Rodrigo Castriota

The Mine, the City, and the Encampment. Contesting Extractivism in Eastern Amazonia

Chapter 1

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When the plane begins its descent towards the Carajás Airport, the view of the endless rainforest covering the mountain range is thrilling. It evokes the illusion of an idyllic Amazonian stereotype of vast green, dehumanised landscapes that underlie the global imaginary of the region. But this is only because the airport is located inside the Carajás National Forest, a federal conservation unit of 411,000 hectares that protects not only the rainforest, but also several mining complexes and their supporting infrastructures, such as open pit mines, roads, company towns, railroads, and the airport itself.

As I land in the northern sector of the National Forest, surrounded by the dense rainforest, it becomes clear that nature does the job of building a wall, insulating the extractivist operations and infrastructures. [Fig. 1] After all, unless one knows how to handle the heat, the humidity, and the hundreds of animal and plant species that live here, walking through the rainforest might not be a good idea. Tourists and passengers are allowed to enter the National Forest only to access guided tours and the airport. All other entrances and exits are exclusive to Vale S.A., which was once a Brazilian state company, and today is the third largest transnational mining group on the planet. [Fig. 2–3]

A few kilometres away, in the southern sector of the National Forest, lies Vale's most recent development: the S11D Mining Complex, the largest open pit mine in human history. During its construction from 2011 to 2016, the S11D created more than 45,000 jobs in mining, attracting a mass of migrants to Canaã, previously a town of 30,000 residents. After the mining complex started operating in 2017, less than 100 workers were required to run the mine due to the high level of automation, instantly leaving tens of thousands unemployed. Some residents left the city, leaving behind their houses and their neighbourhoods; some rushed to find other work opportunities, causing changes in the urban economy; and some became *camponeses* and occupied plots of land in the agricultural zone of the municipality, often close to zones of logistics and extraction, hence becoming a direct threat to their former employer.

Fig. 1

This chapter explores urbanisation processes that followed the construction of the S11D. My goal is not to discuss mining itself but what happens *around* the mining complex, *in response to* it, and *in spite of* it. What kinds of cities and towns emerge in response to a vast mining enterprise within the domains of the rainforest? What kinds of extended materialities and capacities are mobilised by the state, the mining company, and the "urban majorities" that co-produce urbanisation? [1] If we understand extractivism as a driver of urbanisation, how, then, do the different generations of mining technology induce different forms of urbanisation? In what ways centres and peripheries are reorganised and recast, and what forms of contestation emerge in response?

By anchoring the analysis on Lefebvre's notion of "levels of reality and analysis", especially in relation to the extension of the ediating character of urbanisation towards the non-city, I propose a radical decentring of the urban analysis by exploring, beyond the city, what other mining-induced forms of extended urbanisation are taking place.[2] I emphasise the role of the encampments and the experience of their residents in the rural zone of the municipality to unveil different perspectives of what urbanisation might look like from the "outside." I describe the boom-and-bust process of the mining town that led to rural land occupations by hundreds of families and how these residents relate to and are embedded within extractivist urbanisation even kilometres away from the urban centre. In doing so, I argue that extended urbanisation works both as an extension of the state and capital strategies, and as an open-ended transformative process, as a means through which subjectivities nurtured on the level of everyday life are expressed, often in contesting and generative ways.[3]

The first section of this chapter thus presents the theoretical ground resulting from my broader research to help the reader navigate the text and subsequent empirical sections.[4] The second section presents a brief geohistorical introduction to the region, highlighting that the theoretical framework of extended urbanisation

Fig. 2

Fig. 3

F. 1 Aerial view of the Carajás National Forest.
F. 2 Carajás National Forest: The main gate.
F. 3 Carajás National Forest: Internal roads.

is particularly useful in the Amazonian context to interpret the various rounds of state and capital colonisation in the 1970s and 1980s. The third section discusses how extraction induced the emergence of cities and towns, roads, railroads, mines, and other socio-spatial transformations that have usually followed the expansion of extractive projects in the region.

The remaining sections derive directly from my fieldwork in Carajás, conducted in 2018 and 2019. The fourth section presents the North Sierra and the South Sierra of Carajás and their contrasting extractivist temporalities and urban trajectories. The fifth section examines the urbanisation of the urban centre of Canaã, which hosts the majority of the migrant labour employed in the S11D. The final section presents stories of the "non-city," focusing on agrarian encampments founded by former town residents who, in the process of becoming peasants (*camponeses*), established new forms of appropriating the extended materialities of extractivism and new political subjectivities related to its contestation. In doing so, my goal is to decentre perspectives on urbanisation not only by training analytical attention to non-city spaces but also by positioning myself and narrating everyday life and struggles of the *camponeses* that would otherwise remain unnoticed by city-centric urban research and theory.

CONCEPTUAL OPENINGS: URBANISATION, EXTRACTIVISM AND LEVELS OF ANALYSIS

In 1970 Henri Lefebvre pioneered the conceptualisation of the extended character of urbanisation, assuming these processes are induced by industrialisation. They are not restricted to the expansion of industrial cities but also involve the spreading of an urban-industrial fabric, simultaneously absorbing and eroding agrarian life through numerous and diverse "disjunct fragments."[5] Thus, Industrialisation induced processes of "extended urbanisation" generating material, ecological, and socio-political

transformations beyond dense settlement areas.[6] Lefebvre argued that to grasp the generative and transformative character of the urban, it is necessary to move beyond the "blind field" of industrialism, which shapes our conceptions and representations of the urban and urbanisation.[7]

In this chapter, I propose an alternative, more precise, and geographically specific hypothesis of induction, moving from industrialism to "extractivism."[8] Given its importance in the Amazonian and Latin American contexts, I explore urbanisation processes driven by extractivism, considering the role of state and capital in its planning and production as well as the everyday dynamics and popular practices that contest and co-produce urbanisation.

Although many recent contributions analyse the workings of extraction globally, the literature in urban studies aimed at interrogating the relationship between extractivism and urbanisation is still incipient.[9] Besides, in spite of the insights such contributions convey, their focus is mostly on city-making and agglomeration dynamics—examples of "methodological cityism."[10] Thus, my intent is to show how extractivism induces not only concentrated but also extended forms of urbanisation.

I foreground the role of mining, with its extended extractive assemblies, as a crucial driver of urbanisation in Eastern Amazonia. In addition to the actual extraction sites, these activities demand logistical, hydroelectric, and other energy infrastructures, as well as communication and transportation apparatuses. These assemblies shape the formation of cities and towns, villages, encampments, and other forms of larger and smaller centralities fundamental to extended urbanisation.[11] Here, extraction entails both the emergence of such centralities—their making and remaking through everyday practices, movements, and struggles—and their destruction or radical reorganisation. These extended extractivist assemblies are also subject to popular appropriations and contestations that take advantage of their own "leaks."[12] All of these materialities and flows are constitutive of processes of extended urbanisation, whether or not they have concentrated urban forms (towns, cities, metropolises) as their actual *or* virtual outcome.

It is important to notice that, beyond their immediate material implications, urbanisation processes need to be understood, particularly in the Amazonian context, as a form of mediation between different "levels of analysis and social reality," following Lefebvre's (1970) crucial formulation.[13] In this perspective, the urban is conceptualised as a mediating level between two other levels of social reality: the general level of abstract social relations of state and capital and the private level of concrete dynamics of everyday life. The general level comprises the domains of capital and the state as "will" (of those who hold power and design political strategies) and as "representation" (as ideologies and conceptions of power). The private level comprises the concrete, contradictory, and contestatory dynamics of everyday life, of dwelling, and of lived experience, and is subjected to both domination and radical appropriation.[14]

In this conception, the urban level is shaped by both the projections and materialisations of abstract strategies and general social relations on the one hand, and of everyday forms of contestation and appropriation by various social groups on the other. The urban, thus, needs to be understood as a battleground of struggle and contestation. It is both a means through which capital and state logics violently penetrate everyday life and through which an everyday "reservoir of radical-utopian subjectivity" contests and destabilises the same concrete abstractions.[15]

Though this framework has been used, especially in Latin America, to analyse extended urbanisation, an explanation of why the notions of level and mediation are crucial for understanding these processes has been lacking.[16] Here, I briefly foreground three interrelated arguments on the mobilisation of the Lefebvrian methodological apparatus to the study of extended urbanisation. First, the *extension of urbanisation* entails the *extension of mediation*. Urbanisation advances beyond city limits often

as particular projections of state and capital: a company town, a mining complex, a logistical corridor, or even a unit of conservation. These "top-down" developments, in turn, are met by everyday dynamics of migration, movement, and circulation; in this way, for example, movements of people searching for jobs in mining provinces have entailed the emergence of the "boom towns of the Amazon."[17] Beyond cities and towns, extended urbanisation transforms diverse areas that formerly supported local dynamics like grazing landscapes, *quilombos*, riverine communities, agrarian settlements, and villages of various kinds. Take, for example, indigenous lands and villages in Eastern Amazonia that were crossed by extractivist and logistical developments and experienced displacement and resettlement as a result of the reorganisation of territories and the recasting of centres and peripheries.[18]

Secondly, in non-city geographies, both the projections of the general level and the "counter-projections" on the mediating level are often different, in quantitative and qualitative terms, from their city counterparts.[19] The ways in which state and capital "show up" in the geographies of extended urbanisation are not the same as in cities; and the ways people appropriate and contest them are different too. For instance, in Canaã's countryside, mining infrastructure works are less regulated, police violence (often forwarded by Vale's private security) is more extreme and brazen, and evictions are more brutal, precisely because both Vale and the prefecture understand these landscapes as "off the radar." An example is Vale's relationship with different tentacles of the Brazilian State (environmental agencies, regulatory bodies, police, and law) which allows the company to extend its violence and territorial control in rural areas in ways that would be unthinkable in large urban centres. Illustrative is also the difference between the creation of a park in the centre of Belo Horizonte to displace homeless people and the creation of a conservation unit in Carajás to displace hundreds of peasants living near mining areas; both are examples of environmental "conservation" that occlude intentions generated at the general level and projected into the territory.

Finally, the levels of analysis have to be understood as levels of abstraction. Although the mediation between the levels leads to the penetration of everyday life by abstract objects, rhythms, and logics, the *distinction between* the levels—that is, the very criteria of their determination—is given by degrees of abstraction.[20] The general level comprises the most general and abstract relationships, and its projections onto the mediating urban level engenders an "abstract space."[21] The private level, on the other hand, "is the ground in which all other levels of social reality are rooted."[22] The levels of abstraction suggest different rationales associated with each level: from the "concrete rationality" of everyday practices to the "abstract rationality" of hegemonic actors of space production (the authoritarian state, the planner, the developer).[23]

Through the levels of abstraction, we can understand how extended urbanisation is also composed of processes of operationalisation, i.e., how the multiple "operations of capital," particularly those related to extraction and logistics, are mediated and territorially instantiated.[24] Abstraction produces and brings into relation a fully automated mine, a fully industrialised agricultural landscape, a fully controlled seascape of oil extraction, and a fully protected unit of conservation in the heart of the Amazon—all of which are temporarily deprived of everyday dynamics through which the fissures of abstract space would be explored and disrupted, turned into something else, unplanned, unpredicted, and unanticipated.[25]

In this chapter, I foreground the importance of the extension of these mediations through urbanisation, highlighting its qualitative differences in city and non-city environments, the projections and counter-projections that co-produce urbanisation, and the levels of abstraction involved in the production of space. This conceptual apparatus is particularly useful, as I present in the next two sections, to understand the multiple rounds of colonisation in Amazonian history.

- Urban centres
- Road network
- Transamazonica
- Conservation areas (rain-forest and indigenous land)
- Former Marabá municipal area in the 1980s, now divided into six municipalities
- Railways
- Transshipment port

MINING LEASES AROUND CARAJÁS REGION

- Granted to Vale
- Granted to other companies
- Mining site (open and closed)

EASTERN AMAZONIA
AND THE MINING REGION OF CARAJÁS
Fig. 4

STATE COLONISATION, FRONTIER EXPANSION, AND EXTENDED CITIZENSHIP IN AMAZONIA

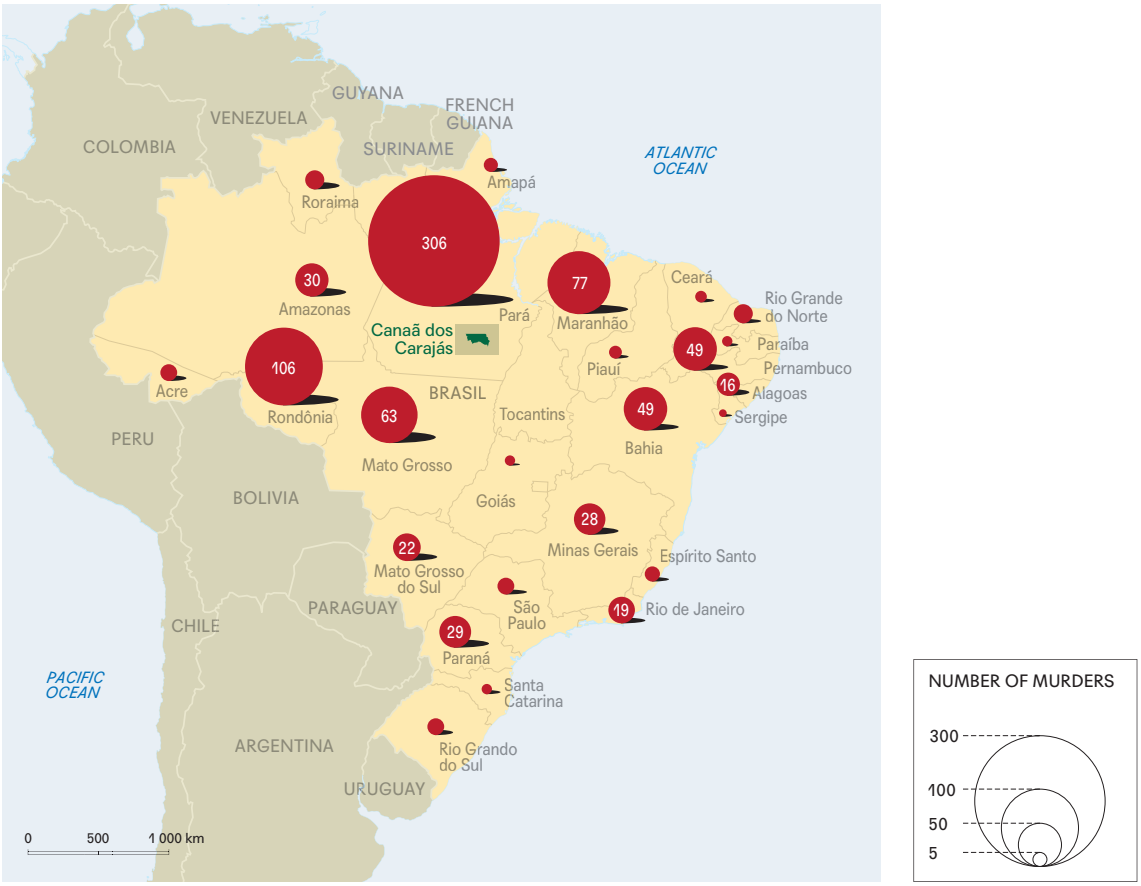
The Brazilian Amazon encompasses two-thirds of the country's territory. Its regional resourcefulness—nearly half of the world's remaining tropical forests, a quarter of the world's fresh water and one-third of the world's known species—has been recurrently instrumentalised by modern-colonial narratives of an unexplored territory of hidden and boundless riches. After independence in 1822, the state incurred multiple colonisation efforts emanating from the hegemonic south-central regions of the country.[26] In addition to the many "marches to the west" in the nineteenth and early twentieth centuries, state efforts to integrate the Amazon into the national and world economy massively increased in pace and scale in the 1960s.[27] Until then, despite the political and economic control that metropolises such as Belém and Manaus exerted in the region, the Amazon could be characterised as an "urban archipelago" of disarticulated cities and towns.[28]

The military regime (1964–1985) changed that trajectory through violent and authoritative strategies and policies, securing the role of the Amazon as the frontier for land colonisation, agribusiness, resource extraction (mining, logging, hydrocarbons), and hydropower production. Through a series of migration policies, colonisation projects, regional economic plans, and incentives for extractive activities, the military attempted to subsume the Amazon to capital and state interests. Beyond ravaging and plundering, these large extractive and infrastructural interventions also functioned as forms of "internal colonisation" that hold to the present and are central to understanding the historical geographies of urbanisation in extractivist Amazonia in relation to the industrialising south-east region.[29]

The state's goal was twofold: first, to exclude, either by dispossession or extermination, the Amazonian autochthone majorities that populated the region; and second, to extract and export regional resources at an unprecedented pace, brutality, and scale. These interventions were carried out by the authoritarian state and national and foreign capital—mining companies, contractors, large-scale loggers, banks, and others—engendering environmental plunder and displacement of Amazonian majorities. Simultaneously, migration policies and promises of cheap land, work opportunities, and abundant resources drove large masses of south-central residents to the Amazon. Cities, towns, and neighbourhoods quickly emerged while oversight, regulation, and control were almost absent, leading to chaotic settlement and land use patterns and social and environmental tragedies in the clashes between migrant "pioneers" and the peoples of the forest.[30]

In this context, the notion of "Frontier Amazonia" was developed to denote transformations and spatio-temporal clashes in that part of the Amazon that was more brutally and intensely occupied in the first decades of the military regime.[31] It was the analysis of Frontier Amazonia that led Monte-Mór to formulate the concept of extended urbanisation, drawing on Lefebvre.[32] Even deep in the Amazon, social processes and spatial forms seemed connected to the urban-industrial realm as the "general conditions of production," formulated by Lojkine and Topalov.[33] [Fig. 4] Those conditions, formerly constrained to cities and metropolitan regions, gradually extended to spaces usually seen as determined by local and everyday dynamics. The concept of extended urbanisation responded to the need to understand the formation of "concentrated urban nuclei" and the entanglements and ramifications of the "extended urban fabric," including centralities and subcentralities created, articulated, and reorganised with significant territorial differentiations and socio-environmental consequences.[34]

In Frontier Amazonia, it became clear that urbanisation not only engendered the equipment of the territory in urban-industrial terms but also *mediated* different temporalities, from pre-Columbian societies to modern capitalism, often separated by short territorial distances.



MURDERS IN THE COUNTRYSIDE
DUE TO LAND CONFLICTS, 1997–2019
Fig. 5

In the process of intense frontier occupation after 1970, several late encounters between the modern forces of urban-industrial developmentalism and pre-[Columbian] groups of Índios, some of them never before contacted by "civilised men," took place in Frontier Amazonia as bulldozers and axes assaulted the jungle with highways, towns and villages. The Suruís and Cinta-Largas, in Rondônia, and the Panarás and Caiapós, in Mato Grosso's Nortão and southern Pará, were some of the groups of Índios forced to face the civilisation brought along with roads, colonisation projects, cattle ranches, gold mining, logging, and other frontier activities.[35]

This "superimposition of temporalities" embedded within the extended urbanisation of Frontier Amazonia was expressed in violent land conflicts.[36] Although the Brazilian state advanced several colonisation projects[37] by advertising free or cheap land to south-central migrants, the vast majority of incomers were never able to secure a piece of land in the region, instead attempting to earn their livelihoods through land occupation, often in conflict with traditional peoples, mining companies, project developers, and ranchers. In the 1970s and 1980s, the intensity of these struggles increased,

leading to a record number of murders, tortures, and massacres in Frontier Amazonia, especially in the state of Pará. [Fig. 5]

The "fight for land" consolidated as the central political feature of the region.[38] A wide range of struggles and forms of contestation emerged against large-scale projects and land concentration assembling landless peasants, traditional communities, and most "peoples of the forest" in organised and well-articulated social movements that transcended the regional scale.[39]

The role of extended urbanisation in the articulation of diverse social groups and political demands—urban and rural unions, indigenous peoples, rubber tappers, tap miners, religious groups, political parties, and many others—led Monte-Mór to conceptualise a concomitant process of "extended citizenship": a particular kind of re-politicisation of space related to the urban praxis radiating from large urban-industrial centres. This theorisation reveals how, despite colonisation efforts by state and capital, urbanisation is always also marked by (re)appropriations, contestations, and radical transformations nurtured at the level of everyday life. It highlights the "multitemporal heterogeneities" that both compose and result from extended urbanisation, which is an open-ended spatial process, never fully predictable, no matter how strong the disciplinary powers of state and capital may seem.[40]

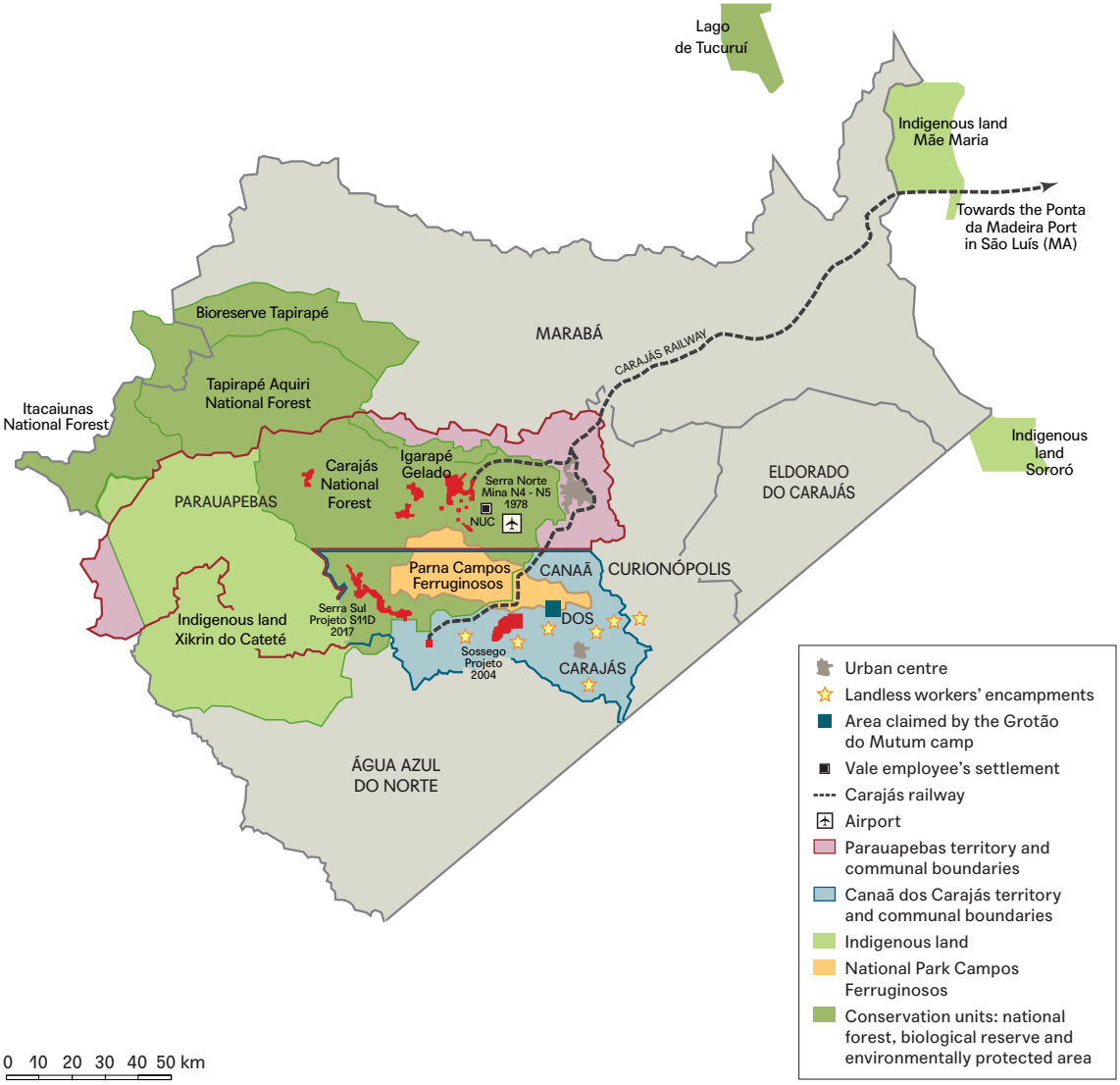
Although urban scholars have shown for a long time that urbanisation processes are crucial for interpreting historical and contemporary Amazonia, the reverse also holds true: the Amazon region is important for contemporary urban studies to subvert inherited concepts and theories and to unveil possible futures that remain off the radar.[41] It is of particular importance to show that studies of cities and towns are insufficient in exploring the drivers and implications of urbanisation, particularly in relation to extractivism. In this sense, the region of Carajás presents a privileged lens for the study of such relations and for illuminating (extended) urban futures.

EXTRACTIVISM AND URBANISATION IN CARAJÁS

The construction of Brasília was crucial for the colonisation of the Amazon. In 1960, the conclusion of the Belém-Brasília Highway paved the way for both the implementation of large extractivist projects and for settling migrant populations. Mining and cattle ranching combined with cheap land and public financial incentives laid the foundation for land colonisation throughout the 1960s and 1970s. South-eastern Pará was one of the first frontier regions to be colonised, largely due to mining activities in Carajás, the mountain range forming a complex of plateaus between the Itacaiúnas and Parauapebas rivers. [Fig. 6] These plateaus hold one of the greatest mineral deposits on Earth, discovered by The United States Steel Corporation in the 1960s and explored by Vale since the 1970s.

Although tap-mining (*garimpo*) was an important activity responsible for large migration inflows since the 1950s, large-scale mining operations were the strongest force behind urbanisation in the region. Throughout the 1980s and 1990s, the concentration of jobs and state-capital apparatuses in this forested region led to several economic booms causing cities and towns to grow in size and number.[42] As new urban centres formed, new municipalities were constituted. The entire region of south-eastern Pará, for example, was previously one single municipality, Marabá. [Fig. 7]

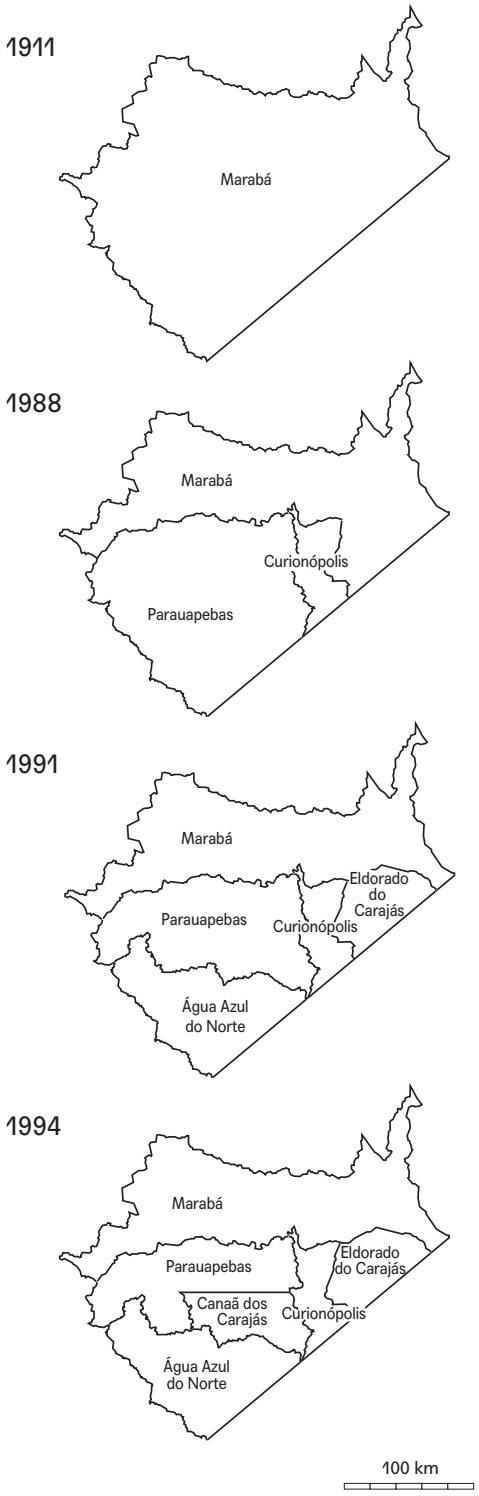
Localised energy and water infrastructures (hydropower plants, waterways), transportation (roads, railways), and waste management (tailing dams) also induced growth and the emergence of new centres. The Tucuruí Hydropower Plant (1981) in Carajás entailed the expulsion of many indigenous, *quilombola*, peasants, and riverine communities and the displacement of 6,000 families involved in fishing, agriculture, and gathering.[43] More than 2,800 km² were flooded for the construction of the dam, further generating soil erosion, gas emissions, and loss of water-life.[44] The Carajás Railroad (1986) was (and still is) responsible for numerous land conflicts along its 993 kilometre route running between Carajás and



SOUTH-EAST PARÁ AND THE REGION OF CARAJÁS:
MINING, INDIGENOUS LANDS, AND PROTECTED AREAS
Fig. 6

Vale's port through indigenous, peasant, and *quilombola* lands, conservation units, and archaeological sites.[45] Several metal mining industries and agribusiness enterprises settled along the Carajás Railroad for locational advantages, and pig iron mills were installed in centres such as Açailândia (MA), Marabá (PA), and Santa Inês (MA), which bolstered logging in response to the mills' charcoal demand.[46]

These infrastructural assemblages—mine, railroad, hydropower plant, and port—still support Vale's operations today. Most of them were constructed in the context of the "Project Great Carajás" (PGC) launched in 1980 by the military regime to deepen the exploration of Eastern Amazonian natural resources. The entire project area encompassed more than 900,000 km², more than 10% of the Brazilian



THE CONSTITUTION OF MUNICIPALITIES AND URBAN CENTRES IN SOUTH-EAST PARÁ
Fig. 7

territory. In its attempts to subordinate Eastern Amazonia to the foreign and national capital, it unleashed incalculable social and ecological disruptions.[47] Extractive, financial, and administrative businesses were attracted to the region by the enhanced infrastructures, financial incentives, lack of pollution and deforestation controls, labour supply, and lack of trade union organisation. Although advertised as a broad development programme with diversified economic activities, the PGC mostly produced the extractivist infrastructure that, today, is either owned or controlled by Vale S/A. This company was founded as a state company in 1942 and privatised for just 3.3 billion dollars in 1997; today, it is the third largest mining group on the planet.

I have presented the historical geographies of extractivism in Carajás in relation to urbanisation for three reasons. First, to reassert the idea that extractivism can induce urbanisation in manifold ways, not only around the extraction sites but also related to their supporting infrastructures—highways, hydropower plants, railroads, and company towns. By agglomerating state and capital apparatuses, infrastructure, and jobs, extractivism creates concentrated nuclei giving rise to urban economies. However, these extended materialities do not necessarily crystalise in the forms of cities, rather they reorganise the entire territory through population displacement and environmental resource plunder.

Secondly, these projects are examples of general state and capital strategies and logics projected and materialised at the urban level. They unsettle and disrupt ecologies, communities, and forms of everyday life that often did not have any relations with the general order). The *Xikrin* people, for example, inhabited the region that today corresponds to south-eastern Pará since the eighteenth century. For the past five decades, they have lived in a constant battle with Vale and the state due to logistic projects in their lands, river contamination, mining explosions, and several other disruptions to their ecosystems and cultural landscapes.[48] Together with other Amazonian majorities—*quilombolas*,

seringueiros, *quebradeiras-de-coco*, *camponeses*, *ribeirinhos*, *sem-terra*, *faxinalenses*—they are forced to operate within the abstract logic of the "general level," manifesting in meetings and negotiations, hearings and inspections, protests, and demonstrations.

Finally, these projections and mediations are not restricted to the conventional repertoire of material imaginaries in urban studies—roads and buildings, cities and towns, concrete and cement. They can also be expressed, as Lefebvre noted, in sites of nature preservation.[49] The Carajás National Forest, discussed in the next section, is a good example of how abstract strategies are mediated and territorially instantiated; in other words, how large territories can be operationalised through environmental regulation.

THE CARAJÁS NATIONAL FOREST AND TWO HISTORICAL MOMENTS OF EXTRACTIVISM

The area that today corresponds to the Carajás National Forest has been explored by Vale since the 1970s. The conservation unit was created in 1998, less than one year after the company was privatised. Formally, Vale only holds a seat in the Forest's managing board, which is controlled by a federal environmental agency. One of the managers in the agency has declared that the privatisation of the mineral "deposits, the territory, would have been a bigger scandal," thus, "this arrangement was made, which [created] the conservation unit in 1998." In practice, Vale has full control of the area.[50] [Fig. 8]

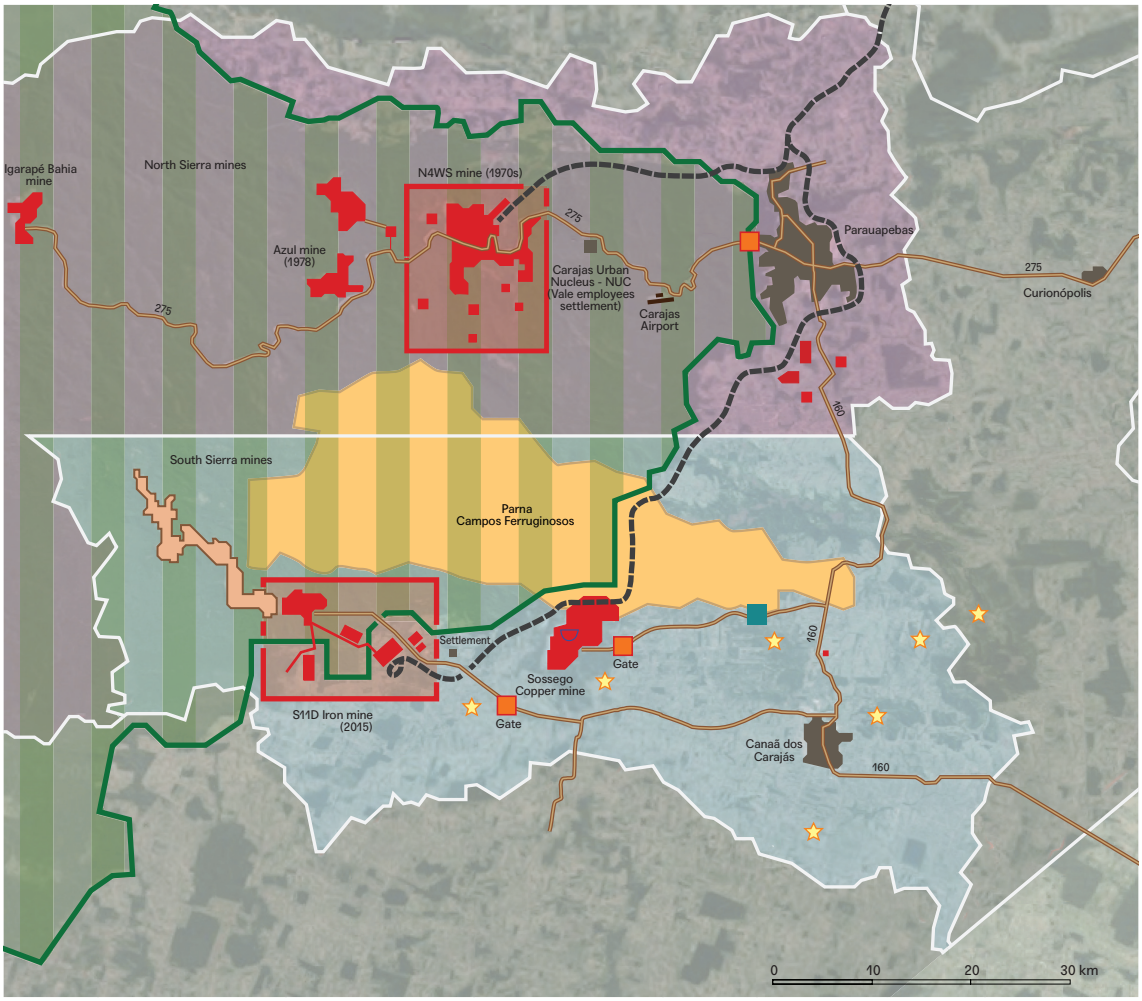
Other authors have used terms like "green shield" and "green belt" to refer to the Forest's function in protecting Vale's operation in a region marked by land conflicts and occupations.[51] I have shown elsewhere that the Forest fulfils several other functions.[52] It regularises Vale's illegal land acquisition while signalling to national and international speculators an ostensible institutional security, reinforcing the legal formalisation of appropriated land, the right to property, and the commodification and financialization of land.[53] Since public agencies are formally in charge of the conservation unit, it transfers the costs and the legal responsibility of protection to the state. It works as an instrument of dispossession of landed groups settled in the area. It gives an alibi and helps fulfil the legal requirements for mining activities since the conservation units are not usually the equivalents of environmental destruction. It creates a massive environmental marketing campaign supported by popular representations of "preserving nature in the Amazon."

While demonstrating how operationalisation can be enacted through environmental regulation, the Carajás National Forest also illustrates two distinct historical moments of extractivism and extended urbanisation in the two *sierras* of the mountain range, both explored by Vale. The North Sierra contains infrastructures built in the 1970s and 1980s, which operate to this day using the old technological model. In contrast, the South Sierra mine utilises a "fourth generation technology" allowing for completely automated operations, thus inducing a different kind of urbanisation.[54]

NORTH SIERRA: THE OLD MODEL

In the North Sierra, Vale has been extracting iron, manganese, copper, chromium, nickel, cassiterite, tungsten, and gold since 1978. The materials are transported to Vale's port through the Carajás Railroad, which penetrates the "preserved" rainforest. [Fig. 9] The North Sierra hosts the Carajás Airport and a company town built in the 1970s. Regionally known as "Vale's neighbourhood" (Bairro da Vale), the company town is well equipped with infrastructure, urban services, and facilities, which are exclusive to Vale's high-ranking employees.[55]

Immediately after the main gate is the centre of Parauapebas, a city that sprung from Vale's operations in the late 1970s. At the time, operating with older technologies, this mine required more human labour, engendering a massive flow of migrants into the city emerging "at the foot of the mountain." In contrast to the planned and structured company town set amid



- Urban centres
- Area of the two main mining complexes
- Mining sites (open and closed)
- Guarded entrance gates to the mining sites
- Landless workers' encampments
- Area claimed by the Grotão do Mutum encampment
- Carajás Railroad
- Road network
- Parauapebas terrritory
- Canaã dos Carajás
- Conservation areas
- National Park Campos Ferruginosos

THE NORTH SIERRA AND SOUTH SIERRA MINING REGIONS
IN THE CARAJÁS MOUNTAIN RANGE
Fig. 8

Fig. 9

the rainforest, Parauapebas was a precarious "city of subcontractors."[56] From 1983 to 1989, its population grew from 1 to 53,000 people living mostly on informally occupied land and auto-constructed houses. While the population boom was followed by growing unemployment, illiteracy, prostitution, and criminality, Vale and the state institutions pressed on with extractive activities despite rising social and political problems.[57]

Today the city of Parauapebas has 200,000 residents. It is the fifth largest city of the state of Pará and Brazil's main exporter of raw materials extracted at the North Sierra, which are expected to continue until 2048. Although Parauapebas has outgrown its initial capacities and is no longer merely a city of migrant mining workers, Vale's historic influence continues to dominate. Parauapebas' everyday rhythms of: traffic congestions and street movements follow the change of labour shifts in the mine. Also, the decisions on public expenditures are mostly aimed at improving Vale's operations, expressing the city's dependence on mining royalties and mining jobs.[58]

Parauapebas is a classic example of historic entanglements between urbanisation and extraction, as in numerous other examples in Eastern Amazonia. The construction of the *Transamazônica Highway* in the 1960s paved the way for several

F. 9 The North Sierra–the old model: extended assemblies of extractivist urbanisation–the forest, the mine, the company town, the airport, and the city of Parauapebas.

cities and towns to emerge along its route.[59] The proliferation of tap-mining (*garimpos*) has also induced the formation of several other urban centres, the most emblematic being *Serra Pelada*.[60] Furthermore, the relationship between extractivism and urbanisation has been analysed in a wide range of geographies around the world.

The case of Parauapebas and the North Sierra also clarifies the strong entanglement between the extraction technology and the rhythms and pathways of urbanisation. The technology of the 1970s applied in Parauapebas required much more labour than contemporary technologies. Therefore, it generated particular movements and spatialities in an environment of flexible circulation, functional and spatial mobility of labour, and new kinds of "extensionalities."[61] The patterns and pathways of urbanisation of Parauapebas are thus entwined with older forms of operations in extraction, logistics, and management; the role of the state was different, as were rationalities, movements, and expectations. In this respect, Parauapebas stands in sharp contrast to the contemporary socio-spatial transformations taking place in the neighbouring municipality of Canaã in the South Sierra.

F. 10 The South Sierra: the S11D iron complex, the Sossego copper mine, and the town of Canaã dos Carajás.

THE SOUTH SIERRA: THE COMPLETE AUTOMATION OF MINING

Constructed between 2011 and 2016, the S11D Complex in the municipality of Canaã in the South Sierra is, as Parauapebas in the North Sierra, also located in the domains of the National Forest. [Fig. 10] It is the largest open-pit mine in human history and was constructed relatively quickly through high-technology module assemblage, allowing for the simultaneous construction of logistics, ore separation, and processing facilities. The operation involves mobile excavators extracting iron ore and feeding dozens of kilometres of conveyor belts that transport the ore to the processing plant. Instead of fixed crushers and off-road trucks that would require human labour throughout the extractive procedure, this system uses mobile crushers and long-distance conveyor belts and treadmills—a scheme Vale proudly advertises as the "Truckless System." The company invested more than 14 billion dollars in the complex, which includes the extension of the Carajás Railroad, new energy transmission lines, iron ore processing modules, long-distance treadmills, transportation tunnels, roads, and bridges.[62] The entire assemblage is completely detached from Canaã's urban centre.

However, the massive amounts of materials, resources, and bodies needed to assemble one of the largest mining interventions in the world also entailed the transformation of the urban centre. Over five years (2011–2016), the project opened up more than 45,000 jobs positions in Canaã, a town of 30,000 residents, back in 2010. Local

Fig. 10

public officials, union representatives, and business owners share the estimate that over 40,000 people settled here during the time of the mine construction.[63] Though many worked in activities of provisioning for the booming urban economy, most migrants were absorbed in the construction of the mining complex, hired either directly by Vale or by third-party companies. With the launch of the operation and the dispatch of the first batch of iron ore in 2017, the vast majority of employees and subcontractors were fired. When I arrived in Canaã in April 2018, the mine was able to operate with less than 100 workers.[64]

The full automation of mining and the low demand for predominantly specialised and highly skilled labour brings the question of operationalisation to the forefront: this is a landscape marked by increasing levels of abstraction—manifestations of the abstract logics of state and capital. The technological model based on automation demands only a fraction of labour compared to the model based on older technologies, thus inducing different forms of urbanisation, unfolding at both the urban and everyday levels. What happened to the tens of thousands of people who are now unemployed? How did Canaã manage to accommodate tens of thousands of new residents in such a short period of time? How did residents experience these changes, and how did they secure their livelihoods amidst the mass unemployment crisis?

2011

2018

CANAÃ'S URBAN CENTER
Fig. 11

F. 11 The rapid expansion of Canãa, between 2011 and 2018, before the dramatic decline.

CANAÃ: THE BOOM AND BUST CYCLE OF THE MINING TOWN

Canaã dos Carajás is one of the most extreme and disruptive cases of entanglement of advanced technologies of extractivism with pathways and rhythms of "concentrated urbanisation."[65] Between the S11D's launch in 2011 and April 2018, when I first arrived the town rapidly expanded. [Fig. 11] It became evident to me that Canaã's urban decay following the massive unemployment crisis was as acute and dramatic as its preceding growth when it doubled its previous population.

Instances of violence escalated quickly. The post office was robbed twice in three months, with the subsequent kidnapping of two employees on one of the occasions. Multiple bank break-ins, blown-up ATM terminals, and home invasions fed the local news, together with rising prostitution, drug trafficking, and gun violence, all recurrent features of mining towns.[66] The prefecture claimed it didn't have the means to provide an appropriate response to the urban decay, despite the fact that it raised more than BR$ 184 million (42 million US dollars) that year from mining royalties. Despite the popular support for the recently re-elected mayor, residents believed that corruption was the only plausible explanation for the fact that the largest mining project on the planet was unable to generate any form of local development. In February 2018, a state judge ordered the mayor's suspension from office for a period of 180 days due to a highly overpaid contracting of a consultancy firm. A few weeks later, he resumed duty with no further explanations, causing an uproar in local politics.

People appeared shocked at Canaã's grim reality and recalled the "good times" with a mixture of nostalgia and regrets for not having bought a certain piece of land, not having conducted business in a certain direction, or not having accepted a job offer elsewhere. They did not regret, however, settling in Canaã even though the horizon was now harsher. Some residents attempted to convince me that there was no better place to be over the previous years.

It was as if they wanted me to agree with a simple rationale: if you settle in a place experiencing such tremendous growth, you will make money.

Hotel owners, moto-taxi drivers, merchants, storekeepers, waiters, informal settlers, public officers, and many other participants of the local economic game always made sure in each conversation that I understood how extraordinary Canaã's economic life was between 2011 and 2016. Hotels were full, many were under construction, and various schemes for accommodation arose daily. Supermarkets were crowded with two-hour queues at the cashiers. Moto-taxi drivers were making their usual monthly income in a single day. Stores and restaurants were constantly packed, and their hardest task was not selling, but managing inventories.

Even those who came to Canaã to find work in mining took advantage of this fleeting phase of economic prosperity. Ricardo from Tucuruí lived in Parauapebas before coming to Canaã in 2012. He and his wife both took mining-related technical courses. "I was in the initial cohort of 20,000 people working in the S11D project." In ten months, he earned enough money to buy a small piece of land. "Five years ago, I was paid twice the money that technicians receive today." As he gradually expanded his networks, he calculated that opening a clothing store would be a better deal. Since 2015, he managed to finish his house and save some money, but is now in the process of shutting down the store. "It's all falling, like an avalanche, from the top down, hitting all levels." He had enough money to keep the eight square metres store running for another year since the rent was declining. "It started with 1,500 in 2015. It reached 1,000 last year. Now the owner brought it down to 750, but I don't want it." Many other stores and houses in town went through similar episodes. "I've never seen the rent go down while the tenant is still in, but that's what's happening! Nowadays, you could even rent a good house for 300–400."

Ricardo's story is not an exception. Real estate development was perhaps the clearest expression of the boom and the decay of Canaã, echoing the construction of the S11D. From 2011 in-migration exceeded accommodation capacities. With rent prices skyrocketing, housing quickly became the main concern for migrants, developers, and the local administration, and a hot market for exogenous actors. Canaã's representatives added multiple extension areas to the urban perimeter to accommodate new housing projects.[67] However, even from the technocratic point of view of planners, urbanists, and consultants, the planned expansions bore "no logic." [68] Several interviewees mentioned illicit schemes behind the conversion from rural to urban land, ultimately selectively implemented for exorbitant profits.

In this context, mobilising the urban as a "governmental category" entailed multiple shifts of urban forms with land conversion enabling land parcellation.[69] New urban allotments became the most popular housing alternative for migrants, gradually filling up the ever-expanding edges of Canaã. In partnership with private regional contractors, rural landowners built basic sanitation in areas marketed and sold as "planned neighbourhoods." Buyers committed to building their own houses in addition to paying relatively cheap monthly instalments for their 300-m² lots. As the majority of migrants had income security through mining-related employment, the combination of auto-construction and monthly instalments for land became the prevalent model of housing provision.[70] [Fig. 12]

Moving through Canaã from the centre outwards, larger houses mix with commercial and service facilities, followed by residential allotments. These first, more central developments are denser, and the loose arrangement of programmes and buildings does not follow clearly defined neighbourhood boundaries. The properties do not have fences around them, and the houses are usually neither plastered nor painted. Even older buildings are often found side-by-side with areas of environmental vulnerability and soil erosion, sometimes inhabited by squatters. Moving toward Canaã's edges, the infrastructures begin to dissipate into fragmented roundabouts, roads that abruptly end in dust or bushes, and unfinished and often

abandoned houses. The landscape is punctuated by precarious auto-constructed bars, shops, and evangelical temples, only identifiable through plastic banners on their brick facades. Signs "for sale," "for rent" and even "trade for motorcycle" are more frequent on houses in the periphery, many of which have no ceilings or walls. Moving further, there is still some infrastructure but almost no houses. The landscape comprises streetlight poles and low grass; under a green sales booth, two people with matching shirts protect themselves from rain and sun. [Fig. 13]

These landscapes express the rhythms of high-technology extractivism imposed on migration, housing, and urbanisation. Because private developers were aware that the housing market would tumble after the completion of the mine, the task of building the houses was transferred to the buyers. In a boom-and-bust economy, private developers rushed to parcel and sell the land without adding any construction value as there was no time for it to be realised. While a higher technological level of mining operations engenders a faster urbanisation process, human capacities for automated construction remain largely the same. The construction of large mining complexes requires tens of thousands of workers, but the demand for low-skilled labour, indispensable during the construction of the mine, is eliminated in the operation phase due to high levels of automation. Highly skilled labour, however, is permanent, less numerous, and well-paid.

The steady demand for highly skilled labour is also expressed in housing patterns at Canaã's edges. In sharp contrast to the landscape of residential allotments, but contiguous to it, is *Residencial Vale*, a development launched by a partnership comprising Vale, the regional contractor Buriti, and VBI Real Estate; the last being a private equity real estate investment firm headquartered in São Paulo. The settlement hosts Vale's high-ranking engineers and officials in hundreds of identical double-story houses in sober colours equipped with cameras and security systems. [Fig. 14]

Fig. 12

Fig. 13

Fig. 14

This project was not an isolated intervention, however. Vale was also responsible for the construction of several townhouses, materialising the company's strategies at the urban level. A company manager took me on a tour of various completed and ongoing works that "Vale did for Canaã": parks, schools, hospitals, the building for the municipal fair, the judicial court, as well as avenues and streets that were either expanded or paved. Vale also has its own community centre, the "Casa de Cultura," promoting free activities for local residents, including music lessons, a playground, and art exhibitions. The centre's manager clarified that its funding comes from Rouanet Law, a federal fiscal incentive programme that allows companies to redirect their taxes into cultural activities. In fact, that was also the case for most of the aforementioned social projects of Vale in Canaã: they were funded by controlling and redirecting mining royalties (taxes) from the local prefecture.[71] Besides the control over public funds, Vale's inscriptions throughout the city speak of different forms of power the company exerts over everyday life. According to Cândido, the company's employees have distinct social credentials for accessing goods and services in Canaã.[72] In hospitals, for example, wearing the company's uniform guarantees a care priority, regardless of the severity of the illness. Local activists and organisers have also emphasised that the company's financial and operational support in the construction of Canaã's civil court amplified its influence in the local judiciary.

Canaã's urban centre expresses the level of precarity, peripherality, and segregation that is predominant across Latin American cities. It also displays the agglomerative dynamics that are expected of booming mining towns,

F. 12 Billboards advertising 300-m² allotments at low monthly instalments.
F. 13 Peripheral landscapes of subdivisions in Canaã.
F. 14 The twin houses of the *Residencial Vale*, for high-ranking company officials.

Fig. 15

particularly given the dimension of this particular mine. Housing and urban expansion respond to the capitalist imperatives of reproducing the labour force while allowing regional developers and contractors to extract quick profits through rural-to-urban land conversion and speculation.[73] This boom town also shows that the technological level of mining is intertwined with the production of urban space, mostly auto-constructed by migrant majorities seeking new opportunities in these centres, generating ghost-like peripheries once full automation is ready to take place, which also exemplifies how the general, urban, and private levels operate with one another. While Canaã's urban centre seems to move towards an uncertain future, a key question remains to be answered: What happened to the workers that became dispensable and were expelled from the production process of the automated mine? In search of an answer, the next section will turn to the non-city geographies of Canaã.

CONTESTING EXTRACTIVISM: LANDLESS PEASANTS, RESISTANCE, AND THE POLITICS OF URBANISATION BEYOND THE CITY

In this section, I speak to this complexity by presenting the case of landless encampments in the rural zone of Canaã, in conflict with Vale and the local state. Although they are situated outside Canaã's formal urban perimeter, they are inextricably intertwined with urbanisation processes, both within the urban core and across the extended urban fabric. I also analyse how extended forms of urbanisation penetrate these agrarian territories and even provide opportunities for urban migrants that previously lived in the booming urban centre.

THE FIGHT FOR LAND

The historical struggles for land in Brazil are referred to as the "fight for land" (*luta pela terra*). Some interpretations qualify these

F. 15 Producing food at the encampment.
F. 16 The Carajás railroad at the southern border of the Rio Sossego encampment.

Fig. 16

struggles as organised actions of rural workers articulated by social movements that basically consist in occupying agricultural land, producing food and resisting evictions. Other interpretations look at a larger set of social groups (e.g., riverine and indigenous peoples, *quilombolas*, migrants, people affected by dams, rural workers), and a broader set of intersectional movements.[74] Several accounts trace the conflicts between the landless and the landowners (ranchers, merchants, companies, banks) and the chronicle of murders, tortures, and massacres that mark the country's history and, in particular, the Amazon.[75]

The migratory movements of the 1970s to Amazonia, and the expansions of large-scale extractivist projects in the same period, boosted land conflicts and extended the scale of these struggles. Social movements formed that soon exceeded the local level and dedicated themselves to the fight for land and agrarian reform on the national level. Migrants regularly struggled against armed militias deployed by large ranchers who claimed extensive portions of land and used all kinds of scams to "prove" their land titles and obtain control over the land. Land-grabbing, known as *pistolagem*,[76] and document falsification were so entrenched that some areas in Eastern Amazonia, both in and outside cities, are said to have "multiple floors," i.e., multiple faked titles, and thus multiple "owners," of the same land. Among the innumerable forms of land scams, *grilagem*[77] is the usual denomination for the practice of falsifying documents, followed by violent expulsions. In the 1970s, *grilagem* and *pistolagem* were practised frequently, most often by ranchers. Today, these practices are carried out by soy exporters, cattle ranchers, mining companies, and even municipal administrations. Dispossession is a diversified and complex phenomenon, coupled with the judicialization of land struggles, criminalisation of social movements, and the involvement of private security companies and police forces.

ENCAMPMENTS: OCCUPATION AND ENDURANCE

Until the 1990s, agriculture and cattle rearing were the most important economic activity in Canaã. With the start of explorations of mineral deposits, agrarian economies began to decline[78] and rural land prices to rise. Today, many ranchers still control vast agricultural areas and are thus able to profit from booming land prices resulting from new "discoveries" of mineral deposits, exploration works, and the ensuing urban extensions. Some of these lands have almost no "productive use"; the few cattle or sparse crops on these fields are rather used as a means of "flagging" control over an area and deterring landless occupation. Despite such efforts, several occupations took place in 2015 when the S11D neared completion and tens of thousands of workers lost their jobs in mining and the broader urban economy. With high unemployment and deteriorating living conditions in the urban centre, hundreds of residents made a radical and concerted movement towards the occupation of agrarian lands and founded seven encampments in Canaã's rural area, each ranging from 20 to 100 km² (5,000 to 25,000 acres).

Rural occupation and encamping are long-established practices in Brazil, especially since the consolidation of the Landless Workers Movement (MST) in the 1980s.[79] Initially, the goal of the settlers in Canaã was just to occupy the land successfully, begin growing food, and resist eviction. But growing food needs technical and environmental requirements, knowledge, skills, and a set of agricultural inputs. [Fig. 15] Furthermore, it needs an appropriate communal organisation: the settlers have to elect their coordinators, who work internally as leaders managing resources and relationships and act externally as representatives of the community in meetings and negotiations. While handling the tumultuous congregation of families and individuals of various backgrounds and relationships, coordinators also need to be in touch with public authorities and negotiate the formalisation of the settlement. These are all requirements of becoming a *camponês*. The term has a historical and political meaning, particularly in the context of the struggle for land. It literally means "peasant," but here I use it in Portuguese for its political meaning.[80] Once people identify as *camponês,* there is no way back to the city. They become "marked cards" in the urban socioeconomic game as explicit and tacit barriers are created for getting a job or accessing basic services. In order to tackle exclusion and criminalisation, *camponeses*' social movements and activists try to bring public opinion to their side, providing a high standard of food production, food security, food diversity, and lower prices.[81] These efforts are not always noticed. "People from 'the street' [the city] don't know where their bread comes from, but they anyway call us lazy, invaders, criminals," a *camponês* told me. Here, I have chosen three encampments to illustrate some of the problems and challenges often shared among the camps. A detailed account of these encampments can be found elsewhere.[82]

The encampment Grotão do Mutum gathered 150 families. They occupied an area that Vale knowingly bought from a *grileiro:* a large ranch including thousands of hectares of public land that its previous owner "illegally fenced in." When Vale went to Canaã's court[83] to evict the *camponeses*, it was requested to present the appropriate property titles. The company, however, did not have the land scripture and presented a mere contract of purchase between them and the previous owner, a classic example of *grilagem*. When the judge refused to proceed with the eviction without proof of ownership, Vale argued that the families should be evicted because the area would be used for the creation of the Campos Ferruginosos National Park (PARNA), an environmental "counterpart" of S11D. [Fig. 8] In the judicial process, Vale stated that "if the current situation of the property is not resolved [...] and the area is not destined for the conservation of biodiversity, as determined by the environmental licensing of the S11D project, the enterprise itself may have problems issuing an operating license."[84]

In other words, the company was arguing that if the 150 landless families were not removed from that area, it would not be able to create the park and, therefore, would not have its environmental license to mine *in another area*. The judge accepted the company's appeal and ordered the eviction of the community in 2016 without any proof that the land legally belonged to Vale. Eight families managed to occupy a much smaller piece of land nearby, hoping that their judicial appeal to get back to their land will someday be heard and processed. In 2017, PARNA was finally established. The presidential decree that created the park, states that more than 19,000 hectares were "donated" by the company—the same area that was once fenced by the rancher and then illegally sold to Vale—and explicitly states that federal environmental agencies allow Vale to run transmission lines, gas pipelines, and other extractive installations through the park. This example shows how environmental regulation can be operationalised according to mining interests and how crucial it is for the company to exert its territorial control within the boundaries of "legality."

In another part of the municipality, the encampment *Rio Sossego* faces different issues. It is located near both the S11D main gate and the highly surveyed Carajás railroad that transports ores to Vale's port in Maranhão. [Fig. 16] Therefore, *camponeses* face more frequent and violent forms of abuse, surveillance, and control. They report different forms of everyday harassment and humiliation by "one of Vale's police forces." They use this formulation because enforcements and interventions are enacted by the National Guard (federal), the Military Police (state), the Civil Police (municipal), the Company of Special Operations (regional), and Vale's private security. Guards and drones are constantly circulating around the camp and taking pictures, "keeping a record of who we are," a *camponês* told me. "We've had beatings, suffocations, mild injuries, and fatalities. We all know we can't walk alone." "They have also arrested a comrade for fishing in the river, saying he was breaking the environmental law." The river, however, like many other nearby water

Fig. 17

F. 17 Collective facilities in the encampment: kitchen, church and auditorium.

sources, was severely poisoned by Vale's mining residues. Water toxicity has already produced multiple cases of skin rashes and diseases.

The encampment *Monte Sião* was formed in an area that was Canaã's municipal dumping ground. Their antagonist is not Vale but the prefecture of Canaã, which bought an extremely overpriced piece of land from someone that, as in the previous example, did not have a property title in the first place. Once aware of the irregularity, 89 families rushed to occupy the area, which meant they would live side by side with massive piles of urban garbage. After being evicted twice from this area, they managed to get the property documents with the assistance of social movements and could prove that the prefecture's transaction was illicit. Now they are filing a lawsuit against the Federal Agrarian Agency to reverse the prefecture's acquisition and to formalise their settlement. Until this process is decided, the prefecture cannot evict them, at least formally. However, the families still face many mechanisms of threats and dispossession: crops are burned down and destroyed, leaders are co-opted, and networks with the city are disrupted.

In order to fight evictions and to cope with all the challenges and threats, c*amponeses* count on the strong support of regional social movements and unions, which offer all kinds of assistance. They visit the encampments to offer educational courses on broader social and political questions and help develop strategies of mobilisation and organisation. These encounters help to form new leaders and coordinators and to embed c*amponeses* into other movements and agendas, expanding their networks of struggle and care. Other social movements offer courses on agricultural techniques for specific types of land, including the use of appropriate tools, fertilisers, irrigation systems, etc. [Fig. 17]

Through these networks, social movements also offer legal assistance, as most of the *camponeses* are living under threats and lawsuits. Lawyers and activists in different cities contact residents and coordinators to inform them about new injunctions, the timetables of various processes in agencies and courts, and any new lawsuits filed against them. During a lunch at the encampment, Junior, a young leader, received a WhatsApp message from an activist lawyer with good news regarding the previous arrest of a fellow *camponês*. He explained, "Internet is very important here because sometimes Vale files a suit in the morning and the police [are] already here by the afternoon [...] Of course, our own lawsuits against them take at least six months to be processed." He told me that the internet connection in his camp is better than in the city because of their proximity to the mines. After our lunch, he loosened his overalls and took off his white boots for a well-deserved rest and told me about the perils of life and work at the encampment. To relax at night, he told me, he watches his favourite series. He is a huge fan of Netflix's *La Casa de Papel*, claiming it is "almost as good as Game of Thrones."

Carlos is one of many *camponeses* who have lived in many different cities across the country. Some grew up on farms and moved to find work in larger cities before coming to Canaã. Others have spent most of their lives working in factories and construction sites or in extractivist projects such as S11D. It is precisely the intermixture of experiences, ideas, networks, and the presence of long-established national and regional social movements that makes the encampment a place of difference, resourcefulness, and endurance. Assembling the skills and experiences that each individual *camponês* (migrant, peasant, factory worker, farmer) brings to the table generates a huge potential. While some learn how to work the land, others learn how to fight for it. The enormous flexibility and mobility of *camponeses*, both spatially and functionally, and their ability to engage in complex social and technical situations creates the conditions to both produce their own infrastructure and take advantage of the existing extractivist infrastructure. It also creates the conditions, as I will explore in the next section, to appropriate these extractive materialities in order to contest them.

INTERRUPTING PLANETARY EXTRACTIVIST INFRASTRUCTURE

All mining infrastructures explicitly produced for extractivism can have alternative uses. The roads constructed by Vale to connect the mine and town, allowing the circulation of vehicles and workers for mining operations, are also used by *camponeses* to occupy land, to sell their food products, and to receive visits by activists and social movements for political engagements and socialising. Communication, energy, and transportation networks provide the means for the camps to communicate with each other and external collaborators. But, most importantly, Vale's mines, roads, and railroads have become a permanent terrain for political contestation.

"Vale is in our hands," a *camponês* told me. After months of fieldwork and collecting hundreds of testimonies on the seemingly seamless veneers of Vale's power and control, I was particularly struck by this statement. "We know everything. We built that mine!" he emphatically insisted, calling my attention to how the company actually provided the means for the *camponeses* to protest and fight against the company. In other words, Vale trained the same people it is now trying to expel. After all, the *camponeses* know the entire mining complex, the location of each facility, and the schedule of trucks, employees, and machines. They have built (and know how to unbuild) tracks, roads, and bridges that lead everyone and everything in and out of the mine. They know the capacity and the schedule of each wagon, how long it takes to reach the port, and the estimates of Vale's hourly losses if the railroad stops. They know how much land Vale "owns" in the region, and they can assess that their own land claims are financially irrelevant to the company. By occupying the road to the S11D, the Carajás railroad and by the sheer eventuality of other occupations with costly repercussions for Vale, the *camponeses* were able to suspend or postpone injunctions and evictions. Importantly, this is how they can assert their own collective demands and secure a seat at the negotiating table.

Fig. 18

F. 18 At the first National Meeting of the "Movement for the Popular Sovereignty in Mining," in May 2018, social movements, communities, and activists marched to the Carajás National Forest main gate to protest against Vale's crimes and abuses not only in Carajás, but throughout the country.

The same logistical apparatus that secures the interconnectivity between territories of extended urbanisation and the large urban agglomerations that form the contemporary global metropolitan system also exposes its vulnerability. In Eastern Amazonia, landless *camponeses*—as well as other historically marginalised groups—are able to play with the logistical interconnectivity of planetary urbanisation. In a contradictory way, extractive logistical infrastructure is what put them "in the game." As much as the operational assemblages of extractivism can fulfil their functions according to well-known profit-oriented intentionality, neither Vale nor the state anticipated what was likely to happen: they were providing the means for new political subjects and modes of collective action to use that same infrastructure to fight for their political rights. [Fig. 18]

In this context, it becomes clear that the mediating character of (extended) urbanisation also works "the other way around" as "counter-projections" that emanate from everyday life.[85] For several decades, indigenous peoples, landless peasants, and other Amazonian majorities have marched to large cities (especially Brasília) for political demonstrations, to make their demands heard, and to find a mediation between their everyday struggles and the abstract actors against which they fight. These activities and actions include a large range of modalities of mediation enabled by extended urbanisation and show how the process of operationalisation can be mediated and territorially instantiated; how power, state control, and capital's projections can be challenged; how these extended materialities can be appropriated in unanticipated ways and/or how they can contribute to transformations in the socio-political terrain.

This is not to say that *camponeses* are "anti-extractivist" or "anti-capitalist"; they are not, at least not initially. They are mobilising, occupying, negotiating, cooperating, sowing, and reaping based on immediate necessities. However, there is always room for individual interests to match collective interests, as individuals are increasingly able to see themselves and the actors they cooperate with or fight against in a different way. The capacity of encampments to gather these heterogeneous experiences and perspectives engenders a stronger sense of self-consciousness, empowerment, and endurance, often in relation to a broader movement or question that transcends the level of everyday life, such as the fight for the land, for agrarian reform, for food security, etc.

Ultimately, *camponeses*, índios, riverines, *quilombolas,* and other Amazonian majorities have something to say about urbanisation that nobody else does. They have a lot to say about nature, sustainability, agriculture, and land but also about infrastructure, social mobilisation, territorial regulation, housing, politics, and streaming platforms. Of course, these voices and perspectives that are continuously created, threatened, and reinvented outside of cities might take some time to be heard, as city-centric approaches to urbanisation are excluding these perspectives from being considered.

BETWEEN EXTRACTION AND REBELLION: EXTENDING URBAN MEDIATIONS

In this chapter, I discussed the historical geographies of Eastern Amazonia as a privileged terrain for the study of urbanisation in relation to extractivism. Through the Lefebvrian notion of levels of social reality, I analysed the historical rounds of Amazonian colonisation with particular attention to the region of Carajás and the contemporary urban transformations in Parauapebas and Canaã dos Carajás in the wake of the construction of massive mining projects. I have suggested that the transformations in mining towns are inextricably intertwined with the technologies and rhythms of extractivism. Although both Canaã and Parauapebas are expressions of the precarity and peripherality that characterise mining centres, the differences in mining technologies and operations have generated distinct processes of urbanisation.

Furthermore, extractivism has induced not only the formation of cities and towns but also of abandoned and unfinished settlements, violent and precarious neighbourhoods in cities, as well as extended materialities, practices, and subjectivities, such as those taking place in the landless encampments in their struggle against Vale and the prefecture.

In these encampments, we find a radical alternative form of political struggle, work, and inhabitation that embodies both the fight for land in the Amazon and the contingencies of urban life under twenty-first-century extractivism. Necessities and practices at the level of everyday life engender unanticipated uses and (re)appropriations of the same extractive assemblies that are used for operationalising the region. It is precisely because of the opportunities encountered by urban majorities for remaking their livelihoods and for contesting abstract logics and interventions from the capital and the state that different levels of abstraction should be considered in the study of extended urbanisation. Importantly, the ways in which the general level projects itself onto the urban level are dramatically different in cities and geographies of extended urbanisation, as demonstrated by how the capital and the state "show up" in the non-city as police forces, eviction injunctions, as private guards, and violent infrastructure.

By being attentive to how the mediations embedded within urbanisation processes—both in their vital and pervasive senses—are extended to non-city domains, urban research can bring elements that are apparently dispersed in the inquiry of urbanisation without the inherited empirical and disciplinary boundaries. The levels can bring together both lived experience and state and capital; both the critique of political economy and the embodied experiences of field research; they can bring into conversation and articulation, the city, countryside, forest, village, and mining geographies that are increasingly shaped by contemporary urbanisation. But most importantly, the analysis of urbanisation through the levels of analysis can bring to the forefront a perspective of urbanisation that is not centred in the voices of city dwellers but also of peasants, villagers, *quilombolas*, riverine, indigenous peoples, and many other groups across the planet whose lives and spaces have been deeply transformed by extended urbanisation.

ENDNOTES

1 Simone, "The Urban Majority and Provisional Recompositions in Yangon."
2 Lefebvre, *The Urban Revolution*.
3 Goonewardena, "The Urban Sensorium."
4 A more complete account of my perspective of extended urbanisation—that draws upon its classical formulations but attempts to move the debate forward—as well as the full story of Carajás is available in my PhD dissertation, see Castriota, *Urbanização Extensiva na Amazônia Oriental: escavando a não-cidade em Carajás*.
5 Keil, "Extended Urbanization."
6 Monte-Mór, "Urbanization, colonization and the production of regional space in the Brazilian Amazon," *Modernities in the Jungle*, "Extended Urbanization and Settlement Patterns in Brazil"; Brenner and Schmid, "The 'urban age' in question".
7 Lefebvre, *The Urban Revolution*; see also Monte-Mór, *Urbanização, Sustentabilidade, Desenvolvimento*.
8 Gudynas, *Extractivismos*; Svampa, "Commodities consensus."
9 Gago and Mezzadra, "A Critique of the Extractive Operations of Capital"; Mezzadra and Neilson, *The Politics of Operations*; Arboleda, *Planetary Mine*; Andrade, *Spaces and Architecture of Extractivism*; Ruiz, "Territory, Sustainability, and Beyond"; Marais et al., "Mining Towns and Urban Sprawl in South Africa."
10 Angelo and Wachsmuth, "Urbanizing Urban Political Ecology."
11 Monte-Mór, "Modernities in the Jungle"; Kipfer, "Pushing the limits of urban research."
12 Simone and Pieterse, *New Urban Worlds: Inhabiting Dissonant Times*.
13 There are many readings of Lefebvre's discussion of the levels of reality and analysis, see especially Martins, *Henri Lefebvre e o retorno à dialética*; Shields, *Lefebvre, Love and Struggle*; Brenner, "The Urban Question," "Henri Lefebvre's critique of state's productivism"; Elden, *Understanding Henri Lefebvre*, "Mondialisation Before Globalization"; Goonewardena, "The Urban Sensorium"; Goonewardena et al., *Space, Difference, Everyday Life*; Merrifield, *Henri Lefebvre: A Critical Introduction*; Schmid, *Henri Lefebvre and the Theory of the Production of Space*; Kipfer "Why the Urban Question Still Matters"; Kipfer et al., "Henri Lefebvre: Debates and controversies"; Stanek, *Henri Lefebvre on space*; Butler, *Henri Lefebvre: spatial politics*; Kipfer et al., "Henri Lefebvre: debates and controversies,"; Costa et al., *Teorias e Práticas Urbanas: condições para a sociedade urbana*; and Fraser, *Towards an Urban Cultural Studies*." I have provided elsewhere a critical account of this literature while stressing at length the implications of Lefebvre's levels for a broader understanding of extended urbanisation, see Castriota, *Urbanização Extensiva na Amazônia Oriental*.
14 Lefebvre, *Critique of Everyday Life*, *The Right to the City*, *The Production of Space*.
15 Goonewardena, *The Urban Sensorium*, 66; Stanek, "Space as Concrete Abstraction."
16 See Monte-Mór, *Modernities in the Jungle*; Arboleda, "In the Nature of the non-City."
17 Godfrey, "Boom Towns of the Amazon."
18 Hall, *Developing Amazonia*; Silveira, *Transformations in Amazonia*; Malheiro, *O que Vale em Carajás?*.
19 Goonewardena, "The Urban Sensorium."
20 See Lefebvre, *Critique of Everyday Life,* 412–416.
21 Lefebvre, *The Production of Space*.
22 Shmuely, "Totality, hegemony and difference," 217.
23 Stanek, *Henri Lefebvre on Space,* 142–143.
24 Mezzadra and Neilson, "Extraction, Logistics, Finance," "Operations of Capital", *The Politics of Operations*.
25 See Katsikis, this volume; see Couling, this volume.
26 Heckenberger et al., "The Legacy of Cultural Landscapes in the Brazilian Amazon," 197.
27 Monte-Mór, *Modernities in the Jungle*.
28 Santos, *O Trabalho do Geógrafo no Terceiro Mundo*.
29 Casanova, *Colonialismo interno (uma redefinição)*; Malheiro, *O que Vale em Carajás?*
30 Monte-Mór, *Modernities in the Jungle*.
31 Hecht and Cockburn, *The Fate of the Forest*; Schmink and Wood, *Conflitos sociais e a formação da Amazônia*.
33 Monte-Mór, "Urbanization, colonization and the production of regional space in the Brazilian Amazon," *Modernities in the Jungle*.
33 Lojkine, *O Estado Capitalista e a Questão Urbana*; Topalov, *La Urbanización Capitalista*.
34 Monte-Mór, "Urbanization, Colonization and the Production of Regional Space in the Brazilian Amazon."
35 Monte-Mór, *Modernities in the Jungle,* 59.
36 Castriota, *Urbanização Planetaria ou Revolução Urbana?*; Castriota and Tonucci, "Extended Urbanization in and from Brazil."
37 See Hecht and Cockburn, *The Fate of the Forest* and Monte-Mór, *Modernities in the Jungle* for a broader account of colonisation projects in Frontier Amazonia. Hall, *Developing Amazonia* presents the geo-history of these projects in south-eastern Pará and Pereira, *Colonização e conflitos na Transamazônica* discusses the case of Marabá, Carajás' "regional capital."
38 Pereira, *Do posseiro ao sem terra*; Michelotti, *Territórios De Produção Agromineral*.
39 Hecht et al., "The Social Lives of the Forest."
40 Monte-Mór, *Modernities in the Jungle*.
41 Castro, *Cidades na Floresta*; Heckenberger et al., "Pre-Columbian Urbanism, Anthropogenic Landscapes, and the Future of the Amazon"; Kanai, "On the Peripheries of Planetary Urbanization."
42 Godfrey, "Boom Towns of the Amazon."
43 The Tucuruí HPP is essential for supplying several regional extractive projects. Its construction was led by state company Eletronorte and costed 7.5 billion dollars. In 1982–1983, there were 30,000 people working on the construction of the plant which, when finally completed in 1984, was the fourth largest in the world.
44 Silva Júnior and Petit, *Hidrelétricas na Amazônia*.
45 See Hall, *Developing Amazonia*; Silveira, *Transformations in Amazonia*; Coelho e Cota, *Dez Anos da Estrada de Ferro Carajás*; The Carajás Railroad was constructed between 1980 and 1986, initially with 892 km of extension, to connect the Carajás Mine (1978) to the Ponta da Madeira port (1986) in São Luís (MA).

46 Carneiro, *A exploração mineral de Carajás*.

47 For broader assessments of the Project Great Carajás see Hall, *Developing Amazonia*; and Coelho, *Projeto Grande Carajás*.

48 Gordon, *Economia Selvagem*; Santos, *Xikrín versus Vale.*

49 Lefebvre, *The Urban Revolution*, 79.

50 Barros, *A Mirada Invertida de Carajás*.

51 Santos, *Território em Transe*; Barros, *A Mirada Invertida de Carajás*.

52 Castriota, *Urbanização Extensiva na Amazônia Oriental: escavando a não-cidade em Carajás*.

53 See Santos, *Mineração e Conflitos Fundiários no Sudeste Paraense.*

54 Gudynas, *Extractivismos*.

55 Coelho, *A CVRD e o Processo de (Re)Estruturação e Mudança na Área de Carajás (Pará)*; see also Hall, *Developing Amazonia*.

56 Roberts, "Subcontracting and the Omitted Social Dimensions of Large Development Projects."

57 Coelho, *A CVRD e o Processo de (Re)Estruturação e Mudança na Área de Carajás (Pará)*; Palheta da Silva, *Território e mineração em Carajás*.

58 Coelho, *Projeto Grande Carajás*. In 2019 the City Hall collected more than BR$ 680 million (US$ 154 million) in mining royalties. Data from the latest demographic census (2010) shows that nearly 10% of Parauapebas' labour force is directly employed in the extractive sector, not to mention third party companies involved in the broader supply chain.

59 Schmink and Wood, *Conflitos sociais e a formação da Amazônia*.

60 Godfrey, "Boom Towns of the Amazon."

61 Simone, "Without Capture."

62 Vale S.A., *Complexo S11D.*

63 This estimate is shared by public officers, union representatives, retailers and other Canaã residents. Official numbers are estimates based on linear parameters and do not capture such demographic surges. The underestimate of population data is clear when compared to electoral data: according to the Brazilian Institute of Geography and Statistics, the 2018 estimated population of Canaã is 36,000 *residents*; however, according to the Superior Electoral Court, there were 339,000 *voters* in Canaã in the same year.

64 It is difficult to estimate the exact amount of people working in the complex, as a Vale manager revealed in an interview. He suggested that due to the truckless system, the need for human labour is almost zero. Other sources, however, suggest that at least 100 workers are necessary for the mine to operate (see Cardoso et al., "Canaã dos Carajás: A laboratory study concerning the circumstances of urbanization, on the global periphery at the dawn of the 21st century."

65 Brenner and Schmid, "Towards a New Epistemology of the Urban?"

66 Gudynas, "Extractivismos En América Del Sur y Sus Efectos Derrame."

67 See Cruz, *Mineração e Campesinato em Canaã dos Carajás*; Cândido, *A cidade entre utopias*.

68 Cardoso et al., "Canaã dos Carajás: A laboratory study concerning the circumstances of urbanization, on the global periphery at the dawn of the 21st century."

69 Roy, "What is Urban About Critical Urban Theory?"; Whereas a rural land plot's minimum size is 20,000 m², the urban land in Canaã can be parcelled into 300 m² lots. Rural landowners were able to obtain substantial profits as the average price of urban lots increased 965% between 2001 and 2014, see Bandeira, *Alterações Sócio-Espaciais no Sudeste do Pará*.

70 Caldeira, "Peripheral Urbanization"; Holston, *Insurgent Citizenship*.

71 Juliana Barros, *A Mirada Invertida de Carajás,* 185 has framed Vale's "corporate social responsibility" policies in Carajás as a form of "territorial domination" masked as "assistance," where putative forms of education and community organisation "constitute the expansion of corporate power."

72 Cândido, *A cidade entre utopias*.

73 Castells, *The Urban Question*.

74 Pereira, *Do posseiro ao sem terra*; Gonçalves, *(Re)politizando o conceito de gênero*; Welch and Sauer, "Rural Unions and the Struggle for Land in Brazil."

75 Pereira, and Afonso, "Conflitos e Violência no Campo, na Amazônia Brasileira"

76 The term "pistolagem" would translate literally to "pistoling," meaning the practice of using a pistol, a firearm. The name attributed to the hitman—professional murderers hired to kill, torture or threaten—is "pistoleiro."

77 The term comes from a technique of producing an aging effect on a paper, which consists in placing false documents inside a box with crickets (*grilos*) to make them yellowish, due to insects' excrement, and gnawed. In his historical summary of the land question in Brazil, Holston, "*Insurgent citizenship*" discusses several forms of land scams.

78 Since the early 2000s, Vale S.A. has established three other mining projects in Canaã: *Projeto Sossego*, *Projeto Níquel do Vermelho* and *Projeto 118*. Although they are not comparable to the S11D in terms of size, volume and intensity they contributed to a historical transition from an agrarian to an extractivist economy

79 There are several accounts of the MST in English, but here I highlight its role in fostering education opportunities and coordinating rural production (Pahnke, "The Changing Terrain of Rural Contention in Brazil"), in strengthening democracy in Brazil (Carter, "The Landless Rural Workers Movement and Democracy in Brazil") and in creating alternatives to capitalist relations of production and property (Diniz and Gilbert, "Socialist Values and Cooperation in Brazil's Landless Rural Workers' Movement").

80 The term *camponês* has a historical and political meaning, particularly in the context of the *struggle? for land*. The MST reasserts the term "as an expression of values linked to environmental preservation and biodiversity, food production, especially for local markets, food sovereignty, cultural diversity and, above all, criticism of an agricultural model based on agribusiness (understood as an export-oriented, high-tech, large-scale production based on monocultures controlled by large trading companies and inputs suppliers). For the MST, the term *camponês* refers to the utopia of a more egalitarian and supportive society" (Medeiros, *A luta por terra no Brasil e o Movimento dos Trabalhadores Rurais sem Terra,* 5). The camps I have worked with in Canaã are not affiliated with the

MST, but to the STTRCC (Union of Men and Women Rural Workers of Canaã). They nevertheless position their practices of land occupation and food production within the broader context of the *fight for land* and agrarian reform and identify themselves as *camponeses*.

81 Although there is no aggregate organisation of food production, camps produce more than 40 types of fruits and vegetables without the use of pesticides. Average prices dropped since the first camp harvests in 2015, which increased food supply substantially. The price of a 50 kg sack of manioc flower—a central component of local and regional diet—decreased from BR$ 400 in 2014 to BR$ 150 in 2017.

82 Castriota, *Urbanização Extensiva na Amazônia Oriental: escavando a não-cidade em Carajás*.

83 Eviction injunctions in agrarian land cannot be processed in local (urban) courts, so the fact that Vale went to Canaã's court is both illegal and a proof of its influence on the municipality (see Santos, *Mineração e Conflitos Fundiários no Sudeste Paraense*).

84 Ação Possessória 0014461-68.2015.8.14.0136. See Santos, *Mineração e Conflitos Fundiários no Sudeste Paraense,* 88.

85 Goonewardena, "The Urban Sensorium."C

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IMAGE CREDITS

All photography from author unless otherwise stated.

All maps from Philippe Rekacewicz with author unless otherwise stated.

F. 4 Sources: GéoComunes; Environmental Justice Atlas; Instituto Brasileiro de Geografia e Estatistica (IBGE); Sâmia Nunes et al. “Potential for Forest Restoration and Deficit Compensation in Itacaiúnas Watershed, Southeastern Brazilian Amazon”, *Forests* 10, no. 5 (2019): 439.
F. 5 Comissão Pastoral da Terra, Massacres no Campo, https://www.cptnacional.org.br/mnc/index.php
F. 8 Sources: GéoComunes; Environmental Justice Atlas; Instituto Brasileiro de Geografia e Estatistica (IBGE)
F. 9 Google Earth
F. 10 Google Earth
F. 11 Google Earth