

# Invisible favelas: the cartographic production of Rio de Janeiro and the representation of its favelas

*Favelas invisíveis: a produção cartográfica do Rio de Janeiro e a representação das favelas*

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## Abstract

This article presents the first part of the results of a study on the presence and/ or absence of Rio de Janeiro's favelas in the city's cartography. Different data sources were used: research in the municipal archives—including the Rio's first aerial photographs ever made, cartographic records and infrastructure maps from the 1920s and 1930s; research in building codes; and research on digital cartographic platforms. The aim of the article is to investigate when and how the urban phenomenon of favelas officially appears in the city's records and to reflect on how this late and inconsistent recognition may have affected the existence of the phenomenon itself, since its lack of official recognition created bureaucratic barriers to public administration actions. The argument of this article is that cartographic production has kept the favela an invisible part of the city and how, especially in recent decades, this invisibility has been a political choice. The article concludes that the choice for invisibility has contributed to these large territories becoming deeply embedded in the city's urban fabric.

**Keywords:** Favelas; Cartography; Rio de Janeiro.

## Resumo

Este artigo apresenta a primeira parte dos resultados de um estudo sobre a presença e/ou ausência das favelas do Rio de Janeiro na cartografia da cidade. Diferentes fontes de dados foram utilizadas: pesquisa nos arquivos da cidade — incluindo as primeiras fotografias aéreas já feitas, registros cartográficos e mapas de infraestrutura das décadas de 1920 e 1930; pesquisas nos códigos de obras; e pesquisas sobre plataformas cartográficas digitais. O objetivo do artigo é investigar quando e como o fenômeno urbano das favelas aparece oficialmente nos registros das cidades, refletindo sobre como esse reconhecimento tardio e inconsistente pode ter afetado a existência do fenômeno em si, uma vez que a falta do seu reconhecimento oficial criou barreiras burocráticas para ações da administração pública. O argumento deste artigo é que a produção cartográfica manteve a favela como parte invisível da cidade e como, principalmente nas últimas décadas, essa invisibilidade foi uma opção política. O artigo conclui que a opção pela invisibilidade contribuiu para que estes grandes territórios se inserissem profundamente no tecido urbano da cidade.

**Palavras-chave:** Favelas; Cartografia; Rio de Janeiro.

## Resumen

Este artículo presenta la primera parte de los resultados de una investigación sobre la presencia y/o ausencia de las favelas de Río de Janeiro en la cartografía de la ciudad. Se utilizaron diferentes fuentes de datos: investigaciones en los archivos de la ciudad, incluidos los primeros registros de fotografías aéreas jamás realizados, registros cartográficos y mapas de infraestructura de las décadas de 1920 y 1930; investigación sobre códigos de construcción; e investigación sobre plataformas cartográficas digitales. El objetivo del artículo es investigar cuándo y cómo el fenómeno urbano de las favelas aparece oficialmente en los registros de la ciudad y reflexionar sobre cómo este reconocimiento tardío e inconsistente puede haber afectado la existencia del fenómeno mismo. Desde su reconocimiento no oficial se crearon barreras burocráticas para las acciones de la administración pública. El argumento de este artículo es que la producción cartográfica mantuvo a la favela como una parte invisible de la ciudad y cómo, especialmente en las últimas décadas, esta invisibilidad era una opción política. El artículo concluye que la opción por la invisibilidad contribuyó a que estos grandes territorios quedaran profundamente insertados en el tejido urbano de la ciudad.

**Palabras-clave:** Favelas; Cartografía; Río de Janeiro.

## 1 Introduction: favelas in the city's cartographic production

There is a vast literature on the phenomenon of favelas, their formation and history. This article will not discuss favelas per se, but rather the cartographic production of the city of Rio de Janeiro during its emergence and expansion over the last century. The objective of this research is to identify in which moments the existence of favelas began to be represented graphically and in which moments it was not represented. The article intends to reflect on the consequences of these actions on the existence of favelas – to what extent an inconsistency in cartographic recognition may have contributed to the expansion of the phenomenon.

The registration or absence of a territory in the city maps may influence the way in which a city is planned and designed. Non-mapping results in administrative blindspot. The fact that the irregular settlements that gave rise to the favelas were not registered or mapped, and thus not recognised as urban territory, meant that those extensive areas within the city did not receive any infrastructure, nor were they monitored. Actually, there was an absence of urban interventions in those areas for much of their existence. However, the research identifies a kind of 'invisible cartography' of the favelas, where there are signs of their recognition despite not appearing on maps—as in the case of infrastructure plans and maps from the 1930s (such as those for energy distribution) where the favelas had to be considered, despite the legal impossibility of their recognition under the law. Therefore, in order to understand the rationale of the urban form of Rio, it is necessary to understand the presence of the favela—and its absence—in the cartography throughout the city's history.

The article begins with a recent episode about the removal of favelas from digital platforms and then carries out a chronological review identifying relevant moments of appearance and absence, seeking firstly, to understand how such conflicts can still occur today and, mainly, to reflect on how these actions may have contributed to the development of this urban phenomenon.

### 1.1 Recent absence: the retraction of the word "favela"

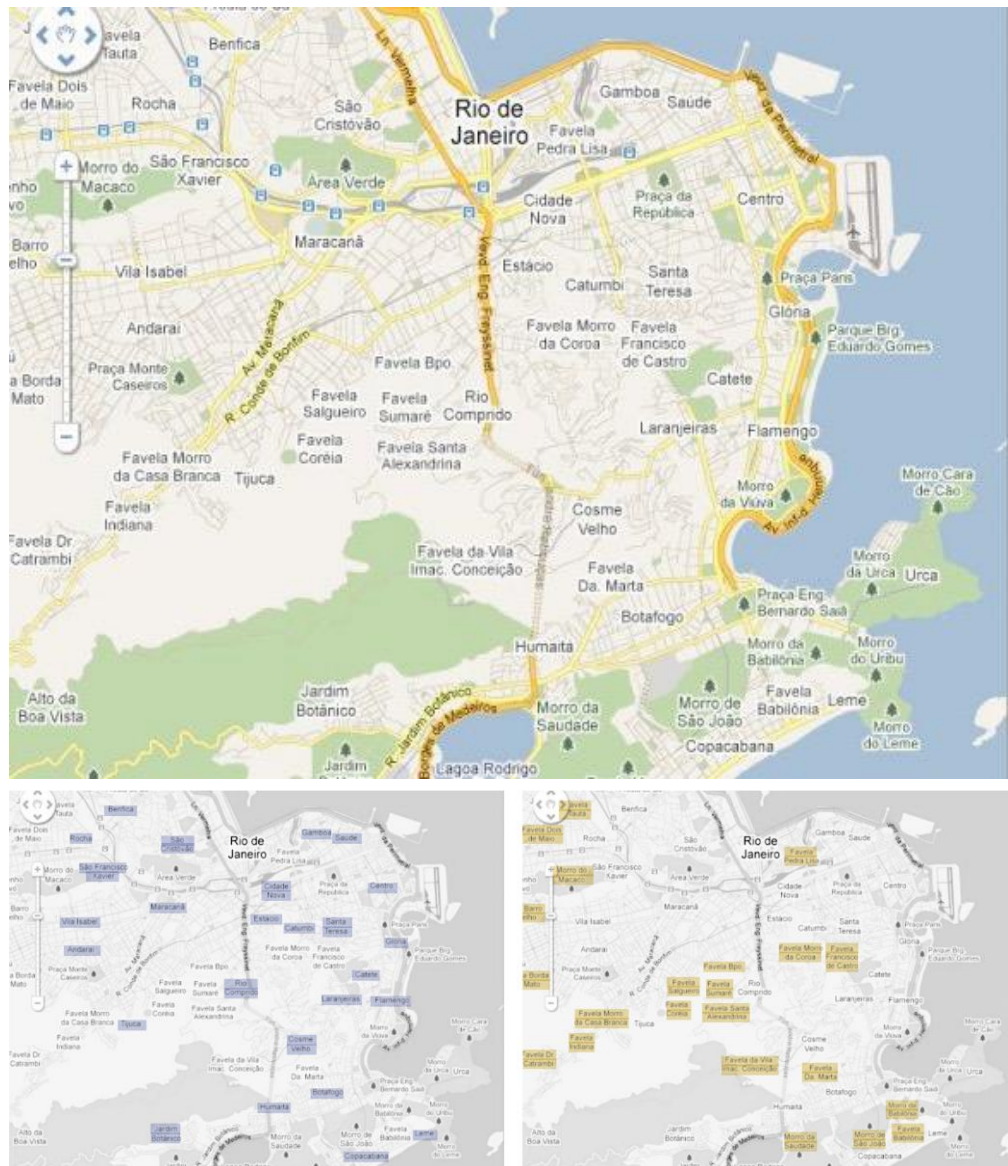
In 2011, the internet giant *Google* updated a version of its map tool - *Google Maps* - with revised information from Rio de Janeiro. In this version, the map tags placed an unusual emphasis on the favelas. In fact, as it can be seen in Figure 1, which shows the center of Rio and parts of the South Zone, several tags indicate favelas between other larger neighbourhoods<sup>1</sup> with an unusual disproportion. For instance, *Botafogo*, with a population 20 times larger than *Favela Dona Marta*, appears with a tag which is the same size as *Favela Dona Marta*'s tag.<sup>2</sup> This inconsistency resulted in a distorted map, since the tags should be hierarchical, following data such as population, area, territorial and administrative boundaries. Although it was caused by a technical issue, this episode resulted on a great commotion in Rio.

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<sup>1</sup> The favelas of Rio de Janeiro are now official neighbourhoods of the city.

<sup>2</sup> Data on Botafogo and Favela Dona Marta: Botafogo: Area: 4,799,000 sqm, population: 82,890; Dona Marta - Area: 53,706 sqm, population: 3,913 (Source: Instituto Pereira Passos, based on the 2010 IBGE Census).

**Figure 1:** Image of Rio de Janeiro from Google Maps. In this image of the City of Rio (showing part of the city center and part of the South Zone - upscale area), we can see that the vast majority of tags have the word “Favela”. The two lower images highlight, on the left, the tags of some neighbourhoods, and on the right, the tags of the favelas, many of them, of small proportion.



Source: Top: Laura Antunes, ‘Google Maps faz do Rio de Janeiro um aglomerado de favelas’, *O Globo* - (Rio de Janeiro, 23 April 2011).

The controversy regarding this map involved several actors in a debate played out through media and social networks. The first headline published by the newspaper *O Globo*<sup>3</sup> in April 2011 announced: “Google Maps makes Rio a cluster of favelas” (Antunes, 2011a; Yapp, 2011). At first, Google did not react or respond to the accusations. When asked to clarify the issues of hierarchy and the origin of the database, it simply stated “the information came from contracted third parties” (Sturm, 2013). The headline had repercussions in both local and international media and it escalated to a point where it involved sectors of the public administration. At that moment, Rio was busily preparing to host the FIFA World Cup games in 2014 and the 2016 Summer Olympics. Therefore, an image of the city as a

<sup>3</sup> The newspaper *O Globo* is part of Rede Globo, the largest telecommunications company in Brazil, and the second largest commercial TV network in terms of annual revenue in the world.

“cluster of favelas” was worrisome and cast the city in a negative light on the international stage, so the Secretary of Tourism Antônio Pedro Figueira de Mello, speaking on behalf of the mayor, asked for a map correction.

Under pressure, the tone changed in a second statement by Félix Ximenes, director of Google Brazil. He said it was a misunderstanding, that it was not Google’s intention to create such a controversy, and the fact that the favelas appeared within the same “hierarchy” level as other neighbourhoods was a mere algorithm problem.<sup>4</sup> After continuous objections and insistence in several media channels, Google decided to concede, announcing that it would fix the algorithm, but the change should take up to 6 months. However, the correction took only a few days, but the result was, arguably, as equivocal as the first problem (Ventura, 2013), as it was described in a newspaper article “*Google de-favelized Rio*”, literally removing the word *favela* from its maps (Bowater, 2013; Johanson, 2013; BBC News, 2013).

As inaccurate or incorrect this “correction” may seem, if the first update provoked many protests with the “favela conglomerate” headlines, the second update with the elimination of favelas, was received without much complaint, and even with signs of approval (Antunes, 2011b).

That is not uncommon in the history of the city of Rio, since some sort of absence of favelas is not something new. It is actually a recurring phenomenon in the history of Rio’s cartography (Valladares, 2005) where the favelas were represented, recognised, and denied in different periods over the last century and even prohibited under a law issued in 1937, resulting in the phenomenon that we could call “invisible cartography”.

## 2 Question and methodology

This article presents seven maps, in chronological order, which depict key episodes in the history of favela recognition. Different sources were used, mainly official documents, but also relevant commemorative or touristic cartographic records. The main sources were: Instituto Pereira Passos – IPP; Arquivo Geral da Cidade do Rio de Janeiro – AGCRJ (General Archive of the City of Rio de Janeiro); Centro de Pesquisa e Documentação de História Contemporânea do Brasil – CPDOC (Centre for Research and Documentation of Contemporary History of Brazil); Biblioteca Nacional (National Library); and Arquivo Nacional – Ministério da Justiça e Segurança Pública (National Archive of the Ministry of Justice and Public Security). At AGCRJ, created at the time of the city's founding in 1567, there is a wide range of maps and cartographic charts from the last century. Within the Subgerência de Documentação Especial (Special Documentation Department), from more than 3,500 documents in the Acervo Cartográfico (Cartographic Collection), were selected approximately 100 files relevant to this investigation. Among these, eliminating overlaps and similarities, it was possible to select significant files, which became the object of analysis.

The method used in this cartographic research involved: a) identification of existing urban cartography archives on Rio de Janeiro; b) selection of urban maps of Rio de Janeiro; c) identification of existing online databases; d) identification of existing urban cartography

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<sup>4</sup> Felix Ximenes said that the basis of these maps was not produced by Google, but bought from suppliers (in this case, the Map Link Company) and that the error or lack of hierarchies came from these suppliers, a responsibility that Map Link rejected.

catalogues in various archives; and e) field work to visit the archives and consult primary sources (Sampayo; Marat-Mendes, 2013).

This analysis will be presented in two parts. Firstly, a brief historical review of the presence of the favelas in the city's cartographic production, divided into: 3.1. the representation of favelas in the early 20<sup>th</sup> century; 3.2. its absence from maps in the 1930s, and a law that prohibited the favelas; 3.3. its reappearance on maps amid political and administrative changes in the city. The second part will focus on four more recent maps where the presence or absence of favelas has gained more complex layers.

### 3 Brief history of the favela in Rio's cartography

The history of favelas has been subject to many approaches and wide-ranging expositions. When talking about their representation in the city's cartographic production, we are specifically referring to the recognition of those informal settlements by the public administration, their acceptance or denial in official documents and the recurring and current association with a territory of violence. In Urbanism, it is impossible to reflect on spatial aspects or urban projects without understanding them in the context of the political history of the city. The history of favelas is a continuous production of peripheral urbanism that corresponds to the informal construction of parts of the city outside official urban rules. This particular model of space production is closely intertwined with different political and economic episodes in the history of the city and its regulatory frameworks.<sup>5</sup>

The first favelas in Rio appeared due to the demolition of tenements (*cortiços*) in the city center in 1893, through actions which combined concerns about health, security and interest in the real estate market. Until the 1930s, favelas were not registered in official documents, but that does not mean they did not have representation and impact on society.

In the 1920s, two perspectives on the favelas emerged: a political-administrative perspective that saw favelas as an economic and social problem and that defended their removal, with concerns (or not) about the resettlement of the population; and a social and

<sup>5</sup> On the bibliographical production on the history of Rio and its favelas, see: Maurício de Almeida Abreu, *Evolução Urbana Do Rio de Janeiro* (Rio de Janeiro: Zahar/IPLANRIO, 1987); Verena Andreatta, 'Favela-Bairro, Un Nuevo Paradigma de Urbanización Para Asentamientos Informales', *Cuadernos Internacionales de Tecnología Para El Desarrollo Humano*, 2002; Pedro Abramo, 'A Cidade Com-Fusa. A Mão Inoxidável Do Mercado e a Produção Da Estrutura Urbana Nas Grandes Metrôpoles Latino-Americanas', *R. B. Estudo Urbanos e Regionais*, 9.2 (2007); Teresa Pires do Rio Caldeira, *City of Walls: Crime, Segregation and Citizenship in São Paulo* (Berkeley: University of California Press, 2000); Adauto Lúcio Aragão Cardoso, 'Avanços e Desafios Na Experiência Brasileira de Urbanização de Favelas', *Cadernos Metrôpole*, 1.17 (2007), 219–40; Sidney Chalhoub, *Cidade Febril: Cortiços e Epidemias Na Corte Imperial* (São Paulo: Companhia das Letras, 1996); Roberto DaMatta, 'As Raízes Da Violência No Brasil: Reflexões de Um Antropólogo Social', in *A Violência Brasileira*, ed. by Maria Cêlia Paoli and others (São Paulo: Brasiliense, 1982); James Holston, *Cidadania Insurgente: Disjunções Da Democracia e Da Modernidade No Brasil*, trans. by Claudio Carina (São Paulo: Companhia das Letras, 2013); Janice E. Perlman, *Favela: Four Decades of Living on the Edge in Rio de Janeiro* (New York: Oxford University Press, 2010); Luiz Cesar de Queiroz Ribeiro, *Dos Cortiços Aos Condomínios Fechados: As Formas de Produção Da Moradia Na Cidade Do Rio de Janeiro* (Rio de Janeiro: Civilização Brasileira: IPPUR, UFRJ:FASE, 1996); Fiori, Riley, and Ramirez, 'Favela Bairro and a New Generation of Housing Programmes for the Urban Poor'; Raquel Rohnik, *Guerra Dos Lugares: A Colonização Da Terra e Da Moradia Na Era Das Finanças* (São Paulo: Boitempo, 2015); Luiz Antonio Machado Da Silva, 'Violência Urbana, Segurança Pública e Favelas - O Caso Do Rio de Janeiro Atual', *Caderno CRH*, 23.59 (2010), 283–300.; *O Novo Carioca*, ed. by Jailson de Souza Silva, Jorge Luiz Barbosa, and Marcus Vinícius Faustini, 1st edn (Rio de Janeiro: Mórula, 2015); Luiz Eduardo Soares, *Meu Casaco de General* (Rio de Janeiro: Companhia das Letras, 2000); Boaventura de Sousa Santos, 'Notas Sobre a História Jurídico-Social de Pasárgada', *Law and Society Review*, 12.1974 (1974), 5–126; Licia do Prado Valladares, *A Invenção Da Favela: Do Mito de Origem a Favela.Com*, trans. by the Author, 5th edn (Rio de Janeiro: Fundação Getulio Vargas Editora, 2005); Alba Zaluar and Marcos Alvito, *Um Século de Favela* (Rio de Janeiro: Fundação Getulio Vargas Editora, 2002).

artistic perspective – in the scope of the artistic-based Anthropophagic Movement initiated in the *Semana de Arte Moderna* (Modern Art Week) in 1922. It was within the framework of the *Modern Art Week* that favelas began to appear on the artistic scene as a component of Brazilian cultural identity and as a theme for paintings and poems, as Brazilian modernists transformed the favela into a symbol of Brazilian national culture (Berenstein Jacques, 2001).

Despite this phenomenon, the demolition of the favelas was the position of public administration. In this period, favelas were not considered in the cartographic production, since favelas were settlements whose extinction was foreseen and desired. Ironically, this lack of cartographic representation contributed to the fact that these settlements proliferated in a disorganised way, with no project or programme capable of containing their expansion. Not looking at favelas as part of the urban territory was the most effective way to make them grow.

### **3.1 The first official cartographic appearance**

The first appearance of the favelas in a cartography was photographic. In 1928, the city of Rio de Janeiro hired the British company The Aircraft Operating Company Limited to produce an aero-photogrammetric survey of the Federal District, seeking a more accurate image of the city to use as a basis for future planning. The results of this aerial survey were pivotal for a whole sequence of facts about how favelas will be represented later. Representation is a key term in this context, containing multiple meanings. It means the understanding of the favelas by the rest of the city, the way the favelas will be understood by the residents themselves, and in its most literal sense, how the favelas will be officially documented, analysed and catalogued.

The process of producing those images was turbulent, and included accusations of corruption, and the images were delivered over a year after the agreed deadline. The most relevant aspect of the aerial survey is not the images themselves, but the manipulation of those photos. The material found in the city archives shows that the photos were altered. In some images, it looks like the existing favelas have been intentionally cut out, as it can be seen in Figure 2, which shows part of the Copacabana neighbourhood with the hills of Caniço and Cantagalo removed from the photo. One of the arguments to justify this possible removal of the favelas is based on “political ideological” concerns, since “this is [...] what should not be shown” (Silva; Paula, 2005).

**Figure 2:** This image shows a fragment of a photo from the aero-photographic survey, by the Aircraft Operating Co. LTD, of the Copacabana neighborhood showing cutouts (white blobs) of two hills in the neighborhood.



Source: Arquivo Geral da Cidade do Rio de Janeiro.

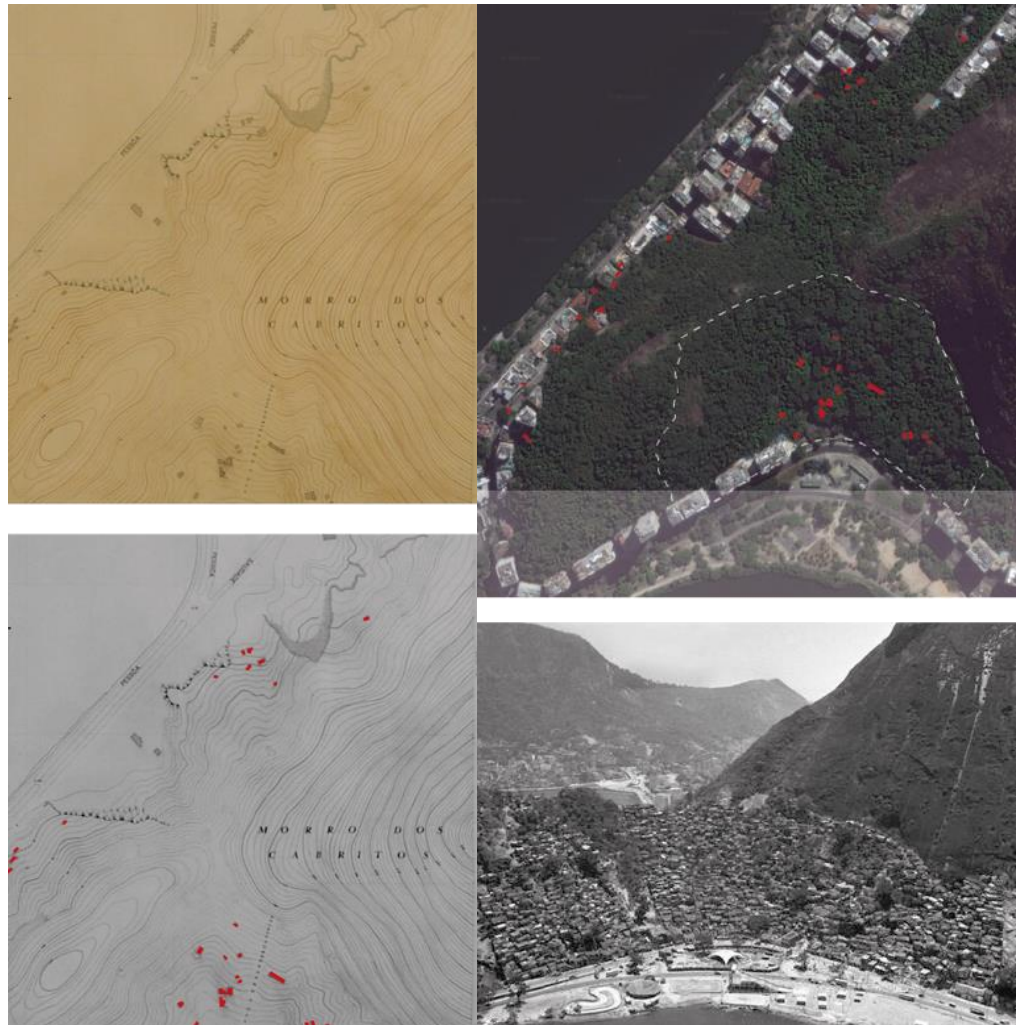
However, there is not much evidence for such an argument. On the contrary, the 1928 photographic survey was the basis for a graphic survey in 1930 and in it is possible to see the early stages of some favelas on it. Figure 3 shows a fragment of the original drawing of the 1930s survey. Analysing the same frame (in black and white), it is possible to see in red, the houses at the beginning of the settlement that would become Favela da Catacumba, which would experience great growth in the 1940s, before being demolished in the 1970s<sup>6</sup>. In order for the drawing of the houses be created, there could be no cutting-out of the favelas. In this historical period, despite being understood as a socioeconomic problem to be solved, the favela is not hidden from the official documents.

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<sup>6</sup> One interesting point of these details is the red dot that appears in the upper right corner, which when superimposed with the current satellite image, is still in the same place. This is the location of Quilombo do Sacopã. Quilombo is the name given to a settlement founded by fugitive slaves. Generally hidden, some of these refuges have stood the test of time and become communities of African descendants. Quilombo de Sacopã is one of the few remaining. Currently, 28 people live there on 6,404.17 m<sup>2</sup>, descendants of Nigerians, who obtained the right to their land in 2014.



**Figure 3:** Survey of 1930, and the record of the beginning of a favela. Upper left corner: Detail of sheet 103 of the Territorial Survey showing part of the Lagoa Rodrigo de Freitas, scale 1: 2000, 1930; Lower left corner: Image with the previous frame in black and white indicating in red the buildings mapped on the middle of Favela da Catacumba; Upper right corner: Current satellite picture highlighting in red the location of the huts found in the Terrestrial Survey of 1930, and in dashed line the area occupied by Favela da Catacumba before removal; Lower right corner: Photo of the Favela da Catacumba before removal.



Sources: Upper left corner: BRRJAGCRJ.PDF/DSG.TER Series, Arquivo Geral da Cidade do Rio de Janeiro) Upper right corner: Collage on original photo from Google Maps. (2017). Lagoa Rodrigo de Freitas. Retrieved from <<https://maps.google.com>>; Bottom right corner: Photo from Acervo O Globo 07/10/1970 in: <http://acervo.oglobo.globo.com/em-destaque/21656705-a4a-f39/materia/Catacumba.jpg>).

Therefore, it is unlikely that there were actual ideological-political intentions to hide the favelas at that historical moment. In fact, it raises questions in other directions, as whether such cuts would have been made for technical reasons such as to facilitate the reading of urbanised areas.<sup>7</sup>

### 3.2 Invisibility and the 1937 law<sup>8</sup>

The possibility of representing favelas will undergo a major change with the creation of a building code that contributes to the non-recognition of favelas. From 1937 to 1945, Brazil

<sup>7</sup> The analysis of the 1928 photographic survey archive will be the subject of a future article.

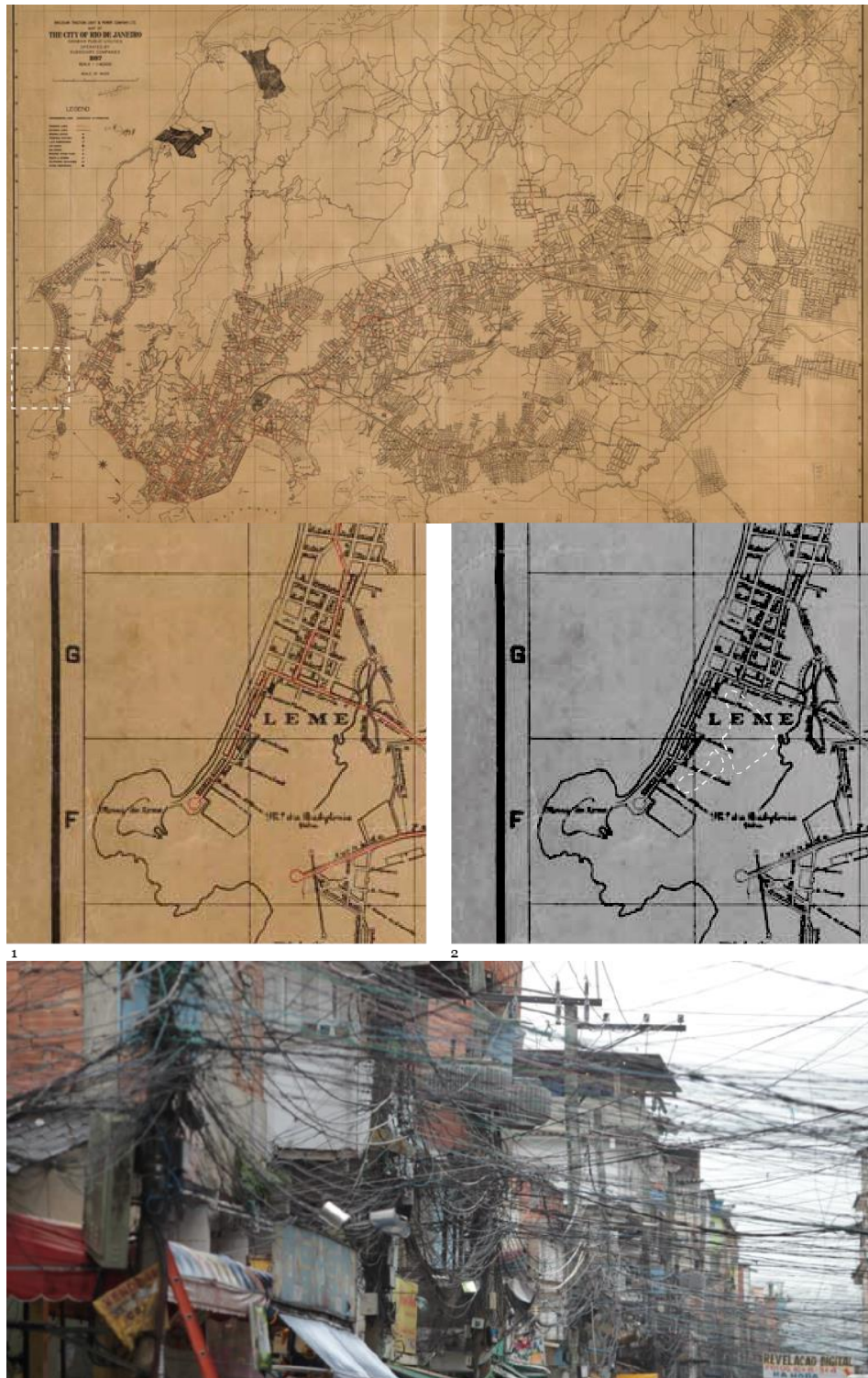
underwent its first military dictatorship. In this period, the favelas – which were rapidly expanding – were seen as a problem, and the solution was to build housing to resettle their residents. In 1937, a new Construction Code was created determining the ‘extinction of favelas’ (Prefeitura do Distrito Federal, 1937). The chapter XV "Extinction of Non-Hygienic Dwellings" determined that favelas would not be permitted, and that existing ones must not be expanded.

The intention of solving the problem by containing its expansion ended up generating a series of issues. In addition to making favelas illegal and officially marginalised urban zones, it created a bureaucratic obstacle to the planning of infrastructure companies. Energy and water companies, which should take this portion of the population into account in their planning, were prohibited by law to acknowledge them.

In Figure 4, we can see a map of the power supply for the city of Rio in 1937 (Brazilian Traction, Light & Power Company: Map of the City of Rio de Janeiro) in which favelas are not registered. By that time, the favelas were already fairly densely populated areas, which would generate a relevant demand for energy. One of the major problems faced by electricity companies in the favelas was energy theft. It was (and it is still) very common for favela dwellers—who do not have access to those services—to illegally connect to an energy supply system, diverting it for their domestic consumption. However, such consumption is significant and when not taken into account, it puts the operation of the system at risk.

For instance, the Leme neighbourhood (Figure 4, Images 1 and 2), with the Babilônia and Chapéu Mangueira favelas, is currently composed by 14,800 residents—including the 3,800 residents of the two favelas. Those favela inhabitants represent 25% of the total, while, historically, the population of favelas has varied between 20% and 25% in the city over the years. In this scenario, favelas could be potentially consuming 25% of the neighbourhood’s energy supply.

**Figure 4:** Energy supply to the Favela Chapéu Mangueira and Favela da Babilônia. (Leme neighborhood) Top: Map of the City of Rio de Janeiro. Showing Public Utilities Operated by Subsidiary Companies, 1937, 1:40.000"; Middle: Image 1-Detail of Leme Neighborhood; Image 2, in white dashed line, the projection of the Favelas Chapéu Mangueira and Babilônia; Bottom: example of illegal power supply connections.



Source: Top: Brazilian traction, light and power company. Map of the city of Rio de Janeiro, showing public utilities operated by subsidiary companies. São Paulo: Comp. Lith. Ypiranga, 1937. 58 x 83cm, 1:40.000. Bottom: 'Alguem Sabe Como Funciona Gato de Energia?', Fórum UOL, 2016 <[http://forum.jogos.uol.com.br/alguem-sabe-como-funciona-gato-de-energia-\\_t\\_3805654](http://forum.jogos.uol.com.br/alguem-sabe-como-funciona-gato-de-energia-_t_3805654)> [accessed 28 September 2017].

Thus, a paradoxical situation was created: on one hand, the maps do not show those zones as inhabited, and on the other hand, they point to a high load of energy for that same area. The 1937 Law led to the non-representation of the favela, and this occultation ended up having an impact on municipal decisions, such as the allocation of public services (schools, health services, post offices, etc.).

Thus, the maps contain the contradiction that creates what we could call the invisible cartography of the favelas, because they are omitted from the maps, but at the same time, municipal infrastructure planning (in this case energy supply company) is forced to consider them in their distribution maps—even if they were not drawn.

### **3.3 Invisibility and the new Law of 1967**

This situation of invisibility remained in a similar fashion until the 1960s. This is the moment when Rio lost its position as capital of Brazil and consequently, ceased to be a federal district. The State of Guanabara was created in its place, and administrative reforms became priorities. In this new political and administrative situation, the Law 6,000/37 was replaced by Law 1,574 of 1967. Under this new Building Code, cartographic production gained some freedom for the representation of favelas since they were not specifically excluded.

Some maps came to represent the favelas, but in most cases they were not conducted in the way the other urban areas were. Despite those differences, the favelas began to emerge as a recognised and mapped urban reality, as can be seen in Figure 5. In this map (Figure 5), favelas are included as a subcategory. The traditionally recognised urban areas are represented in dark pink, with plenty of contrast between the streets in white and the vegetation in green. We can see how the favelas are demarcated with reasonable precision in their boundaries and borders, but in a lighter pink tone, as if they were a semi-urban area, which almost blends in with the vegetation. The same lighter pink is used to define other areas, such as a cemetery.

**Figure 5:** Schaeffer Plan of the City of Rio de Janeiro, State of Guanabara. 1969-1972. In the detail we can see, above, the Favela da Catacumba (demolished in the 1970s) and, below, the Favela do Cantagalo.



Source: AGCRJ. Schaeffer's Plan of the City of Rio de Janeiro, State of Guanabara. 1969-1972 updated version.

## 4 The current state of invisibility

In recent years, the representation—or not—of favelas on maps has gained more complex layers. In theory, issues like technical difficulties were overcome. Through advancement of digital instruments, the difficulty of drawing the small grain of houses and alleys is no longer a problem. The same occurs with issues of institutional recognition because, since the 1980s, favelas have been officially recognised as an integral part of the city. Despite those aspects, representation conflicts still occur. We will now see four examples of those conflicts: 4.1. The digital map; 4.2. The Google Maps; 4.3. The collaborative platforms; 4.4. The touristic map.

### 4.1 The digital map

In 1999, a digital vector map database based on a 1:30,000 aerial photogrammetric survey was developed, covering the entire area of the city of Rio de Janeiro. As a result, digital orthophoto charts were produced at the scale of 1:10,000 in a mosaic composed of 64

sheets. Each sheet represents an area of 6,500 x 4,500 meters, mapping details to the level of the blocks.<sup>9</sup>

Favelas were represented on those maps. However, the way in which they were drawn still did not present the same level of detail as other urban areas. In many cases, they were represented only by the outline along with their name, in contrast to other urban areas that detail streets, blocks and even outlines of buildings.<sup>10</sup> The collage in Figure 6 shows the superimposition of the digital files produced by the urban planning department over a satellite photo. We can see that the archives of the public administration recorded the buildings, blocks, curbs, topographical levels, and so on. Small elements and details are recorded. The houses in the favela areas, however, are not. And it is not a question of the size of the houses. It is possible to see that other houses outside the favelas were recorded. The digital precision and the existence of details show that the lack of design of the houses and streets in the favelas was a choice—a decision not to represent their presence.

**Figure 6:** Collage of the research “New Cartographies” by Gabriel Duarte. An overlapping of a satellite image and the digital survey, showing that the favelas were not mapped. In this image, we can also see that dispersed houses, (center of the image, to the left) next to the favelas were mapped.



Source: Gabriel Duarte, ‘Maps to Hack, Synchronize and Decipher’, in *AD - Brazil Restructuring*, ed. by Hattie; Hartman and Helen Castle (London: John Wiley & Sons, 2016), pp. 48–53

<sup>9</sup> The 1999 maps as well as current georeferenced maps and data on cartographic surveys can be found on the Data.Rio digital platform: <https://www.data.rio/>; and on the IPP-Instituto Pereira Passos website: <https://pcrj.maps.arcgis.com/home/index.html>;

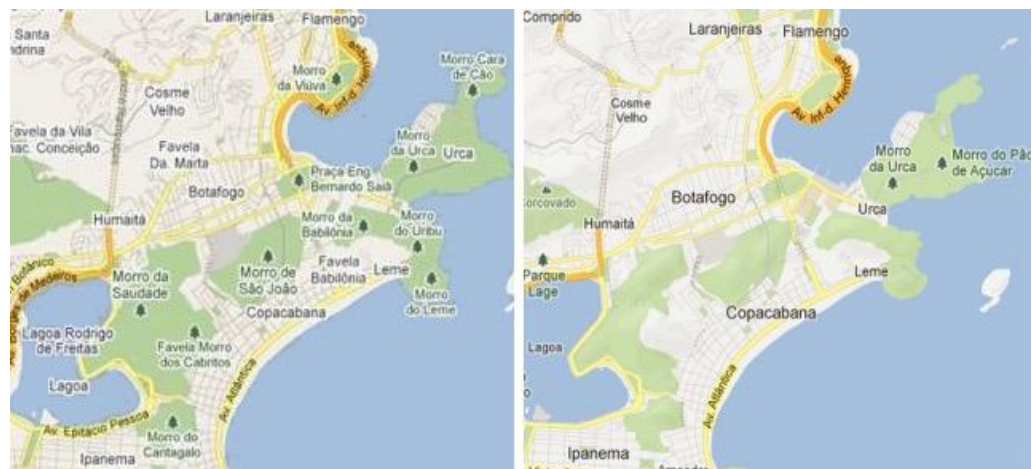
<sup>10</sup> According to a research by Gabriel Duarte, the lack of mapping of the favelas is one of the main reasons that make this survey from 1999, although very important, not completely reliable. Other reasons revolve around the lack of precision in the division of the boundaries portrayed in each sheet, where some areas present overlaps, leaving gaps on the other side. This is due, among other factors, to the fact that they were developed by different companies and adapted over the years in addition to the different political and economic interests for the detailing and the update of certain areas. Gabriel Duarte, ‘Maps to Hack, Synchronize and Decipher’, in *AD - Brazil Restructuring*, ed. by Hattie; Hartman and Helen Castle (London: John Wiley & Sons, 2016), pp. 48–53.

## 4.2 The Google episode

Moving back to the beginning of this article, to the case of the disappearance of the favelas on 2011 Google Maps. After almost a century of cartography—with phases of recognition, subtractions, and being recognised as an integral part of the city—it is surprising that so many years after the new Constitution of 1988, the development of society and the organisation of local resident groups, history repeats itself in such a banal fashion. It is important to point out that Google is not responsible for the cartographic production of the city. For this reason, it does not have to answer political and administrative questions. Google Maps, however, is part of this discussion as it is one of the main map databases used in the city, being the most popular digital mapping tool. This makes Google an important player in this discussion.

The process of “correcting” maps that we saw earlier, went beyond just removing the “favela” tags from the maps. In some cases, the word favela was replaced by the word morro (hill). Many favelas have their name associated with the name of a hill, and this relationship was used to circumvent the issue. The tag Favela Dona Marta was removed and replaced by the tag Morro Dona Marta. In other cases, such as when a favela is not on a hill, but rather inserted in a flat urban area, such as the Favela do Jacarezinho, all information has been removed, making it impossible to locate it on the map (STURM, 2013). In some more emblematic cases, such as of the *Favela da Rocinha* (one of the most famous favelas) the name Rocinha was kept, but the word Favela was removed.

**Figure 7:** Image from Google Maps of Rio de Janeiro in 2011 and in 2013 with the favelas erased.



Source: Google Maps

One of the visualisation options offered by the Google Maps is to switch views between the map mode and the earth mode, which comprises satellite photos.<sup>11</sup> When switching between those views, there is a discrepancy in the way the favelas appear. In Figure 8, it is possible to observe a sequence of cases where the favelas are presented in different ways. The images on the left show photos of a favela in earth mode, and the images on the right show the same framing in map mode.

<sup>11</sup> The digital tool Google Maps is constantly updated. These images refer to the researched period, but in different browsers, it is possible to check previous versions, and until the end of this project, it has been possible to find evidence of these disappearances.

**Figure 8:** Sequence of images showing the lack of hierarchy even within the category of favelas. Top: Favela Parque da Cidade as a green mass and without a tag; Middle: Morro dos Cabritos as a flat grey mass, surrounded by a green mass, and without a tag; Bottom: Morro da Providência as grey area and without a tag.



Source: Original photo from Google Maps. (2018). Rio de Janeiro. Retrieved from <https://maps.google.com>

In the first example, in the top two images, the urban mass of the *Favela Parque da Cidade* is ignored, showing only a green mass, indicating the area as a continuation of the Tijuca Forest. In the second, the two images in the middle, when in map mode, it is possible to see the *Favela Morro dos Cabritos* on the left, with the favela as a grey mass but without any tag, and wealthy houses in a formal area as loose polygons in a green background; and the third, the bottom two images, show the *Favela da Providência*, Rio's first favela, represented as a simple indiscriminate grey urban area.

With Google, we are faced once more with cartographic invisibility, but this time, there is no legal support, there are no technical impediments or methodological issues. And even when Google pulverised the map of Rio with favelas—indeed a distorted representation—its solution managed to be even more aggressive and damaging.

Internet tools like Google Maps have changed the paradigm of maps. Nowadays the use of a physical map is rare. Navigation maps are in our everyday use and available from most smartphones. This ease of access and the possibility of automatic updates made the production and use of traditional maps (produced by public administration, or by automotive companies) fall into continuous decline.



In the traditional media, any map represents a reality of what it intends to show. And because of this it assumes a narrative—what is mapped, for whom, and for what purpose. However, these digital tools offer a “satellite” viewing mode. And the narratives, in a certain way, disappear. We see whatever is captured by satellite. But even using the reality captured by the satellite, Google Maps override any implicit intention by digitally displaying information about some streets, neighbourhoods, and regions while deleting others.

### 4.3 The collaborative platforms

One of the advantages of digital tools is that they offer alternatives to specific narratives. The next map, from the Wikimapia platform, is an example of a collaborative database. According to its website, Wikimapia is an open-content collaborative mapping project created in 2006 under the Creative Commons License (Koriakine; Saveliev, 2017). With its slogan “Let’s describe the world!”, the platform works by adding information supplied by users to existing map platforms (Google Maps, Bing Maps, OpenStreetMap and Yahoo Maps). It means that users can add a place, draw a polygon to identify a certain region and name it. Each of those entries, or tags, can carry textual information, addresses and web-links. Although it is a useful map tool because it is made by users, this platform does not present any formal rigour or review of its information.

Figure 9 shows that in the region of Copacabana, there are 14 areas tagged as favelas. Some of them, like the *Favela Morro da Saudade*, would never be officially considered a favela by the public administration, since it has only 10 houses<sup>12</sup>—but it’s on this map. Above all, this platform offers recognition and, despite not being official, it is a relevant source of information. However, as it is based on data provided by the public, this information is not necessarily validated—nor official. Therefore, although democratic, since it allows anyone to include their communities on the map, it is not possible to argue that this platform is necessarily inclusive in official matters.

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<sup>12</sup> IBGE official definition: “Subnormal agglomerate” (Favelas): Set consisting of at least 51 housing units (shacks, houses ...), occupying or having occupied until recently, land disposed of (public or private) disposed, in general, in a disorderly and dense way, as well as mostly lacking essential public services.

**Figure 9:** Collage simultaneously showing several favelas included on the platform Wikimapia. When you hover over these areas, the polygon appears along with the name assigned to the location. It is interesting to note that some of these areas, such as Vila Benjamin Constant, Favela Morro da Saudade, or Rei do Bola, are agglomerations with less than 50 units, so they are not officially considered favelas.

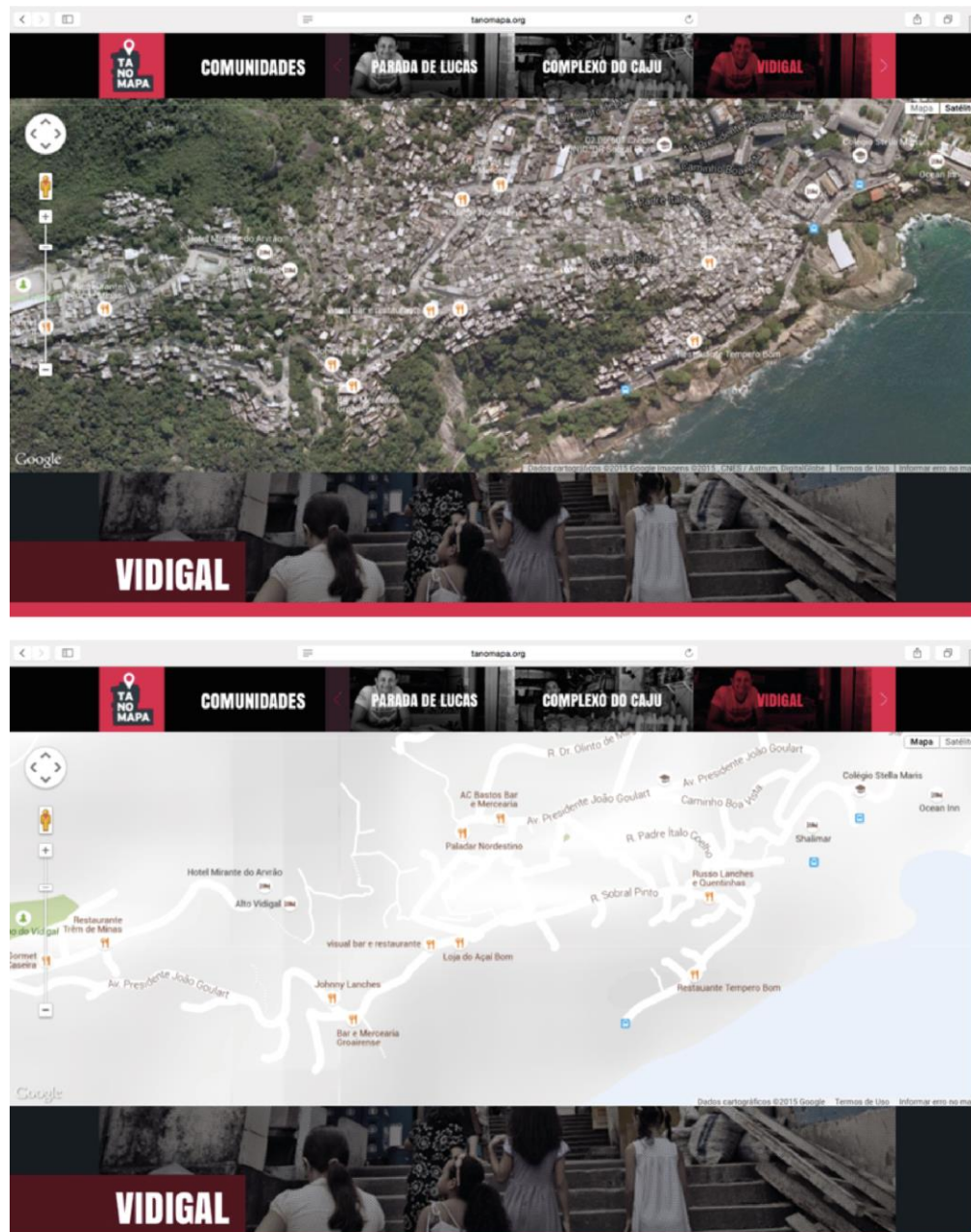


Source: Original photo from Wikimapia. (2017). Rio de Janeiro. Retrieved from <http://wikimapia.org/#lang=pt&lat=-22.963372&lon=-43.181849&z=15&show=/34147634/pt/Coroa&search=favela>.

There are other platforms that have taken a more active role in the inclusion of the favelas in maps, such as WikiMapa (not to be confused with Wikimapia) and the On the Map project (Azevedo; Santos, 2010). These collaborative mapping projects allow the definition of streets and alleys, house numbers, and the inclusion of points of interest (POIs). WikiMapa was an international award-winning project developed in 2010 through the social organisation 'Programa Rede Jovem'. It uses a phone application which was used by the local youth who was trained to create geo-referenced elements: main and secondary streets, points of interest (POI), or services available in favelas (Rede Jovem, 2014). The aim was eventually to create a new map that could be more effective for local users. In 2014, WikiMapa was implemented in 154 cities with more than 2,500 users, and more than 7,000 POIs and 150,000 streets were mapped.

A similar initiative came from the NGO AfroReggae, a well-respected and recognised institution in the country.<sup>13</sup> The principle is the same: local residents equipped with mobile handsets and GPS locators map streets that will be added to their own digital platform. *Tá no Mapa* (On the Map) was created in 2013 in partnership with the giant advertising agency, J. Walter Thompson, with the slogan “Breaking the Wall between the Favelas and the World” (Quebrando o muro entre as favelas e o Mundo). It quickly gained recognition, and in 2014 the programme signed a partnership with Google in order to map all the favelas of the city.

**Figure 10:** Projeto Ta no Mapa (on the Map). Morro do Vidigal in the two viewing modes: Satellite and Map. Maps made within the Google system, but without being included on the Google Maps platform



Source: Source: AfroReggae (NGO), ‘Ta No Mapa’, 2013 <<http://www.tanomapa.org/>> [accessed 17 May 2015]

<sup>13</sup> Project Tá no Mapa: AfroReggae (NGO), ‘Ta No Mapa’, 2013 <<http://www.tanomapa.org/>> [accessed 17 May 2015].

By 2016, the programme had mapped 21.3 km of streets. The most particular aspect of this programme is the partnership with Google, which offers technology and validates the information provided. While Google erased the favelas in its main platform, it created another platform to map them. The issue here seems to revolve around commercial interests. As we can read on the homepage of the platform, “There are more than 1,000 favelas in the city of Rio de Janeiro alone; Only 0.001% of them are mapped; More than 1,443,773 people live in them” (Tá no Mapa, 2013). We must also consider that the favelas of Rio present a high digital inclusion rate. The *Complexo da Maré*, one of the poorest communities, has 55.9% of digital inclusion (above the national average of 51.2%).<sup>14</sup> Despite this initiative, Google created an “alternative” platform. Moreover, even with these different alternative platforms, and various inclusion and recognition initiatives in favelas, their impact is still small, because these platforms are not the tools we use every day. The favela remains outside the most important platforms.

#### 4.4 The touristic map

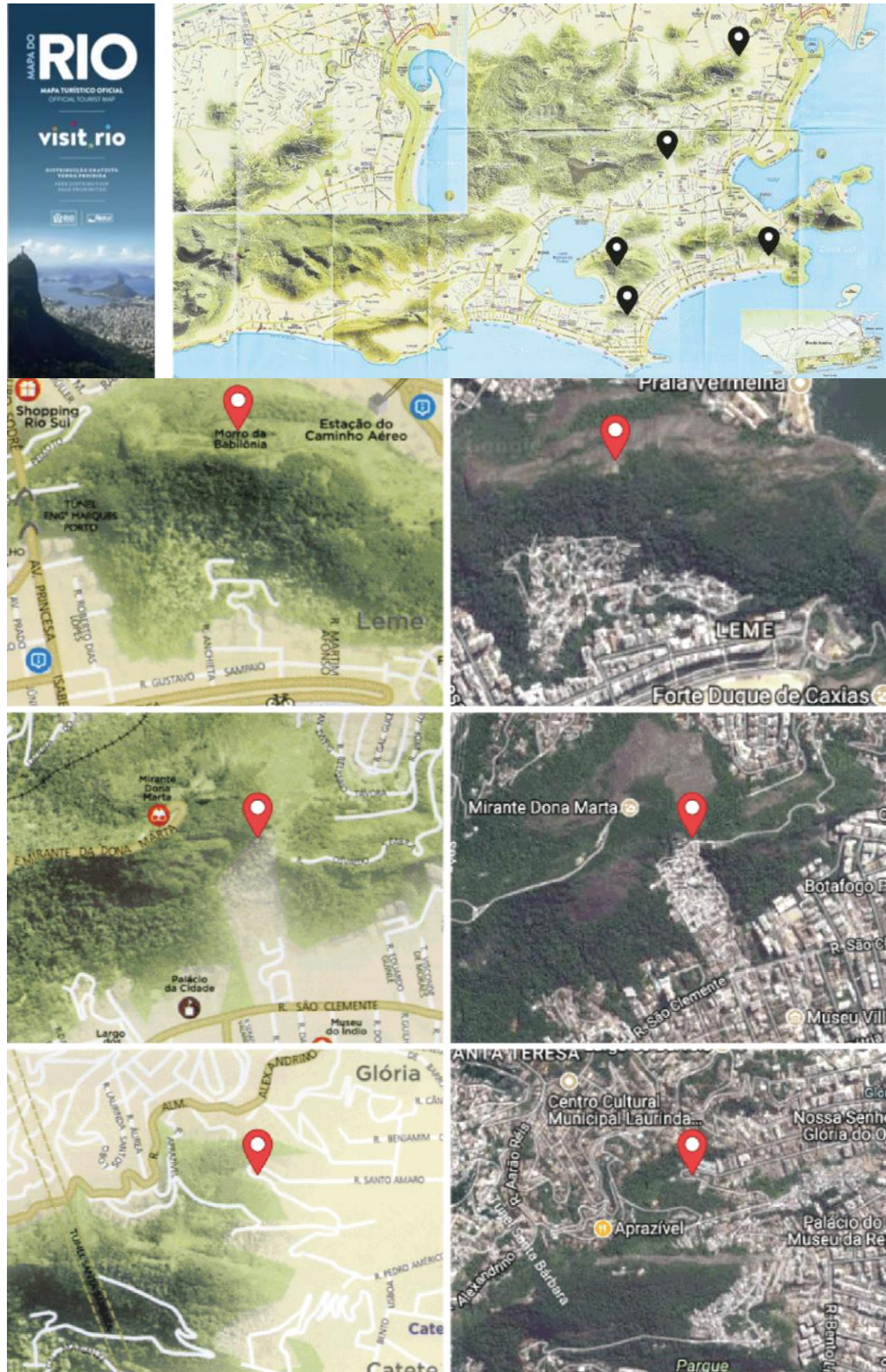
The last map in this discussion is “The Official Touristic Map” of Rio that, once again, conceals the existence of favelas, as a strategy that seeks to “hide” more degraded areas. Produced by the City Tourism Office (Riotur) it is distributed free of charge in touristic spots across the city. These maps had great repercussions in the media and on social networks. Several newspaper articles appeared in the media when this official map was released. Assuming a tone of denunciation, these articles described the fact that this map was graphically manipulated so the favelas would look like forest areas. The media, that previously complained about Google when its maps gave relevance to the favelas, now complained about their omission.

An O Globo article focused on identifying those “responsible” for such subtraction. Among the different parties in charge, Riotur, when questioned for the first time, argued that this is a map that should only show touristic sites (Zarur; Yousef; Lima, 2017). With the increase of negative repercussions, Riotur stepped back and blamed the previous administration, stating that the map layouts were the same as those that were previously used, but with updates to the transportation system.

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<sup>14</sup> Rede Jovem, Wikimapa 2014 (Report), 2014 <<https://pt.slideshare.net/redejovem/wikimapa-2014-engfinal>> [accessed 11 October 2017].

**Figure 10:** Official bilingual tourist map of Rio de Janeiro. Produced by the tourism office. Sequence of images from the newspaper reports compared to satellite images. On the left, the images of the map distributed by the Riotur, and to the right, the same frame seen on the Google Maps application.



Source: Riotur, 'Home | Visit.Rio' <<http://visit.rio/>> [accessed 12 October 2017]; Camilla Zarur, Leila Youssef, and Ludmilla Lima, 'Folheto Da Riotur Distribuído a Turistas Tira Favelas Da Geografia Da Cidade', *Jornal O Globo* (Rio de Janeiro, 11 September 2017) <<https://oglobo.globo.com/rio/folheto-da-riotur-distribuido-turistas-tira-favelas-da-geografia-da-cidade-21806418>> [accessed 12 October 2017].

The report also questioned the geographer in charge. In her defense, she stated, “the favelas were not represented on the maps, because they are areas of irregular construction, and that is a guideline enforced by the IBGE (Brazilian Institute of Geography and Statistics)” (Zarur; Youssef; Lima, 2017). IBGE protested, affirming that it does not make this kind of recommendation. RIOTUR’s last justification was that the favelas are included in a magazine also produced by Riotur, distributed at the same touristic points. But in this magazine, they only appear under “Special Tours”—which are sightseeing ads.

The reporters' zeal to find someone to blame, along with Riotur's apologies, show that this failure to map the favelas was seen as negative. Within this discussion, it may be relevant to ask what are the conditions that define whether a favela is a touristic destination. This is a delicate point, since any potential favela can attract tourists due to its characteristics, as it occurs with the different parts of the city, although some have more attractions than others. The difference is that, this time, this justification was viewed negatively by society.

## 5 Conclusion

The argument of this article is that the cartographic production kept the favela as an invisible part of the city, and especially in recent years, this invisibility was a political option. In the past, due to being illegal and unrecognised, they could not be the object of urban interventions and consequently, they were kept as irregular spontaneous settlements, with illegal possession of property. However, opting for their invisibility did not prevent the favelas from growing. On the contrary, this contributed directly to these large disorganised territories being deeply inserted into the urban fabric of the city.

A series of episodes were identified, where cartographic production was analysed versus the historical context at the time of its production: The first maps (Item 3.1), produced from aerial photography surveys, seemed to “cut out” the favelas. But a graphic analysis showed that this hypothesis was not true. Administrative strategies, such as the 1937 Master Plan (Item 3.2), in its attempt to solve the housing deficit, prohibited favelas. As a result, they could not be officially recognised. Among the consequences of these acts, the favelas could not be mapped. This obscurantism contributed to the uncontrolled growth of these informal settlements. The lack of monitoring and control contributed to their growth and consolidation. Under the 1967 building code (Item 3.3), favelas began to appear on maps, but as blobs, as subcategories of the urban fabric.

With the advent of digital cartography, this slow process of recognition was interrupted and gained political overtones. The city's cadastral maps (Item 4.1) ignored the favelas in their files. Despite the fact that there was no technical obstacle to registering the favelas on the city's maps. The Google Maps episode (Item 4.2), with its embarrassing alternation of representation, revealed, in a more direct and less disguised way, the desires of the administration — and part of society — not to represent the favelas on their maps. Something that gains levels of perversity, with the possibility of alternating between viewing satellite photos — showing the favelas — and graphic views, where they were not registered. Collaborative platforms (Item 4.3) offered alternatives to the dominant tools, and several people are nowadays in charge of registering their communities on the maps. However, their low popularity does not represent a great achievement. The Google platform also ventures into mapping the favelas in a collaborative and social way — but on an alternative platform. And finally, an official tourist map of the city (Item 4.4), produced by the Tourism Department, in an amateurish way, erases the favelas from the brochures

distributed to the city's tourists. Perhaps it was the most shameful moment of the political intention to erase the favelas from the map.

It is possible to argue that these centuries-old invisibility has directly contributed to the favelas being "forgotten" by the public administration because, if an area is not registered, it is no longer considered. The problems of urban inequality that we have today are closely linked to this invisibility.

The objective of this article was to identify moments when the existence of favelas was graphically represented on city maps. It was shown an alternation of representations — sometimes erased with the intention of containing their expansion, other times with the intention of hiding them from tourists. Nowadays, favelas are in process of being completely mapped — even because satellite photos do not lie. But this selection of maps shows moments of still present great shame and prejudice. Despite being officially considered neighbourhoods since the 1988 Constitution, favelas were hidden by the public administration — by pressuring the Google Maps platform or by airbrushing them out of their tourist maps. It is therefore possible to argue that this invisibility contributed to the expansion of the phenomenon. By not registering, measures were not taken and as a result, the favela grew.

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