
Belo Horizonte

OPENING A TERRITORY AND MAKING A CAPITAL

Student Works

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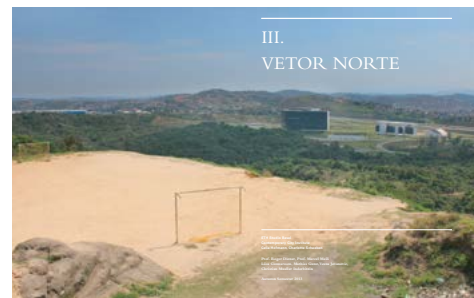
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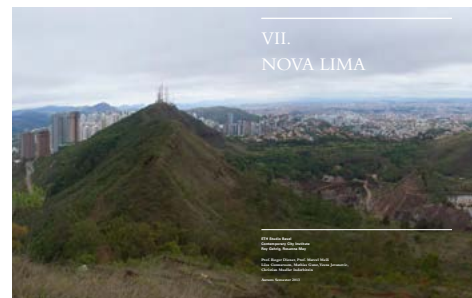
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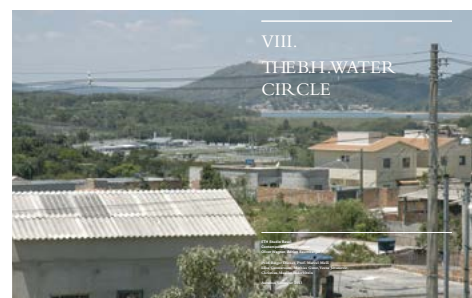
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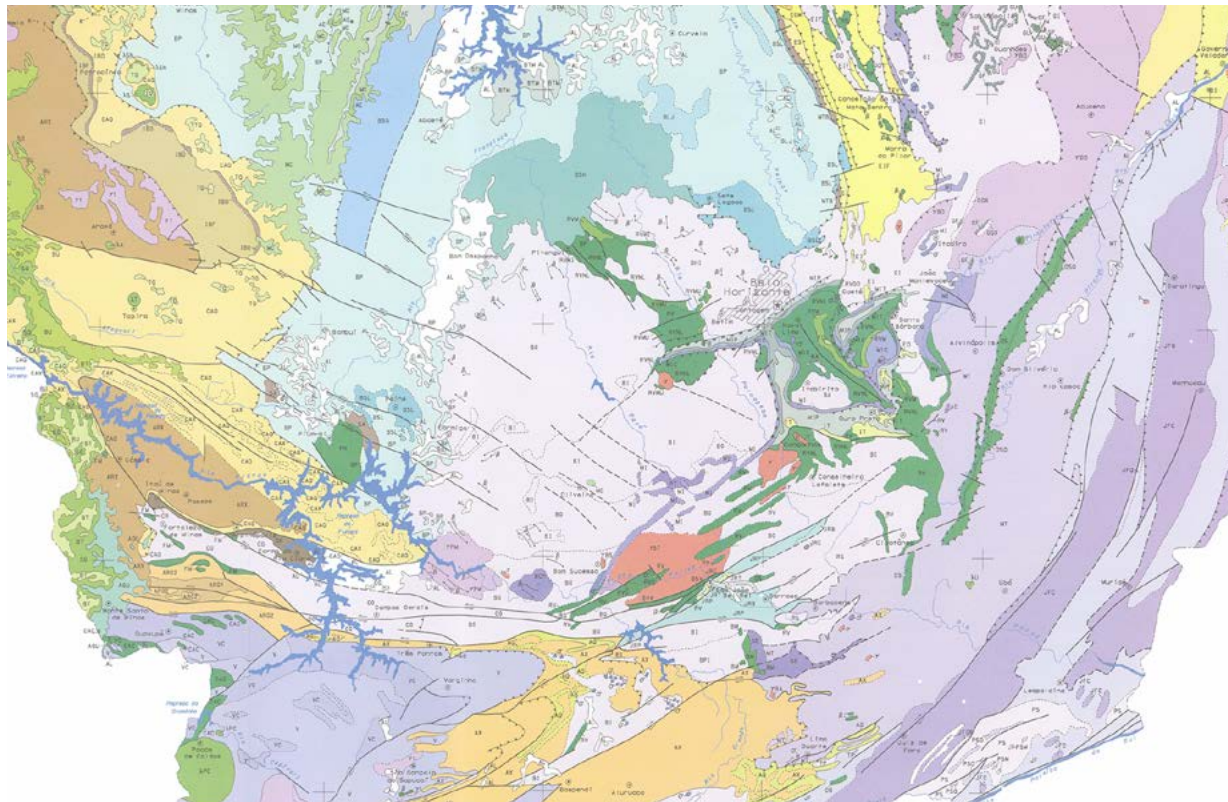


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INVESTIGATING THE CITY AND ITS TERRITORY

After having studied transformation processes of contemporary cities under globalization for a number of years now, we have more recently started to frame a wider area and ask what is the impact of those same globalization processes on this greater geographical scale, one that extends beyond the clear gravitational fields of the metropolis. Knowing that the city is unmistakably unautonomous, always embedded in relation to a wider territorial logic, with human activity therein allowing for its accumulation, we have started to outline and investigate what comprises such contemporary territories in relation to the shifts we have observed in the contemporary city. Globalization processes seem to inspire different reactions evolving from preexisting traditions in any given territorial milieu. The properties of the local elements inherently determine the outcome of this mixing process. Territories have begun to reconfigure themselves in the wake of globalization, to loosen up allowing for increased mobility and metamorphosis, these processes require our professional inspection, as they are as vital to understanding contemporary life, as is the accumulated understanding we have in our field of the city. How do we begin to describe this looseness of territory, and the changes in the relation between the city and the territory it is inscribed in? In order to find concrete answers we have ventured this year to the interior of Brazil, to a state called Minas Gerais, abbreviated from 'Minas dos Matos Gerais', which means 'Mines of the General Woods', referring to the two large geographical spaces dominant in this (very large) state: the Sertão - the dry Brazilian highlands - and what has now come to be called the Quadrilátero Ferrífero - a very mineral-rich area that for centuries has seen urbanization activity in the form of mining towns, and cargo infrastructure. If none of these names or places seem familiar: this is also the place that the city of Belo Horizonte is capital of. Belo Horizonte today represents the third most populous metropolitan region of Brazil, right after São Paulo and Rio de Janeiro, with its 20 cities and 5.5 mil. inhabitants. Compared to the extensive activities that have been happening on the land, this metropolis is very young, founded in 1897, and stands on top of this land in a very complex series of relations to its surroundings, performing its metropolitan duty, and much more than that, but also in instances ambiguously autonomous, disconnected even, from this same land. This book will try to describe how this territory opens up, and how do Brazilians construct a capital.

This project continues ETH Studio Basel's territorial researches in Switzerland (1999-2005), the Nile Valley (2009), Rome - The Adriatic (2010), Florida (2011), Vietnam (2012) and Muscat and Oman (2013), which clearly show ways in which densely populated environments invent new types of space: traditional natural or rural areas turn into urbanized territories characterized by a multilayered occupation of landscape, overlapping structures and meanings.



zoom-in of the 'Mapa Geológico do Estado de Minas Gerais', 1994., COMIG

THE RED SOIL OF MINAS GERAIS

The first striking thing about Minas Gerais is the bright red color of the soil, which impregnates the entire landscape. In its 'original' nature this land was (and still is) lush green (during the season of heavy rainfall) or timidly yellow (during the four dry months of winter). The soil, as it were, rests under the vegetational surface - therefore when we perceive it, as we do nowadays everywhere in this region, it is because the earth has been scratched - the land overturned, cut into, exploded, ploughed, or shifted. The red soil of Minas Gerais becomes an observational tool of the ongoing processes of man-made physical interventions started over 400 years ago, first by the colonials, and subsequently carried on by the Brazilians (it is difficult to assert, however the practices of the natives - who occupied the land for far longer, and before the arrival of the Portuguese - seem to have in turn been far less consequent with regard to terraforming). So the Minas Gerais that we now see, is the second Minas Gerais, the one of the Cerrado agriculture and pastures, the one of the iron ore and limestone mining, the one of new highways that make slits in the land, the one of 'condominios' that resculpt the tops of hills as extensively at times as the process of open pit mining does - the one of a rapidly developing society with a pragmatic and not too shy attitude towards the land.

A pile of earth rich in iron, logic would demand, cannot be suited for farming - and indeed there are distinct geographic spaces, where mining is predominant, or where agriculture and livestock herding prevail. The state divides into 3 ecologies. The first is the very dry Sertão to the north of the city of Belo Horizonte - a poor region where farming is difficult, and the mineral riches (most famously of diamonds, but also of gold and other precious metals) are now depleted. Second, there is the Brazilian Savannah to the west and southwest of the capital, the Cerrado, which is now synonymous with cow herding, milk and cheese production, vegetable and coffee plantations, and if one ventures really west into the Triângulo Mineiro one encounters a scale jump into very large scale agricultural production. Seemingly the farther away one ventures from Belo Horizonte, the more dominant the nature of the Cerrado becomes. This land was previously thought to be unproductive, and multiple efforts of land transformation have brought a very productive landscape into being. The third ecology is the Mata Atlântica, or what remains of the former Atlantic Forest (compared to the Amazon rainforest, where 15% has been lost due to deforestation, the Atlantic forest has under several centuries been completely erased, with only 12% of its surface remaining). It spreads south and southeast of the city of Belo Horizonte, nowadays resembling the Cerrado, as the forest itself has in most instances been cleared away. Within it rests a unique region - the Quadrilátero Ferrífero - one of the largest iron ore deposits in the world, where the mining activity has characterized the land since it was first colonized (starting with gold mining initially).

But this oversimplified geographic designation quite simply does not suffice to describe the complexity of this landscape - it is indeed not the case that where there is iron the land is not cultivated, all of these activities of man mix and overlap in the countryside, constructing new relationships throughout. This truly is a hybrid landscape. Most interestingly, and even though it does not seem to have been the intention of politicians nor urban planners, the capital of Belo Horizonte emerged exactly in the spot where all of these geographic specificities meet.



HOW DO BRAZILIANS BUILD A CAPITAL?



The second striking thing about Minas Gerais, is the topography - finding flat land here is a fool's errand, which is probably why the founders of Belo Horizonte did not bother looking for an ideal clearing, instead they placed the future city in the 'center' of the state, in order to consolidate the state itself, and to centralize its functions - it was in every way a strategic and administrative decision. In a very clear urban grid atop many hilly slopes, the city inserted itself, at first slowly, and with the beginning of industrialization, and the kick-off of the iron ore mining era, more and more rapidly - the city outgrew the plan manifold and the 'Centro' is today only one neighborhood in an extensive urban field. It is avidly clear that the plan was one idea, tied to the notion of creating an administrative head for the region, and that the economic strategies that the city subsequently employed - which informed heavily the nature of urbanization - were another idea: once brought into existence, the city had to find ways to claim, and maintain, its administrative power, and it is at this point that it seemingly disconnects from the land itself in order to do so.

At the time of its founding, the center of Minas Gerais was the poorest part of the state, it was also the intent with its siting to change this. Built during a time when the gold rush was long a thing of the past, and the iron ore rush had not yet begun, the rich and powerful nobility involved in the creation of the city were the coffee barons, and the southwest region of the state was where their coffee plantations were, at that point in time the most lucrative land in the state. But the barons had quite clear economic ambitions of what this city would be about - a new economic industrial center, to be fueled by global economic impetus, ie foreign investment. Starting off as a minor provincial capital, the Mineiros had the dream of rivalling São Paulo, by bypassing it and turning to the rest of the world - economic power would carry political weight on the federal scale of Brazil, and the Mineiros were since the formation of Brazil invested in federal affairs, but had lost their air to economic giants, ie São Paulo and Rio de Janeiro. An industrial city emerged based on production, the most significant industry (among many) was the automobile industry, and the presence of Fiat in the neighboring town of Betim elevated Belo Horizonte to the global economic forum. Nowadays, and with the growth of the city, the spaces of production and habitation are intertwined, and the significance of industry still remains an important factor for the city.

Explained in this manner, the city seems not to have a lot to do with the land around it, economically speaking, it seems to have succeeded in establishing itself on its own, and all the while also turned outwards - to the federal and global scenes. If the countryside was autonomous and globally oriented already since the time of the european colonization, then what is the position of this metropolis within this milieu?

URBANITY OF PLURALISM IN A LAND OF PLENTY

Something should be said about Brazilian tradition - perhaps in an attempt to put this territory into perspective. I will try to do this with two examples we uncovered in the research, the Japanese (indeed Brazilian) farmer, and Inhotim Art Park.

Brazilians are extremely ethnically diverse, and numerous, living in a vast, geographically diverse land. They are perhaps even more diverse than the Americans, although one need not stick to the comparison for long. The American landscape - the entire American landscape - has common properties, a logic of ordering (the Jeffersonian grid), every American city has a downtown, every smaller town a Main Street, it is recognizable that public buildings seem to follow, classically, a certain style (at the time borrowed from Europe). In Brazil no such spatial commonalities exist, that would begin to reflect a common identity, every Brazilian city is different - for instance public transport is organized how each city sees fit, and only certain projects of infrastructural investment are made by the federal government. The physical commonalities seem fewer (if one ignores for a moment the architectural output of Oscar Niemeyer, which is impressive, to say the least). One could imply that the federal level carries less weight than the state level, perhaps due to Brazilian pluralism, which creates a very optimistic, special instance of democracy which we were only slightly during this research able to observe and understand. Perhaps a better comparison than the US would be the cantons of Switzerland, or the dynamism that exists in Switzerland between the federal and cantonal levels. While every Brazilian feels Brazilian, he is proud to be a Minerio - or a Paulista - far more. The culture of pluralism instills optimism here, and has historically meant that the many people that came - for instance escaping poverty in their homelands such as Italy or Japan - have carved out their own piece of land, and now coexist with many other - different - people. While this is typical of cities, which we define through the constant working of differences, it is also true of the countryside of Brazil, where we encountered farmers of Japanese origin, whose realities are still connected to a global scene.

This pluralist mentality - perhaps - is also the reason why an eccentric mining tycoon has managed to create, in the 'hinterland' of Belo Horizonte, although such a word is unfitting for this context, an Art Park, which seemingly bypasses the land, and the city, and connects to the global art circuit, and is discussed in places like New York, to where this world tangents - also almost completely ignoring, like the coffee barons did, São Paulo and its Art Biennial.

The metropolis of Belo Horizonte is therefore not the only global portal of this territory, a way to open the territory up, it is just one part of the urbanity of pluralism. Its significance rather seems to be local - its initial role to consolidate the region and serve as a capital providing functions, services and cultural content of a higher level of organization, seem to be in the end what the city 'does'. An unorthodox discovery, although perhaps not too surprising in a land whose territory was open long before the thought to create the city came to anyone's mind.

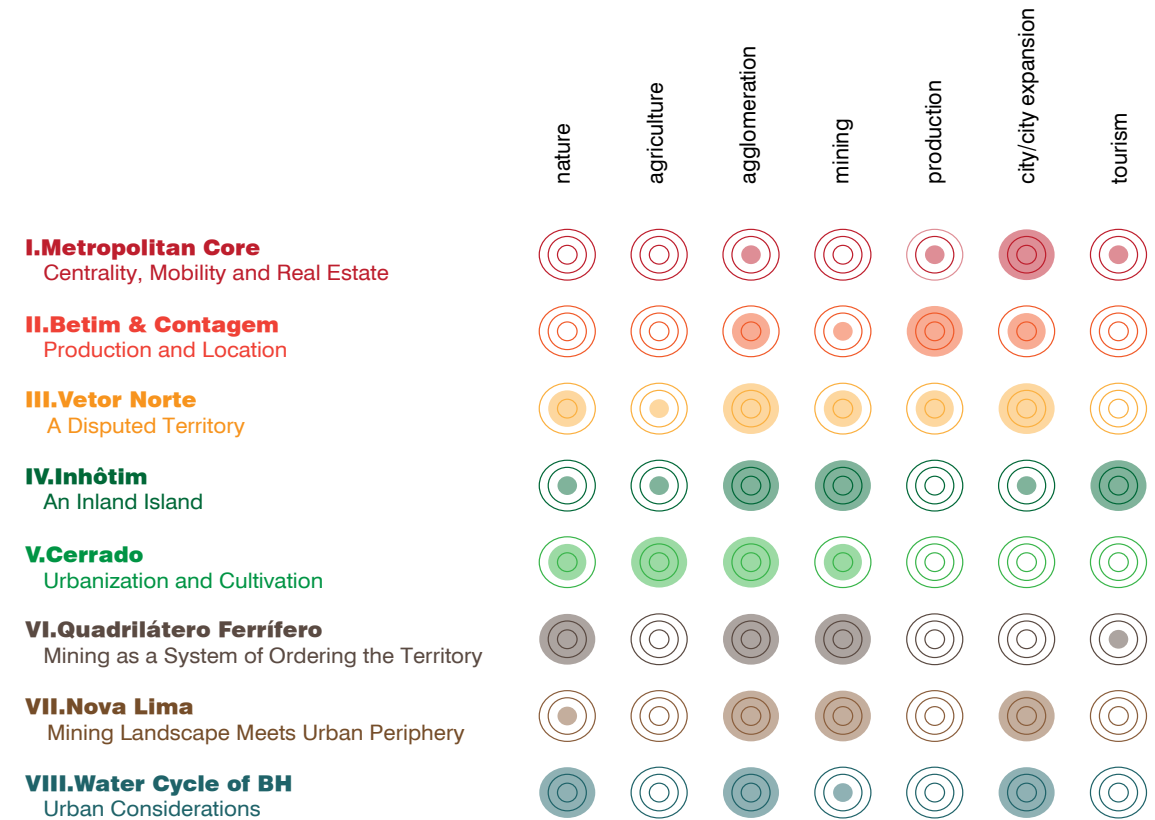
Vesna Jovanovic, 2013.

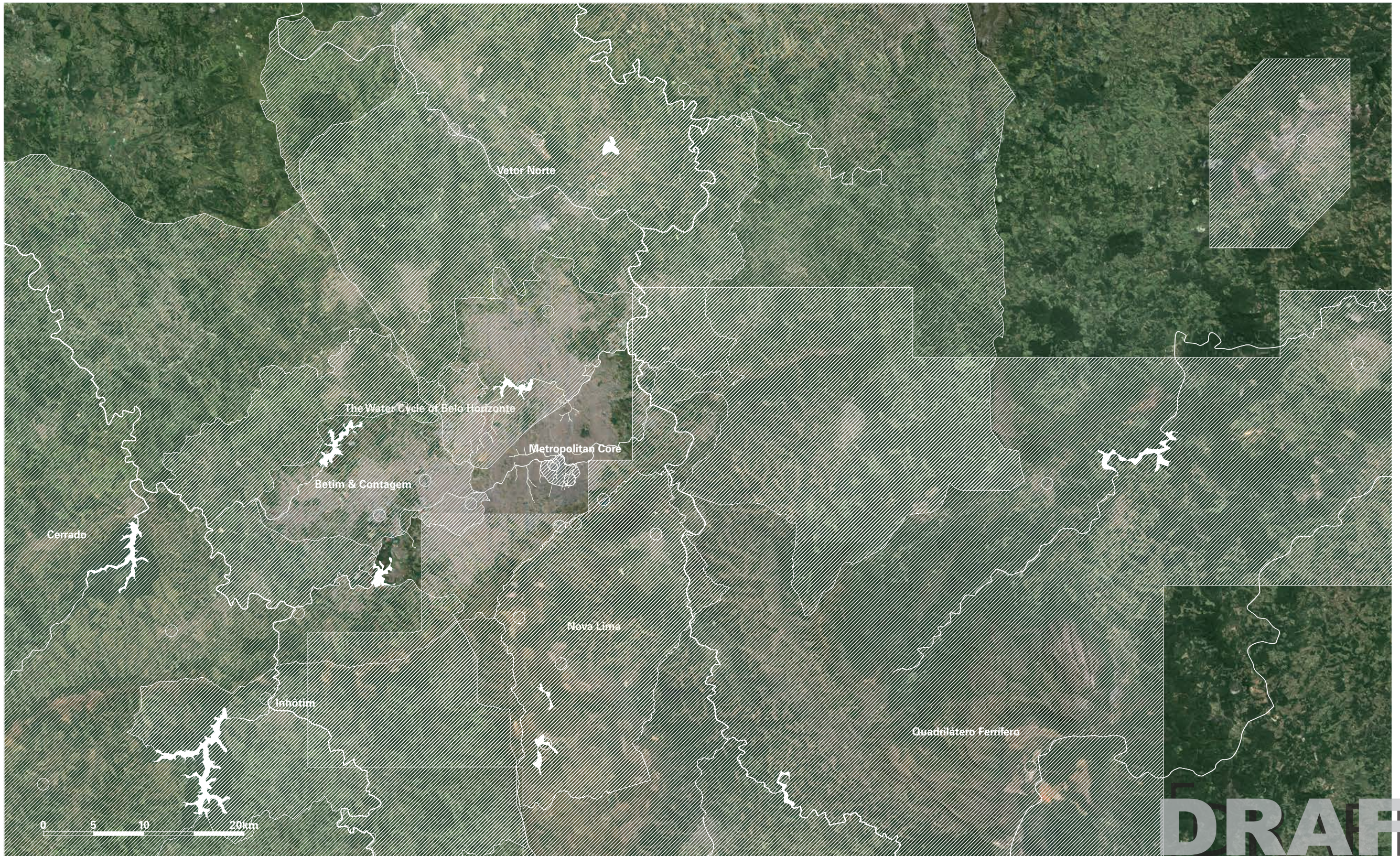


RESEARCH TOPICS

Each research topic was developed by an individual team of student-researchers and tested through case studies. Each case study relates to a specific physical location, in which the recent tendencies are best visible.

- I. Metropolitan Core**
Centrality, Mobility and Real Estate
- II. Betim & Contagem**
Production and Location
- III. Vetor Norte**
A Disputed Territory
- IV. Inhôtim**
Inland Island
- V. Cerrado**
Cultivation and Urbanization
- VI. Quadrilátero Ferrífero**
Mining as a System of Ordering the Territory
- VII. Nova Lima**
Mining Landscape Meets Urban Periphery
- VIII. The Water Cycle of Belo Horizonte**
Urban Considerations





I. METROPOLITAN CORE CENTRALITY, MOBILITY AND REAL ESTATE

In 1985 with the plan for the new state capital ‘Cidade de Minas’, a metropolitan form was stamped on a then still virtually untouched land. This urban form – today the Centro of Belo Horizonte – contains the entire program of a metropolitan downtown: wide avenues, monumental squares with obelisks, high-rise buildings, museums, libraries, theaters, government palaces, a central train station, a large central park etc.



For reasons that remain to be investigated (safety, traffic etc.), it has in recent decades been increasingly deserted by both upper class dwellers and businesses, many of which have moved to the southern tip of the Centro or even beyond the Avenida Contorno, the ring road defining it.

At the same time the high real estate prices keep away more modest users. As a result the very center of the growing metropolitan region has become partially abandoned and exists today in a strange mélange between pressure and neglect. Why is the very entry point of the city into the territory slowly losing its role as center? And where are those central functions going?

A city center can be a nucleus for many different networks and systems: politics, culture, commerce, transport etc. Start by looking at different such hubs (central market, train station etc.) and observe how they work within the city. Who owns them? Who owns the land they’re on? Who works there? But do not look at them isolated; always ask yourself how these central functions are connected to the larger territory. How far into the territory do the flows reach, that come together in the center? And has this structure changed? Are there maybe new hubs outside the Centro? Find such examples and investigate them. By looking at sev-

eral institutions try to develop a clear picture of the changes and movements that are currently affecting Belo Horizonte’s centralities!

Site(s)

Centro
New hubs
Traffic network

Atlas

Try to trace the history of the ‘metropolitan project’ of Belo Horizonte. Which plans and visions have shaped the city? Learn as much as possible about the city’s history in general and try to visualize – in a timeline – important steps and shifts in life, politics and planning! Investigate the current situation of the Centro! Who are the actors involved? Who owns the land? What conflicts are discussed in newspapers and such?

An important indicator for the relation of an urban core and its territory is traffic. Map the networks of private and public transport and try to find data on traffic flows! Which are the most important hubs in the transport of goods and people and where are they located?

Contacts

Professor Radamés (via UFMG)
Fundação João Pinheiro (statistics)



II. BETIM & CONTAGEM PRODUCTION AND LOCATION

Belo Horizonte is the third biggest city in economical terms in Brazil and the one with the highest growth rate. Traditionally the region was devoted to mining, and the city emerged as an important industrial center. Today the production industry only contributes to around 15% of the city's GDP but its presence in the city is still vivid. Belo Horizonte was in a way deliberately created as a center for alternative economical activities not (only) directly dependent on the mining industry that had evolved and dominated the surrounding area and the state of Minas Gerias during the last centuries.



After the creation and realization of the first city plan with its orthogonal urban blocks, the 'suburban belt' and supporting agricultural areas of the city soon failed in hosting the growing population and managing its legal land use or land occupation (partly due to land prices). With the intention to support the economical and industrial development urban areas like the hexagonal plan of the Industrial City in Contagem (1940's) were implemented offering at the time a modern and effective infrastructure, including a power plant and extensive road networks. In a later stage and in direct proximity the housing district Eldorado was build. Around the steel-tube industry of Mannesmann (V&M Group) an industrial area of Bahreiro evolved in the 1960's. The implementation of designated 'industrial cities' continued and in 1970 Fiat established itself in the neighboring city of Betim. As a support for the local industries and as a reinforcement of the industrial attractiveness of the area, other major industries like Petrobras (oil refinery) located activities in Betim. In the case of Fiat their policy to demand a 'just in time'-system of subcontractors consequentially led to a whole production network of support industries to the car industry developing in and around Belo Horizonte. Driving out of the city along the westbound road of BR-381 the Contagem Industrial City, Petrobras, and Fiat dominate the landscape, but it's also clear that the use of the land has partly been

changed and one reads instead of several dispersed entities one continuous urban fabric, as the housing (of the workers?) has consolidated all the separate pieces together. The refinery, with its immense size and pollution level, creates the exception, as it still to this day requires natural green buffers around it.

Important questions to seek the answers to are how this 'second economic surge', and leaving the mining aside (although its interrelations to production should not be ignored), has changed and organized the territory in and around the city? How was it planned? What was actually realized and why? What is the relationship of the industry to the city today? And – looking wider – how has the specific location within the territory supported and enabled the industry (proximity to resources, support industries, the formation of industrial concentrations, infrastructure, etc.)? Investigate what kind of urban 'spin-offs', legal or ill-legal land occupations (housing neighborhoods etc.) these industrial areas generated and generate. Infrastructure, such as roads and railways, for example, have a history of forming around, and being enhanced in accordance to, the needs of economically important sectors (financed by private or public means). Identify and describe the distribution systems of these industrial sites. Who initiated and executed the infrastructure (paid and planned)? With the tendency today being an economical orientation towards the service sector, information technology and biotechnology, one also wonders if and how these older areas are changing, ie what their vitality is to the city today.

Sites(s)

Industrial areas west and southwest of the city
Contagem
Bahreiro
Betim

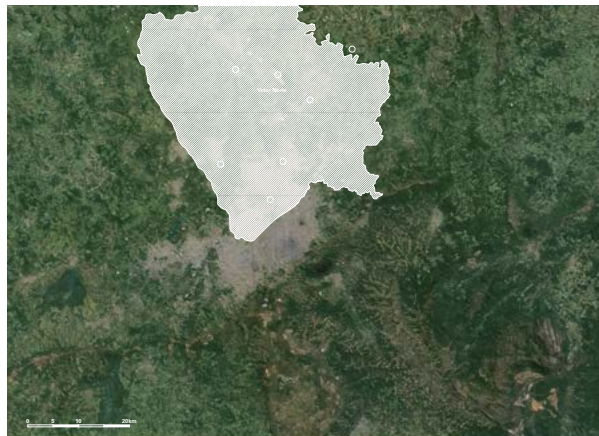
Atlas

-Economy of Minas Gerias and Belo Horizonte



III.VETOR NORTE URBAN PLANNING, MINING AND ECOLOGY

The 'Northern Vector', the whole stretch of land north of the city center towards and beyond the international airport in Confins, has for long been advanced by official planning authorities as the area for the future city expansion. Since a couple of years Belo Horizonte has a regional planning agency in charge of coordinating all work done on developing a plan for the Metropolitan Region of Belo Horizonte (RMBH), which includes 37 municipalities.



The extension towards the north and the slow incorporation of neighboring towns started already with the Pampulha (sport and recreation) complex designed by Oscar Niemeyer in the 1940's. With the inauguration of the 'Cidade Administrativa' in 2010 a decisive step towards emphasizing the cities' growth in this direction was undertaken. The international airport in Confins is also viewed as an important element in the configuration of the 'Northern Vector'. It is the biggest airport in Belo Horizonte and is being extended in order to handle even more traffic and cargo (recently it has become an international airport). These two entities are the biggest inserted artifacts along the northern stretch otherwise composed by smaller towns and cities, which have clustered around the old stretch of the railway and the mining in the area (limestone/cement). Many of these settlements are very poor and with an insufficient infrastructure. The natural geology and habitat is that of the Cerrado, with poor soil qualities but with rich and sensitive natural bush, grass and forest ecosystems. In addition the area is rich in historical remains from earlier civilizations. This precarious setting is now the scene for urban change.

Look at what has traditionally given shape to the occupation of this landscape - the mining and its aggregated urban sprawl (plus the agriculture) and how these formations are

changing. Describe the conflicts concerning nature and culture preservation, mining and the urban pressure. These are relations that at times appear as astonishing and 'violent' clashes which one can visually read in the landscape. What do the newly planned areas within this region look like? Like in the south, certain high-end industries (garment and SEMI-conductors) and centers (like the Cidade Administrativa) are being built with the outlook of creating an urban enhancement, paving the way for a planned metropolitan expansion. What considerations and measures are taken whilst implementing the new?

Site(s)

- Pampulha
- The Technology Park of Belo Horizonte
- Cidade Administrativa
- Neves (poor neighborhood)
- Santa Luzia
- Vespasiano
- Confins
- Lagoa Santa
- São José da Lapa
- Pedro Leopoldo (Sete Lagoas)

Atlas

- Causing the urban pressure are the demographic changes and increase in population. Describe the demography of Belo Horizonte
- In order to understand the power play behind the current situation and the urban changes it can be good to have a general understanding of the traditions and laws of Brazilian (MG) land ownership and land use (eg. big mining companies vs. farmers/house owners, illegal settlements, land-grabbing movements)



IV. INHÔTIM ART, MINING AND AGRICULTURE

In the 1980s the mining magnate Bernardo Paz – who lately sold his Itaminas mining empire to a Chinese investor for \$1.2bn – started converting his private 3,000 acre ranch 60 km outside of Belo Horizonte into a sprawling botanical garden after a design of his friend Roberto Burle Marx. The art collector then started placing pieces of contemporary art within the garden both in pavilions and outdoors. What was first conceived only for him and his friends opened to the public in 2006 and has since become an international destination for contemporary art.



The collection comprises works – many of which are site-specific installations – of both the Brazilian and international art ‘elite’. In 2011, it attracted nearly 250,000 visitors from all over the world. Inhotim now sprawls over 5,000 acres and employs 1,000 people, costing Bernardo Paz \$60 million to \$70 million for operations each year. In order to make the project financially self-sustaining he plans to expand Inhotim with 10 or more new hotels, a 15,000-capacity amphitheater, and even a complex of ‘lofts’ for those who want to live amid the collection. “I want to create a place where people can come and work without being in a hurry, [where they can] live surrounded by birds, have fun, a place they can bring their lives to,” Paz told O Globo newspaper. “It’s like Disney, which began life as a park and expanded. Only here it is something serious.”

Brumadinho is a rural settlement of 18,000 inhabitants, which has more or less over night become part of global streams and forces due to its immediate proximity to the Inhotim project. Its modest economy and infrastructure is now confronted with the needs and means of international art tourism. A close – but arguably uneven – relationship has developed between Brumadinho and Inhotim. Inhotim has become a major employer and claims to actively engage the local community in its activities. Some see Brumadinho

as the lucky beneficiary of an unexpected ‘gold mine’ while others feel it has been forced into the service of a venture as megalomaniac as the Manaus Opera House.

Examining the relationship between Inhotim and Brumadinho, the conflicts, synergies and potentials, might give important insights into contemporary processes of urbanization. How does a powerful urban institution, such as Inhotim, occupy the landscape and what is the territory’s reaction to such an ‘invasion’?

First map the physical relationship of Inhotim and Brumadinho! What kind of infrastructure do they each have? Which parts only work for themselves and which relate to the other?

Then try to unravel all the different relations and conflicts between the two entities. Opinion on the value of this relationship may greatly vary so try to find as many different perspectives as possible! The presence of an international art-tourist destination might affect the entire region, especially along its access path (road Inhotim – airport). What can you observe there? Are there other tourist / resort projects in the hinterland of Belo Horizonte?

Site(s)

Inhotim Art Park
Brumadinho (Municipality)

Atlas

Try mapping out a history of tourism in Brazil (timeline). What is the economic importance of tourism today? What different forms of tourism are present and where are they centered? What spatial models (resort, hotel etc.) do they apply?

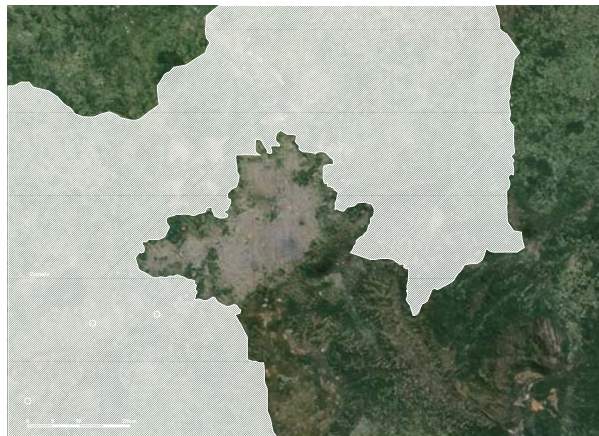
Contacts

Patrícia Capanema



V. CERRADO CULTIVATION AND URBANIZATION

Along the western exit road BR-262, towards the ‘Triangolo Mineiro,’ the city comes in direct contact with rather extensive forms of agriculture. The hilly landscape is occupied by scrubs, termite mounds and detached herds of Zebu and Holstein cattle. Dairy farming – next to mining, the traditional industry of Minas Gerais – consumes large plots of land and demands very little ‘cultivative’ measures. How does such a land occupation react to the pressures of urbanization?



Minas Gerais was once known for milk and cheese production. Today Brazil is a major importer of dairy products to supply the domestic demand. At the same time the advent of large monocultures, such as eucalyptus plantations, raise the question of ecology.

It is at first glance unclear to what degree rural settlements such as Mateus Leme or Bom Despacho are still based on agriculture and how productive this quiet landscape still is. How is agriculture affected by the city’s proximity? Is dairy farming still a lucrative industry? What are alternative products? Who does it supply and who lives of it? How does all this relate to the important questions of food quality, food security and nutrition in booming Brazil?

Start by visiting several farming operations along BR-262. Map the physical relationship of the farm infrastructure and the cultivated area. How is the landscape cultivated for farming? How do people live and work on these farms? Is farming their only income or do they work additionally in other sectors? If yes, where do they work? What are their traditional crops and animals, what are new ones? Do they produce only for themselves or for the market? Where do they sell their products? Try to identify different types of farmers and develop their specific profiles!

Another direction to approach the subject is to start with the points of sale (highway stops, markets etc.) and trace back the products to their origins. How close or far away from the city are these products produced?

Parallel to this find experts to tell you about the current agricultural politics. What role does agriculture play for this territory and the city of Belo Horizonte? How do people envision the future of agriculture?

Maybe a trip to Uberaba or Uberlândia – both centers of industrial agriculture – will put the agriculture around Belo Horizonte into a wider perspective.

Site(s)

BR-262
Mateus Leme
Nova Serrana
Bom Despacho, etc.

Atlas

Learn about the agricultural heritage of Minas Gerais and Brazil. How did agriculture traditionally work here and what settlement patterns has it produced?

Then investigate the role of agriculture today both at the scale of Minas Gerais and Brazil. What is produced and where is it consumed? What is exported and what (if anything) imported? What is the share of agriculture in Brazil’s economy (numbers of employees, GDP)? Try to map the different production zones within Brazil! For this you will have to go back a step to investigate the different premises for agriculture, mainly climate and soil quality.

Also try to find out which political policies, subsidies, supports and strategies are in action. Sketch the different actors and their relations in order to have as much background knowledge as possible for the case studies during the field trip.

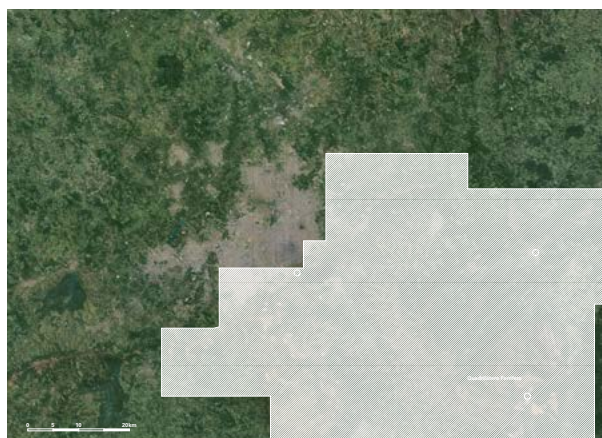


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VI. QUADRILÁTERO FERRÍFERO THE MINING LANDSCAPE

The territory of the Quadrilatero Ferrifero is mainly characterized by extraction, a principle that has historic roots in Brazil that go back to its discovery by the Europeans. These ‘rushes’, first of gold and diamonds, now of iron and steel have permanently reconfigured nature into artifact. Minas Gerais is one of the biggest iron ore deposits in the world, when one looks at an untouched hilltop in this region, one knows that it could only be a matter of time before it is shrunk over a process of several decades, and depleted, with a very awkward crater left behind in the process.



Over centuries of man made changes, it is very hard to know what untouched nature here once looked like, as the extent of the transformation has been widespread and continuous. An interesting question to us is how is this seemingly infinite process impacting the current reality, and what different pieces make up this complex landscape puzzle. This study will focus on a stretch of the Quadrilátero Ferrifero that seems to collect several of these puzzle pieces, that are exemplifying what kind of transformation the practice of continuous ore extraction can and has had on settled and on virgin land, focusing closely on the relationship between settlement and mining.

One starts from the historic colonial towns of Ouro Preto and Mariana, both settled upon very steep topography close to riches of gold ore, both boasting a long colonial history and Portugese architectural heritage, and both currently living off of services and tourism, and then continues on the road northwards towards Itabira, a very important town, and also the name of a very important mine, the first large scale, open-surface mining operation of the Brazilian mining giant Vale, its functioning has already for decades defined the everyday of the citizens, and the everyday of the physical reality. This place is half-mine, half-city, and will become an interesting case study into the growth and urban

impacts that such a seemingly hostile extraction activity has had. However, contemporary mining practice does not at all anymore require human settelement for its functioning, the existence of the village of Itabira happened to be pure accident (people even had to be ‘moved’ slightly to get at the ore), therefore, last but not least, and dealing with very much the contemporary mode of conduct, along this same road, between Mariana and Itabira, there are segments of immense nature, mountain ridges and water springs, and it is here that we find the largest scale of human physical transformation taking place due to mining, an immense re-carving, of such a scale that one can read the age of the mine, and feel the process of extraction cutting down the mountain (once depleted, a kind of green grassed zigurat remains, as if to resemble an Incan temple, confusing our interpretation of this grand nature we are seeing, while the meticulous operation moves onto the next ridge, creating dark grey terraces mixed up with the reddish Minas Gerais soil).

1) Old mining towns that struggle in their existence forms the question of the first case study; 2) A seemingly rampid human intervention within hidden and unsettled nature forms the second case study; 3) and the interlinked realities of living in an active mining town form the third case study. Through it, one begins to understand the complexity that this long process can have on the land, and the consequences that it has on human settlement, also opening up questions about the heritage of the mining, preservation of the landscape and economy. A large part of the Quadrilátero Ferrifero lies within a proposed UNESCO Geoparks area, an area that is supposed to exemplify one day landscape preservation, allow the study of mining landscape as a heritage, as well as continue to allow mining as an active economic activity, all together forming one happy family.

Site(s)

Mariana (and Ouro Preto)
Mina Alegria (and the area around it, including the private rail



terminal, the immense water dam project, etc.)
Itabira (the city and the mine in the city)

Atlas

-Mining History in Minas Gerais, resources and the history of extraction and transport
-Understanding the giant Vale (initially a state owned enterprise, now the biggest actor in the region)



VII. NOVA LIMA MINING AND REAL ESTATE

Traditionally, the city of Belo Horizonte was restricted in its growth southwards, due to a sharply defined East-West-stretching mountain ridge. Nowadays, the slope of this ridge, as well as the ridge itself, represent the upper class concentration in the city, located in neighborhoods correctly dubbed with names such as ‘Belvedere’. The municipality however wants to stop this vector and focus the city growth northwards, even though this is an immense expansion already.



Why? Apparently this entire area is a case of ‘private urbanism’ and its roots can be traced back already to the 70’s, when developers started to make areas with second homes in the outskirts of the city, in the neighboring municipality of Nova Lima. Nova Lima is mostly owned by the mining agglomerations, nowadays, and it was already the case in the last century. As the iron mining drew to an economic slump mid-last century, an upscale urbanization phenomena started to occur, and the miners were converting land spotted initially to have iron, and developing it for a profit.

The trend has continued up to today, although nowadays the mining activity has once more become very lucrative. With the growth of Belo Horizonte creating a land value increase on its outskirts, this has meant that the perimeters of Nova Lima have become new city parts of Belo Horizonte. Ongoing mining activity, ongoing condominium and high-rise development, along with some pieces of leftover nature, now define what one sees when one climbs up from the center to the ‘Belvedere’. This topics deals with the question of private urbanism, in a very particular context of a ridge, which used to be the former natural barrier of the growth of the city, and inevitably deals with the mining giants, albeit in another role here, in the role of land developers.

1) Nova Lima in particular has been the source of the second home of the Belorizontino for a long time, the first case study should include older condominium developments; 2) the Belvedere is the obvious pinnacle of the city, and represents the second case study; 3) the mines are not really to be forgotten here, being so close to the urban reality of Belo Horizonte, there is a lot of myth and criticism about the activities that are (or are not) happening in the area. It would be important to get an understanding of what is happening to old ‘hotspots’ of the mining, which are supposed to be converted into natural parks, or developed in some other way.

Site(s)

Condominiums from the 70s
Belvedere
Belvedere Old Mine

Atlas

- Historic development of the city, in particular of what was happening in the area in question
- Economic historic timeline of impacts on mining, and on real-estate (or rather the link between the two) in Nova Lima in particular
- Understanding the Geoparks UNESCO proposal for the greater Quadrilatero Ferrifero region, or what the current debate is on remnant-mining landscapes, and current mining landscapes

Note: Diploma topic



VIII. NEW BETIM WATER AND URBAN GROWTH

Minas Gerais is rich in water resources both for portable water and for hydropower production. With its absolute abundance of fresh water and with its relatively good distribution system the state has one of the highest and best water supply levels in the country.



The fresh water sources of Belo Horizonte, the rivers and lakes in the closest surroundings, all used to lie outside the agglomeration but are today taken over by the cities growth and embedded in urban fabric. This directly illustrates the paradox the city is in, where fresh water is available but due to urbanization pressure it has gotten a poorer and poorer quality. The city is now seeking for more remote sources in order to meet the needs. The endeavor to protect the current water sources and the current process of naming new, have had consequences for the formation of the urban sprawl in the adjacent areas.

Describing and understanding these consequences will allow us to have an understanding of the specific role the water has in the formation of the metropolis. Early on COPASA (the water company of BH/MG) have had a strong role and they are still effectively executing and implementing their programs in the region. But how much influence do they have over the actual urban configuration – over the legal and illegal developments? Are their distribution systems, cleaning plants and reservoirs ordering the territory? Or is it the other way around? Look at the case study of Lagoa Várzea das Flores and the neighboring area of 'New Betim'. Water (the fluctuation of lake levels, quality and access) are also often mentioned as points of conflicts in relation to min-

ing activities throughout the area. Are there parallels to be drawn? What are the dependencies and economical powers and concerns behind the decisions concerning how the water and the nature questions are being dealt with? This raises the general question under what condition can 'nature' become part of the metropolis and its territorial activities.

Site(s)

Lagoa Várzea das Flores, Betim
Area around 'dried out lake' in Ibirité
Reservatorio Serra Azul
Represa Rio Manso
(Lagoa Santa?)
Ref: COPASA (Water Company of Belo Horizonte)

Atlas

-Ecology/nature Preservation in Minas Gerais (an overview of water policies and nature protection)
-Survey of hydropower production in MG and its role and importance

