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Conflictive territorial co-production and the neo-apartheid city: Lessons from favela politics in Brazil

Abstract

This paper explores urbanisation and activism in Rocinha - the most populous informal settlement in Brazil - to examine how enduring inequalities intersect with newer, conflictive forms of territorial co-production. Using the concept of the [neo-]apartheid city, the paper distinguishes between 'persisting' and 'neo' apartheid processes to analyse how socio-spatial divisions are produced and challenged through infrastructure. Drawing on multi-method (qualitative-inclined) research conducted since 2017, the study focuses on water, sanitation, and hygiene (WASH) infrastructures as key arenas of democratic claims-making. It shows how these infrastructures symbolise both marginalisation and possibilities for collective action. The paper contributes to Southern urban scholarship by offering a temporal-spatial framework to understand urban apartheid logics, highlighting the democratic tensions of service privatisation in favelas, and calling for more intersectional and decolonial approaches to co-production. It argues that granular, longitudinal perspectives are essential to grasp the layered dynamics of inequality and change in informal settlements.

Key Words: Informal Settlement Upgrading; Favelas; Neo-Apartheid City; Territorial Co-production; Infrastructure Politics

1. Introduction

Setting the Scene: A Glimpse into Rocinha's Infrastructural Politics

Friday, 30th April 2021, the auction for the Rio de Janeiro State Water Company (CEDAE) begins. With a legal design relatively new in the country, the BRL 30 billion concession was dividing the metropolitan region of Rio into 4 'blocks' - each corresponded to a portion of the city for which the purchasing company would be entitled to provide water, sanitation, and hygiene (WASH) services over a period of 35 years. The concession scheme had been elaborated by the Brazilian National Bank for Economic and Social Development (BNDES), and this was part of a package of measures aimed at the fiscal recovery of the state of Rio de Janeiro, a process that began with an economic crisis in 2017. In practice, the auction meant a partial privatisation of CEDAE. Whilst the stages of water collection and treatment would continue to be the responsibility of the state of Rio de Janeiro, distribution, maintenance, and built environment-related improvements would be left for the concessionary companies.

The arrangement also entailed a legal commitment of social interest. Within their blocks, companies must carry out WASH-related investments in informal and precarious settlements – i.e., favela upgrading. The minimum value of the works was announced at approximately US\$300 million (at the time). In addition, the concession model of BNDES foresaw that part of the total amount collected from the auction should be invested in environmental actions, mainly the depollution of the

Guanabara Bay and the Guandu Basin; two important water bodies for the metropolis.

The socioeconomic and political backdrop of the CEDAE auction could not be more dramatic. At the global scale, the world was experiencing an unprecedented health crisis triggered by the COVID-19 virus. At the national scale, there was immense pressure for rapid distribution of vaccines, especially because there was no cohesive national plan, and the volume of deaths caused by the disease was still alarming. On the day of the auction, the country had vaccinated less than 15% of its population. At the local level, the impact of the pandemic in Rio stood out if compared to other cities. In 2020, Rio recorded one of the highest fatality rates in the country and in the world (FIOCRUZ, 2020).

Amid this scenario, 'staying at home' and 'washing hands' were the main advertised recommendations for individual/household protection against the new coronavirus. For millions of Brazilians, however, such measures were far from feasible. Especially in favelas – called 'subnormal clusters' by the Brazilian Institute of Geography and Statistics (IBGE), the uncertainties generated by the pandemic were to some extent an intensification of so many others that were already part of everyday life – something consistent to other global South territories (Bhan et al., 2020).

The populous *favela* settlement of Rocinha is one of those places where, for many, life had to move on, whatever the cost. Perhaps for this reason, in that April 2021, the outside observer looking at Rocinha might not have noticed so much the changes generated by the pandemic. Motorcycle taxis continued to circulate frantically through the favela, the main commercial areas were live, and public spaces were relatively full of children and teenagers playing. Despite being aggressively attacked by the crisis, life on the streets had a certain air of normality¹.

On that same day of the CEDAE auction, in a 'virtual public space' (a Whatsapp group), a heated discussion was taking place between local favela leaders, activists, technicians, authorities, academics and other active individuals from surrounding areas which somehow had interests in Rocinha. The group entitled 'Rocinha for Sanitation' was, at that time of the pandemic, the main space for information exchanges and articulations between the members of a new alliance aimed at bringing networked WASH infrastructures into Rocinha. Despite the variety of members, all had a common objective: the return of investments from the 'City Community' (recent favela upgrading) programme, which had been announced by former governor Wilson Witzel two years earlier (in 2019). For reasons that cannot be fully expanded here, the programme was controversial but still accepted by the population - precisely because of its focus on WASH infrastructures (Comelli, 2021). In pandemic times, having access to water and sanitation at home was more important than ever.

Still in 2019, the authorities coordinating the City Community programme claimed that the funds to carry works were being claimed from a judicial 'setting of accounts' between CEDAE and the national government. After a decision by the Federal Supreme Court in 2017, CEDAE would have BRL 2 billion available, which should necessarily be reversed in works of social interest². Despite this green light, both in the first months of the pandemic and after the local governor's removal from his role due to an impeachment process, the works of City Community were repeatedly suspended. At the time, some leaderships from Rocinha claimed that interruptions could be also linked to the upcoming privatisation of CEDAE.

Fast forward again to April 2021, as the auction was broadcast live on various media outlets, the WhatsApp group 'Rocinha for Sanitation' engaged in a heated and tense discussion. This was not the first or the last clash between participants of this alliance. Because of their different ideological

¹ Descriptions related to Rocinha during the period of the pandemic are the result of digital ethnography and part of the methodology of my doctoral research (Comelli, 2021). During the pandemic I was not in Rocinha in- person, but I followed the place and its dynamics through social media account and other digital resources.

² Triangulation of archival research and interviews.

alignments and agendas, members frequently disagreed. Nevertheless, meetings were conducted periodically as there was a clear common goal and priority to be achieved. Within favelas with a stronger history of political activism like Rocinha, this conflictive mode of cooperation – where longstanding ‘rivals’ come together to plan strategies and actions – is common in the politics of territorial co-production and, to some extent, an expression of local democratic vibrancy.

The discussion that day revolved around how beneficial the new CEDAE concessions would be for Rocinha. While several favela leaders frowned upon the pseudo-privatisation of the public company, representatives from neighbouring upper-class areas argued that the concessions could mean better services, especially given the perspective of the ‘counterpart’ improvements/upgrading designed by the BNDES. At some point, one of Rocinha’s residents used a historical argument to provoke the group: “when was privatisation ever good for *the favela*?”³. The overall local majority agreed that CEDAE concessions would probably mean at least delays in the long-awaited ‘complete’ basic WASH infrastructure. And as this article is being finalised (2025), local concerns appear well-founded.

Seeing conflictive territorial co-production through the concept of the ‘neo-apartheid city’

The above vignette is a small piece of Rocinha’s long term collective struggle for infrastructure (particularly WASH-related), also commonly referred by residents and activists as one of the ‘historical struggles’ in the settlement. Engagements between different favela dwellers and state branches/sectors/levels are part of a long tradition of alliances, disputes, and grievances, in which periodic victories are achieved. As in many other territories in Rio and in Latin America, struggles for infrastructure contributed to create political subjectivities and leaderships, many of them who still identify with the ethos of insurgent citizenship (Holston, 2008).

But despite illustrating broader phenomena, Rocinha is both incredibly diverse and unique. This is an enormous favela that displays different occupation patterns, legal tenure statuses, socioeconomic profiles, racial identities, and political and ideological inclinations. Numbers are often imprecise and contested (between 150 and 200 thousand dwellers⁴), but Rocinha is commonly understood as the largest informal settlement in Rio, and most likely in Brazil (IBGE, 2022). Rocinha is also unique because of its location within the city – close to wealthy areas, the sea, and bulk infrastructure such as the underground – and its political influence, which is a consequence of a rich history of activism.

Rocinha is a paradigmatic case to explore the complexity of politics for territorial co-production and local democratic claims in contemporary times. This complexity is marked by the articulation between entrenched and novel inequalities, and processes of socio-spatial segregation, which this article will explore through the concept of ‘neo-apartheid city’ (Bradlow, 2021). The paper will use diverse environmental and built infrastructures entry points to analyse local urban apartheid through time and space, and the democratic claims for fairer spatial co-production that emerge from such segregation. For simplification purposes – although this binary is more theoretical than practical – the paper creates two categories of apartheid - ‘persisting’ and ‘neo’ – to allude to local engagements with the state (longstanding, continuous) and private actors (more recent, intermittent). The article will further show how the combination of persisting and neo apartheid operate at different scales.

Beyond the above conceptual-theoretical contribution, two others could be extracted from this piece. First, the narrative points to the importance of looking at territorial co-production in a

³ Notes on ‘digital field work diary’ (digital ethnography method)

⁴ Local favela associations typically report higher population figures than those provided by official statistical agencies. This article opts to indicate the settlement’s approximate scale.

longitudinal way – that is, through methods that reveal slow changes in time and space. This allows for a more nuanced understanding of local politics. Second, the paper alludes to the importance of drawing on (intersectional) feminist and decolonial perspectives that uncover differentiated and place-based experiences of citizenship, as well as nuanced readings (e.g., intra-settlement) of urban inequalities (Sultana, 2020; Butcher, 2021; Vasudevan and Novoa, 2022).

Methodology and Positionality

This article emerges from my engagement with diverse informal settlements over the past decade. The research which gives birth to this paper started in 2017, when I began my PhD research focused on the settlement of Rocinha. My background and experience with urban planning contributed to the goal of understanding dynamics of participatory planning and activism in contexts of informality and their consequences to tangible spatial transformation. This is infused by an interest in how the governance of urban and environmental infrastructures contribute to shaping such dynamics in unique ways. The research was mostly qualitative but encompassed diverse methods such as semi-structured interviews with key informants (30), quantitative surveys (521), consultation in hundreds of public and private archives (from 1960 to 2022), and participant observation in diverse activism and planning-related spaces (including digital ethnography during the pandemic). To this date, I still engage with Rocinha residents, activists and scholars as much as possible.

2. Infrastructural inequalities as persisting apartheid

The term ‘apartheid’ is usually associated with processes of social segregation created and reproduced through ideas of race and/or ethnicity. South Africa was an extreme manifestation of this process in the 20th century. Not only because the state institutionalised racial segregation in its legal framework, but also because deep racial divisions soon became imprinted in urban areas, leaving a legacy still observable through housing and infrastructural disparities (Smith, 2003; Lemanski, 2004; Lemon, 2021). Since its inception, the notion of ‘apartheid city’ already showed significance beyond the South African context. Several studies connect the term with more structural processes of colonial dominance (Yiftachel, 2009a) and everyday violence – for instance, the case of territorial dispossession and infrastructural (and physical) oppression experienced by Palestinian populations in the Middle East (Yacobi, 2015).

When writing about processes of ‘peripheral urbanisation’, Caldeira (2017) argues that, among other aspects, the phenomenon produces “highly unequal and heterogenous cities” (Ibid, p. 4). At the global level, southern urban studies have shown that logics of autoconstruction and the informal management of the city and its urban infrastructures are not spontaneous and chaotic forms of building and living (in which the poor are to blame), but in fact consequences of deregulated institutions and unjust urban citizenship engagements (Roy, 2009; Yifatchel, 2009b). Meanwhile, southern urban scholars have also highlighted how such fragmented cities created opportunities for more imaginative socio-material infrastructures and forms of urban governance not bounded by strict spatial jurisdictions, nor by outdated urban regulations and framings (Caldeira, 2017; Bhan, 2019).

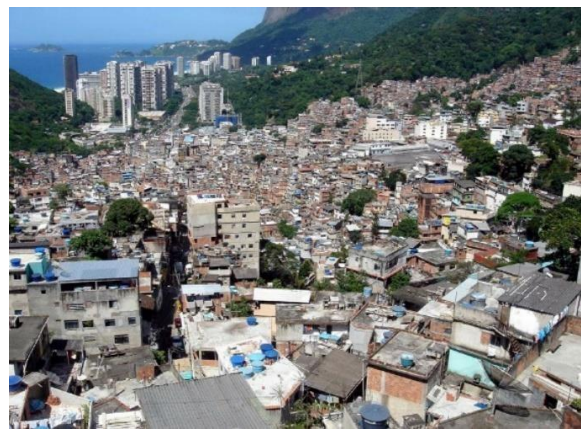
Brazilian favelas - and Rocinha - are good examples of how peripheral urbanisation can operate as a form of *persisting apartheid* that create infrastructural gaps at the *national and global levels*. As in many postcolonial contexts, social divisions in Brazil are connected to an unequal distribution of land, which historically favoured white elites (Maricato, 2017). In Rio, the history of informal settlements comes with many silences, but by and large, favela studies have shown that the occupation of hillside areas is largely a consequence of the lack of affordable and accessible urban land equipped with housing, infrastructure, and quality services (Prado Valladares, 2016). Freed

slaves and migrants from poorer regions (seeking opportunities in industrialised zones) are among the historical occupants of such residual land (Ibid).

In pre-colonial times, the territory now called Rocinha (in Portuguese ‘small farm’) is said to have housed indigenous tribes called Tamoios, who occupied the region until their expulsion by French and Portuguese settlers. The oldest available archives on the region (from about 1910) show that on that hill operated a farm focused on cattle and sugar cane. Debts led the owners to sell the large plot to a Portuguese family which, between the 1920s and 30s, irregularly subdivided and sold the land. The minimum infrastructure required by law at the time was never provided⁵. Therefore, although Rocinha did emerge from processes of autoconstruction, informality in land distribution and the absence of infrastructural provision was mostly produced by white elites and tacitly sanctioned by the local government.

Uneven investments at the metropolitan level in the form of housing developments and infrastructure for affluent middle classes further exacerbated this process, and for a long time, favelas developed despite the state, that is, through processes of autonomy (Souza, 2006; Gonçalves, 2016). As these settlements grew in the mid-20th century, state-led hygienist campaigns focused on shacks removal reinforced the racial connotations that shaped *persisting apartheid at the national and metropolitan scale*. In the media, and even in public discourse, favelas were commonly portrayed as places of marginality, occupied mainly by vagabonds and criminals (Perlman, 1979). The height of removalist policies was between the 1960s and 70s (the beginning of the military dictatorship), when entire settlements were erased from the landscape of Rio (Abreu, 1987).

Rocinha was contemplated several times in removal policies, but mass evictions never happened in substantial numbers. The size of the settlement might be pointed as a reason for this. In 1970, it was estimated that 100 thousand people already lived in the settlement. Also, the politics there has been intense from the start. During the 60’s, several favela associations emerged in the city, and were connected through a municipal federation. Rocinha established its first of four associations in 1961. Even in dictatorship times, it already had enough organisation and capacity to make noise and create political instability in the face of eviction threats⁶. Furthermore, until the development of another⁷ wealthy neighbourhood on the edges of the hill - by the sea -, the area where Rocinha is located was relatively far from the centre and hence not so valuable (Image 01).



⁵ Archives of the ‘Sankofa Museum’ of Rocinha.

⁶ These historical reflections are based on triangulation between archival research (old newspapers and documents), interviews, and grey and academic literature.

⁷ Today, Rocinha is between Gavea and Sao Conrado, two wealthy neighbourhoods. Gavea had already been established as an industrial region in the early 20th century and it is said to have stimulated the growth of Rocinha (as industries demanded labour). Still, the area was not coveted until infrastructural works made it better connected to the central parts of Rio.

Image 01 (left hand side): Rocinha in the mid-20th century. Source: Instituto Moreira Salles and government of state of Rio de Janeiro. Image 02 (right hand side): Rocinha in the late 2000's. Source: government of the state of Rio de Janeiro (booklet of the Growth Acceleration Program).

São Conrado – Rocinha's affluent neighbour located by the sea (Image 02) – had already been officially created in the 1930's, but it was not until the 1970's that the area became densely populated and coveted. Large scale infrastructural developments partly explain this. For instance, in 1971, the government inaugurated a tunnel (below the hill where Rocinha is located) which facilitated connections between this area and the city centre. Luxury developments in the 80's - such as housing high rises and an extravagant hotel – also increased the value of land. Yet, this did not mean networked infrastructure for the whole region. While São Conrado consolidated its imprint, Rocinha was still negotiating with the government the installation of its first public water tap.

Global/national *peripheral urbanisation* and national/local *uneven infrastructural investments* also led to the exacerbation of environmental risks in the area. Even though Rocinha is not the only one exposed to hazards and environmental damages, it is one of the more vulnerable settlements at the neighbourhood-wide level. This is because several parts of Rocinha have been urbanised over steep sections of land and, during the rainy season, the risk of flooding and landslides increases significantly. In many 'sub-neighbourhoods' (internal areas organically defined due to land use) within Rocinha, space is highly anthropic and there is little green or built infrastructure to contain or slow rainwater. There are days when the streets and staircases of Rocinha become rapids that carry waste, furniture, houses and people. The local government has repeatedly failed to collect quantitative data on human and material losses caused by the rain in favelas (City Council of Rio de Janeiro, 2019). However, every year, community newspapers report damages and deaths. For example, in 2019, joint efforts from grassroots groups from Rocinha noted that 18 households had suffered catastrophic damages in Cachopa, one of Rocinha's sub-neighbourhoods. Also, in Laboriaux – a more precarious area uphill in Rocinha and closer to the border of the forest – whole houses were destroyed, and a dweller died buried by debris⁸.

When reflecting on these environmental and climate challenges, the leaderships of São Conrado claim that these are "sibling territories"⁹ - since what happens in one space affects the other. According to them, this means that the leaderships of São Conrado and Rocinha should always be thinking of solutions together. Yet, conflicts between these representations are common and the environmental apartheid is clear. Whilst the population of São Conrado suffers mostly from waste - carried by the rain towards the sea - and floods to a lesser extent, no significant housing or human losses have been reported there. Further, if one considers income gaps – and different capacities to overcome material losses, the disparity is even more significant. São Conrado has some of the most expensive land prices in Rio de Janeiro¹⁰ and it is where authorities, celebrities and businesspersons live.

Beyond the above issues, this research was able to detect *intra-settlement gaps* that have historical roots (persisting apartheids), but that were further reinforced by recent upgrading efforts. In Rocinha, despite the idiosyncrasies of each sub-neighbourhood, there is a symbolic division between the upper and lower lands, recognised both by dwellers and planning authorities¹¹. Lower areas are more consolidated, both in terms of housing and networked infrastructures. For instance, the first public water taps negotiated by activists happened in the lower parts of the favela, in Bairro Barcellos. Today, housing in the lower areas is mostly titled, relatively expensive and sought by a local middle class. Meanwhile, housing in the upper part enjoys less government recognition and more environmental

⁸ Interviews and informal conversations.

⁹ Semi-structured interviews with presidents from the local neighbourhood association.

¹⁰ Source: local real estate indexes.

¹¹ Triangulation of interviews.

risk. This is of course a simplification of the reality in the settlement, and although this research has not been able to delve too deep into these differences and nuances, they have been consistently captured in interviews and informal conversations:

“The upper part of Rocinha is still mostly inhabited by blacks and browns (...). There is a racial division, it's not so clear, you must have a critical eye [to see it]. Because they mixed, northeastern whites began to marry black women from Rocinha. (...) This research, they [academics] never did”. Informal conversation with favela leadership transcribed to field work diary, 2019.

“In the 1970's, I participated in a census in Rocinha (...) and noticed that in the lower part (flatter), people complained more [about infrastructure and services] and had fewer children. The higher I climbed, the number of children increased, and the complaints decreased. The lower part was already more expensive, especially for large families and single mothers”. Speech by local engineer at community-led discussion forum, 2021.

“In PAC 2 [upgrading program], the government wanted to install a cable car because it was working very well in [the favela of] Alemão. (...) The richest [of Rocinha], who live in the lower part and doesn't need it, was against it. Because there would be several expropriations and because it was being served - by bus, van, and in the future a subway [now consolidated]. The higher and poorer part (...) was favourable to the cable car.” Interview with planning authority, 2019.

The first two excerpts allude to internal socio-spatial divisions related to race, gender and income levels. The second one shows how material infrastructures both reveal socio-spatial tensions and exacerbate them. Whilst it will not be possible here to discuss in depth the complex web of relations and processes that created tensions between the first and second editions of the Growth Acceleration [upgrading] Programme (PAC 1 and 2), in a nutshell, it would be fair to say that this was about conflictive urban visions. PAC had a limited budget and authorities at different levels were inspired by the case of Medellín in Colombia (Matsuyuki et al., 2020) – an upgrading initiative largely focused on mobility infrastructures (the cable car being its main symbol). Yet, several activists from Rocinha believed that WASH infrastructures, not the cable car, were the key priority, especially considering that both mobility and WASH works would entail evictions and substantial investments. In the end, Rocinha never saw a cable car, nor massive investments in WASH. But the conflict, which peaked in 2013, was considered successful, because it contributed to consolidate a relatively homogenous consensus that WASH was indeed a priority in for Rocinha. The surveys conducted within the scope of this research further confirm this (see Image 03).

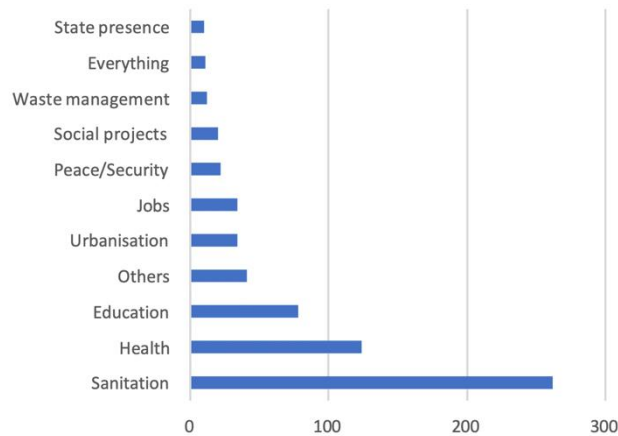


Image 03: Questionnaire with 521 dwellers applied through a randomised approach. Question: In your opinion, what does Rocinha need most? (Open answers collated by author). Note: This research found that it is common for the local population to use the term ‘sanitation’ as an umbrella term that encompasses various WASH infrastructures and goods.

The above partly explains why ‘City Community’ – the upgrading programme launched in 2019 and described in the introduction – had a political discourse and agenda mostly focused on WASH. It also explains why, in 2021, an alliance of dwellers from Rocinha and Sao Conrado (and academics, authorities, among others) was formed with the objective to claim that the promises of ‘complete’/comprehensive WASH infrastructures was fulfilled by the state government. Although not all members from the alliance could be described as progressive or insurgent, the perception that urban risks and nuisances are multidimensional contributed to the formation of these later consensuses. Some leaderships in Sao Conrado were fiercely pursuing WASH-related upgrades in Rocinha, claiming that ‘all’ were somehow affected by the issues in the favela¹². Also, at the settlement level, favela leaders that historically competed with each other (e.g., in the 2013 cable car debate) eventually agreed that there is an urgency for more comprehensive, interconnected environmental (WASH) works rather than punctual/localised investments.

3. Neo-apartheids seen from Rocinha

In this article, the term ‘persisting apartheid’ was coined as a reference to the fact that in Rocinha – but possibly broadly in other global south settlements, socio-spatial divisions have their origin in the uneven occupation of urban land and provision of infrastructures. This is all infused with racial undertones. Also, the paper draws on the premise that persisting apartheid have their roots in modernity, meaning that the (non-monolithic) state is to a large extent central to the fragmentation of space. Hence, in the context of this analysis, ‘neo’ forms of apartheid refer to the protagonist role of actors beyond the state in shaping inequality, as well as to urban governance dynamics that extrapolate the boundaries of the nation state.

The case of Rocinha helps to shed light on a few analytical threads – worth exploring in more depth in future research on the neo-apartheid city. At the global scale, it is possible to note how the urban apartheid produced through peripheral urbanisation is intensified by *international mobilities* and robust national and foreign *infrastructural investments* that lead to displacement and socio-political conflicts – i.e., hybrid or alternative forms of gentrification or ‘white expulsion’ (Lees, 2012; Lemanski, 2014; Comelli et al., 2022). In Rio, this was more clearly observed during the period that preceded mega-events (i.e., FIFA Worldcup and the Olympics). The city and Brazil were experiencing an

¹² Several statements of this sort appeared during the process of digital ethnography.

economic boom at the time, which was combined with real estate optimism. The state contributed in diverse ways to this scenario – e.g., through favela upgrading, several infrastructural works and ‘pacification policies’ (military occupations in settlements dominated by drug factions). But the presence of international capital – e.g., as tourism and foreign direct investments – also played an important role to exacerbate socio-spatial divisions (Comelli et al, 2022).

A dramatic example was the almost complete removal of the ‘Vila Autodromo’ favela, located in the Olympic Park area (Ivester, 2017). At that time (2010’s), it was no longer common to promote mass evictions in Rio – the paradigm was to upgrade on-site (Magalhaes e Conde, 2004), so the arrival of mega events was seen as a setback in urban policy which threatened many insurgent citizenship gains. In Rocinha, dwellers reported real estate prices rocketing and the come-back of more aggressive forms of poverty tourism (i.e., ‘safari-like slum tours’) led by guides that were not from the community¹³. The cable car conflict also speaks to this moment – and could be understood as a reaction to international forces. This because, from 2004 to 2007, Rocinha had been through a sequence of planning discussions of participatory nature, and never was a cable car part of possible solutions agreed with the community. So, when PAC 2 emerged with its Colombian-inspired proposal, many Rocinhans interpreted this as a foreign idea which did not make sense in the context of Rio. It is worth noting that the few cable cars were actually built at that time – in other favelas – and eventually stopped working due to lack of maintenance, among other factors.

At the settlement scale, neo-apartheids might also be produced through incremental interventions that have few interconnected infrastructural elements. That is, exacerbated or new socio-spatial gaps could be unintended negative by-products of disconnected urban policy, planning and interventions. In a large settlement such as Rocinha this becomes more clearly visible. Even though this favela has been indeed contemplated by substantial upgrading programs and initiatives, some of the comprehensive plans produced did not translate into concrete overarching responses. The justification for this is usually limited budgets, which lead to trade-offs. As a result, interventions tend to be punctual and in areas of less structural and environmental complexity. For example, a key work identified as necessary in Rocinha for many years is the treatment of large-scale *thalwegs* - natural rainwater channels imprinted in the hill over which the favela was urbanised. There have been diverse activities and proposals to deal with the issue of rainwater infrastructures in a comprehensive way. But to date, upgrading actions have been limited to dealing with some bits of the channels in a punctual manner. So, not only are environmental hazards never fully resolved, but some areas of Rocinha are more benefited than others. Residents commonly complain that high and low-land disparities are further exacerbated by these fragmented investments.

Further, as the introduction of this paper suggested, national and metropolitan practices of privatisation or pseudo-privatisation might produce neo-apartheids through state withdrawal. During my digital ethnography research, I noted that favela leaderships become frustrated with the (perceived) loss of its main interlocutor. In Rocinha, activists are well connected with authorities, state representatives and clergypersons. Yet, their social capital loses strength as the engagements with those new private actors come with uncertainties. In the concession designed by BNDES, works of social interest are mandatory and citizen participation is required, but leaderships are sceptical that is going to be monitored and evaluated in a rigorous manner.

Another interesting theme emerging from Rocinha is the instrumentalization of environmental discourses by elites. During interviews and processes of dialogue and knowledge co-production with dwellers, there have been complaints related to start-ups and projects that wish to implement projects of environmental nature in Rocinha without any connection to past planning discussions and culturally sensitive solutions. To illustrate this, one of the leaderships mentioned projects to install solar panels and green roofs in favelas. Whilst dwellers see the value of these proposals, they raise

¹³ Interviews with local activists and informal conversations from 2017 to 2020.

several points. For instance, in Brazilian favelas, it is common that rooftops are plane and made of concrete, and historically dwellers transformed these private spaces into semi-public leisure areas. So, not only do green roofs and solar panels might disrupt local culture, but they also create maintenance and citizenship challenges. Internal gaps might also occur. As one building in Rocinha might house dozens of families, not all have access to sun, and the mainstreaming of solar panels could be a way of exacerbating gaps related to electrical services.

4. Discussion

Through the case of Rocinha, it is possible to see that some forms of neo-apartheid city are exacerbations of persisting patterns, while others are indeed the fruit of new future visions. The collection of these layers is summarised in Table 01. In summary, it shows how local processes translate into wider dynamics that could be applicable – and used as explanatory factors – for other southern urban studies concerned with infrastructural inequalities and citizenship struggles.

Temporal-Spatial dimensions	Global scale	National scale	Metropolitan scale	Wider neighbourhood scale	Intra-settlement scale
Persisting apartheid	Heterogenous and unequal cities produced through 'peripheral urbanisation' (e.g., occupation of valued lands in Rio by white elites)	Uneven investments across regions (e.g., southeast of Brazil more industrialised leading to population boom in favelas)	Uneven investments across urban areas (e.g., Sao Conrado receiving bulk and networked infrastructure whilst Rocinha is struggling for public taps)	Uneven exposure to risk and political influence (e.g., Rocinha more vulnerable to flooding and landslides despite events that hit the region equally)	Uneven exposure to risk and access to goods (e.g., higher lands in Rocinha with less tenure security, infrastructure and resilience)

Neo-apartheids	Led by international mobilities, investments and visions (e.g., megaevents leading to evictions, policy setbacks and conflicts)	State withdrawal - erosion of citizenship relations (e.g., mainstreaming of privatisation strategies for fiscal recovery)	State withdrawal - erosion of citizenship relations (e.g., pseudo privatisation of water company meaning the loss of interlocutor for citizenship claims)	Environmental and technological discourses being instrumentalised by elites and authorities (e.g., 'green' and 'high-tech' visions for Rocinha leading to fears of cultural and citizenship losses)	Fragmented investments in infrastructure (e.g., the legacy of upgrading in the form of partial works which tend to benefit 'less complex' areas)
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Table 01: Forms of apartheid observed through infrastructures and favela upgrading – reflections from Rocinha. Note: Other scales (e.g., household) might be relevant to discuss the neo-apartheid city from the experience of Rocinha. Yet, these were the elements which my research was able to capture to some extent.

This analysis is not exhaustive and there might be other ways to describe persisting and neo urban apartheid. Nevertheless, this paper highlights the multidimensional ways in which these patterns operate. This calls for future studies to look at peripheral and southern territories with a wider temporal and spatial frame – instead of snapshots and geographically bounded analyses. In my research in Rocinha, I learned that only a longitudinal and multi-level investigation could reveal some of these layers and nuances, many of them which would require further exploration.

5. Concluding points

This paper explored the complex and evolving manifestations of infrastructural politics in Rocinha, the largest informal settlement in Brazil. It reflected on how different forms of conflictive territorial co-production emerge in and through informal settlements' claims for infrastructure equity. Based on a longitudinal and qualitative analysis of planning engagements, the research analysed engagements in Rocinha through concept of the *neo-apartheid city*, offering a heuristic to differentiate between longstanding and novel socio-spatial inequalities (persisting and neo-apartheids). This helps capture layered and intersectional dynamics of exclusion, which are racialised, but also shaped by gender, class, and migration trajectories.

Besides its empirical and conceptual-theoretical contributions, the article also demonstrates the importance of temporal and spatial depth when analysing infrastructural and territorial politics in informal settlements. The case of Rocinha shows how longitudinal and multi-scalar methodological approaches can uncover nuanced dynamics that are easily flattened in snapshot analyses of precarious and informal settlements.

Future research could expand these contributions in several aspects. First, a more robust and quantitative investigation is needed to trace the causal links between broader urbanisation processes and intra-settlement divisions – this is true for Rocinha but could be applied to other informal settlements where data is often scarce and contested.

Second, the instrumentalisation of climate and environmental discourses in contexts such as Rocinha

warrants further exploration - particularly the ways in which such narratives are adopted, resisted, or transformed by local actors in their struggles for infrastructural justice. This was captured in my wider research to some extent and seems to be a promising line of inquiry towards the future.

Third, comparative studies across other favelas or informal settlements - especially in smaller or secondary cities where investment and overall policy attention is even scarcer - could help test and refine the conceptual framework of persisting and neo-apartheids introduced here.

In sum, this paper argues that understanding the co-production of marginalised territories and the renewal of democratic practices in favelas requires careful attention to the material politics of infrastructure and their embeddedness in multi-layered histories of urban apartheid, which contain racial and other intersectional undertones. Rocinha shows us that while infrastructures can express and help understand processes of exclusion, they can also catalyse alliances and imaginaries for more just and inclusive urban futures.

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