daily activities on the construction site, which were carried out only on weekdays when they were busy. Therefore, community residents waited for the monthly meeting to be informed about the project's progress. The difficulties inherent to the process were regarded with suspicion and seemed hard to understand (how was it possible to lack resources with so much money available in each measurement procedure?). There was growing suspicion as the work progressed. Threats were made to occupy the land and later the worksite, and to distribute the lots so people could self-build their own houses. including families urgently needing to leave Piquiá and outsiders.

Deviating from the self-management emancipatory potential, the social relationships on the construction site became the major hindrance for resettlement. They were like short circuits in the system, which caused inexplicable and permanent failures, to the point of becoming insurmountable. These short-circuits included sharing information restricted to the construction coordination (such as the available funds for each service or material) with contractors or suppliers, in tacit and undeclared agreements, as well as the increased boycott of advisory guidelines, especially on the part of the construction management team.

Regarding the gender issue, the political role played by women was crucial in the struggle for resettlement, as it is in the broader fight for housing in Brazil. Women were affected the most by housing-related issues, being socially burdened with reproductive work, domestic care, and family maintenance. However, as they were responsible for both the resettlement and their families, conflicts of interest were frequent on the worksite. If the advisory team admonished a relative of a board member, this was perceived as a threat to their job, hence a threat to their family. If a family member failed to fulfill their tasks and hindered the construction process, the advisory staff would address the matter during a coordination meeting. This would then create an uncomfortable atmosphere, and no one would make any comments.

In this sense, the neoliberal rationality of self-entrepreneurs becomes particularly dangerous in self-managed processes. Furthermore, a prevailing tradition based on privatism, family protection, or the exchange of favors -- along with the heterogeneous nature of labor, power, and authority in the self-managed worksite in a market society, has weakened the sense of collectivity, giving way to autonomous workers without a clear understanding of their role in the production process. The autonomy in self-organized work has become illusory not only because it is conditioned by the productivity needs of capital — as imposed by the program and internalized by its executors — but also because it is permeated by family bias. This perverse mechanism leads workers to adopt the discourse of their oppressors, and when one speaks of self-management, it is understood as one wishes: "Being my own boss, I decide what I want and will do." This subjective approach, in turn, shapes a type of citizen-consumer who demands rights as commodities because they aim to be owners and barely recognize themselves as workers any longer.

The struggle for the resettlement of Piquiá involved various stakeholders, including residents, the company, supporters, and the government, resulting in a lengthy, complicated, and contradictory process. Taking that into account, many milestones were achieved; nevertheless, in the end, the room for popular organization was diminished. In a narrative that illustrates a growing popular awareness regarding the production of space, centered on the development of collective projects, relationships intensify and contradictions become acute during the materialization of a construction project, especially in the context of the far Right's ascension in Brazil. It is precisely such concrete experiences, with their profound complexities, tensions, and contradictions, that defy any simplifying critique based on theoretical models removed from reality. Nonetheless, it is through the exercise of these experiences – amid such tensions and conflicts – that one experiences, in practical terms, the possibility of other forms of existence.

Fig. 138: A drone photo of the construction work completed by 2023.

notes

1 Regarding the resettlement, there are two minute books and 60 pages by a third party, thus more than 900 pages written on the advisory work for Piquiá. The first book encompasses the period from Piquiá's first contact with Usina in 2010 to the initial stages of the construction at the end of 2018, including the collaborative project development, negotiations for land expropriation, and the composition of the financing, project approvals, training sessions, and meetings prior to the construction. During this period, Usina made more than two dozen trips, mostly to Açailândia but also to São Luís, Brasília, and Rio de Janeiro. In the second and third books are the accounts of the construction stage. They cover the years 2019 and 2020. From that, the reader can picture the amount of information, activities, meetings, and decisions constantly taking place in the process. In this phase, Usina performed

alternations among architects and was present throughout the period comprising the construction work, having made countless trips between São Paulo and Açailândia, averaging one-month stays per architect.

2 Interview with Joselma Oliveira in Ortiz, Fabiola. "Piquiá, um povoado coberto por pó de ferro na Amazônia" [Piquiá, a village covered by iron dust in the Amazon]. The *O eco* newspaper (online). July 14, 2014. <https://oeco.org.br/reportagens/28458-piquia-um-povoado-coberto-por-po-de-ferro-na-amazonia/>.

3 Interview with Mr. Joaquim in Brustolin, Cindia [Org.] "Liberdade Caça Jeito: A história de todos na história de cada um" [Freedom Hunts for a Way: The story of everyone in each one's story]. São Luís, EDUFMA, 2019, p. 52.

4 Interview with Mr. Edvard for the documentary *Aconteceu d'eu Sonhá* [It so Happened that I Dreamed], by Felipe Duran (2015). Available at: <https://www.youtube.com/watch?v=y35MTS2wWio>.

5 Interview with Angelita de Oliveira in Ortiz (op. cit.).

6 Interview with Mr. Joachim in Brustolin (op. cit.), p. 66.

7 Interview with Mrs. Tilda in Brustolin (op. cit.), p. 65.

8 Interview with Angelita de Oliveira in Ortiz (op. cit.).

9 Benatti, J. H. "Carajás: desenvolvimento ou destruição?" [Carajás: development or destruction?], in *Dez anos da Estrada de Ferro Carajás* [Ten years of the Carajás Railway]. Coelho, M.C.N. and Cota, R.G. (org.). Belém: UFPA/NAEA, 1997, pp. 79-105.

10 Angelo, M. 'Na garganta do futuro: no Maranhão, trens da Vale prometem desenvolvimento e entregam um rastro de violações de direitos' [In the throat of the future: in Maranhão, Vale's trains promise development but deliver a trail of rights violations]. *Observatório da Mineração*. May 19, 2022. Available at: <https://observatoriodamineracao.com.br/na-garganta-do-futuro-no-maranhao-trens-da-vale-prometem-desenvolvimento-e-entregam-um-rastro-de-violacoes-de-direitos/>.

11 Pig iron is the result of the reduction of iron ore with charcoal in a blast furnace, transforming it into a 95% us liquid.

12 Harvey, D. (2004). 'El 'nuevo' imperialismo: acumulación por desposesión' [The 'new' imperialism: accumulation by dispossession]. *Socialist Register*, no. 40, pp. 63-89.

13 Svampa, M. (2012). 'Consenso de los commodities y megaminería en América Latina' [Commodities consensus and megamining in Latin America]. *América Latina en Movimiento (473)*, pp. 5-8.

14 The Comboni Missionaries are a Catholic congregation devoted to the world's poorest and most excluded people, inspired by the actions of Italian bishop Daniel Comboni, who dedicated his life to evangelization and the fight against slavery in Africa in the 19th century.

15 The Landless Workers' Movement East 1 (MST-Leste 1) is a social movement for housing created in 1987. It operates in the city of São Paulo, specifically in the East Zone and, together with technical advisories, has produced more than four thousand housing units through collective efforts and self-management.

16 The Housing Program named "Minha Casa, Minha Vida" (My Home, My Life) was established by Law 11.977/2009 during the Lula government. Its goal was to contribute to reducing the housing deficit in the country through the granting of incentives for the production and acquisition of new housing units. It contemplates two different production modes: by *entidades* (social organizations) and by construction companies. In the modality of production performed by *entidades*, which we explore in this work, civil organizations present their projects alongside technical advisors and are granted public resources to directly execute them. In the modality of production carried out by construction companies, private agents present their projects to municipalities, and the units are built by the companies and later sold to the government or on the open market. About 97% of the program's resources were allocated to work executed by construction companies, and less than 3% to work executed by *entidades*. According to the Ministry of Economy (2020), the program reached the milestone of 5.5 million contracted housing units, with 4.1 million of them already delivered.

17 The Urban Quality Seal was launched to complement project resources in consonance with architectural and urban quality

parameters, and the Piquiá project obtained the maximum score.

18 Ferro, S. 'Arquitetura nova' [New architecture]. *Revista Teoria e Prática*, no. 1, 1967, pp. 3-15.

19 Usina. 'Processos de projeto como construção de autonomia' [Project processes as building blocks for autonomy]. *Urbânia 5*, 2014, pp. 194-204.

20 Valdivia, Blanca. 'Del urbanismo androcéntrico a la ciudad cuidadora' [From the androcentric urbanism to the caring city]. *Habitat y Sociedad*, no. 11, 2018.

21 Baravelli, J.E. *Trabalho e tecnologia no programa MCMV* [Work and technology in the MCMV program]. London: Oxford University Press, 2017.

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24 Ferro, Sérgio. (1972). "Reflexões para uma Política na Arquitetura" [Reflections for Politics in Architecture]. *Arte em Revista*, no. 4, 1980, pp. 95-99.

25 Idem, 2010.

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27 Ferro, S. 'Questões de método' [Questions of method], in *Arquitetura e trabalho livre* [Architecture and free labor]. São Paulo: Cosac Naify, 2006, pp. 233-240.

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29 Guerreiro, I.A. (2018) *Habitação a contrapelo: as estratégias de produção do urbano dos movimentos populares durante o Estado Democrático Popular*. [Housing against the grain: the urban production strategies of popular movements during the Popular Democratic State]. Ph.D. dissertation. University of São Paulo (USP).

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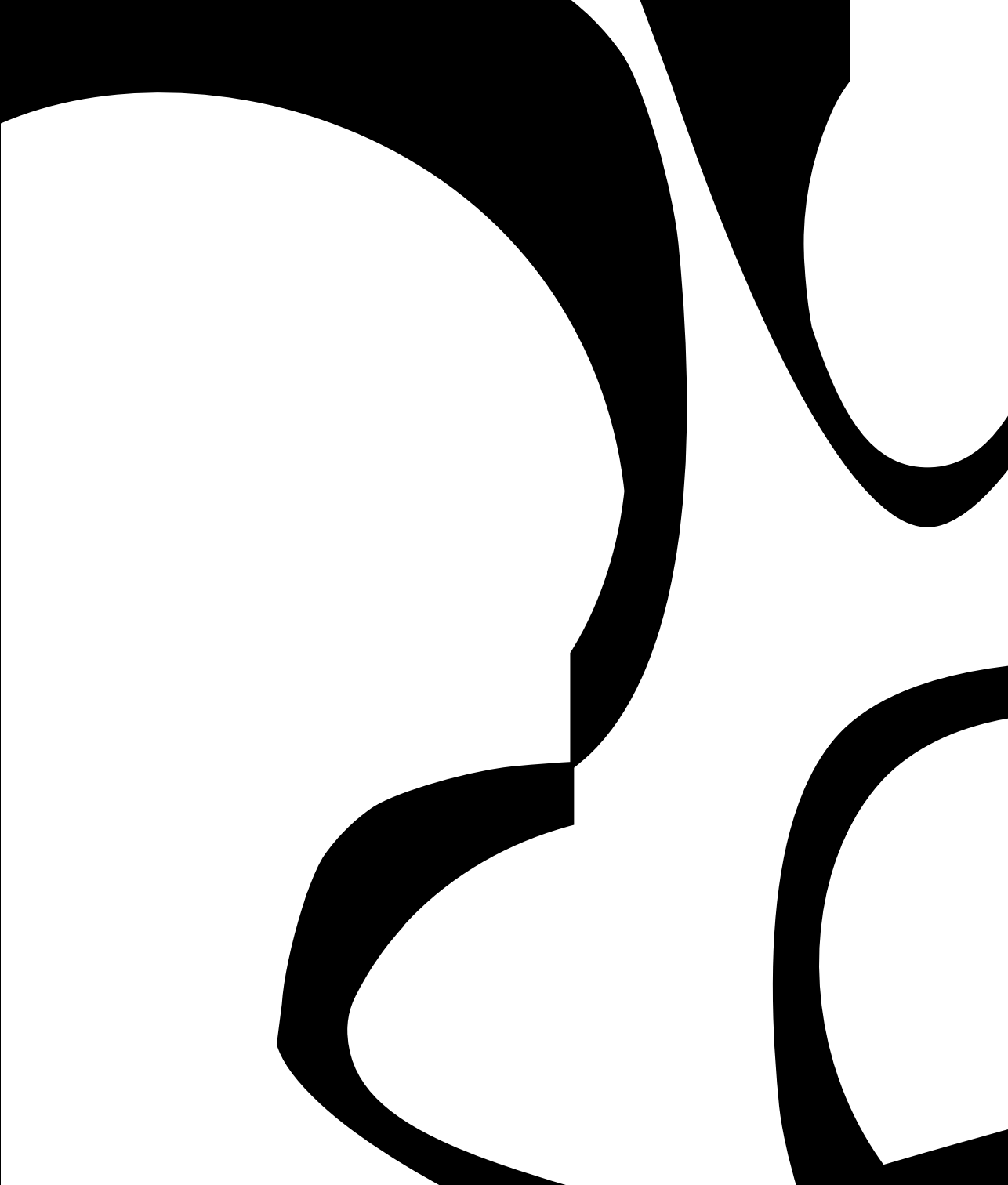

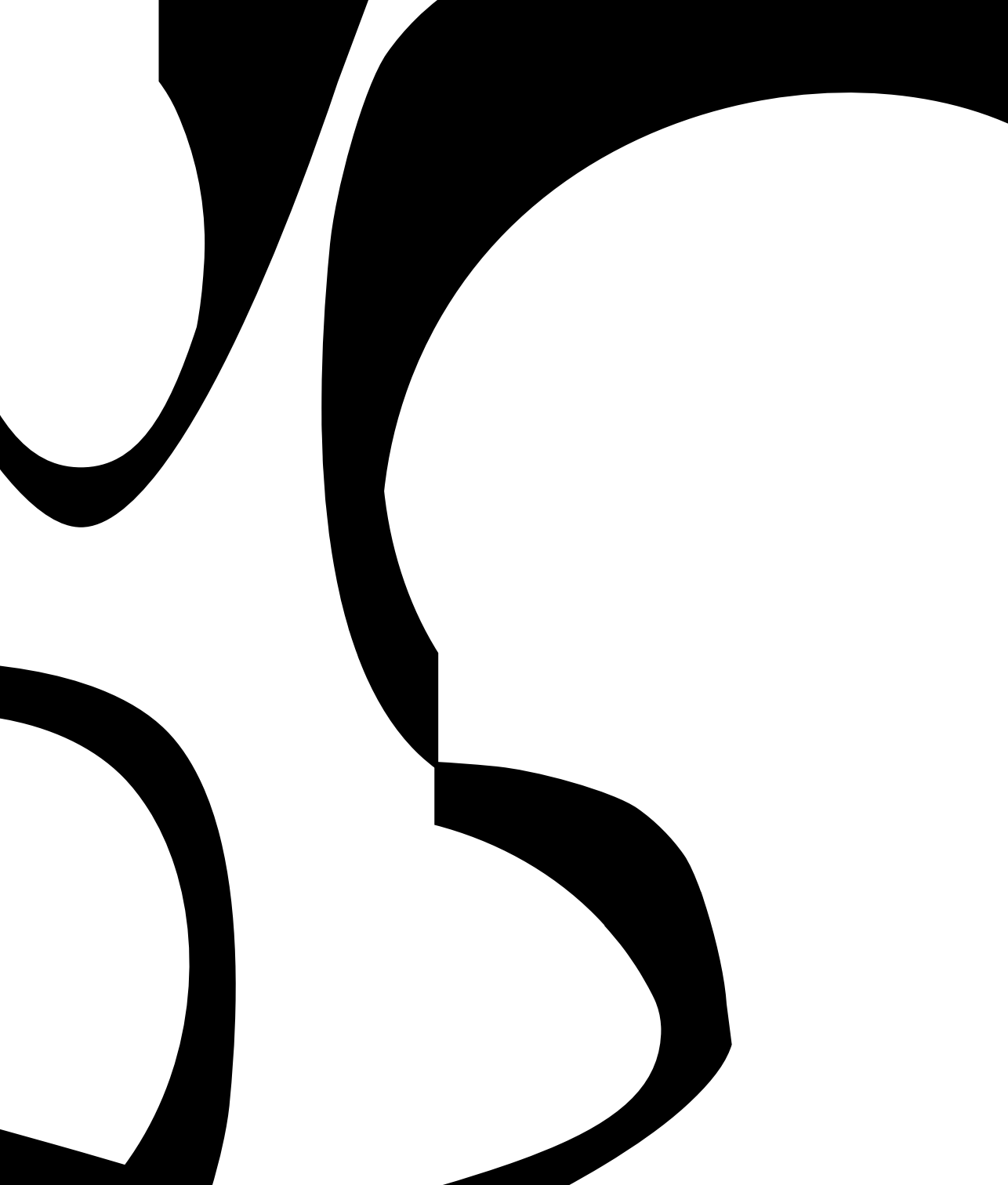

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