

## Mapping Urban History: Belo Horizonte's spatial history through a cartographic approach [1]

### Mapeando Histórias Urbanas: a história espacial de Belo Horizonte através de uma abordagem cartográfica

Patrícia Capanema\*

#### Abstract

Seeing the growing complexity of what we used to know as urban – now more and more intertwined with the rural, productive sites and nature – the last decades have witnessed the reawakening of interest in landscape (urbanism) and cartography as tools to apprehend and deal with complexity. While landscape is able to embrace the urban with the natural and the social, the cartographic method has the potential of combining space with time, fluxes, movements, processes. This article presents a reflection on the potential use of cartographic methods and practices in urban studies, particularly in urban history, for their ability of uncovering hidden logics and constructing alternative narratives, in alignment with post-colonial thought. Supported by Milton Santos, Lefebvre, Charles Waldheim, James Corner, Deleuze, Guattari, and others the first part of the paper navigates through the notions of space, landscape, event, rhizome and cartography in order to expose the potential contribution of the cartographic method and practice to urban studies. Finally, we present three maps representing distinct moments in Belo Horizonte's history. In those, the application of the proposed method reveals alternative narratives and interpretations on the history of spatial formation in this city.

**Keywords:** cartography, space, landscape, urban history, Belo Horizonte

#### Resumo

*Diante da crescente complexidade do que outrora conhecíamos como urbano – agora cada vez mais interseccionado pelo rural, áreas produtivas e natureza – nas últimas décadas presenciamos o ressurgimento dos interesses na paisagem (ou urbanismo paisagístico) e na cartografia, como importantes ferramentas para compreender e abordar complexidades. Enquanto o conceito de paisagem é capaz de mesclar o urbano com o natural e o social, o método cartográfico combina espaço, tempo, movimentos, fluxos e processos. Este artigo apresenta uma reflexão sobre a potencialidade do uso do método e da prática cartográfica nos estudos urbanos, sobretudo na história urbana, pela capacidade em revelar lógicas obscurecidas e construir narrativas alternativas, em consonância com o pensamento pós-colonial. Se apoiando em Milton Santos, Lefebvre, Deleuze e Guattari, Charles Waldheim, James Corner e outros, a primeira parte do artigo navega pelas noções de espaço, paisagem, evento, rizoma e cartografia com o objetivo de expor a contribuição do método cartográfico para os estudos urbanos. Por fim, apresentamos três mapas representando momentos distintos na história de Belo Horizonte. Nestes, a aplicação dos métodos propostos, revela interpretações e narrativas alternativas para a história da formação espacial desta cidade.*

*Palavras-chave:* cartografia, espaço, paisagem, história urbana, Belo Horizonte



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## Introduction

The present work aims to promote a reflection on the intersections between Urban History, Cartographic Method and Praxis - or Descriptive and Interpretative Cartography -, focusing on the possible results of their combination and juxtaposition, as a contribution to urban studies. In this article, the application of the method contributes to launching a new look at the urban history of Belo Horizonte, Minas Gerais.

Recognizing and absorbing the numerous existing narratives about this object, the research highlights that (Brazilian) urban history is usually told through great facts and acts - and often only through plans - with little emphasis given to spaces produced and materialized by such processes. Thus, the first premise of this methodological approach is to adopt a spatial perspective. In this sense, the present historical reconstruction benefits from the cartographic method and praxis, and its potential to shed light on other dynamics and actors involved in the production of space. Space and landscape are used here as tools to tell a territorial story that considers not only its forms, but processes.

Therefore, this article brings a reflection on the meanings of space and landscape and how such categories can contribute to the construction of a spatial history through mapping. The last section presents an attempt to apply the proposed methods, presenting three maps that make up an episodic history of the spatial formation of Belo Horizonte.

## Spatial history through a cartographical approach

*Space, Landscape, Time, Event*

The resurgence of the interest in cartography and mapping is intrinsically, but not solely, connected to what has been called the 'spatial turn', meaning the reawakening of the problematic of space as opposed to the predominant 19<sup>th</sup> century focus on time, transparent in its obsessions on history and progress. The growing insertion of the dimensions of space within social and urban studies is generally considered as a particular expression of postmodernism and its characteristic space-time compression (HARVEY, 1990) and representational crisis (JAMESON, 1991). Underlined in the spatial turn is an appeal for the necessity of new tools with which to better apprehend space and events in space, such as mappings and cartography (SPERLING, 2016) in its many facets.

The shift towards space was announced by Foucault (1997) already in 1967, and later picked up by geographers and other social theorists such as Denis Cosgrove (1985), Fredric Jameson (1991), David Harvey (1990), Edward Soja (1996) and Robert Tally Jr. (2013), amongst many others. Thereafter, the socio-spatial dialectic has become a largely used instrument for architects and urban planners to tackle contemporary urban problems as it is able to encompass time-space, geography and history simultaneously while putting the city space at the locus of social change.

Milton Santos has defined space as, amongst many other definitions alike, an inseparable aggregate of systems of objects and systems of actions. It is within their interaction that lies the dynamism of space allowing for its transformations. While the system of objects provides forms to actions, the system of actions either leads to the creation of new objects or gets realized through pre existing ones. Space is not a thing nor a group of things but a relational reality that involves things and relations together (SANTOS, 1988).

In other words, space is a hybrid composed of form and content in which object and action, the materiality and the event should be treated as one. The importance of space relies on the fact that human society is always realizing itself over a material base, the space and its use, time and its use, materiality in its many

forms. Therefore, understanding human society also implies the knowledge of the spaces it creates and transforms.

For Santos, the key element that differentiates the notions of Landscape and Space is action, or human life. Landscape can be defined as a material base in which human action has already worked to transform it, a frozen image in which it is possible to see the previous actions in a holistic perspective. Space, on the other hand, is the landscape added with present actions, a unique situation that only happens in the 'now'. However distinct, space and landscape are for Milton Santos a dialectic pair, complementing and opposing each other, forming a palimpsest in which actions from different generations are superimposed through accumulation and substitution. These dialectic relations between space and action, space and landscape are also present in Lefebvre's understanding of space. What Milton Santos calls landscape, the receptacle of human action, is for Lefebvre treated as 'pure nature'. While Santos defines space as landscape added with human life, including fluxes and movements, Lefebvre goes broader considering several categories and levels of spaces, including mental space, the one of plans and ideologies.

In his understanding of space, Lefebvre goes beyond the binaries of mental and physical space, introducing, in 'The Production of Space' (1991 [1974]), the third term: the social space. To overcome the large gap between 'ideal' mental space and the 'real' lived in space, he calls for a *science of space*, supposed to provide a true knowledge of space and the processes involved in its production, rather than mere descriptions of physical spaces. Social space is, for him, not a mere aggregate of things, pure form, nor only their content and symbols. Space is defined by Lefebvre as social because it "implies, contains and dissimulates social relationships - and this despite the fact that space is not a thing but rather a set of relations between things (objects and products)" (ibid, p. 83). The reality of social space is, therefore, at once formal and material.

Understanding space as alive, as a locus of action, process and transformation, implies automatically the consideration of time. Time is, of course, an indispensable category besides

space, object and action when the processes are at focus. In the meeting of time and space, one finds the notion of the event which, for Santos, is an instant in time realized in a point in space, a unique situation, and never repeated; they are absolute. This absoluteness is what renders the efficacy of the event in their (spatial) transformative character. Although most of the time the event means human action, it can also mean ideas. Events are also never isolated, belonging to systemic ensembles. They can be diachronic, happening in succession throughout time or synchronic, coexisting in several places at the same time. This is, for example, the case of State action, where a determinate law can act upon a totality of people, institutions or territory simultaneously. Supported by Whitehead (1938, p. 255 *apud* SANTOS, 2002, p. 106) Santos affirms that each event has two simultaneous levels of existence, the global and the local, and that no event can be wholly and solely the cause of another event. Therefore, one must not analyze the event separately, but within the totality in which it is inserted, the succession of events, in multiple scales.

This category will be a key to the understanding, in the history of Belo Horizonte, how each event, with their systemic ensembles, has acted in the transformation of space, considered as both action and idea, physical and mental, applied in specific places and times. Each event will not be treated individually, but instead, expanded to the chain of preceding and successive events.

In the recent decades, the concept of Landscape has acquired new meanings in the field of urbanism, understood, for some, less as a category than as a tool. Not a new idea, it lately became a meeting ground to geographers, biologists, artists and sociologist with architects and urbanist who start moving their attention beyond the city (COSGROVE, 1985). The new meanings and applications of Landscape are inserted in the many attempts to find new methods to approach and describe contemporary fragmented and heterogeneous urban forms, along with terms such as *Cittá diffusa* (SECCHI, 2012), "deconcentration" (GOTTDIENER, 1985), "*urbanização extensiva*" (MONTE-MÓR, 2006), and many others.

It is within this context that Landscape is presented as a model of contemporary urbanism uniquely capable of describing such conditions (WALDHEIM, 2006, p. 37). Extrapolating the limits of what we used to know as “urban”, landscape can also incorporate water, agricultural production, ecology and even mining to the urban question. In addition, landscape presents itself as a “medium, as it has been recalled by Corner, Allen and others, uniquely capable of responding to temporal change, transformation and adaptation and succession” (ibid, p. 39). Landscape Urbanism as a tool emphasizes two important implications that will be crucial to the sort of approach this paper proposes. Firstly, it goes beyond the focus on urban form – spatial arrangements of streets, typologies, functions - being capable of embracing also large infrastructures (such as mining), natural resources and ecology as well as social practices, serving as interface between nature and culture. Secondly, the wide temporal dimension of landscape projects the territory as a medium of continuous ongoing exchange, particularly relevant for historical analysis.

### Cartography as storytelling

This predominant role given to space, landscape and cartography clearly is not anything new, having its most significant moment dating from the Renaissance. It is no coincidence that the emergence of cartography is aligned with the period of the great navigations and, with the discovery of the Americas, a complete change in space perception and world-view. (TALLY JR., 2013). Digging into the history of cartography the geographer J.B. Harley has shown us, in *‘Deconstructing the map’*(1989), how maps are not mere representational tools, actually acting as instruments of power. “While the map is never the reality, in such ways it helps us to create a different reality” (HARLEY, 1989, p. 167–168) Therefore, the redrawing of Belo Horizonte’s historical maps presented in this article aims not only at dismantling the objective reality coat currently covering them, but also to create different realities with the combination of other sources. As Robert T. Tally Jr. has observed, “to draw a map is to tell a story, in many ways, and vice-versa” (2013, p. 4).

On the other hand, the cartography proposed by Deleuze and Guattari in *A Thousand Plateaus* (1987) takes distance from the associations with space and is more tuned to another important postmodern turn: the crisis of science (SANTOS, 1995). In line with other French philosophers, their cartography is a symptom of the refusal of modern sectioned and reductionist science characterized by the search for the totality of the world through the examination of the fragment. Instead, the post-structuralist approach proposes to tackle complexity by embracing multiplicity and, as defended by Latour (2005), through uncertainties and contradictions.

In their seminal work, *A Thousand Plateaus*, Deleuze and Guattari strongly deny any form of binary logic, that of the root-tree, which is, according to them, unable to understand multiplicity (ibid, p. 5). In that sense, they developed the idea of the rhizome, a term borrowed from biology, meaning a root system without any hierarchy, nor pivot. “There are no points or positions in a rhizome, such as those found in a structure, tree, or root. There are only lines” (ibid, p. 8).

Their principle of cartography connects the ideas of rhizome, multiplicity and assemblage: “make a map, not a tracing” (ibid, p. 11). While the tree logic is the one of tracing and reproduction, the map is like a rhizome, having multiple entryways, always detachable, connectable, reversible and modifiable. Cartography is therefore always conceived as an open map, a method to approach the subjectivities understood in its processual dimension. “It’s following a process and not an object” (KASTRUP, 2008, p. 469). For a moment, the persistence in contrasting the rhizome to the tree, mapping to tracing, might seem to revert to the dualism to which they so strongly oppose. On the contrary, the authors defend a constant movement between the terms. The tracing translates the map into an image, organizing the multiplicities and structuring the rhizome. It performs as to reproduce the impasses, blockages and points of structuration of the rhizome and might be dangerously reproducing only itself instead of the map of rhizomes, while propagating redundancies.

Reflecting on the implications of this new cartographic approach on the tools commonly used in urban studies, it seems to suggest

that we avoid any form of graphic representation, or tracing, for its dangers of crystallizing processes, inserting blockages and interrupting lines of flight. Should we then abandon the practice of drawing maps, so long associated with spatial analysis and design? The landscape architect James Corner does not believe so. In his influential essay “The Agency of Mapping: Speculation, Critique and Invention” (1999) Corner picks up precisely from Deleuze and Guattari statement “Make a map, not a tracing” to argue for the crucial agency of mapping practice in not only reformulating what already exists but revealing and realizing hidden potentials. Mapping gains therefore a projective dimension, “first employed as a means of ‘finding’ and then ‘founding’ new projects, effectively re-working what already exists” (ibid, p. 222). By being essentially a visual apparatus, maps have the unique ability of providing a visual projection of things otherwise only imagined.

Also for Waldheim (WALDHEIM; DESIMINI, 2016) cartographic praxis has a great projective potential as “a representational project that merges spatial precision and cultural imagination”. He regrets that the ascendance of “mapping” and data visualization has privileged abstract forces and flows, moving the trajectory of representation from physical description of ground conditions toward the depiction of unseen, immaterial forces. For him, this tendency is a response to the use of plans (or maps) associated with “master plans”, seen as static and antiquated, incapable of dealing with complexity and dynamic relationships. Instead, he sees cartographic practices as a necessary grounding, as a mean to recognize the spatial qualities of the earth, complementing systemic diagrams representing social, economic and political forces. Agreeing with Corner, he states that “mapping is no longer thought to be a tool for description or representation, but rather as an instrument to produce ideas and actions”(ibid, p. 17).

While the discourses of Corner and Waldheim argue for mapping as a tool for imagining new possible futures, the same practice might also be used retrospectively, reinterpreting spatial history and unveiling hidden realities. A re-tracing and re-mapping of Belo Horizonte’s historical cartography, layered with narratives, processes and actions, potentially reveals the rhizomatic

complexity of space production, considering also actors and agencies involved.

Milton Santos’ movement between landscape and space, which for him meant a movement between the frozen and the dynamic, can be directly related with the movements of tracing and mapping suggested by Deleuze and Guattari. Combining both perspectives, we see that, while tracing produces only a portrait of a frozen moment in landscape, mapping means to cartograph space, including actions, human life, social dynamics, etc. It is necessary therefore to travel between the movement and the static, from landscape to space and vice-versa.

Our focus on materiality owes to the fact that, as Latour (2005) has observed, (urban) objects might become particularly visible when they are objects of controversies, when they are in movement and when they become the center of actions, discourses and counter-actions. Therefore, the urban materials, as the crystallization of moments of territorialization and deterritorialization, become the trigger for understanding the alignments between humans and non-humans producing the city[2]. In the urban studies field, such alignments have been termed as ‘assemblage’, one of the many conceptual unfoldings of rhizome and agency coming from Deleuze and Guattari and from Latour’s ANT. Such concepts allow a double gaze on the material and the social, allowing to reveal, through ‘things’ the processes involved in their making.

In this article, the appropriation of Deleuze and Guattari’s (1988) ideas of rhizome, plateau and cartography will be two-fold. Firstly, it shall de-hierarchise sources, images, maps, narratives, all to be considered as truthfully equal testimonies of urban histories, besides more traditional academic bibliographical references. Secondly, interpretative and descriptive cartographies are produced combining topographies, topologies, events, laws, praxis and narratives through a careful work of selection and isolation in order to project new histories and possible interpretations. The dialectic move between maps, tracings and texts is also a move between materialized urban form and processes, which are here the main focus. Therefore, we will target first at the crystallized urban form in order to actually

grasp performance, traveling between tracing and mapping, as Deleuze and Guattari have suggested.

### Why re-mapping urban history

As we know, History - with the capital H - is always told by the victorious, therefore from the center, while small histories from the periphery are shadowed. Under the modern scientific paradigm, the (spatial) history of Belo Horizonte has been told mostly through the perspective of its plans and great acts. As such, many historical overviews have focused on the urban form proposed for the city, searching for its premises or failures.

The proposed approach through mapping shall allow moving away from the fixed image of the project as the main generator of planned cities while reinserting other forms of narrative in its spatial history. The proximity of narrative and mapping has been elaborated by Tally Jr:

“Sometimes the very act of telling a story is also a process of producing a map. And this operates in both directions, of course: storytelling involves mapping, but a map also tells a story, and the interrelations between space and writing tend to generate new places and new narratives. (TALLY JR., 2013, p. 46)

A deconstruction of a consolidated history becomes even more urgent if seen under the light of post-colonial thought. Searching for the construction of a Latin-American architectural historiography, the Argentinian historian Marina Waisman claims that there is a distortion between the historical reality which serves as the basis for the elaboration of concepts and their later application and exploration in the countries marginal to the centers of intellectual production (WAISMAN, 2013, p. 42). This mismatch between concept and reality was also felt by Ananya Roy while doing research in Calcutta (2015). Recognizing a mismatch between the dominant theories and the reality found, Roy proposes, therefore, the construction of new geographies of theory, meaning, the production of theories from the “global south” as a possible way of reconcentration of critical urban theory. According to the author, post-colonial theory allows

thinking in a relational manner about cities. Relational thinking finds resonance in the idea of rhizome, representing a denial of the tree-root structure as it demolishes center-periphery relations.

Equally, the history of Brazilian cities and urbanization shall not be read and repeated from the universality of history, underlined by the linearity of time embedded in ideas about progress, but instead from its own geography and its own temporalities, by use of relational thinking. Such notion opens the way for anachronisms and *heterochronies* which, on urban space, are found under the form of “coexistences of different times in the cities, non-pacified coexistences causing strangeness, conflicts, shocks.[3]” (BRITTO; JACQUES, 2017, p. 298)

But the deconstruction and the re-telling of the history of the city faces the following deadlock: the disappearance of the non-dominant, non-homogenized, heterogeneous narratives. A possible solution is found on the mapping of materialities, of crystallized urban objects, especially when they become the object of confrontation and debate.

In the words of Margareth da Silva Pereira:

“It is in relation to the ephemerality and precariousness of life in its immanent character that each construction, and particularly architecture, stands as a gesture whose ambition is to be a form of resistance and transgression. As a desire and possibility of transcendence, duration and permanence. (...) A mix of constructions more or less conscious of its stubbornness, the city, in its materiality can be read as a cartography of those successive and juxtaposed gestures[4]” (PEREIRA, 2017, p. 151).

According to the analysis of Marina Waisman, in our countries, the *longue durée* elements are not in architecture but in urban tracing, in the urban vocation and in the life of the streets (2013, p. 82). Therefore, the reading of urban forms and social practices, not only architecture, might aid to produce other narratives, constructed from a specific point in the map, as argued by Ananya Roy.

In urban history, it is not enough to portray a certain landscape in a specific moment in history but is equally important to be able to grasp the processes involved in its formation, considering it as a space in which human action takes place. The analysis of three different episodes in the history of Belo Horizonte aims at grasping actions and processes around a specific event that have triggered profound transformations in the city dynamics.

### Three episodes, three maps

To build one of many possible reconstructions of Belo Horizonte's spatial history, this article navigates through important events that have contributed to the city's materialization while reconstructing its cartography. Three special events (or episodes) have been selected for representing important urban gestures which have crystallized in urban form, here represented and analyzed through maps. They are: (1) the foundation of the city in 1895; (2) the emergence of its first satellite settlement in the 1940s, Pampulha; (3) the recent sprawl towards its neighbor Nova Lima.

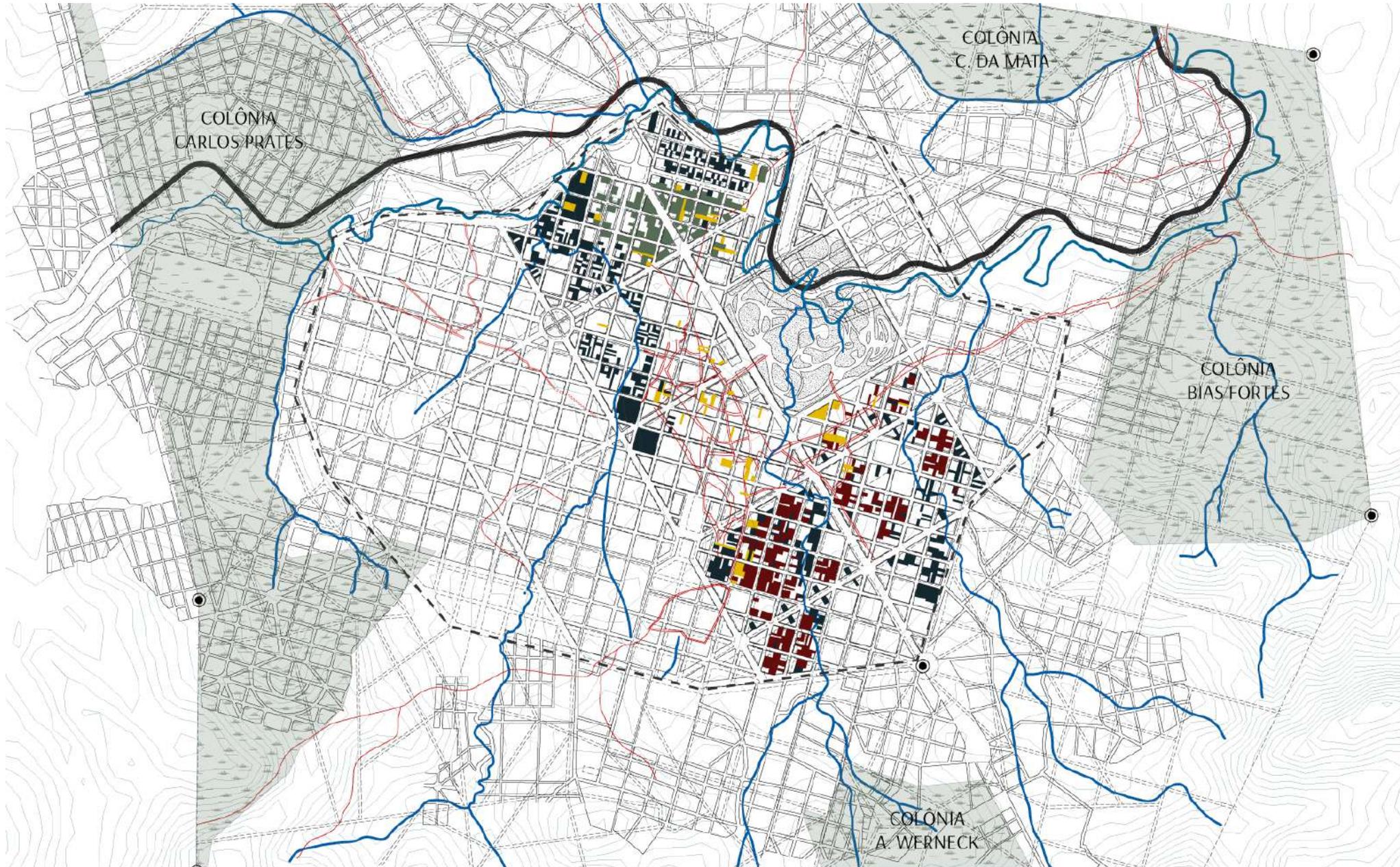
Each of these episodes is usually seen as an isolated moment in Belo Horizonte's urban history, each having its particular motivations and contextual realities, rarely seen within the same narrative, through the same set of lenses. A focus on space through the mapping of spatial formation processes functions as a sort of filter that grasps mainly specific social relations with direct results on physical space. The method thus eclipses, even if temporarily, social relations not directly materialized in space, left to the second plane. A focus on space and mapping allows us to see not only spatial forms but complex landscapes in transformation. Although producing three different spatial forms, the research revealed very similar attitudes regarding ground manipulations, grand infrastructural works and social segregation across the cases.

The episodic essence of this narrative requires making large jumps in time and space and, knowingly, leaving much unexplained. Although attempting to reveal untold stories on each historic moment of the city, we acknowledge the

impossibility of producing a holistic history, in fact never intended. The micro-histories here told through maps are a result of an extensive work that goes back and forth in bibliographical as well as archival research and mapping, between narrative and image, tracing and mapping. What emerges from each map and its following text are fragments of histories which have, through a non-systematic rhizomatic approach towards diverse sources, been compiled and translated momentarily to fixed representations. Those try to depict more than space, but mostly spatial processes and socio-spatial relations. This approach and the limited space of this article means also that many facts and details will be mentioned very punctually, remaining unexplained. The intention is to tell a history from the maps and the several sources that were used to compose it.

As a planned city, all facets of cartography - sketching, mapping, surveying, planning - have had a protagonist role in Belo Horizonte's history, since before its foundation. The 1895 plan by Aarão Reis figures in almost every historical account of the city. As its image has consolidated as a symbol of its foundation, the projections have overshadowed its real ground conditions, deleting simultaneously its past and future while enhancing the *tabula rasa* illusion.

The present map was produced from the retracing and selection of information from several historical maps, some largely neglected in Belo Horizonte's historiography. A detailed cadastre map of the *Arraial de Belo Horizonte*, the village totally demolished for the construction of the new capital was drawn by the Construction Commission (*Comissão Construtora da Nova Capital - CCNC*) in 1894 (NOVA CAPITAL, 1894), registering all properties to be expropriated and demolished. As it shared the same node points from the 1895 plan (NOVA CAPITAL, 1895), their superimposition was possible, with reasonable precision. The visual result reaffirms facts already exposed in the city historiography, for example, the superimposition of *Igreja da Boa Viagem* to the *arraial's* main church (BARRETO, 1996). Other less known relations are also exposed: the coincidence of some *arraial* streets with the new ones leaves open ground for interpreting that the 1895 plan was not so exogenous as it is usually portrayed.



Map 1 – Foundational core (1893-1928): intertwined co-existence. Source: by author with data from: historical maps available at APM and APCBH.

- ..... Strip for 30.000 inhabitants
- - - - Urban / Suburban limits
- Plots for funcionarios - 1895
- Plots for R.H. owners - 1895
- Railway
- Suburban waters
- Agriculture colonies 1898
- ▨ Vila Operária 1902-1919
- ▨ Plots reserved for State

Another important layer of this map comes from the “*Planta da parte urbana da Cidade de Minas designada para 30.000 habitantes*” (MINAS GERAIS, 1895), elaborated by the CCNC already in 1895, as plots began to be sold. Following guidelines of Act n.3 Additional to the Constitution (CAPITAL, 1893), this plan depicted the strip to be constructed initially for 30.000 pp. and the plots reserved for public buildings and conceded for state civil servants, for former homeowners of Ouro Preto, - as a compensation - and of the *Arraial* – in exchange of properties, as well as the plots already sold by 1895. Some interesting conclusions can be drawn from this. The majority of plots sold by this date were concentrated in the ‘commercial zone’, a lower area next to the Rail Station, the first to be leveled and put on auction (LEAL, 1895). The middle section of the strip for 30.000 inhabitants had less plots reserved or sold. The superimposition with the *Arraial* plan witnesses complements to written accounts: by 1895, the village was not yet demolished and many of its houses, mainly concentrated in the center of the strip, were used by the commission (BARRETO, 1996). The cartography produced presents a spatial visualization of the co-existence, for at least a few years, of the old village with the new modern city in construction. At the southern edge of this strip, lays the area with most plots reserved for functionaries, the *Bairro dos Funcionários*, an area higher in topography which became the most valued over time.

Beyond the Urban zone grid is the suburban zone, whose mesh has been drawn here according to the city cadastre map of 1928-29 and contrasted to Aarão Reis’ original design, in dotted lines. The engineer’s descriptions of the plan mention only that this zone would have narrower streets of 14 meters wide, in order to accommodate better topography (BARRETO, 1996). However, when the plan is overlapped to topography one can see clearly that this has not been, in fact, a guiding principle. When comparing the pre-existing roads (in red) and to the rivers, we can see that occasionally the suburban streets follow their pattern. When compared to the suburb cadastre map of 30 years later, we can see that in fact those are the only streets which coincide with the plan of 1895, not because they followed design, but because the design followed pre-existing structures.

Another important layer in this map is depicted by green patches, apprehended from the “*Planta dos Terrenos Demarcados para a Fundação da Cidade de Minas*” (Plan of the land demarcated for the foundation of the Cidade de Minas), organized by virtue of the Decree 1127 of 6<sup>th</sup> December 1898, discriminating the urban, suburban and colonial zones. While the city was being inaugurated, agricultural colonies began to be implemented around the city, part of a State project of agricultural development associated with the importing of foreigners[5]. The map shows four of them, Carlos Prates (west), Córrego da Mata (later renamed Américo Werneck, north), Bias Fortes (east) and Adalberto Ferraz (south). Their implementation, undertaken by the State, goes in the opposite direction of Reis’ plans, which foresaw this area as a suburban zone, separated from a rural surrounding. The colony’s limits follow the ones of already expropriated land, but also landscape structures. Their land subdivision was organized in long strips parallel to the river, following agricultural reasoning. Compared to the map of 1928, it is possible to see that the urban mesh developed goes in fact in many cases according to the agricultural and hydrological structures and not to Reis’ plan.

One of the main criticism of Belo Horizonte’s plan and implementation is its uncontrolled sprawl in the first decades, presenting an inverted growth, from the periphery to the center (PAULA; MONTE-MÓR, [S.d.]; TONUCCI FILHO, 2012). The presented cartographical analysis of the suburban area, with all its juxtaposed rationalities, shows that, however not developing according to the initial plan, it was not as ungoverned and chaotic as usually portrayed by Belo Horizonte’s historiography. While in some areas the original plan is followed, mainly by connecting roads and larger structures such as cemetery and hippodrome, in other cases, occupation follows agricultural structures. The resulting map of the juxtaposed rationalities at stake between 1893 and 1928 shows that the areas initially occupied were in fact the ones receiving state projects. Other areas hosting more buildings at first were the immediate northern suburb, along the Arrudas river valley and the railway, as this area was the first to receive state infrastructure. As the Urban zone was either not yet demolished, not yet built or reserved, the large influx of

immigrant population began to occupy the available areas along the valley even before the official plan was launched.

The intention of this map was to portray a different version of Belo Horizonte's foundation, not the one provided by the plan of 1895, which alludes to a tabula rasa condition. It tries to depict the image of a city that was not founded at once, but was slowly constructed over decades and which emerges simultaneously as urban, suburban and rural. It did not completely erase its pre-existing village, but resurrected some of its features, including its geographical insertion.

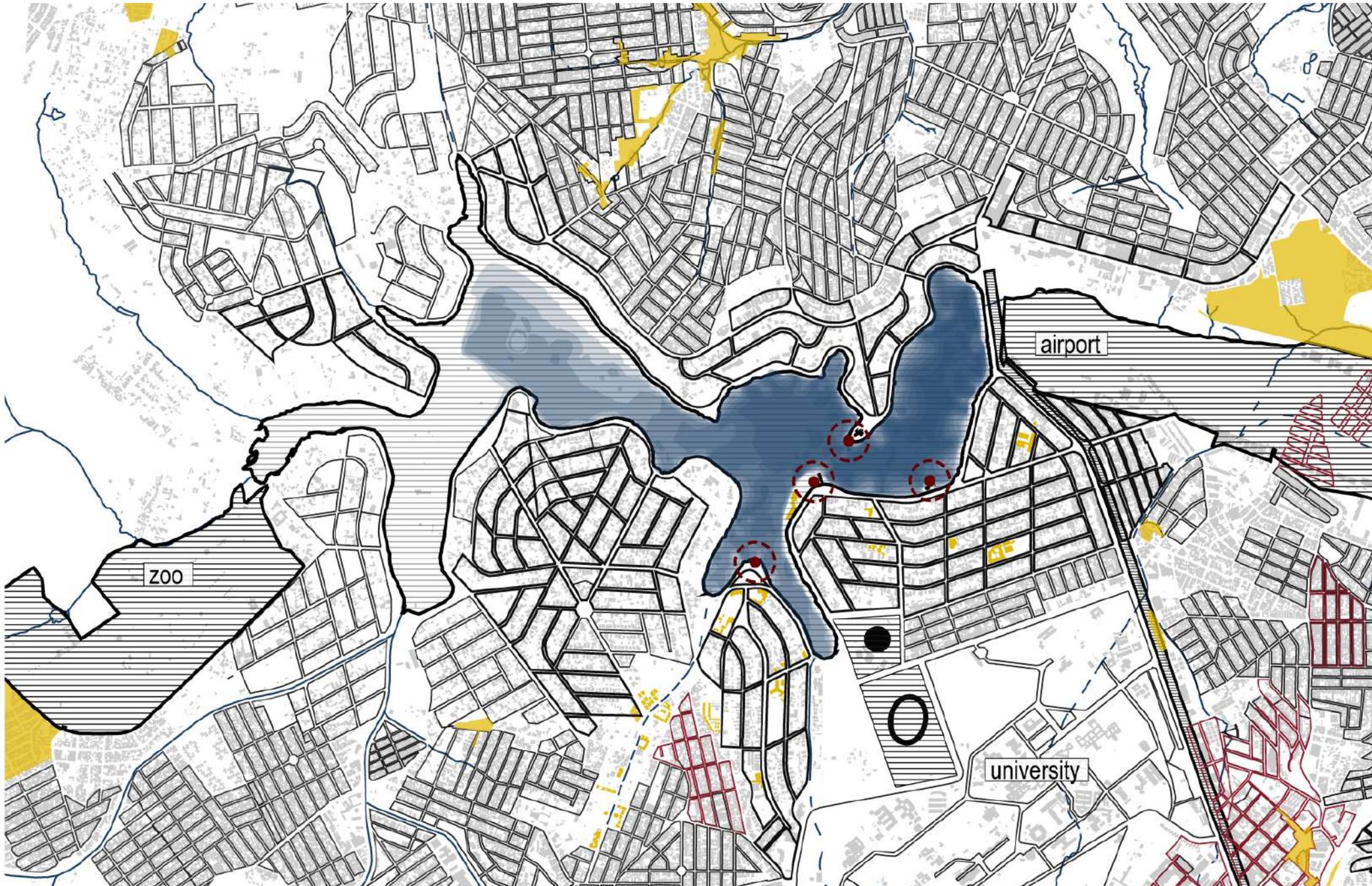
Pampulha, the first satellite town of Belo Horizonte, is generally considered as an important State project that has encouraged the city's development towards the north. It is not today perceived as a satellite city, but has been in the past. Invited by the then mayor Kubitschek to visit the city, the French urbanist Agache had suggested building a satellite city for workers around the lake, worried about the social problems he had witnessed in the city, an idea only partially accepted (SEGRE, 2012). In 1948, the new mayor Negrão de Lima presented in his yearly report a section about the Satellite Cities, suggesting Pampulha as a promising center of tourism and entertainment (BELO HORIZONTE, 1948).

Although largely regarded as a State project, Pampulha is not, however, the result of a specific master plan nor any comprehensive urban plan. As in the previous episode, the exercises of analysis and re-mapping of archival cartography, supported by texts, allowed better understanding of the spatial transformations in the area. In the absence of a holistic plan for Pampulha – such as Belo Horizonte's 1895 plan –, the mappings have reconstructed the timeline of Pampulha's materialization throughout five decades, by combining and retracing private allotment approval plans, available at municipal archives, and the documented State punctual, however massive, investments.

Pampulha is the result of the gradual accretion of governmental as well as private actions, bigger or smaller, which are represented in the above map. In fact, the inauguration of new fronts for expansion of the city, an idea already totally embraced by 1948, goes in the opposite direction of urbanist

Continentino's 1941 plan for Belo Horizonte, which advised to avoid sprawl by adopting the compact city model (AGUIAR, 2006). It also contradicts the Decree 54 of 1935, which tried to halt city expansion by regulating land allotments. Simultaneously, the lake Pampulha is presented in Otacílio Negrão de Lima's report of 1937 as a solution for the water supply of a growing city. Nevertheless, a small sentence reveals the future desired for it: "The accumulation [of water] will serve to the practice of water sports" (BELO HORIZONTE, 1937, p. 54) Around the same time, the mayor gave a speech in the municipal chamber promoting the "edification of a new and picturesque leisure neighborhood" at Pampulha (Anais da Câmara Municipal de Belo Horizonte, 1936, cited by FERREIRA, 2007), predicting therefore the future construction of a neighborhood around the lake. To access the lake, a large avenue was laid out, Avenida Antônio Carlos, substituting the old road to Venda Nova.

A few years later, after the completion of the dam, the decree n. 55 of 1939 (BELO HORIZONTE, 1939) ruled the division of plots and construction parameters to land bordering the lake. Its first article determines that projects, surveys and leveling of allotments within a 500 meters strip around the lake would be undertaken by the municipality, under the request of owners. The second article prescribes a minimum of 20 meters front and 1000 sq meters of surface area to plots, establishing an exceptional case in the municipality, as it is cut out from the Decree 54 of 1935 (BELO HORIZONTE, 1935) ruling over the subdivision of plots in the rest of the city. Consequently, it determines which kind of use and social class to be established there. The allotments that resulted from this law - highlighted in the map - have formed a sort of belt around the lake in which only high standard, gardened houses were allowed, securing the image of Pampulha as a wealthy, elegant area. All lakeshore allotments were approved in 1943, signed by then mayor Juscelino Kubitschek who became known as the 'creator' of Pampulha. Despite the exposed antecedents, the dam formation beginning in 1937 and the law of 1939, Pampulha is highly associated with his administration, beginning only in 1940. He foresaw its great future as a tourism center, increasing the municipality's revenue. To accomplish his view, he hired the architect Oscar



Map 2 – Pampulha (1940s-1990s): from homogeneous enclaves to heterogeneous urbanity. Source: by author with data from: Prodabel; PDDI-RMBH; Portal Plantas Online (PBH); Google maps.

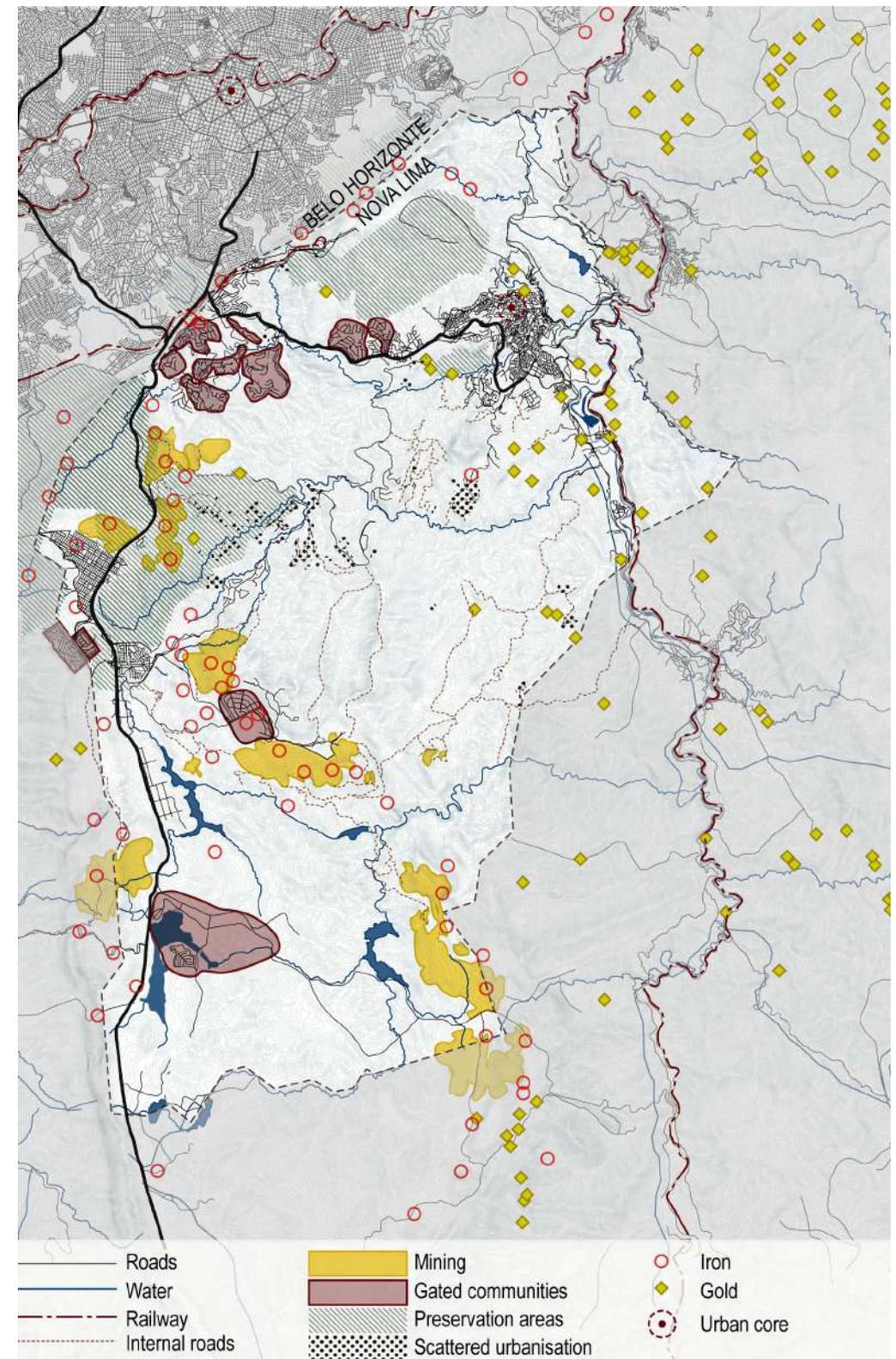
Niemeyer to design buildings around the lake, all dedicated to culture and leisure – a Casino, a Ball Room, a Yacht Club and a Church. This new settlement comes as something totally new, just as the foundation of the city itself, ignoring completely the pre-existing fabric in the area (shown in red).

In the following two decades, as the occupation of Pampulha was still at a very slow pace, the State made large investments in the region, considering the availability of land and the large investments already made. The larger ones were the airport, the University Campus, and the Zoo. Slowly in the 1950s and more intensely on the 1970s[6], other allotments began to fill the gaps left between Pampulha and the city center, south of the lake, and Pampulha and Venda Nova, to the north. In contrast to the lakeshore those complied with the general rule of the city, marking a strong division between two kinds of ‘Pampulhas’, also visible on the map. The fragmentation of previous farmland property in the area meant also the fragmentation of allotments and the heterogeneity of its urban form. The spaces in-between, especially around the creeks, were left undivided – identified as ‘fragments’ in the map. With time, these gaps were filled with whatever was not included in the monofunctional residential enclaves of Pampulha, which ranges from slums to highly active commercial areas (marked in yellow). These ‘exceptions’ filled the physical as well as the social gaps in Pampulha, allowing heterogeneity of classes and uses, in contrast to Pampulha’s homogeneity dictated by zoning. Instead of being secluded and isolated by the high-class residential enclaves that surround it, the lakeshore can fulfill its originally intended role, which is to provide leisure to all inhabitants of the city, and now, metropolitan area.

By highlighting the state infrastructure applied, the pre-existing tissues and the exceptions, the map tries to show that Pampulha is in fact a very diverse territory and not only the ensemble of the lake and the architectural landmarks as it is usually depicted. It is not a project of only two brilliant men, Kubitschek and Niemeyer, but of many people together, which already existed before them and gained a whole new life after.

Map 3: Nova Lima’s patched urbanization (MAPA 3)

Source: by author with data from: IBGE; PDDI-RMBH; CPRM; Google maps.



The map of Nova Lima depicts its multifaceted character through the combination of at least three themes representative of the conflicting forces currently acting in this territory: human settlements, mining and environment.

The history of Nova Lima is deeply intertwined with mining, the reason for its foundation and until today its main economic drive. The words of Richard Burton, the 19th century British traveler, defined well: “Built by mining, it fell with mining, and by mining, it has been ‘resurrected’” (BURTON, 1983, p. 195). Until the mid 1800s, the town was one of many within the mining colonial urban network (MORAES, 2006) having gone through the golden age and subsequent decay.

The economic and political openings after Brazil’s Independence (1822) allowed the establishment of English companies in Brazil, radically transforming the regions’ mining activity. The input of large amounts of capital directed at technological development allowed the extraction of underground gold and started a new era of resource extraction in the region. At the turn of the 20<sup>th</sup> century, geological surveys revealed the existence of large iron ore deposits in the region today named *Quadrilátero Ferrífero*, in which Nova Lima is centrally inserted. From this moment, many foreign companies started to acquire large pieces of land starting a new cycle of extraction in the region, now focused on iron ore. To the present day, most of the municipality’s territory belongs to these companies which are in fact the ones orchestrating the region’s urban development.

Until the 1950s, Belo Horizonte’s metropolitan extension had been towards the North and West directions, fostered through State projects such as Pampulha (north) and *Cidade Industrial* (west). The expansion towards south and the east presented two impediments: the *Serra do Curral*, a mountain ridge crossing in the southwest-northeast direction forming the borders between Belo Horizonte, Nova Lima and Sabará; and the large concentration of land in the hands of the mining companies.

However, the 1950s showed a turning point to Nova Lima’s urbanization. As the express highway connecting Belo Horizonte to Rio de Janeiro (BR040), was constructed, financial difficulties led mining companies to sell lands bordering the

new highway (PIRES, 2003). The sum of these events resulted in the urbanization of strips along the road, a typical phenomenon which Panerai (2006) has called ‘the path and the hill’. Some pioneer settlements were Jardim Canadá, Vale do Sol and Miguelão. Very soon, the first gated communities emerged in the region, however not totally attached to the highway as the first ones. The first dwellers of these condominiums were attracted by the ‘living within nature’ ideology offered by the region’s beautiful landscape. Morro do Chapéu and Retiro das Pedras were the first of this kind, followed in the subsequent decades by many others. The same occupation pattern started to emerge simultaneously along the MG030, the road connecting Belo Horizonte to Nova Lima original nucleus, with Ouro Velho Mansões being the pioneer in this new kind of settlement.

After the 2000s Nova Lima’s dynamics started to change drastically with two events: the inauguration of Alphaville, a large gated community at the south of the Municipality, shaped in the molds of American suburbs for permanent dwelling (instead of weekend homes); and the verticalization of Belvedere, the last neighborhood of Belo Horizonte, spilling over Nova Lima in the Vila da Serra neighborhood. Lower prices, taxes, and more flexible urban regulations at the latter, meant a higher-density occupation in vertical towers contrasting to a hilly landscape upon a preexisting allotment initially meant for low rise. Since then, Nova Lima has seen an unprecedented densification of some areas as well as the spreading of new horizontal gated communities towards its territory, threatening environmentally protected areas.

Besides an already well-known story of the gated communities, the above map allows the visualization of a third layer which is acknowledged however hardly seen from the high-class towers: mining. Not unexpectedly, but seldom visible, the mining pits are very close to human settlements and the highway. The overlapping of underground with over-ground data allows visualizing the juxtaposition of iron ore registered deposits (orange circles), mining pits, the highway and human settlements, where a unique geological formation has resulted in large concentrations of iron ore following a ridge. The availability of already mined and infrastructured land has as consequence

the construction of gated communities, generating a third economic wave for the mining companies, now with real estate. To the municipality's east, the concentration of gold, instead of iron, meant another kind of occupation, which relates more to the 18<sup>th</sup> century mining colonial urban network: small scaled and along roads and mines.

Nova Lima holds therefore, at least five very different kinds of human occupation within its municipal borders, in complete dissociation with one another. While the gated communities hold a very homogeneous kind of settlers, the core of Nova Lima functions as a normal small town, with heterogeneous groups, but still different from the new patched neighborhoods along the highways, more heterogeneous than the condominiums but still detached from the main-city. On the borders of Belo Horizonte, the vertical occupation of Vila da Serra functions exactly as other luxurious neighborhoods of the capital, however on Nova Lima grounds and completely detached from its core. Intertwining those, are the mining grounds, not resumed to the visible pits, but including a large influence area with its own parallel infrastructure of roads, railway, water cycles and social networks.

### Final remarks

The maps here produced according to the cartographic method and principles here exposed have provided, on one hand, the exposition of historical urban facts already known but not necessarily interpreted spatially and, on the other, uncovered relations not usually perceived or generally neglected.

The time frame stretching of Belo Horizonte's foundation map allows overcoming the stigmatization produced by the fixed image of the *tabula rasa* perpetuated by Aarão Reis' 1895 plan's iconography, leading to interpretations of an 'ungoverned' growth. The rhizomatic juxtaposition of different times, cartographies and historiographic sources has allowed seeing Belo Horizonte's foundation as a process with many actors and not as an instant.

In the same way, it was possible to see how Pampulha was formed by a series of both private and public gradual actions

and not solely by the touch of Kubitschek and Niemeyer. It also became visible how instruments used to organize and shape space and its occupation have functioned to perpetuate long standing social asymmetries, also fixed in Belo Horizonte's foundational core, and which continues, with new apparatus, in the next episode.

The exposing of the historical formation of Nova Lima's tissues has allowed the visualization of the already acknowledged, however seldomly perceived, intertwined relations between urbanization, mining and ecology. Approaching Nova Lima as a unique landscape, however fragmented, allows the understanding of its current territorial conditions in relation to its history, and, most importantly, its underground features.

In all cases, space and landscape have been put on the foreground allowing a spatial historical reconstruction. This has fostered a deeper understanding of how social relations, governmental projects and individual actions reflect on urban space, contributing to the shaping of the city. The mapping practices have shown, visually, that urban space is not solely a social product, but an aggregation of actions and objects, to which we must include topography, valleys, water courses, mineral resources, etc. Those are known to shape the city, but are usually undermined or neglected when the social production of space is foregrounded. The maps here presented are not a final product, being only one of the infinite possible unfolding narratives. They contribute to bring new insights to urban history and theories, by providing a true knowledge of space and the processes involved in its formation, rather than pure descriptions of spaces.

## Notas

1. A longer version of this paper was presented at the ENANPUR in May 2019 and published at the conference proceedings, also in English.
2. The approximations of cartography with Latour and the ANT have developed into the concept of the 'cartography of controversies' (Venturini, 2010) which should not be confused by the cartographies explored in this research as it has very different aims and techniques.
3. Free translation by the author
4. Free translation by the author
5. See AGUIAR, 2006 for a detailed account.
6. The dates refer to the approval of the allotments stamped in the Cadastre maps. It is possible that many allotments already existed and became legalized only in the 1970s, before the first zoning law was launched, in 1976.

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**\*Patrícia Capanema Álvares Fernandes** é doutora em Arquitetura e Urbanismo pela Universidade Federal de Minas Gerais em cotutela com a KU Leuven, Bélgica (2019), no tema dos processos históricos urbanos usando Belo Horizonte como estudo de caso. Possui graduação em Arquitetura e Urbanismo pela UFMG (2007) e mestrado Advanced Master of Architecture no Berlage Institute, Holanda (2012), Atuou como professora em diversas instituições - UniBH, KU Leuven, UNIFESSPA e UFOP - e tem como principais interesses de pesquisa processos de urbanização, planejamento urbano cartografia e morfologia urbana. E-mail: pcapanema@gmail.com