

Innovation Backbone

A new economic zone in Rio de Janeiro's urban voids

keywords: urban economy, voids, knowledge, creativity, innovation

TU Delft_Master of Urbanism_ComplexCities Studio_AR3U012_Final Report July 2010

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Special Thanks

Besides my mentors - Akkelie van Nes, Thorsten Schuetze and Roberto Rocco - without whom nothing would have been possible, I would like to thank my friends architects and urbanists Luiz Santos and Rodrigo Louro who took time to discuss with me the idea of the Innovation Backbone project. The commentaries and criticisms of the urban planners and landscape designers from my work, KCAP - Kees Christiaanse Architects and Planners in Rotterdam - were also essential in the development of the vision. I would also like to thank all the people I interviewed, which helped me to see Rio's problems from different points of view: brazilian experts Helena Galiza (social housing), Ricardo Esteves (mobility), Luís Oswaldo Leite (developer), Natália Magalhães (tourism), Mirko Kueck (cientist), people from Devas (a NGO in Maré slum), Maria José (my ex-house cleaner in Rio), and "the creatives" Rodolpho Donato (marketing advertiser), Carlito Carvalhosa (artist) and Carlos Machado (fashion industry specialist). Besides TU Delft, the library of the Netherlands Architecture Institute (NAi), where I spent many days during the summer of 2009, was essential in making available so much valuable material. I am also gratefull to my friend urbanist Rafael Verissimo, which sent me an overload of e-books with which I couldn't even cope with! This research would also not be what it is without my previous study with Flávio Ferreira and Sérgio Magalhães at UFRJ - the Federal University of Rio de Janeiro - and the work experience I previously had in Brazil with architects and urbanist Jorge Mario Jauregui, Diego Portas, Thais Meireles and my own father, architect Antônio Carlos Saraiva - people with whom I collaborated many times in different opportunities, enganging with local governments and communities. And least but not last, my mother, who always let me use her credit card to buy new books! I'm sorry if I forgot anyone. Thank you all!

RESEARCH

1. Goal

The goal of this research is to develop an strategic intervention that could enhance Rio de Janeiro's economy in an inclusive manner.



Why?

Because Rio has been developed under a process of socio-spatial segregation which has engendered high urban criminality, obstructing the city's enormous potential as a leading international destination.

In order to realize Rio's huge touristic potential and generate jobs, the government has focused on building new attractions - such as music halls and new museums - and hosting sport events - the Pan American Games in 2007 and the upcoming World Cup and the Olympics. However, as this research will demonstrate, these investments might not achieve their expected economic effects if a more integral strategy, focusing on the long term, is not pursued by the city. As crime is a consequence of inequality, a broader strategy need to be developed for Rio.

"Security continues to be a very serious problem, putting the country in the 130th position, behind South Africa and Russia"

Source: World Economic Forum of 2008 in <http://oglobo.globo.com/viagem/mat/2009/03/04/brasil-sobe-quatro-posicoes-no-indice-de-competitividade-de-turismo-do-forum-economico-mundial-754684858.asp>

"Whenever compared with other touristic destinations, the current situation is uncomfortable... Rio is only the 40th most visited city... There are many explanations for this performance. Such as, the distance to rich countries, the lack of rooms in the hotel chain, the reduced amount of flights between Brazil and other continents, the quality of the offered service, and the demand of reciprocity in visas for Americans and other nationalities.... Besides, **the news about the Olympics end up eclipsed by episodes such as the invasion of the Intercontinental Hotel by criminal groups. For this reason, the spontaneous media from sports events can be insufficient for attracting tourists.**"



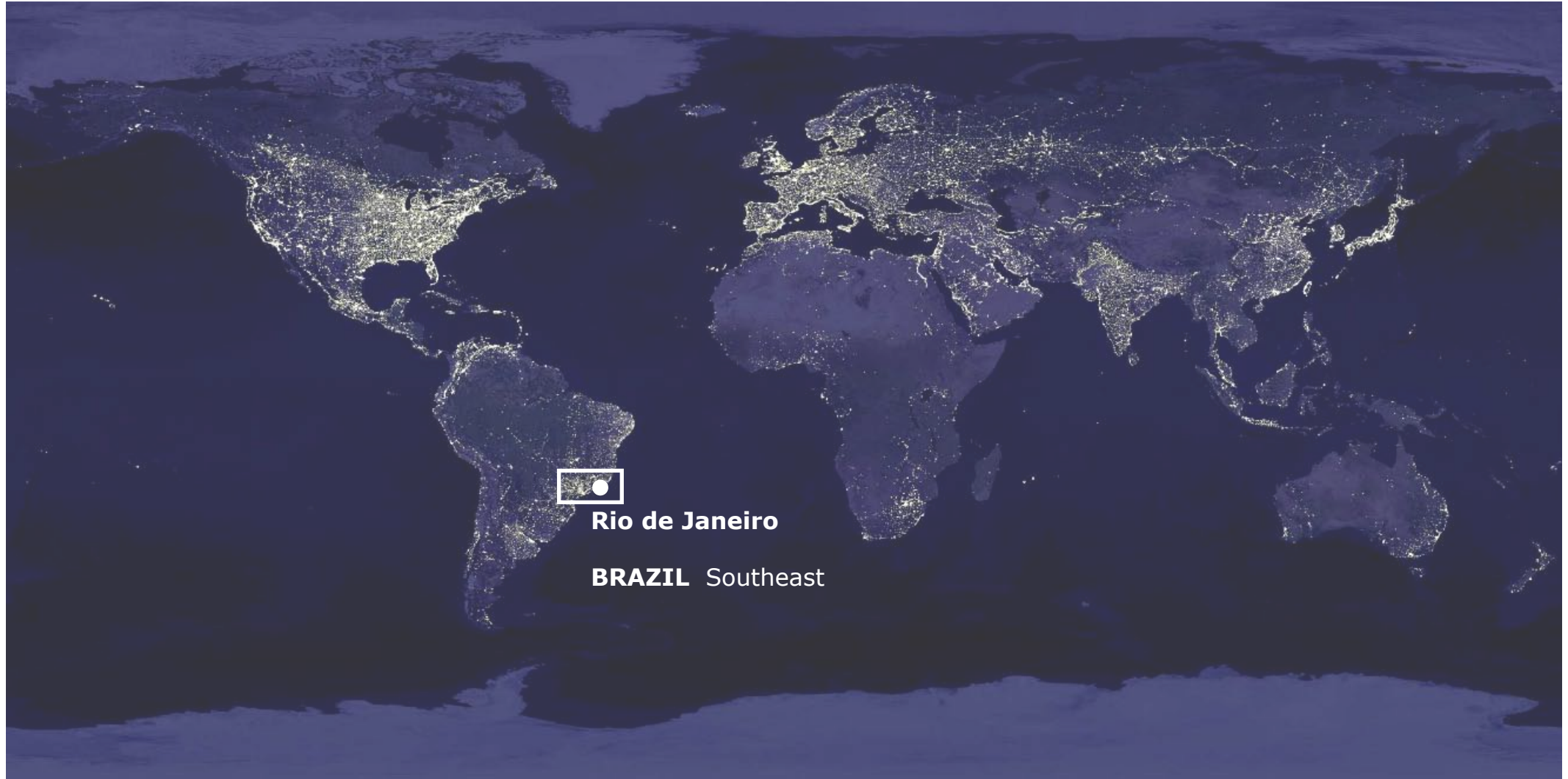
"Income inequality plays an important role in criminality."

Source: Gutierrez, Mendonça, Sachsida &
Loureiro, Inequality and criminality revis-
ited: further evidence from Brazil

2. Analysis

2.1. Global level

Rio in the World:

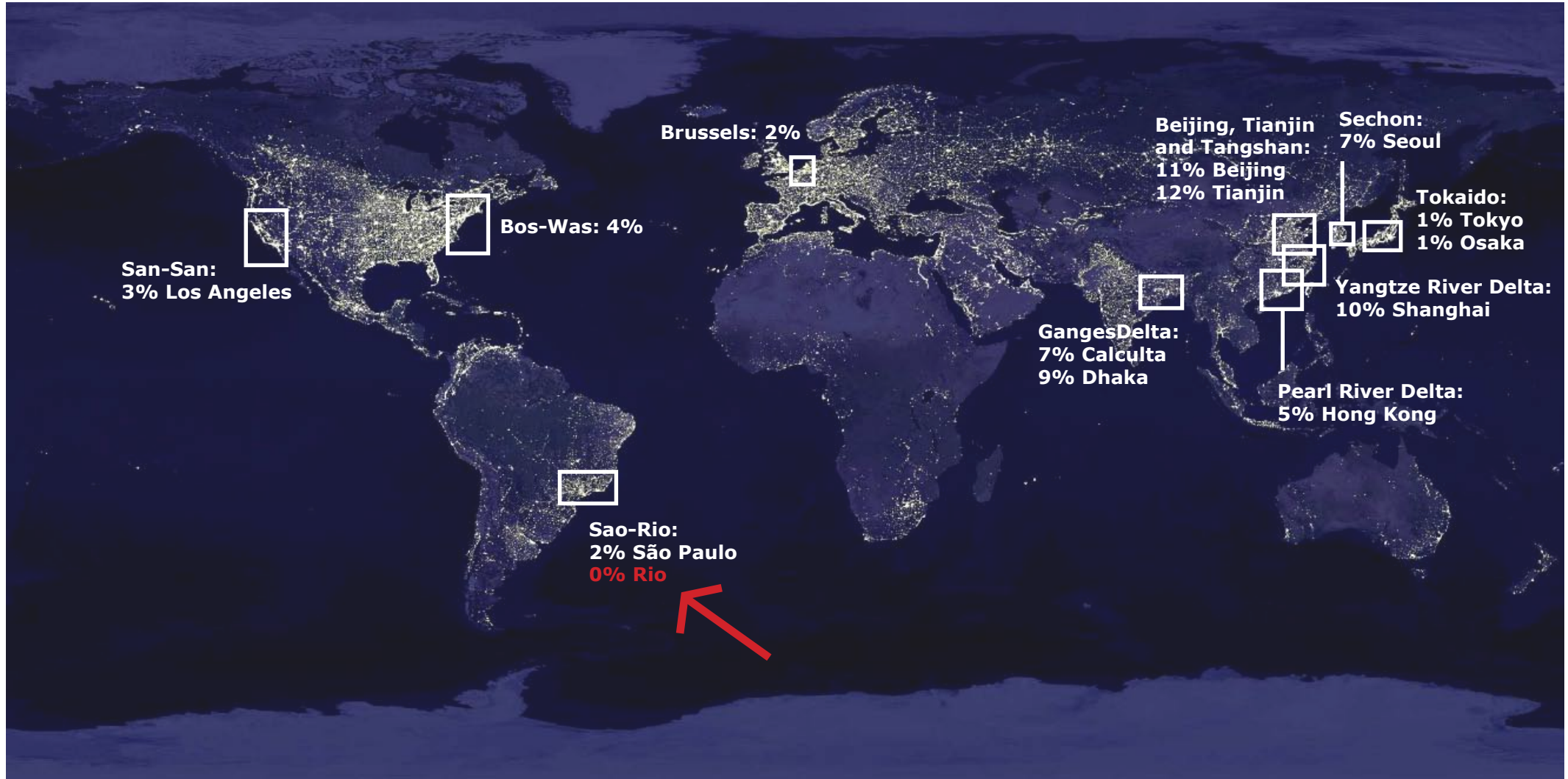


Rio de Janeiro is the second biggest Brazilian city, after São Paulo. It has 6 million people in its municipality and 11 million in the metropolitan region. São Paulo has 11 million in its municipality and 20 million in the metropolitan region.

Rio and São Paulo are located in Brazil's most industrialized, wealthy and populous region: the Southeast. Together they form a corridor which concentrates 22% of Brazil's population (37 million people) in 0,5% of the territory. This corridor is responsible for 60% of Brazil's industrial production.

"The 500 kilometer corridor of Rio/São Paulo... with a population of 37 million, is already larger than Tokyo-Yokohama."

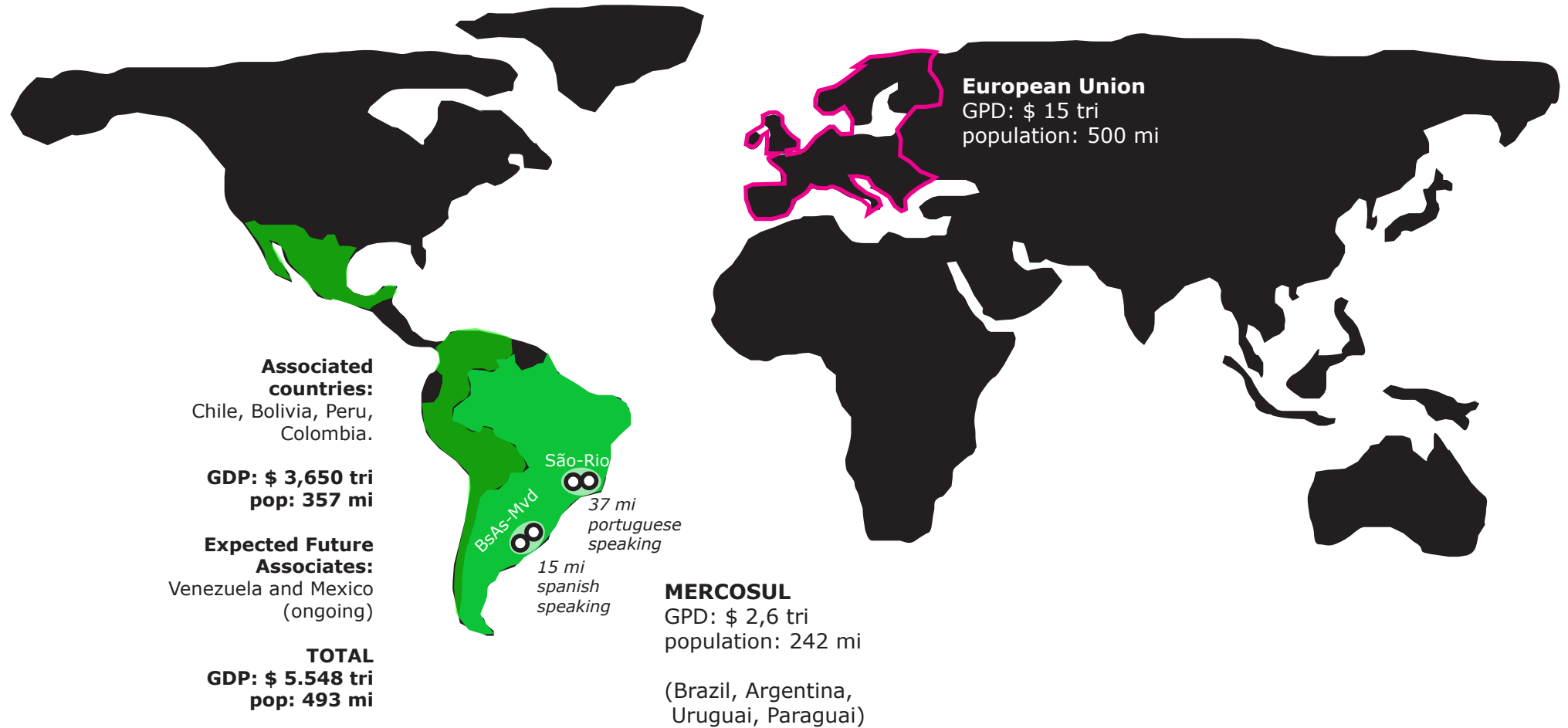
Metropolitan growth:



In Brazil, the process of urbanization - understood as the migration from the countryside to the cities - is finished, while in China and India urbanization is happening at enormous speed.

In Brazil, due to a lack of efficient planning, urbanization had as main outcomes: an enormous amount of slum dwellers and precarious transportation systems.

Mercosul: a growing economic block



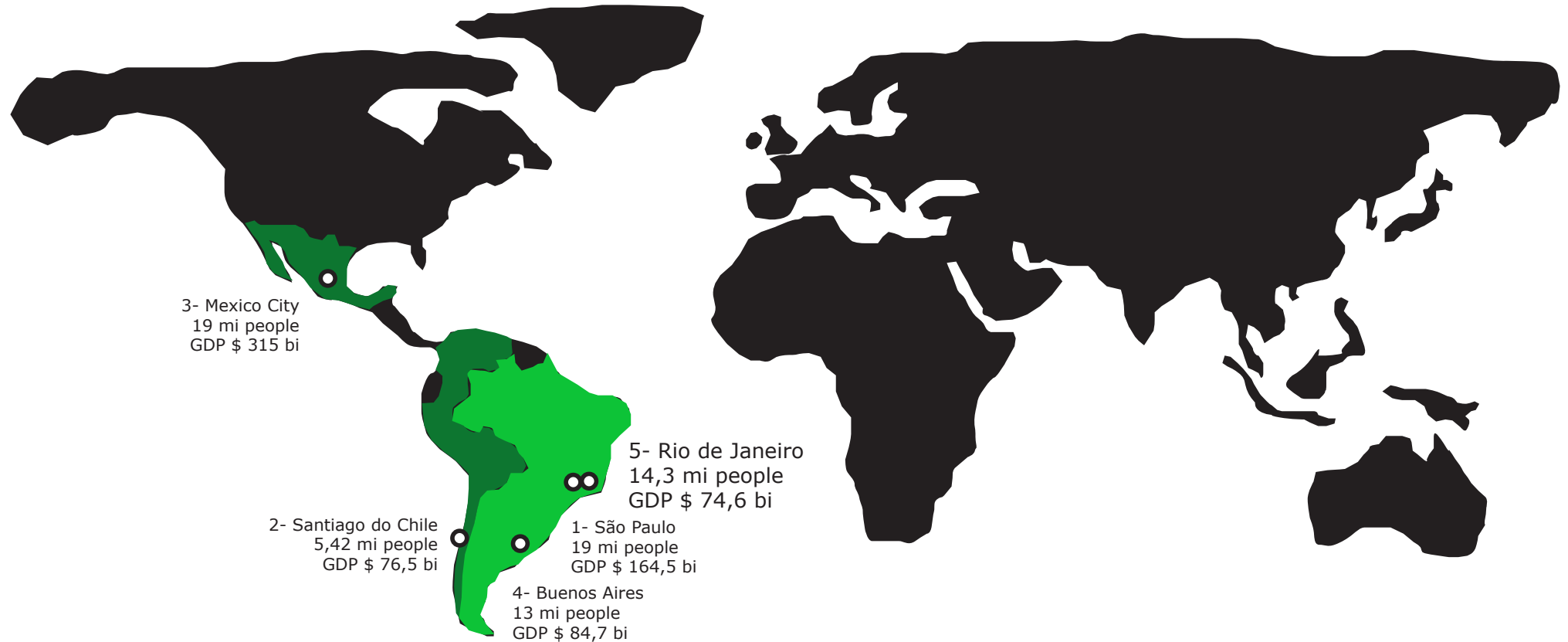
Brazil is part of Mercosul, the economic bloc comprising Argentina, Uruguai and Paraguai besides Brazil.

Mercosul is expanding, adding new members. Chile, Bolivia, Peru and Colombia are associated countries while Venezuela and Mexico are expected future associates.

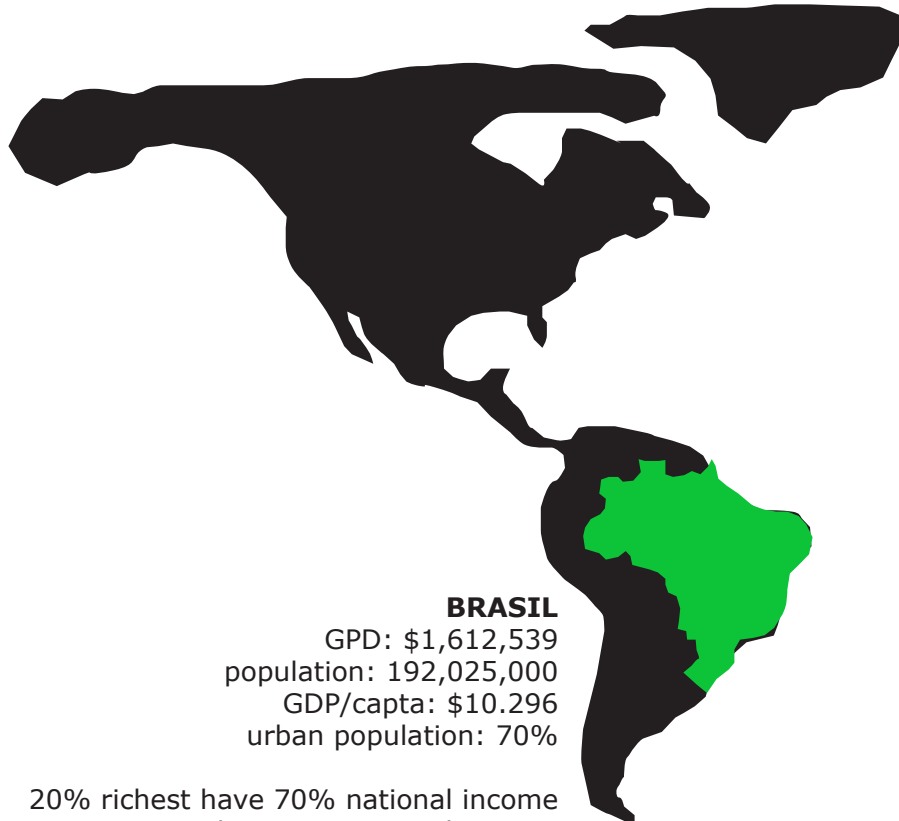
Recently Israel was surprisingly announced a member of Mercosul.

Because cities and regions are the engines of the global economy, we could say that in Mercosul two main centers dominates the global performance of the bloc: São-Rio, a portuguese speaking agglomeration of 37 million people and BsAs-Mvd, a spanish speaking agglomeration of 15 million people.

Rio, 5th best place to do business in Latin America:



Brazil: reasonable GDP but extreme inequality

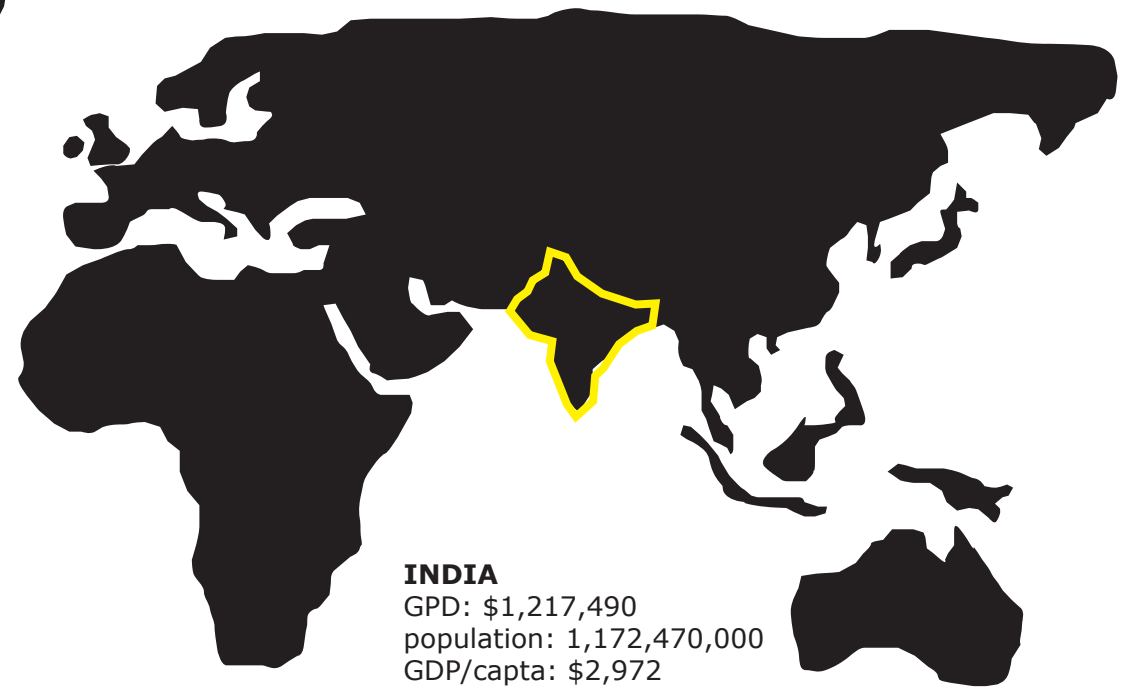


BRASIL

GPD: \$1,612,539
population: 192,025,000
GDP/capta: \$10.296
urban population: 70%

20% richest have 70% national income
20% poorest have 2% national income

total taxation: 35% of GDP
gross investment: 19% GDP



INDIA

GPD: \$1,217,490
population: 1,172,470,000
GDP/capta: \$2,972
urban population: less than 30%

40% richest have 40% national income
20% poorest have 9% national income

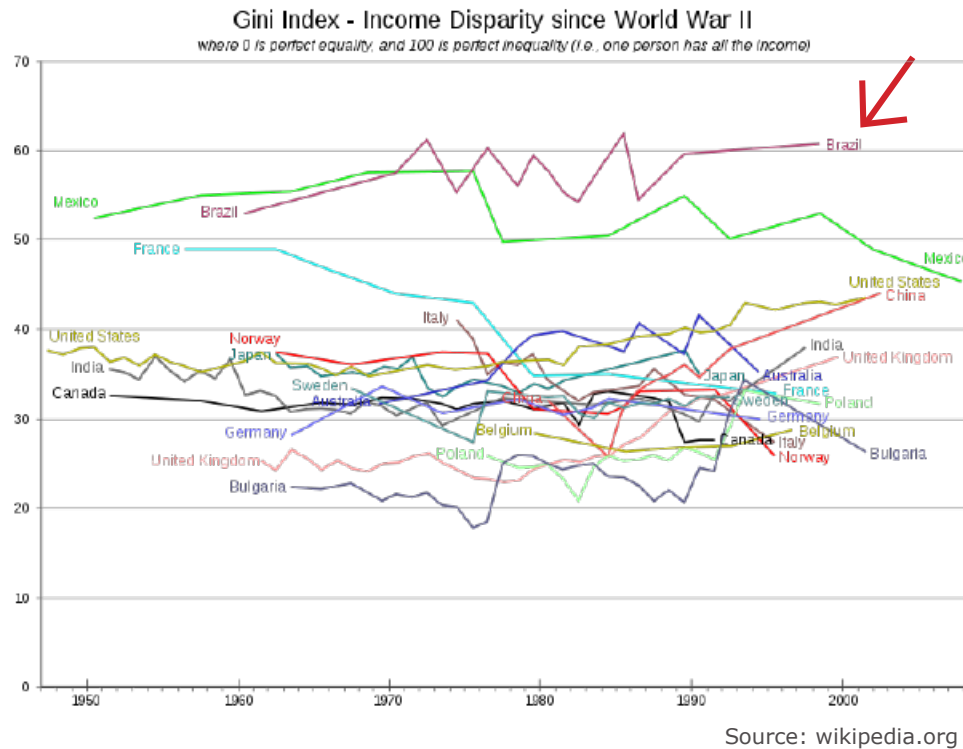
total taxation: 20% of GDP
gross investment: 24% GDP

Although Brazil has numerous problems - such as poverty (53 million, 34% of the population), illiteracy, hungry, deficient public health and education, enormous housing deficit (10 million units), etc - Brazil is not a poor nation. The perceived poverty is a result of an over concentration of resources in the hands of a few.

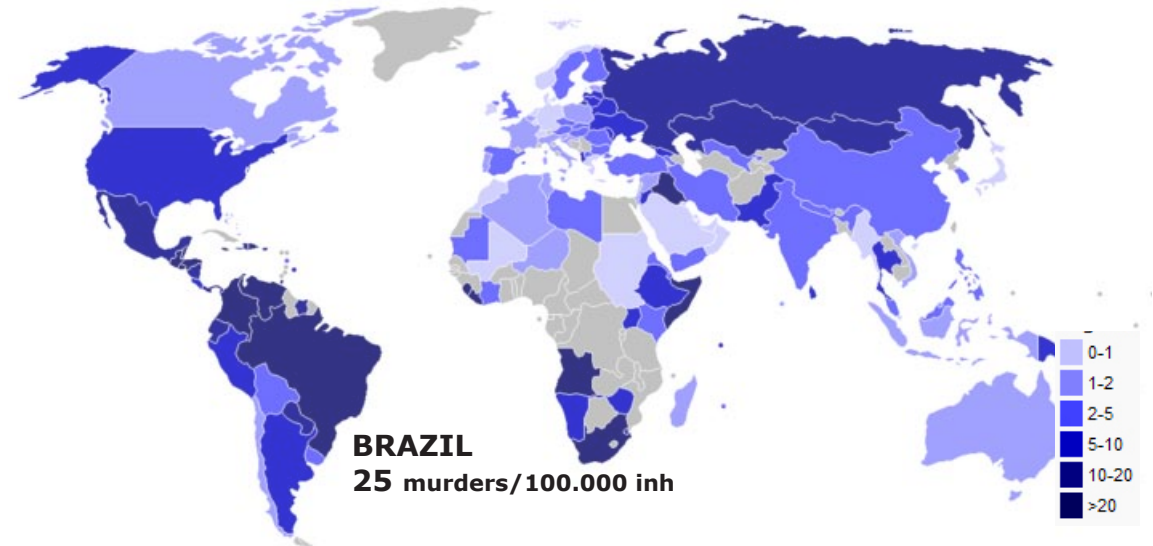
The economist Celso Furtado (*Em Busca de Um Novo Modelo*, p.10) made a comparison with India that shows well the situation: while in India 40% of the richest have 40% of the national income, in Brazil 20% of the richest have 70% of the income.

Why is it a problem? According to Furtado, this hyper-concentration of income favors a lot of imports, making the country loose its internal funds that are needed to finance its socio-economic development. If Brazil could elevate its savings to 5% of the national product, it could solve the housing deficit within 5 to 10 years (p.14-15).

Inequality by Countries:



Brazil: criminality

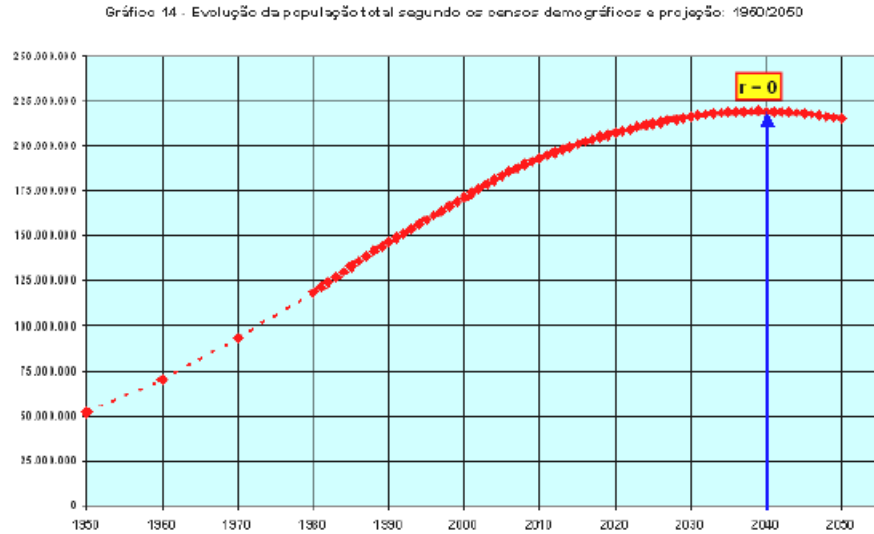


Brazil has now 25 murders per 100.000 inhabitants.

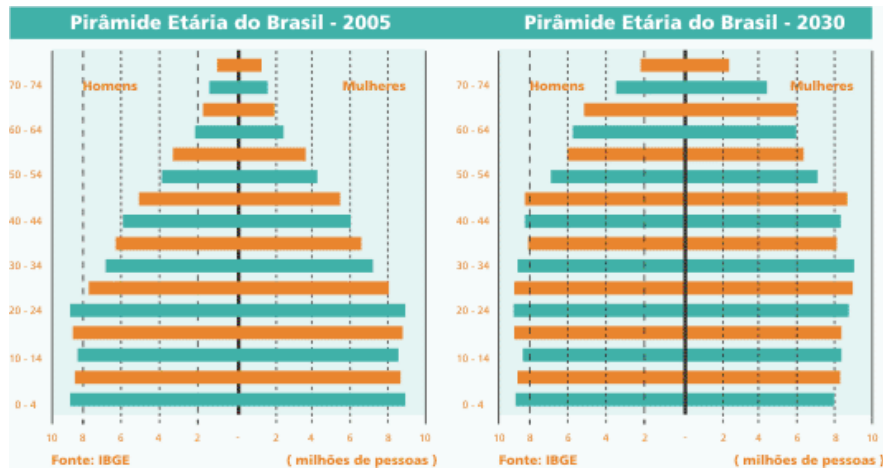
10.2% of Brazil's GDP (\$ 65 bi) was the costs with security in 2001 - in Education the current expenditure is 5% of its GDP.

Sources: wikipedia.com
GUTIERRE M., MENDONÇA M., SACHSIDA A., LOUREIRO P., Inequality and Criminality Revisited: further evidence from Brazil
Ib Teixeira, Fundação Getúlio Vargas

Brazil: Trends in population

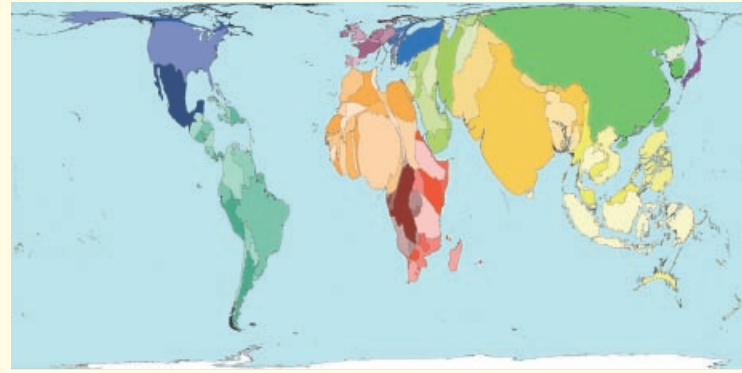


Brazil's population will stabilize in around 215 million, by the middle of the XXI century.

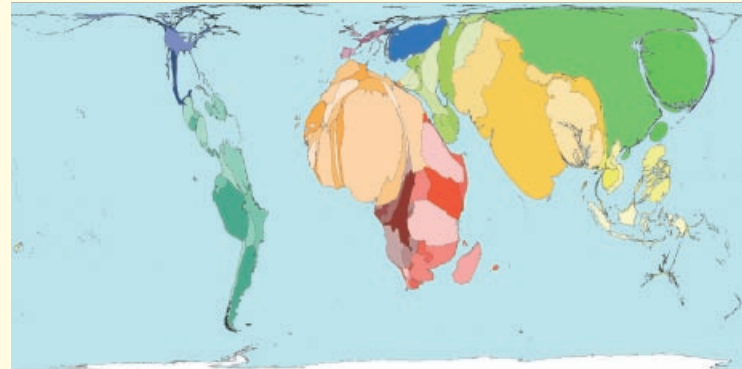


Brazil's population is ageing. This means that future expenditure with pensions and health care will increase dramatically in the coming decades.

Projected Urban Growth



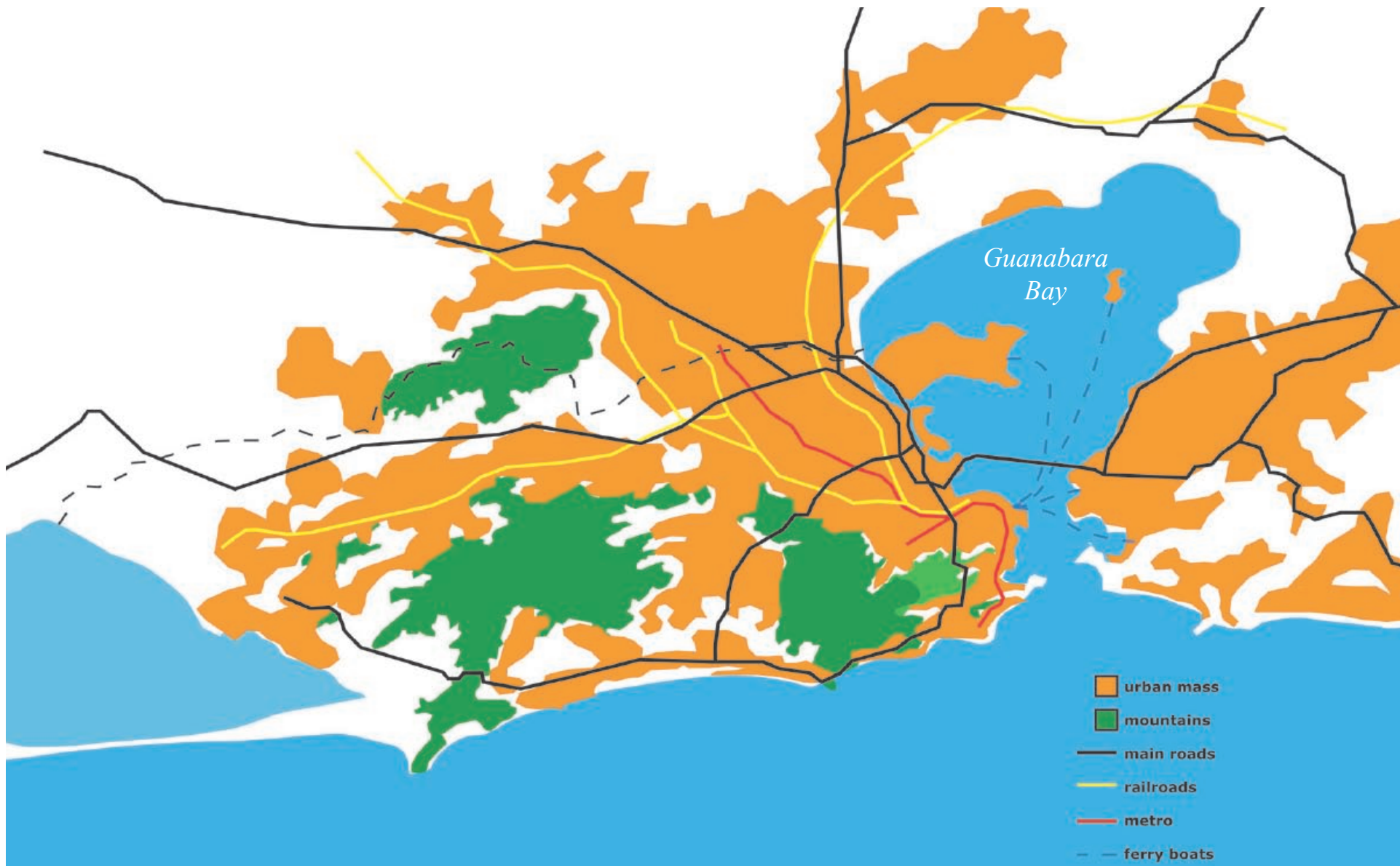
Slum Growth



Even though very unequal, Brazil's cities and slums don't have an expressive growth anymore, while in nations such as Nigeria, China and India, cities will continue growing in the coming years.

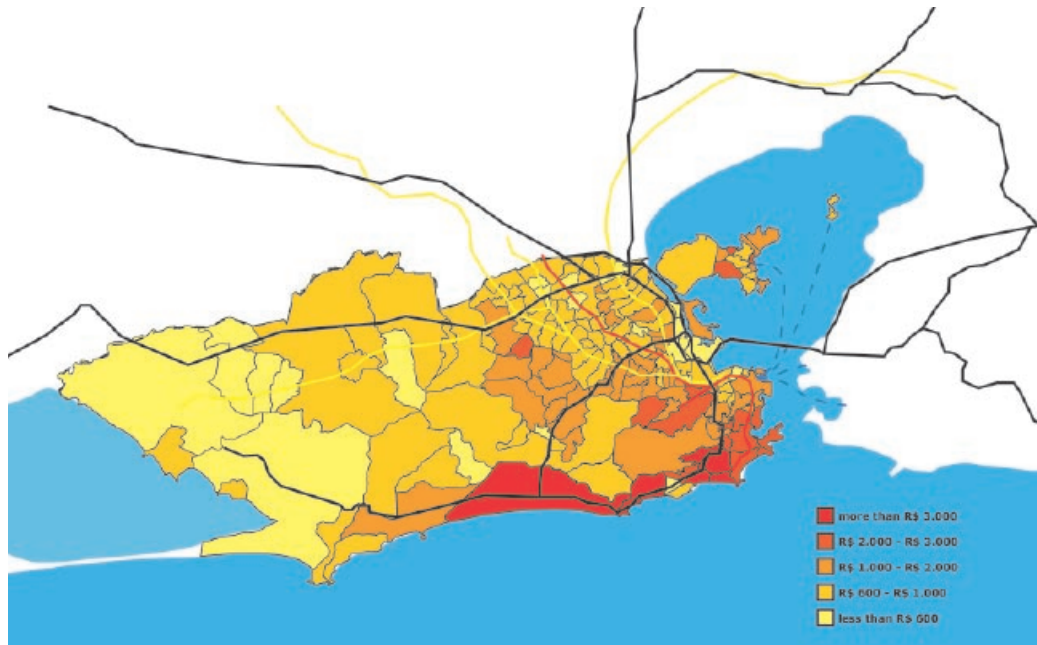
2.2. Local level

Rio de Janeiro's metropolitan region:



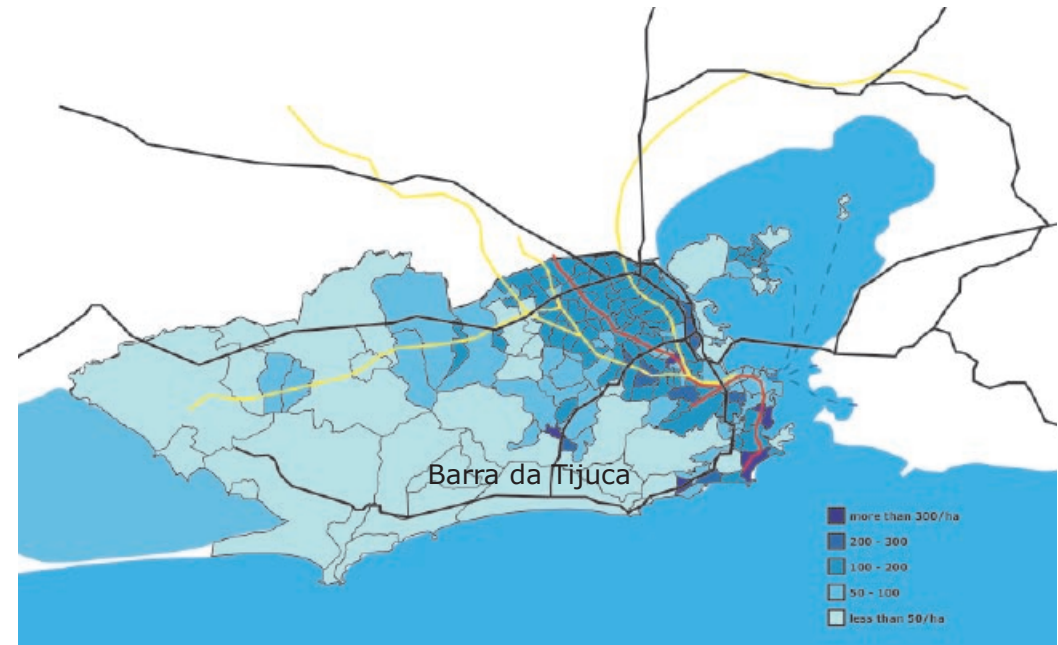
Rio de Janeiro is a municipality (dashed line) that makes part of a bigger metropolitan region which developed around the Guanabara Bay. The mass transportation systems (trains, metro and boats) reach only the central-north areas, while part of the south has just recently received the metro, and the west (Barra da Tijuca area) is still dependent on cars and buses despite of its rapid growth. In this map it's also visible how the mountains divide these zones and constrain the city's development.

Income according to neighborhood:



High income concentration along the coast: the beach has been, since the early 20th Century, a privileged location for real state speculation.

Density according to neighborhood:



High density concentration along the coast and main transportation axis. Barra da Tijuca, Rio's main expansion area (west coast) is still not dense, but lacks mass transportation. This is the site of the Olympic Games.

2.3. Photographic survey

A metropolis implanted in a beach resort location...

The Central Zone:

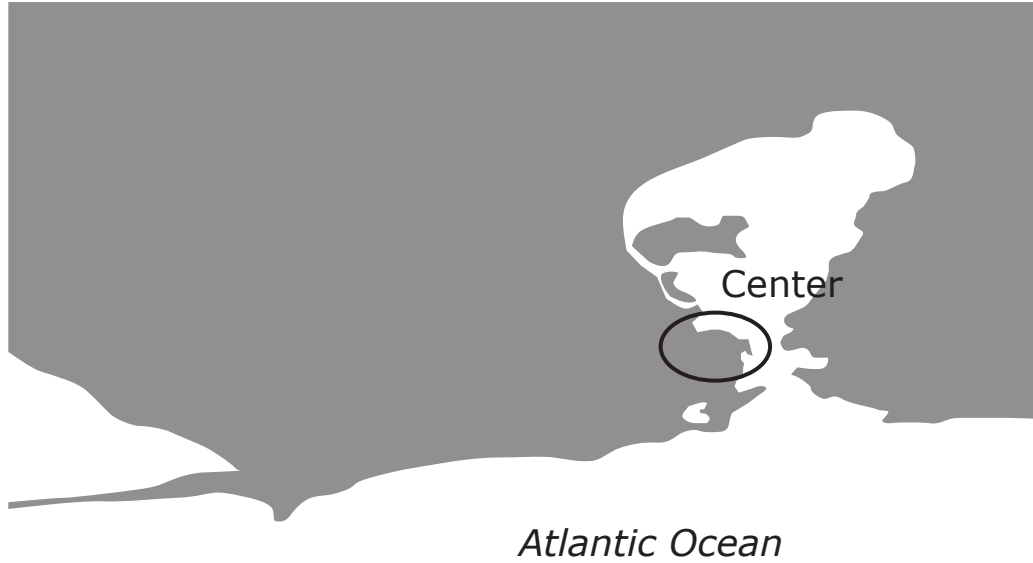


Downtown area.



Christ the Redeemer, Rio's most visited attraction.

The Central Zone



Downtown and the Port.



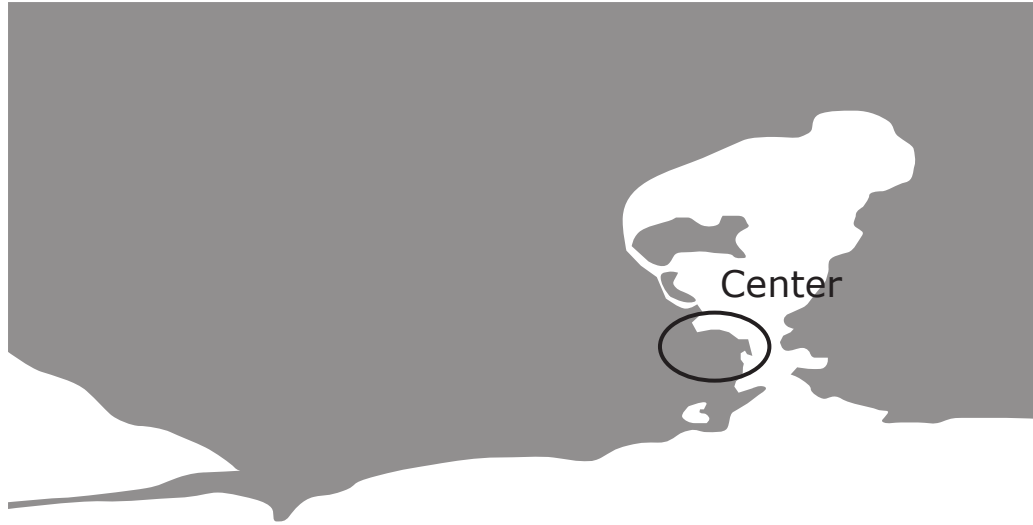
Carnival: the world's biggest event!



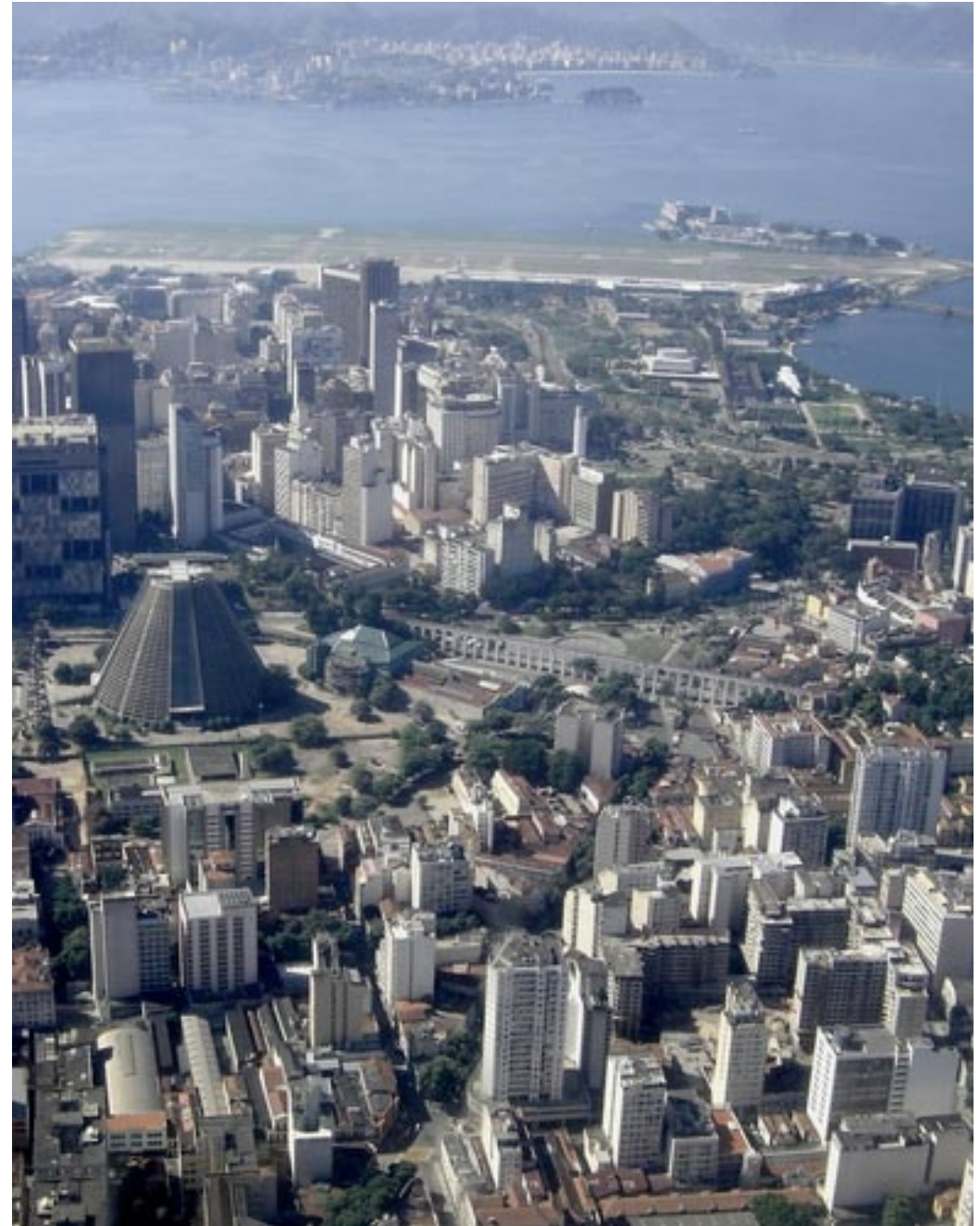
Flamengo park, and landfill.

source: skyscrapercity.com

The Central Zone:

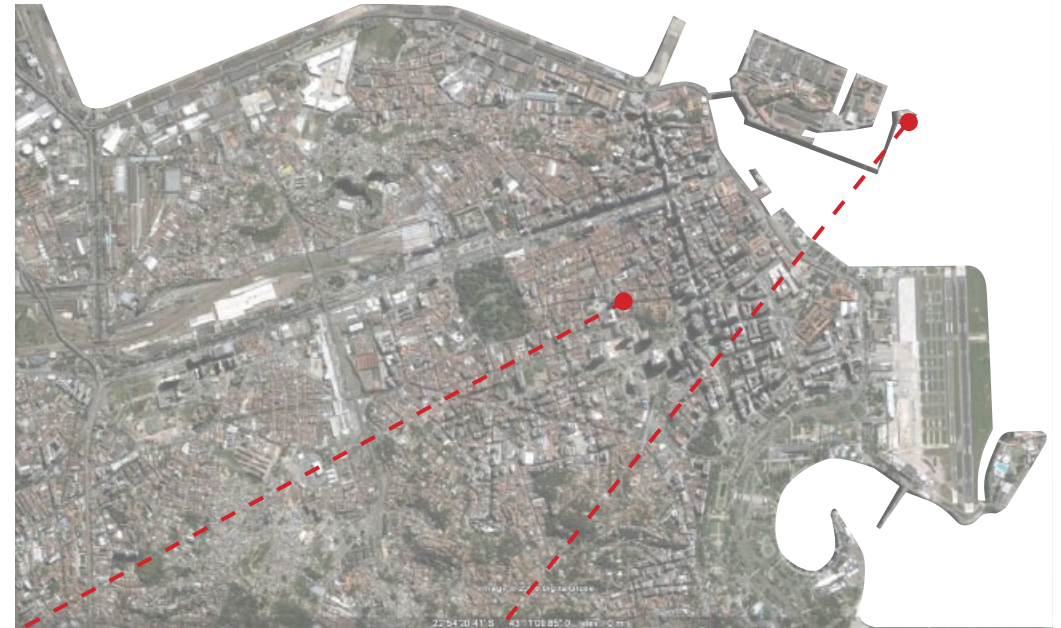
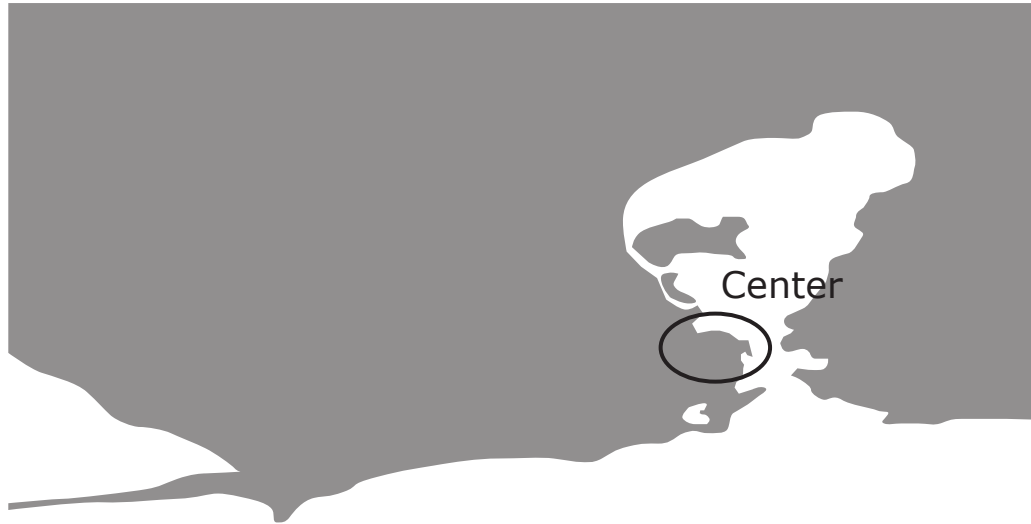


Lapa Arches.



Downtown and Lapa.

The Central Zone:

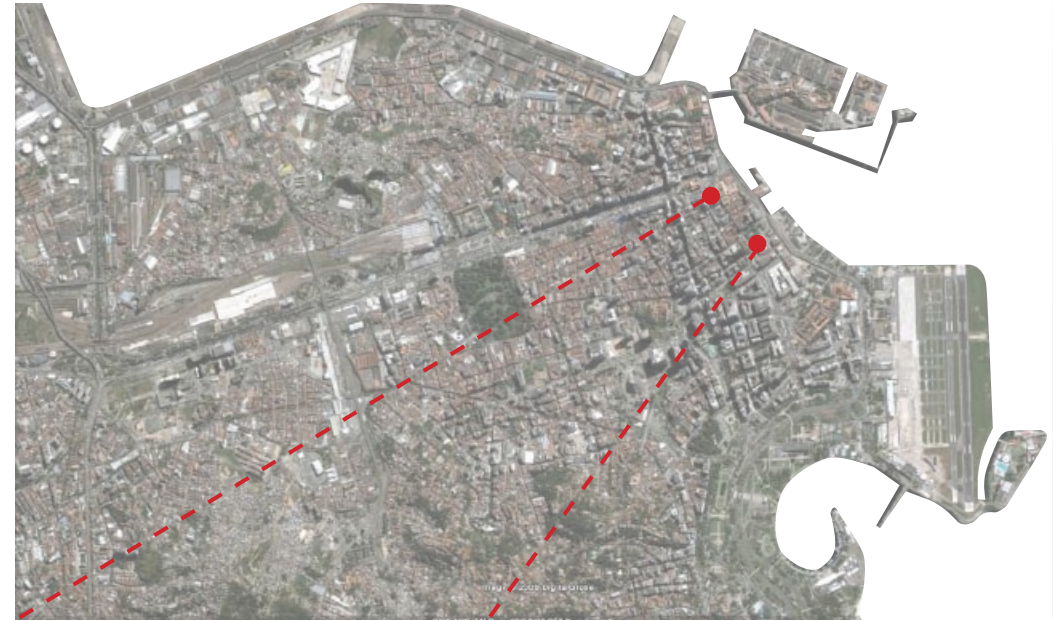
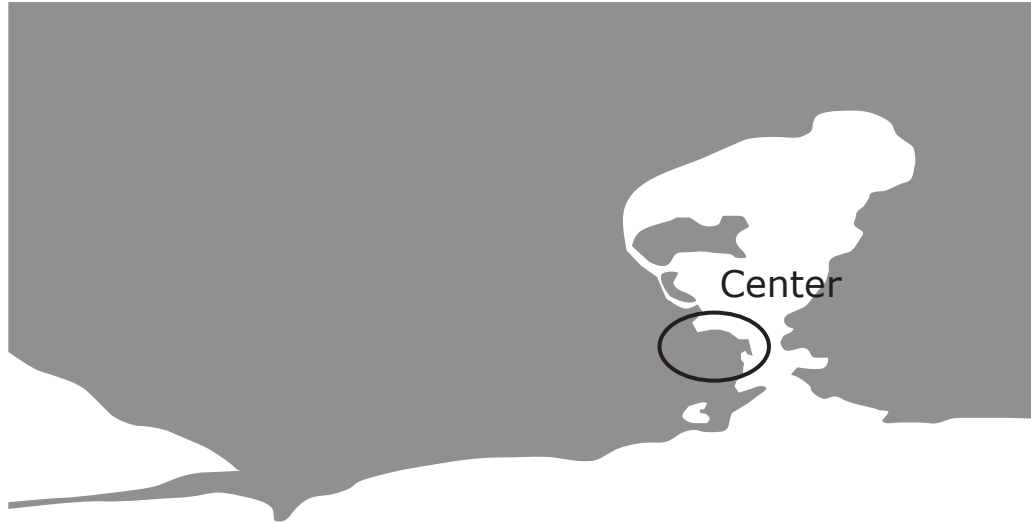


The Royal Portuguese reading room.



The Fiscal Island, place of the last party of the Brazilian Empire.

The Central Zone



Fiscal Island, where the last party of the Empire took place.



CCBB: Bank of Brazil's Cultural Center



The Imperial Palace of the colonial times (in the back) and the Deputies chamber in the middle

The South Zone:



Rodrigo de Freitas lagoon. To the right, Ipanema neighborhood.

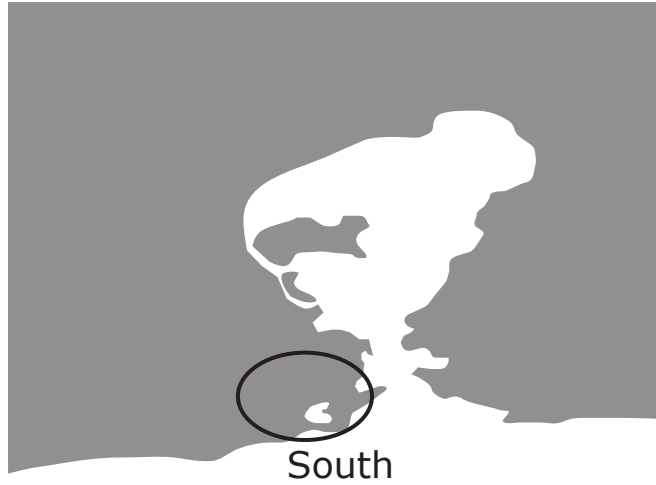


Beach soccer at Ipanema beach.



Swan boats at Rodrigo de Freitas lagoon.

The South Zone:



Copacabana beach, with its public paving designed by Burle Marx.

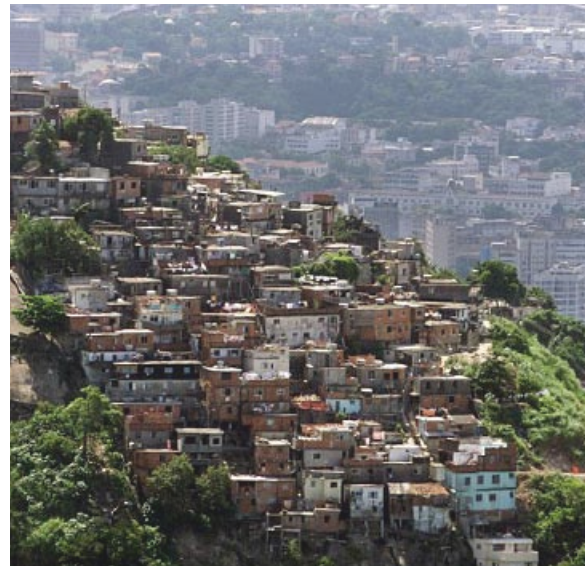


The Botanic Garden, founded by Portuguese king João VI in 1808.

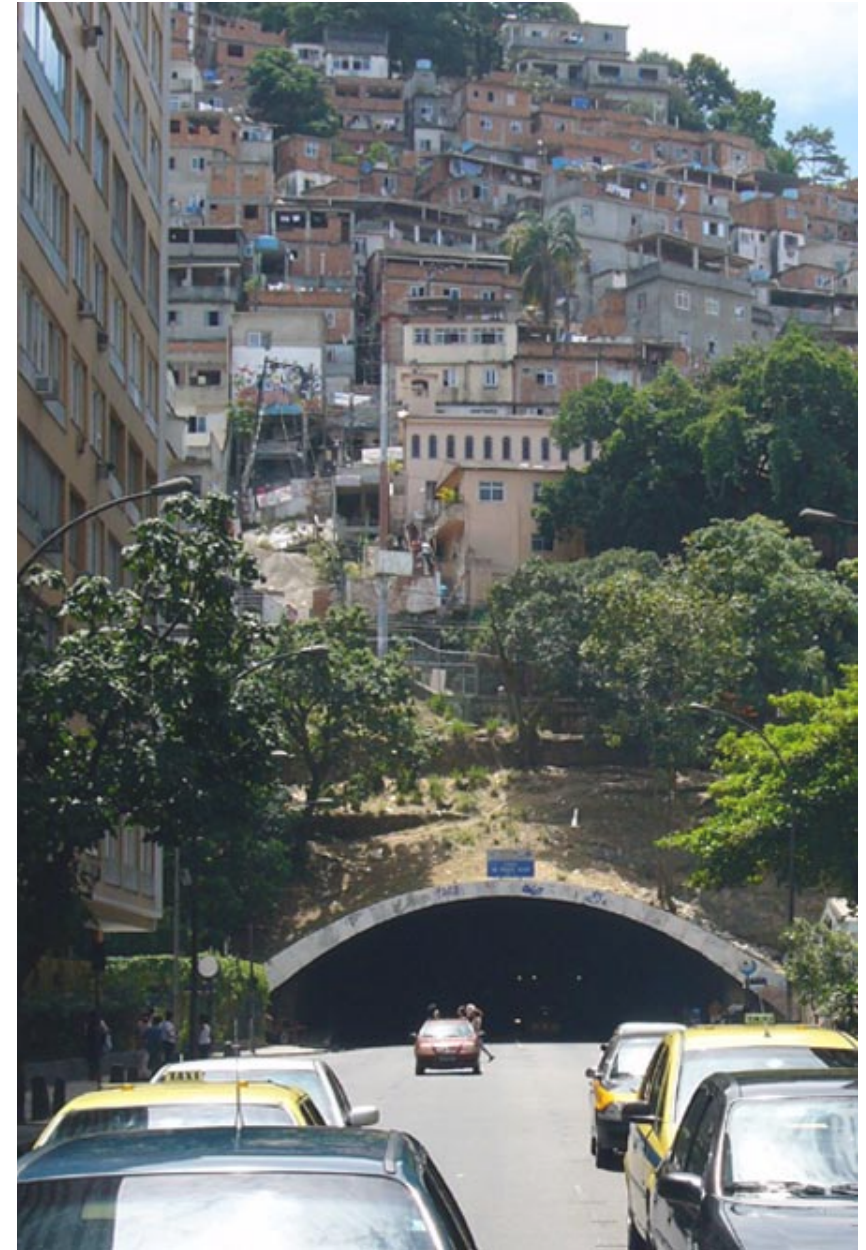
The South Zone:



Girls from Ipanema.



Slums in Ipanema.



Pavão Pavãozinho slum, in Copacabana.

The West Zone:



Linha Amarela, the highway that connects Barra to the Center.



Rio 2, a gated community in Barra da Tijuca, Rio's fastest growing area.

The North Zone:



Soccer game in Maracanã Stadium.



Imperial Museum at Quinta da Boa Vista park, former residence of Portuguese crown.



Maracanã Stadium.

The North Zone:



Penha's church.



New roof and use of São Cristóvão Pavillion, formerly designed by Sérgio Bernardes.



The North Zone:



Linha Vermelha highway, connects the South Zone and the Center / outskirts.



Piscinão de Ramos, an artificial beach for the poor.



Others:



Rio-Niterói Bridge



MAC, designed by Oscar Niemeyer



Tijuca Forest: the biggest urban forest in the world



2.4. Historical Development

The origins of social-spatial inequality...

1812, a compact and mixed city:

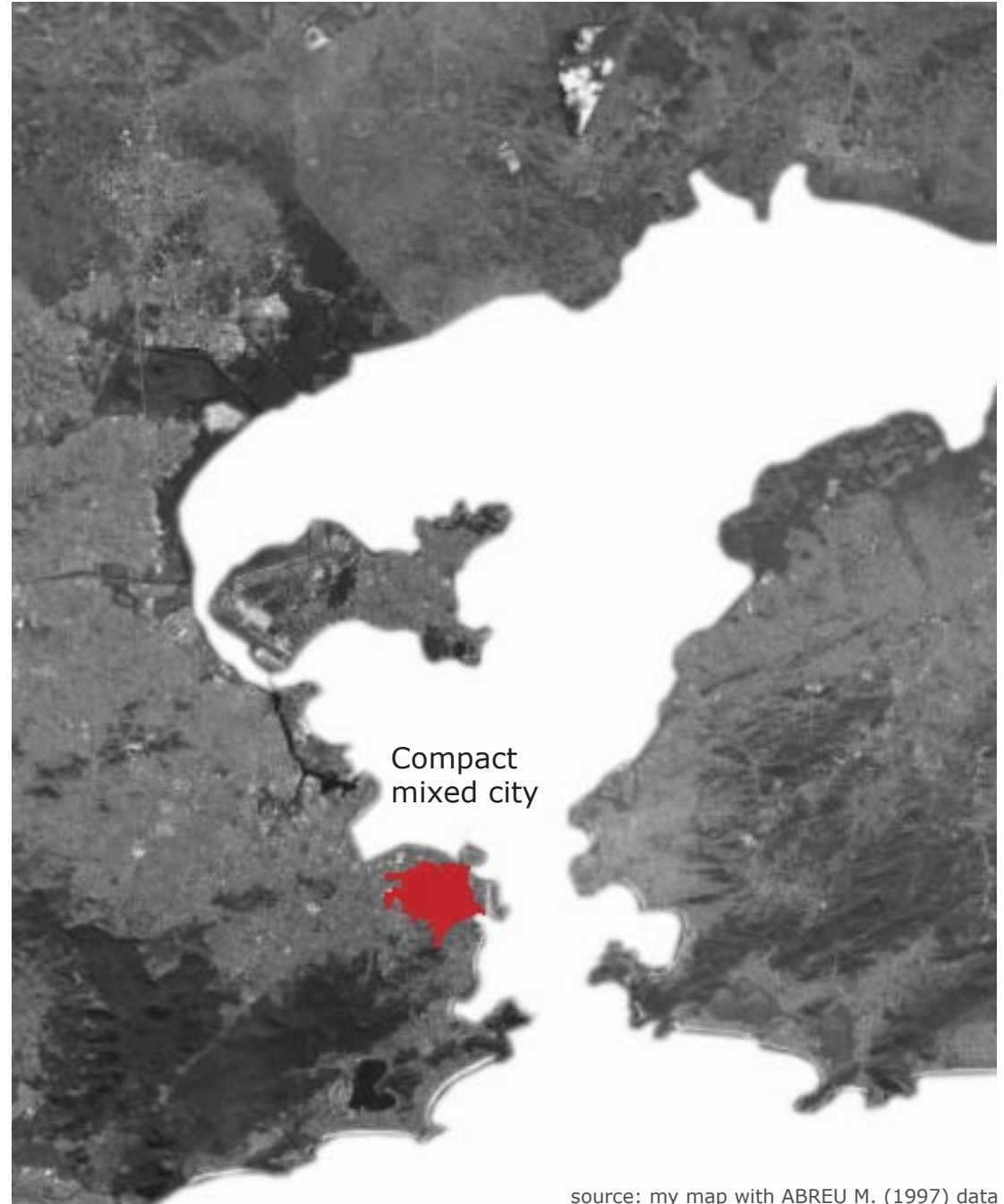


Source: ABREU M., 1997

Being founded in 1655, Rio de Janeiro was until 1812 a compact and mixed city, surrounded by mountains and swamps. During this time the city didn't grow fast or change much in appearance. The colonial capital was Salvador, in the North-east.

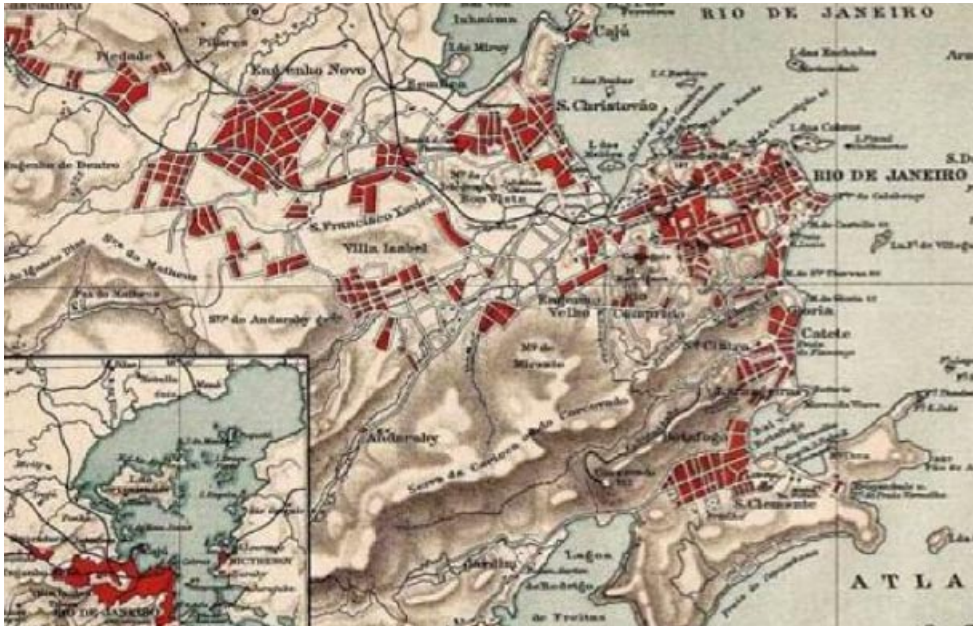
However, in 1808 Rio became the capital of the Portuguese Kingdom due to the fleeing of the royal family to Brazil, escaping from the Napoleonic wars in Europe. The royal family chose Rio instead of Salvador as the capital of the kingdom and therefore Rio, which was not more than a colonial village, had to go through many transformations. This period lasted until 1822, when Brazil won independence from Portugal.

After 1822, with Brazil's independence, Rio continued being the capital of the territory and it had to incorporate many new epochs and ideologies: Brazilian Empire capital, then Republican Capital, and then a modern industrial city. These period of Brazilian capital lasted until 1960, when Rio was replaced by Brasilia as the national capital. Also important to mention is the fact that during the XX century Rio lost the position of Brazil's main economic and cultural center to São Paulo.



source: my map with ABREU M. (1997) data

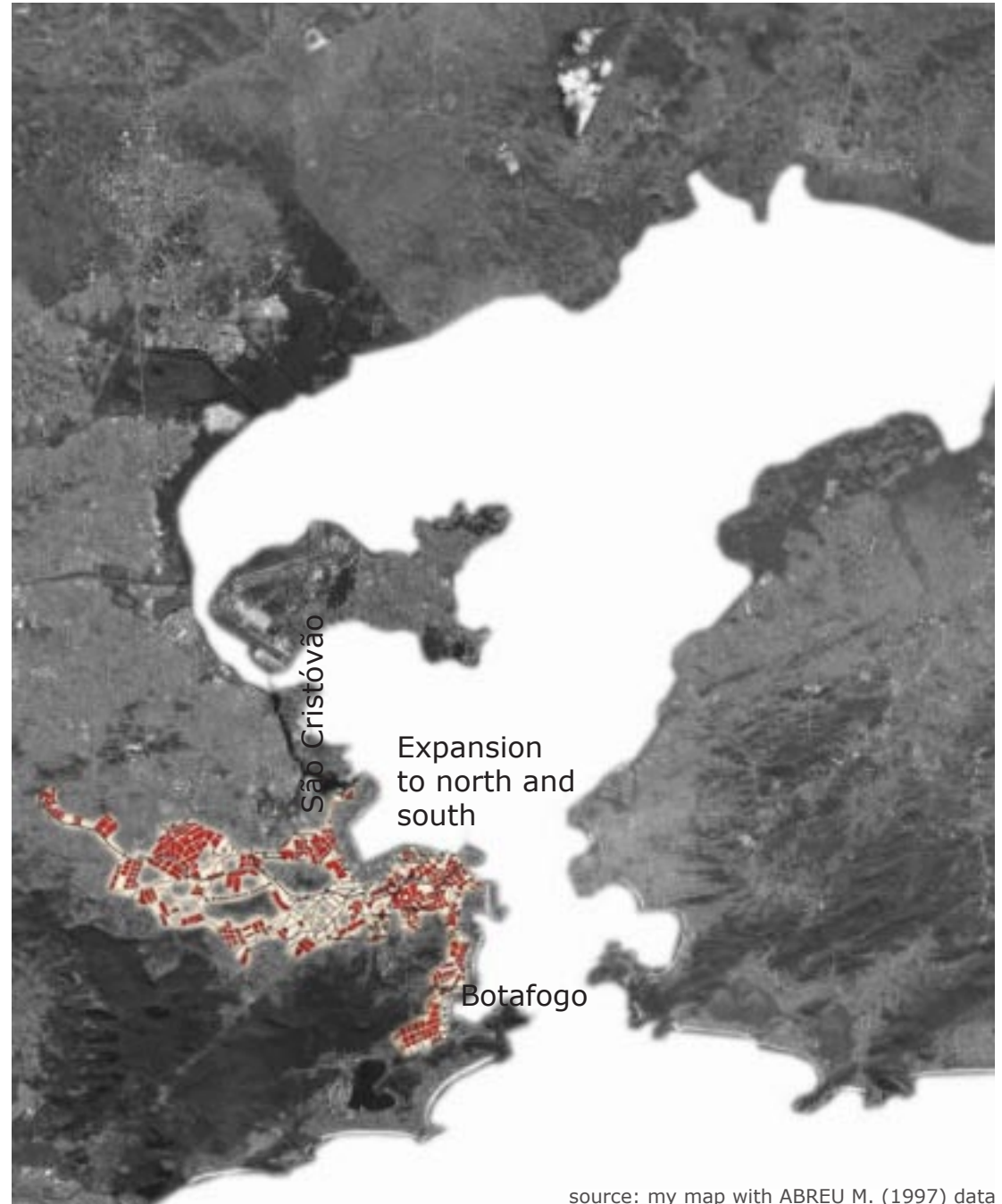
1898, North and South expansion:



Source: BORDE A., 2006

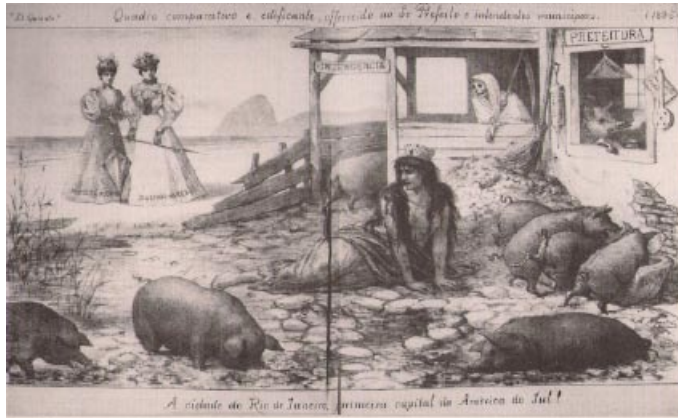
The turning of the century is a very important moment in the history of Rio de Janeiro. During this time the city was receiving many immigrants from all parts of Brazil and Europe. This provoked the spreading of the city in two directions, north and south, which resulted in losing Rio's very compact morphology. The north, polarized by the neighborhood of São Cristóvão, was the place of residency of the Portuguese royal family, while Botafogo, in the south, was a newer neighborhood that began to attract part of the bourgeoisie due to the charming of its beach and the beauty of its landscape.

Already by that time an expressive part of the population was quite poor, and therefore many were living in overcrowded and unhealthy tenements in the center - the "cortiços". In 1892 the city began a war on these tenements, as they were said to concentrate diseases and their people lacked morals. However, without proper affordable housing provision, these peoples who do not have enough income to live far away and pay for daily mobility had to settle in the nearby mountains and swamps. 1897 is the year of foundation of Rio's first slum: with permission from the government, soldiers coming from the Canudos war in the Northeast, established themselves in the city center. The general policy was to expell poor citizens out of the center, so that the city could affirm itself as a prosperous world capital.



source: my map with ABREU M. (1997) data

1902, The Passos Reform, *à la Haussman*:



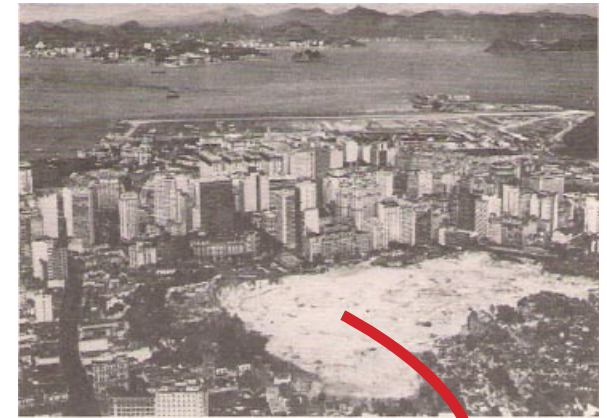
The comparison of Rio de Janeiro with Buenos Aires and Montevideo, showing Rio as a dirty city full of poors and pigs, was constantly in the Brazilian newspapers of the time. This shows media's very elitist point of view, which surely served as a convincing excuse for mass evictions.



Investments in public lighting and paving was being done in the South Zone, benefiting private investors, in a time when the North was already well populated and much in need of basic infrastructure.

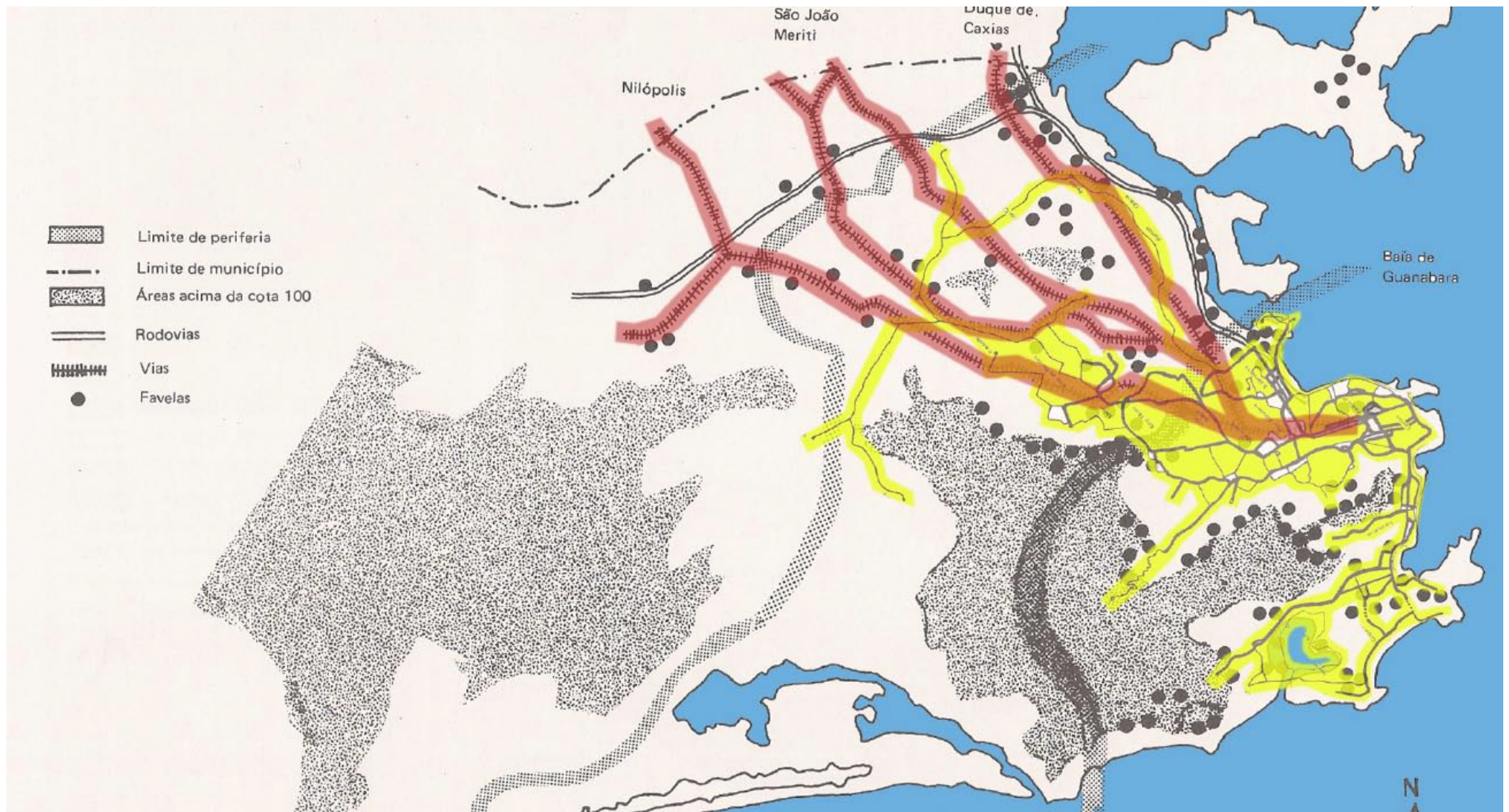


Mapping of "Reforma Passos", a series of urban transformations: new avenues in dark lines.



The removal of mountains in the center where the poor lived was a way of creating empty land for investors there and landfills along the South coast, where the rich were ready to pay high prices for apartments in new buildings.

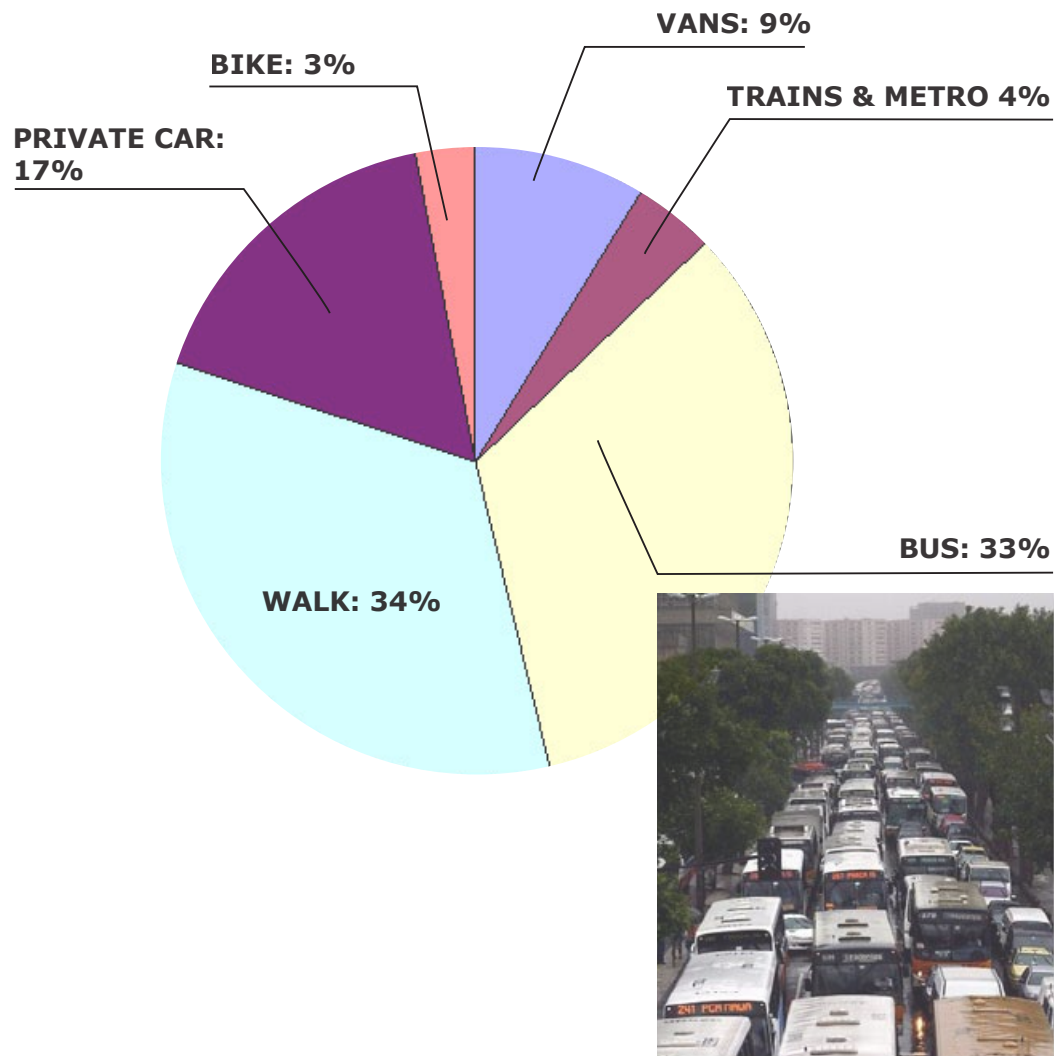
1960, trains to the north, trolleys to the south:



The 60s is also the decade when Brazil was receiving many car industry factories from the United States and Europe and, as a consequence (never openly stated), the tram lines were shut down. The excuse was that they were financially deficient, while the car was being promoted as the new modern mode of transportation. The black dots show the existing slums that time. As seen, the number was already great, and concentrated around the formal city.

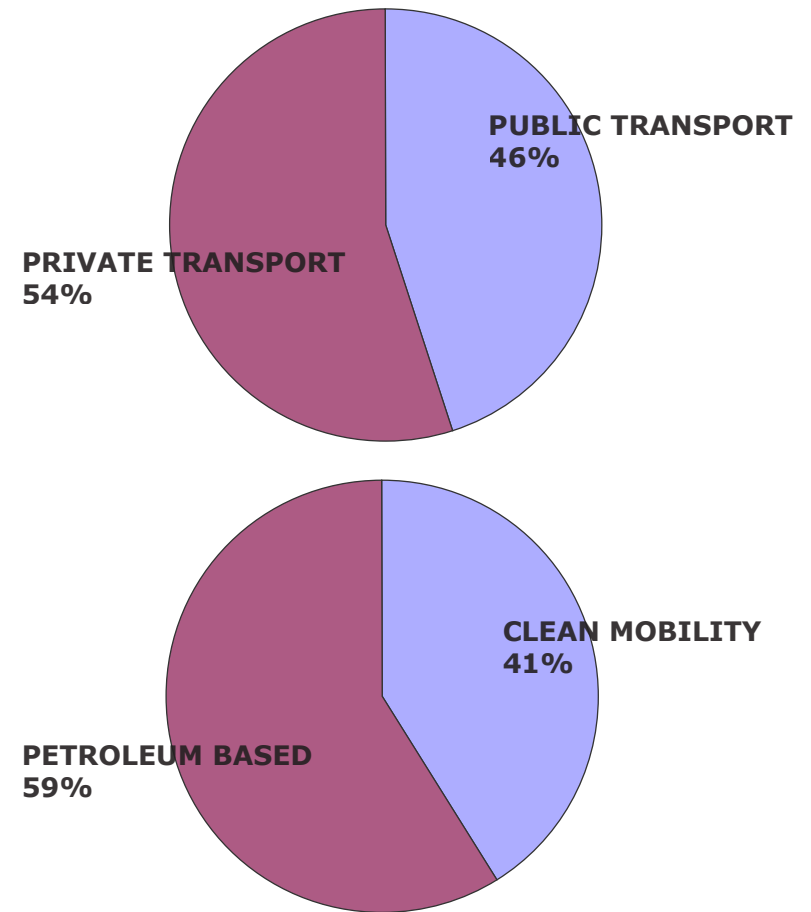
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2.5. Mobility



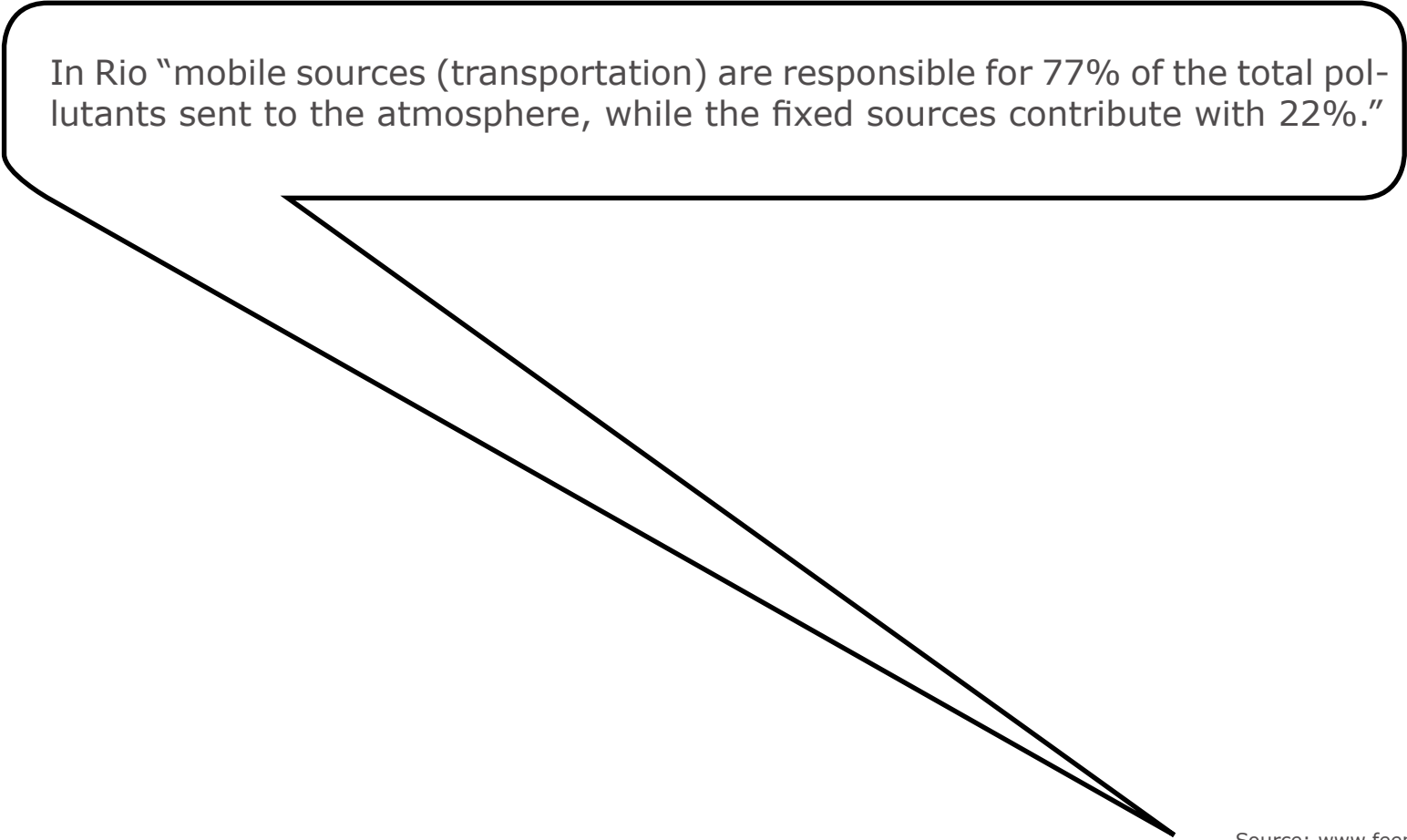
In Rio only 4% of the mobility is done by mass transportation modes (trains and metro), while 59% is petroleum based, pollutant modes. The large amount of walking mobility, specially due to the presence of slums close to job opportunities, makes the clean mobility percentage quite expressive (41%).

Sources: SOUZA F., BODMER M., BRUSSEL M., ZUIDGEEST M. Oportunidades para bicicleta como meio de transporte no Rio de Janeiro: Rumo à Inclusão Social.



Rio has an excess of bus lines, most of which pass through all neighborhoods. Now the city is trying to shrink those lines and make the system more efficient (implementing a daily card for example), in order to alleviate the traffic congestion and diminish air pollution.

Source: <http://oglobo.globo.com/rio/mat/2009/11/26/rio-quer-reduzir-numero-de-onibus-nas-ruas-914940230.asp>



In Rio "mobile sources (transportation) are responsible for 77% of the total pollutants sent to the atmosphere, while the fixed sources contribute with 22%."

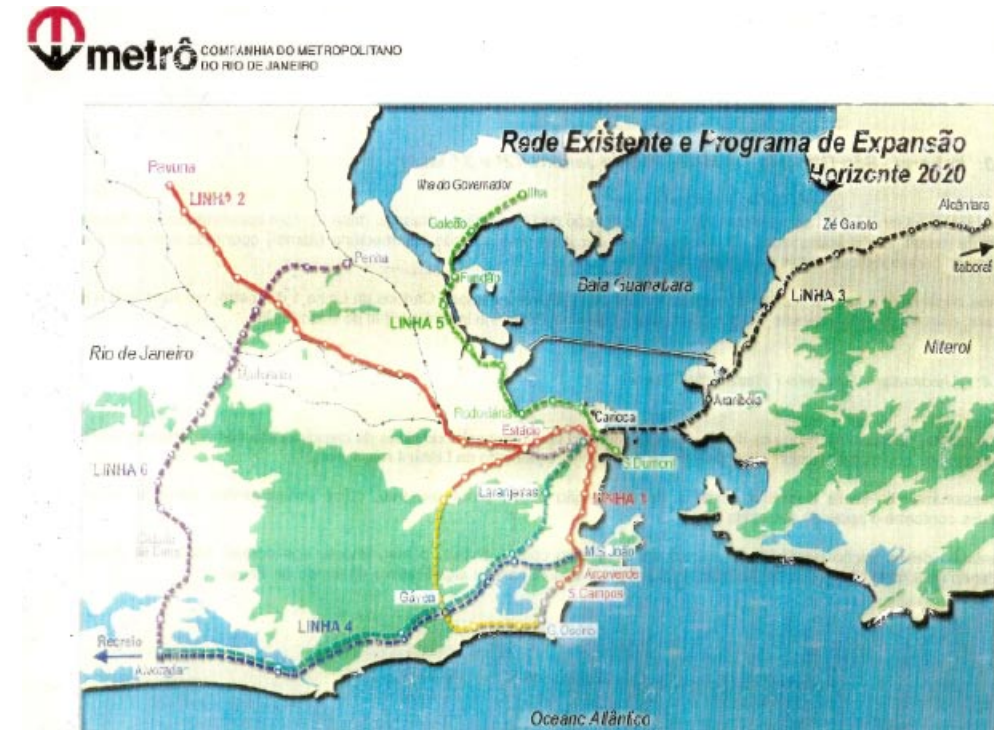
Highway developments:



After the 1960s, in order to bring foreign car industries to operate in Rio, there is a shutting down of the tram system and many highways begin to be built. With a decaying train system and the metro opening only in 1979, mobility becomes mainly petroleum-based.

This car-oriented policy continues even today: the Federal Government (under the presidency of Lula) has cut taxes of car ownership in order to stimulate the economy out of the financial crisis (2009). The result is mega traffic jams in Rio and São Paulo, increasing pollution and time waste.

Metro plan of expansion:

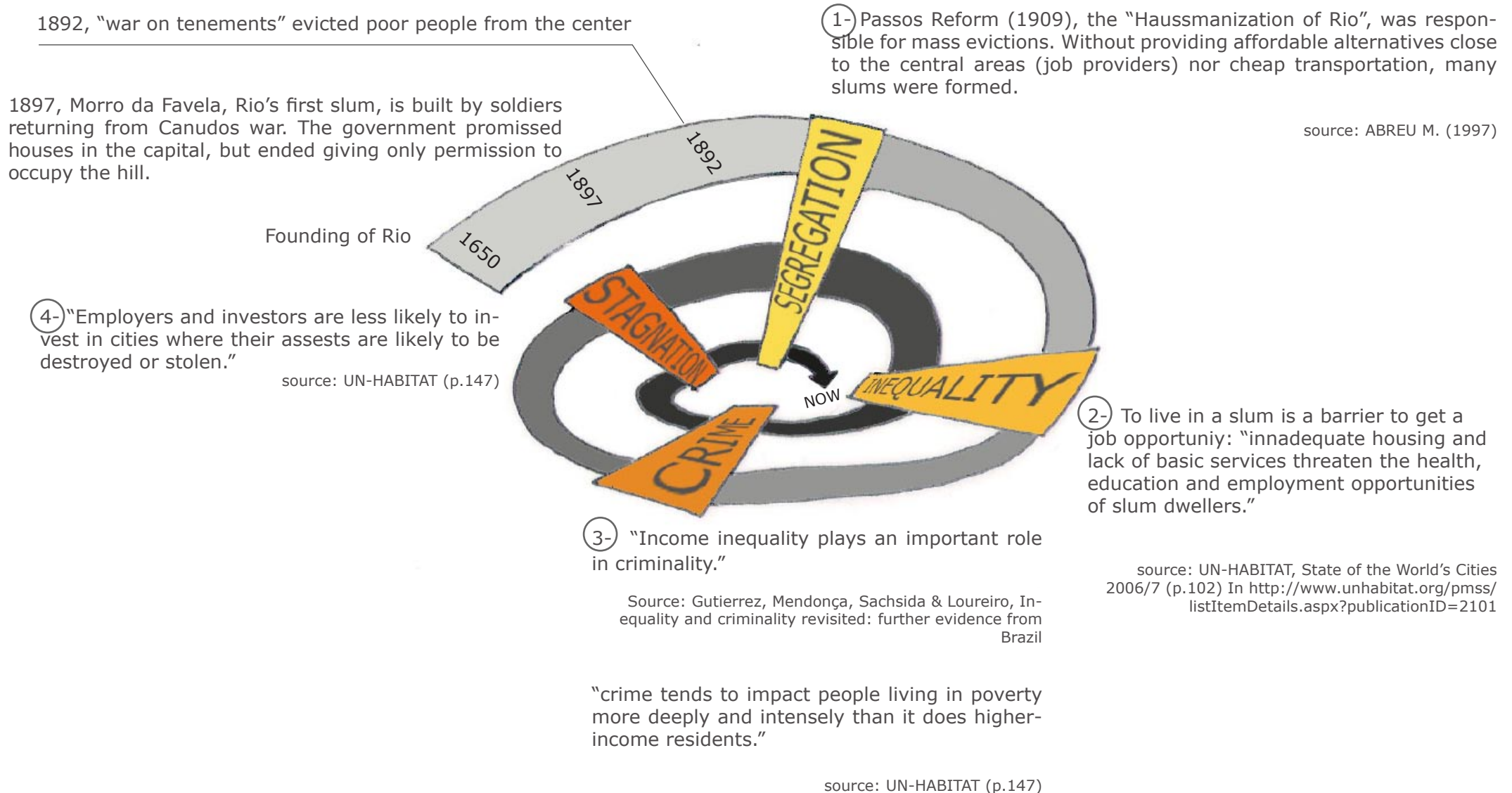


From 1979 to 1989 the city builds its metro system (2 lines, one above ground, in a former train line), but expansion is halted due to an overall lack of public funds during the 80s and 90s (IMF's structural adjustment plan).

In 1995 expansion is restarted, finally reaching Copacabana. In the end of 2009 the metro reaches the eastern tip of Ipanema.

The map shows in red the existing lines. All the others are projects, unrealized so far. The metro seems to be too expensive and slow to cope with the needs of this megacity.

How the inequality problem began:



2.6. Ongoing Projects

- Iconic Buildings
- Sports-event city
- High-speed train

Iconic Buildings:

As many other cities in the world Rio has embarked in the "icon strategy" aiming at increasing its position as a touristic destination.

However, in the World Economic Forum of 2008, the reason for Brazil's bad position in the tourism industry is due to a lack of proper infrastructure and unsafety. The country is second best in natural resources and 14th in cultural ones.

Therefore, we could say that this strategy, in the case of Rio - a city already full of attractions - is rather doubtful and might not achieve expressive effects.

Source: <http://oglobo.globo.com/viagem/mat/2009/03/04/brasil-sobe-quatro-posicoes-no-indice-de-competitividade-de-turismo-do-forum-economico-mundial-754684858.asp>



Cidade da Música: 200 million euros (architect: Christian de Portzamparc) in Barra da Tijuca, an expansion area that needs no regeneration whatsoever.

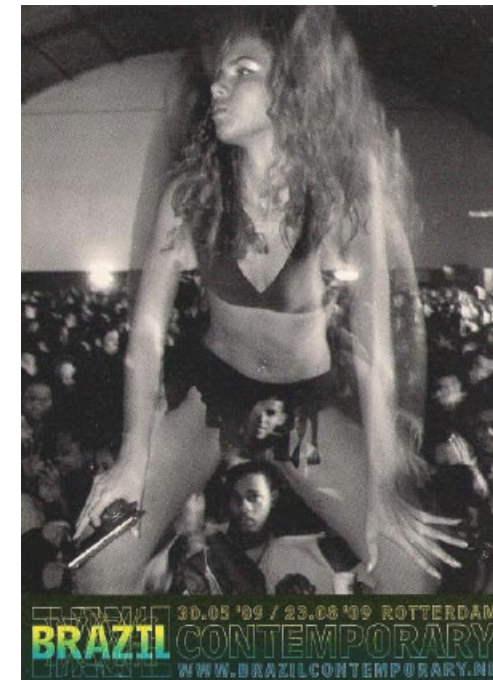


The new Museu do Amanhã (Museum of Tomorrow, architect Santiago Calatrava) and the new Museu da Imagem e do Som (architect: Diller + Scofidio).



In a number of interviews which I conducted with around 100 people from different nationalities and age groups I found out that the unsafety of Rio is rather strong in the foreigners minds. Rio's image, and Brazil as a whole (as Rio ends up responsible for Brazil's international perception), seems to oscillate between two facets: a very fun place to be and at the same time a violent and scary one. This seems to explain why most of the people I interviewed would like to go to Rio but very few actually did so.

Because the authorities know that security is quite a crucial factor in attracting new visitors, there is a much greater amount of police men in Rio's streets recently. By doing so, the city ends up looking more like a civil war battle field and not really more safe, as the Brazilian police is extremely corrupt and inefficient.



These two flyers found in the Netherlands demonstrate: Rio (represented by its Christ statue) being responsible for the image of Brazil and, in the second image, Brazil as a place of crime and violence (represented by a gun in the hand of a dangerous, half-naked young lady).

The first image is an advertising of a Brazilian restaurant in Rotterdam and the second is an advertising of an exposition at the NAI, the Netherlands Architecture Institute.

"... you come from Brazil? How nice... I would so much like to go to Rio... but isn't it a bit dangerous there?"

Chunxiao Liang, chinese, 24 years old

"...ahh Brazil... cool! beach, samba, delicious food... i would love to go there on vacations..." (and ended up going to Vietnam instead)

David van Eck, dutch, 30 years old

"... oh Brasiillllll wow!... Carmen Miranda de Copacabana!! ...I would love to go to carnival but my kids told me not to, because it's too dangerous..."

Patricia Verwiël, american, 60 years old

"...we went on holidays to Florianopolis only (Brazil's south), because everybody said it was quite dangerous in Rio and São Paulo, and we were bringing our baby with us..."

Yanaika Holle, dutch, 32 years old

Strategic iconic building: learning from Bilbao

Since the Guggenheim Museum was built in Bilbao in the 1990s and its supposed miraculous effect of putting such a decadent industrial city “on the map” and bringing hordes of tourists and new businesses instantaneously, it became commonplace to propose iconic buildings as a strategy to revitalize cities. However, on a closer inspection, Bilbao did not count only on its new shiny museum to come back on tracks. The city made vast investments in mobility (of which the new metro line with fancy stations designed by Foster is the most noticed), engaged in environmental and urban regeneration, invested massively in IT (fiscal incentives) and in its banking sector, created a technopark and many other social improvements.

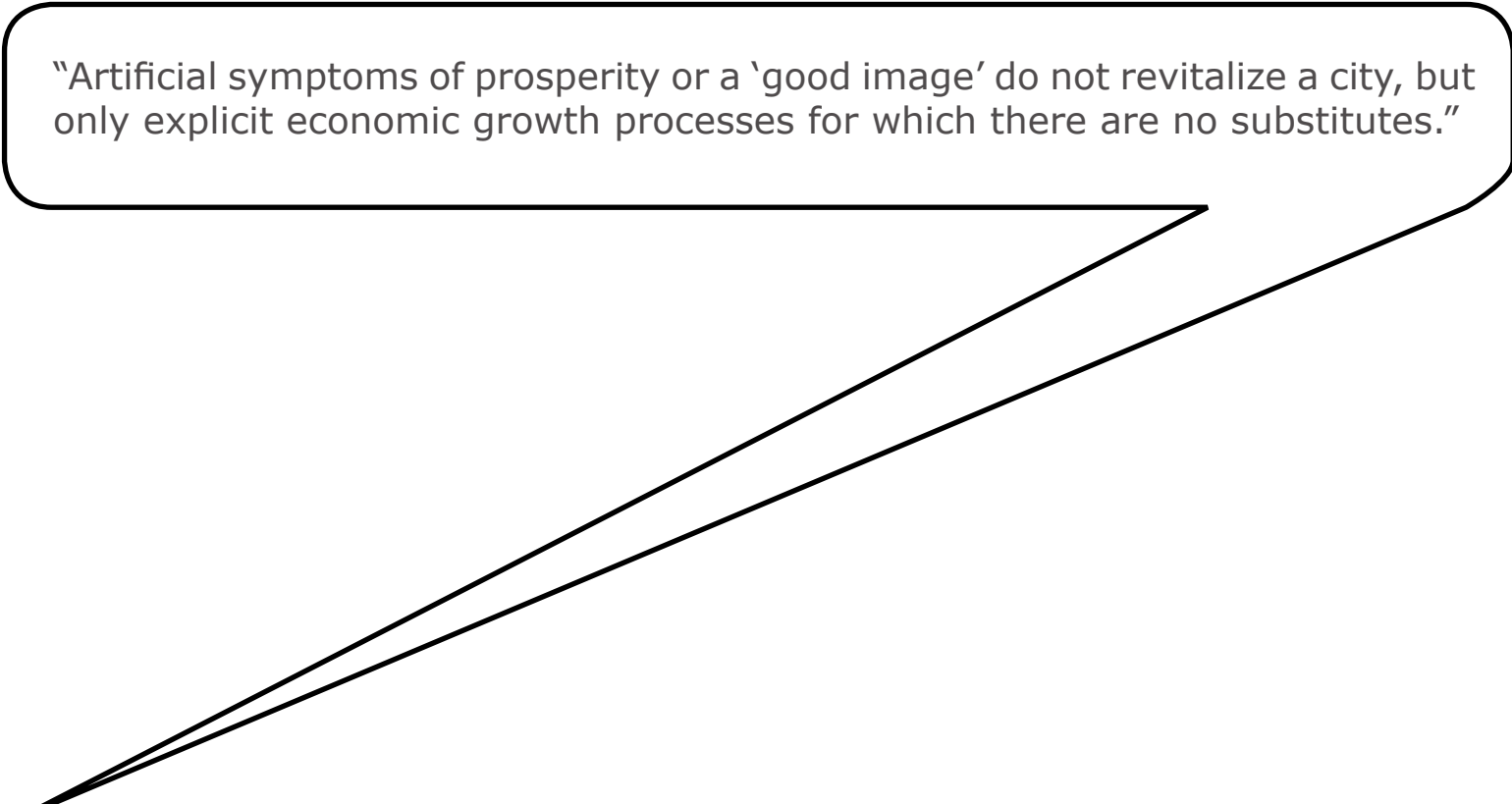
Bilbao developed a clear vision to participate in the global economy. The museum helped by making it the cultural capital of the region, but did no miracle.

Today Bilbao is the banking capital of Spain and is aiming to be the informational technology portal for Europe. Recently, the European Union established a software institute in Bilbao to help its member nations compete with the United States and Japan. The city's hope is that it will become a magnet for high-tech business operations. (p.60)

Source: MARSHALL R., Waterfronts in Post-Industrial Cities. Spon Press, London, 2001



The Guggenheim museum (designed by architect Frank Gehry), the new metro stations (designed by Norman Foster) and the Zamudio Technopark form a network of interventions that positions Bilbao as a major node in the European grid of cities and a relevant player in the global economy.



"Artificial symptoms of prosperity or a 'good image' do not revitalize a city, but only explicit economic growth processes for which there are no substitutes."

Sports-event City:

PanAmerican Games of 2007: no legacy afterall



The pan American Games village: bad architectural quality, disconnected and technical problems - the development is sinking due to a problem with the landfill.

For the PanAmerican Games of 2007 a new metro line connecting the airports to Barra was planned but not built, and the architectural quality of the venues is simply too poor and disconnected to the city fabric to have any positive impact in its surroundings or add any value to the city. Therefore we can say that the PanAmerican Games left no legacy, but only sports infrastructure for the tax payers to maintain.



Sadium Engenhão, unrealized transportation infrastructure (Transpan) and the sports complex at the autodrome, in Barra da Tijuca. The PanAmerican left no legacy for Rio.

Sources: oglobo.com and Time in <http://www.time.com/time/world/article/0,8599,1926094,00.html>

Olympics 2016: an upcoming gated mega-event

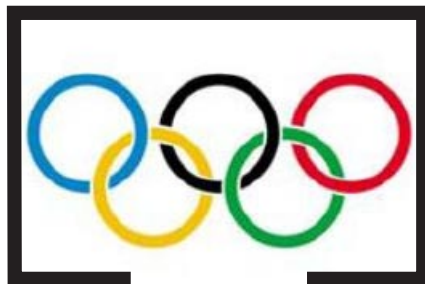


Source: <http://www.youtube.com/watch?v=SUIsJsqhpFA>



Mapping of planned sports events during the Olympic Games of 2016.

Source: city's candidacy video on youtube: <http://www.youtube.com/watch?v=SUIsJsqhpFA>



The plan for the Olympic Games demonstrates that Rio became so uncontrollable (dangerous, polluted, noisy) that the mega-event will happen *intra-murus*, as a gated-event in the city's suburbs, where no re-generation is needed whatsoever.

In every city where the games were a success - such as Barcelona and Sydney - and left a real legacy, the infrastructure was put inside the city, as a way of having its inhabitants benefiting from it afterwards. Barcelona is the example much cited by Rio's authorities, but here the plan is completely the opposite: the focus is on building in Rio's expansion area (Barra da Tijuca), leaving the problems of the city center and the North Zone untouched. Besides, there is no integral mobility plan announced, while three new iconic museums are underway.

Barcelona: a long lasting Olympic Legacy

Because Barcelona is so much cited by Rio's officials as a model for a successful Olympic Games, it's important to note what that city actually made to achieve such a role. First of all it's important to note that Barcelona undertook an impressive transformation prior to the games, so that it had plenty of time to plan carefully what to do. The majority of the projects were not made specifically for the games.

The main transformations were: the opening up of the sea front (Parc du Mar), restoring historic buildings, iconic projects by *starchitects*, transportation, housing, offices and commercial venues, telecommunications and services, hotels; sport facilities, and environmental infrastructure.

Thus, projects have a long-lasting impact on the city.

The main effects were that the city changed its image from an industrial city to a service one, positioned on the European context and not under the influence of Madrid anymore. The economic impact was that investors have preferred to locate in Barcelona due to the city's availability of services and labor, its market and overall competitiveness.

"Barcelona has planned the projects strategically so that the maximum number of useful investments can be left behind after the games. The main Olympic Projects imposed a structural effect on the city."

Sources: www.mt.usi.ch/pages/barcelona.pdf
GOLD J., GOLD M. (2007), Olympic Cities: City Agendas, Planning



In Barcelona's Olympic project public space quality was a main investment and its effects are long lasting, benefiting the future generations as well.

London Olympic site...



Instead of building a segregated Olympic site in Rio's suburbs the city could have made this main investment in its central area (called 'retro-porto'). This is a deteriorated environment but full of potentials: close to the CBD and its historic buildings, close to the huge Maracanã stadium, close to Quinta da Boa Vista park (where the Portuguese royal family lived during their stay in Brazil), etc. This area has many state owned urban voids that could generate a network park, new living quarters, besides new infrastructures and sports facilities.

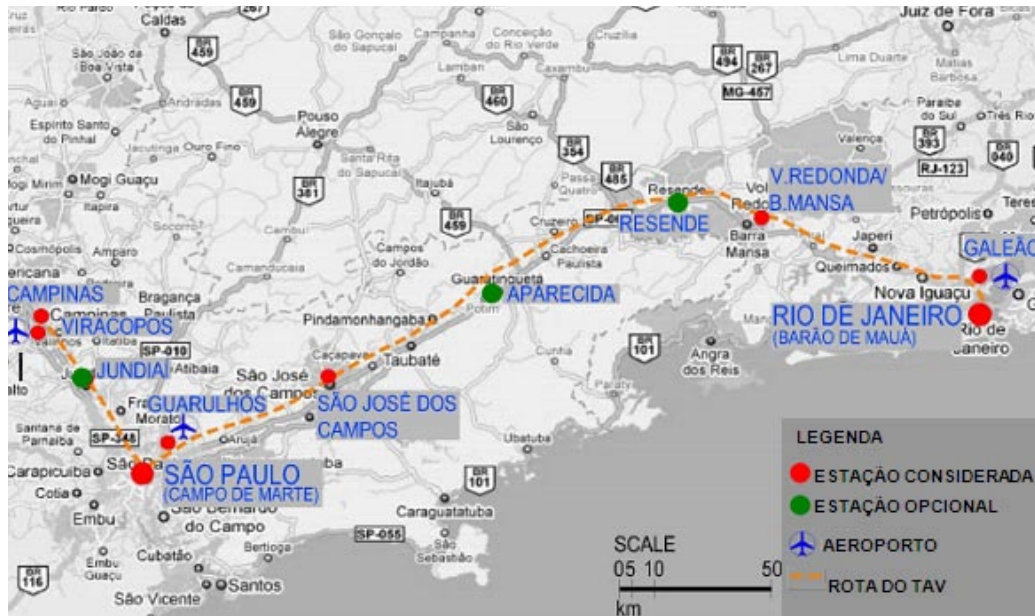
This area was not chosen by the city because of its more complicated conditions, needing environmental upgrading and unsafety. The suburban setting seemed easier and benefits real state companies that speculate over land there. However, it seemed to have been important to have the courage to face such a challenge that would produce much better results in the long term: a true legacy, as London is doing.

The Olympic site in London has a similar position in the city: a deteriorated area very close to the CBD - a place full of potentials. By upgrading this site there is an extension of one of the best parts of the city towards the outskirts. Therefore, this future neighborhood will develop in a sinergetic relationship with the center and its cultural and touristic assets, maximizing the effects of the public investment.

Copy and pasted in Rio's central area:



High-speed train Rio-São Paulo



Source: www.tavbrasil.gov.br

Currently under planning, the High-speed train would connect Brazil's two global cities: Rio de Janeiro and São Paulo. This new connection would make them function as a single system, a strong and networked global metropolis, making both cities more attractive for visitors and business people alike.

"Global cities constitute a system rather than merely competing with each other." (Sassen, 2001)

While São Paulo is a global financial center, Rio has on its advantage a striking combination of nature and culture which makes it the most visited city of Brazil. Besides, media production and its bohemian cultural lifestyle show that the creative sector is strong there.

The arrival of the high-speed train in Rio's and São Paulo's city centers would enhance the competitiveness of these cities by strengthening their complementary roles and enforcing their functioning as a highly specialized network.

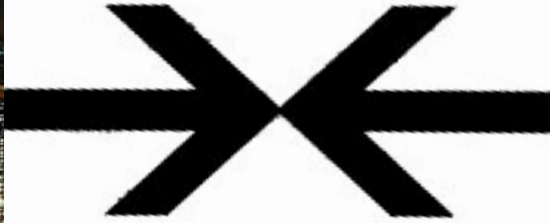
However, its enormous costs - around U\$ 15 billion - make it difficult to say that it is a really important investment right now, as Brazil is spending enormous sums with the World Cup and the Olympics. Despite being a cleaner form of transportation the high-speed train will not be faster than the air flights. Besides, it would connect its most rich cities and be used by its most rich citizens, consuming federal resources that could help other areas to develop as well.





POWERHOUSE

*High-speed train
connection...*



*45 minutes
travel*



LIGHTHOUSE

"Rio de Janeiro is Brazil's lighthouse" - Fernando Henrique Cardoso (former president). Source: www.ibge.gov.br

ARTS:

"Rio and São Paulo are both equally strong in fine arts. São Paulo has more private galleries, more market, but these cities host around the same amount of fine artists. The place for living and working doesn't matter much for selling. However, Rio is traditionally the home of the greatest Brazilian musicians."

Carlito Carvalhosa, sculptor
e-mail interview

ADVERTISING:

"Rio has many advertising firms, but the main ones are in São Paulo because of the concentration of bigger clients. Many agencies have a second office in Rio, in order to attend that market as well."

Rodolpho Donato, advertiser (DM9)
e-mail interview

FASHION:

"...I was in Rio last November to document the RioSummer, that I loved! I think that is, with no doubt, the stronger part of Brazilian fashion, beach wear. You don't see in the world what is done here... Sincerely, I'm leaving São Paulo a bit disappointed... when the creators try to make a lot of style, they end up recurring to references like Balenciaga and Givenchy..."

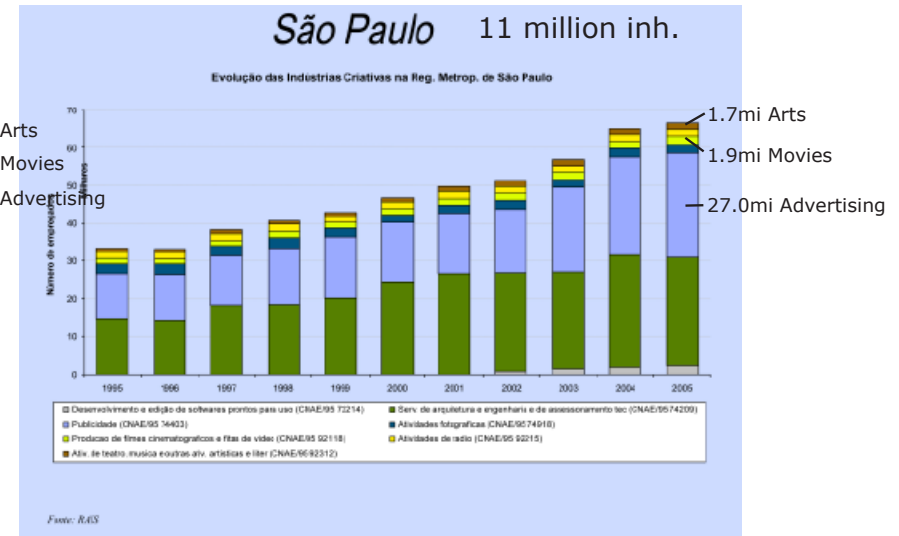
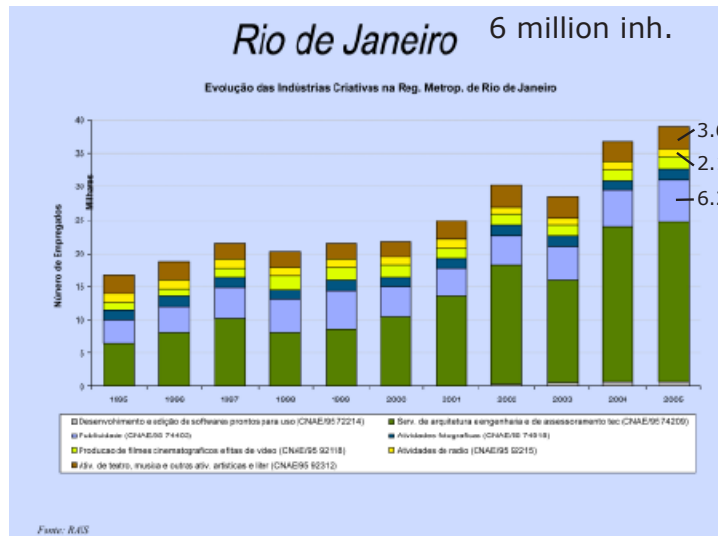
Marie-Christine Marek, French fashion journalist
Source: www.erikapalomino.com.br

IDENTITY:

"The young Brazilian girls want to wear the style of the girls from Rio, and that's why our firm is doing so well and growing fast. We are specialists in just that!"

Carlos Machado, marketer (Farm Rio)
e-mail interview

Rio de Janeiro and São Paulo creative economies:



Despite being half the size of São Paulo, Rio has double percentage of jobs in arts, literature and movies.

Source: IGLIORY D. (2008), Creative Industries and Metropolitan Dynamics: Is Brazil on Track? University of Cambridge and Universidade de São Paulo

Rio's unique landscape and lifestyle have traditionally favored a bohemian and creative culture. However, São Paulo ends up stronger in publicity and design due to their clustering around the financial sector and its wealthy clients. Arts seem to be equally strong in both cities, but since the Week of Modern Art held in São Paulo, the Brazilian artistic elite has chosen São Paulo due to its rich clientele.

Nevertheless, Rio is still stronger in media production as it hosts Brazil's biggest media conglomerate, Globo, since the times it was the capital of Brazil and there was a close relationship between the company and the federal government. Globo generates many direct and indirect jobs in Rio and the city's lifestyle seems to help in attracting and keeping those artists in the city.

It is important that Rio's government realizes its strengths and reinforces them even further, so that a job drainage to São Paulo is avoided. So far, Rio's natural qualities have done the work.

2.7. SWOT Analysis

Strenght: RIO EXPERIENCE

- Rio de Janeiro has a unique combination of nature and culture: the city is in between the mountains and the city, composing lively mixed-use zones.
- Rio is Brazil's lighthouse: it's responsible for most of Brazil's foreign perception
- Rio makes the image of Brazil! Inside Brazil it's an important source of national identity.
- Rio is the name of casinos around the world: **Rio means fun!**
- Rio is a favorable city for bohemian people. It's the home of many artists, poets and musicians.
- Rio was chosen the best city by the international gay community.
- Rio is strong in **creative industries** and was rated the most powerful Brand of Latin America (City Brands Index)

Weakness RIO VIOLENCE

- Rio has been built under a process of socio-spatial segregation, resulting in inequality, crime and fear, seriously damaging Rio's international perception and its tourism industry.
- An inefficient public transportation system, mostly based on petroleum modes (bus, cars and vans) creates a chaotic routine where a lot of money and time are wasted, making air pollution problematic as well.
- This inefficient transportation and a lack of a strong social housing policy favoured the appearance of slums throughout the city. These communities are controlled by the traffic mafias that creates violence and fear.

Opportunity RIO OLYMPIC CITY

- Rio de Janeiro will host the **Olympic Games of 2016** and also host part of the World Cup in Brazil, in 2014.
- Rio de Janeiro might be connected to São Paulo by a **High-Speed train** in the coming years. If this project proves successful, the two metropolises might function together as big megalopolis of 37 million inhabitants.
- Rio also receives royalties from the petroleum production in Rio de Janeiro State, that might increase in the near future because of the exploration of the oil under the salt layer in the sea.

Threat RIO WITHOUT A LEGACY

- The lack of vision and strategic planning might make Rio **lose** some of the **opportunities** to come. Social and environmental goals can be reached now!
- The Olympic project might be realized as a gated development, not really regenerating the city's existing fabric.
- The absence of an ambitious public transportation project that could be gained might prevent the city from making a great leap forward.
- General 'favelization' can enhance environmental problems.

3. Problem Statement

Summary:

1- Loss of economic and cultural strenght

- During the XX century São Paulo consolidated as Brazil's economic powerhouse and Brasilia became the country's political capital (1960s).
- Unemployment seems to be low: 6%, but this rate excludes informal sector workers which have no social benefits. Besides, demographic factors contribute for the "positive" outcome (low natality and higher proportion of elderly).

2- Spatial segregation, inequality and crime

- Rio has officially 1 million people living in slums (2000 census) - some say 1.5 million (www.observatoriodefavelas.org.br).
- Slum dwellers are perceived as different and have more difficulty in getting jobs. (Habitat 2006-2007)
- Rio is marked by an extreme spatial segregation: while the richer classes live in the South Zone, the poorer ones live in the North or in slums.
- Despite Rio's low populational and economic growth, slums have grown a lot: almost 7%.

3- Lagging behind as a top international destination

- Rio's touristic potential has been obstructed by the increased criminality in the city, because of its social inequality.
- Despite being second best in natural resources and 14th in cultural ones, Brazil was rated **110th place in security**.
- A lack of proper infrastructure, touristic information and dirty public spaces complement this situation. Price is also not very competitive, 91th - due to high airport fares.

4- Pressing environmental problems

- sea and river waters are polluted because many communities (poor and rich) lack proper sewage provision.
- forests are being cut in several spots due to urbanization (mainly by slums developments)
- endemic floods almost paralyze the city during summer storms and provoke landslides in slums.
- air quality is bad due to an excess of petroleum-based mobility.

5- Olympic Games and Iconic Architecture so far without an integral strategy

- Rio's failure as a main international destination and its low GDP growth (around 5%) seems to have pushed its officials to establish a new project for the city: the Sports City.
- However, PanAmerican Games of 2007 left no legacy for the city (no infrastructure improvement, urban renewal or whatsoever).
- World Cup of 2014 haven't showed a comprehensive, integral approach, that takes into consideration how the city will benefit in the long term.
- Therefore it's doubtful that these events will really regenerate the city (the case of Athens with its expensive stadiums to maintain might be a possible scenario for Rio).



Summer storms often paralyze the city in the summer.



The development of slums throughout Rio are not only a housing problem. Their cause is the lack of affordable and efficient public transportation and their consequences are environmental damages and the strengthening of criminal mafias that take advantage of their uncontrolled and uncontrollable space.



The labyrinthine structure of the slum space favors the strengthening of criminal mafias. That's why the police builds training environments that simulate that space, difficult to gain control. The high criminality in Rio has damaged Rio's international perception, making this unique city lose a large amount of tourists that now go to destinations such as Kuala Lumpur and Guangzhou. The last image is the helicopter that was shot down by the mafias, right after the city won the Olympic bid - a demonstration of the criminals' power in the city.

4. Research Questions

Main:

1- How can Rio enhance its economy in a more inclusive manner, diminishing inequality and crime, and in this way enhance its vocation as an international destination?

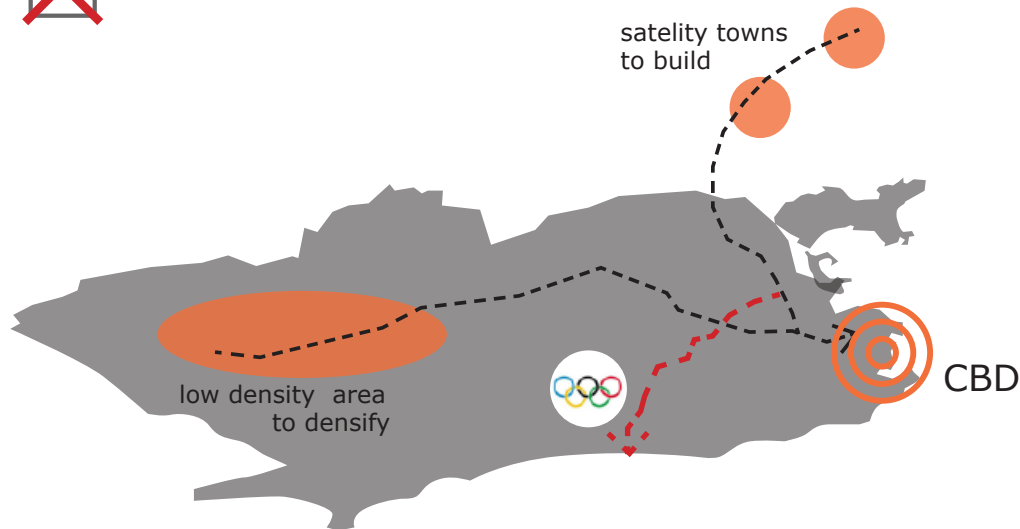
2- How can Rio make the most of its momentum and build a long lasting legacy?

Development Scenarios:

In order to find out what would be the best to do in addressing Rio's most pressing and basic problems, a "scanning" of the city fabric was done in order to find out where the city could better develop job opportunities and social housing.



PERIPHERIC APPROACH



- HOUSING: densification of low density areas (west) and/or build satellite towns.
- MOBILITY: needs to improve train lines, but it's extensive and time consuming.
- JOBS: industries are suitable, but not higher-value work.

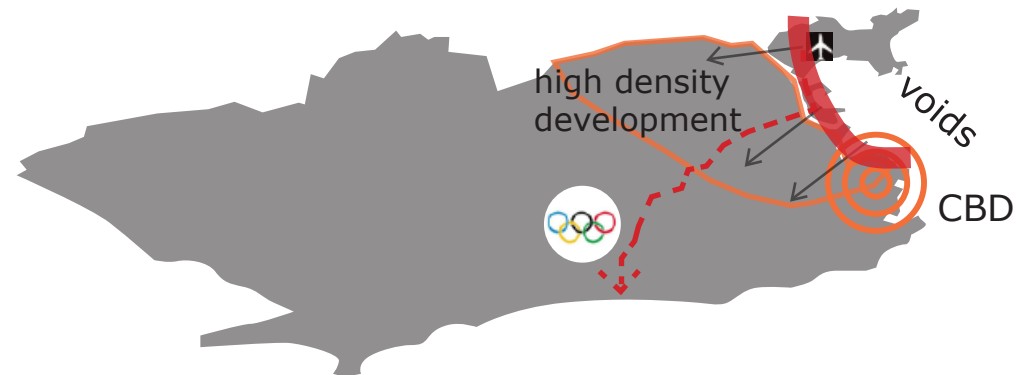
SCENARIO EVALUATION:

- multiple stakeholders to negotiate with
- more investment in mobility is needed
- too peripheral, less potential for strong business areas



CENTRAL URBAN VOIDS APPROACH

"urban voids are areas which became empty and remained vacant" (BORDE, 2007)



- HOUSING: development in vacant areas.
- MOBILITY: closer to the CBD, shorter connections make it accessible.
- JOBS: due to a proximity to the CBD and main infrastructures (airports, university, etc), higher-value services are feasible here.

SCENARIO EVALUATION:

- few stakeholders (mostly public owned land)
- more compact and mixed, favors walkability
- central position, already infrastructured

Rio has almost 1.000 ha of urban voids... isn't it *the* opportunity to build a real legacy?



As showed before, that the Urban Voids scenario, which proposes to use the urban voids (mostly public owned and nearby the CBD, airports, highways and railways) for new businesses and affordable housing would be the most efficient way of building a long lasting legacy for Rio.

Scale comparison:



Here we make a scale comparison to show the vastness of this territory. A high density mixed development, well connected to the rest of Rio, could generate quite positive effects for the city as a whole, and help to attenuate its most pressing problems - housing, mobility and employment.

Sub-research question 1:

3- How can Rio's urban voids play a role in the development of a long lasting legacy for Rio?

Even though we already know from this point that these urban voids could host an expressive social housing program and be well connected to the city by a new mobility axis, we still need to figure out which economic role this area could play.

In order to try to answer this question a study was carried on about the economic potential of cities in an informational, globalized economy. This study encompassed researchers such as Saskia Sassen, Manuel Castells, Peter Hall, Richard Florida and Jane Jacobs. The result is the following article "Urban Opportunities in a Global Economy", which tries to answer the above research question to then formulates new ones.

Urban Opportunities in a Global Economy

Rafael Alencar Saraiva



Introduction

In the current phase of global capitalism, major cities and regions have risen as strategic nodes of production, forming a “transnational urban system”¹. These strategic nodes agglomerate the most advanced services and have a hyper-concentration of infrastructure – hard and soft, physical and social². The agglomeration of these activities in key nodes is a consequence of the territorial dispersal of industrial production and services, which was made possible by new telecommunications technologies.

These new technologies - the infrastructure of the global economy - enabled the industrial production to become decentralized and networked, having its lower value segments established in peripheral regions and its higher value segments concentrated in global cities: main urban centers which have the ability (the money, infrastructure and power) to command and control.

This logic of agglomeration and networking is not only shaping those cities playing a major role in the world economy and their distant subsidiaries, but is an overall dynamic inducing specialization among different cities anywhere. Financial centers, high-tech manufacturing regions, logistic hubs, etc. all tend to continuously attract more of those activities they already concentrate. This phenomenon is explained as “a snowball effect where new entrants (in a certain sector) tend to agglomerate (in a certain place) as they benefit from higher diversity and greater specialization in production processes”², exactly because it’s easier for companies to start and succeed in places where all the bits and pieces of the supply chain are already established.

Therefore, cities around the globe face the need of concentrating certain activities and specialize in order to become hubs of those activities and benefit from their agglomeration effects - in this way becoming relevant in the transnational urban system. This logic has been pushing cities and regions to pursue strategies capable of positioning themselves as specific hubs, thus engendering a strong competition between them.

While there is a massive concentration of financial services in a few urban centers – mainly New York, London, Tokyo, Paris and Frankfurt - other cities specialize as centers for leisure, tourism, culture or technology in order to take a stake in the transnational grid of cities – which is commonly referred to as “putting themselves on the map”. In this grid we could now also include large airports and high-speed train stations which are emerging as hubs for shopping and culture, almost as important for the global system as main cities themselves. As said Koolhaas in the case of Atlanta International Airport: “(it) is the biggest airport in the world. Not that everybody wants to be there; it’s a hub, a spoke, an airport of connections. It could be anywhere.”³

In this paper I will discuss three specializations that cities around the world are focusing on in order to become unique sites of production and consumption: technology, creativity and logistics. As any other specializations their goal is to speed up economic growth by clustering those specific activities. These three specializations are made visible in strategic projects for technopoles, creative zones and airport-cities, sometimes overlapping in broader visions.

Information, Knowledge, Innovation and Creativity: defining concepts

The current phase of capitalism is also called the Information or Knowledge Age, where “the source of productivity lies in the technology of knowledge generation, information processing, and symbol communication.”⁴.

The information society is what comes after the industrial society, and therefore some scholars have called it post-industrial society. However, for Castells this is not accurate, as it would be the same as calling the industrial age post-agrarian. His research, together with Peter Hall, about Technopoles - specific sites for the production of advanced goods, such as bioelectronics, renewable energy, genetic engineering, etc⁵ – makes clear the point that industrial production is still very important today, when ever characterized by the intensive use of knowledge. This is due to the fact that value comes from the knowledge applied to those products and not from the material thing itself.

Knowledge presupposes an “understanding of a subject”⁶. In global capitalism there is an excess of information - media news, advertisements, political campaigns, events, music, magazines, all kinds of images, etc - although not all of these bits of information brings us an understanding of anything. As said Scott Lash, “people are bombarded with signifiers and increasingly become incapable of attaching ‘signifieds’ or meanings to them.”⁷ Information without knowledge is maybe how we experience our contemporary globalized world.

Although not so pervasive as all the other informations surrounding us, knowledge is a specific kind of it: a type of information which enhances efficiency and is responsible for the creation of higher-valued services and goods, making it the most important resource for economic growth in the current global economy.

Hence, in the current phase of capitalism, firms, nations and cities compete to produce the most advanced, knowledge intensive and therefore valuable services and goods - which means, the latest technologies. As says Castells and Hall: "The technological basis of countries and regions becomes critical for growth because, ultimately, the deficit in the balance of trade between high-value, high-technology producers, and low-value, low-technology producers creates an untenable disequilibrium."⁸

In this way, innovation - "the process of turning knowledge and ideas into value"⁹ - becomes crucial and the employment of the most creative workforce - people able to manipulate information in an innovative manner - became essential for firms and regions. This explains why Research and Development (R&D) departments are now so indispensable, as they are responsible for "the creative work undertaken on a systematic base in order to increase the stock of knowledge... and use this knowledge to devise new applications"⁹.

Why place matters?

Global capitalism is fuelled by knowledge intensive firms and therefore is dependent on its human resources more than in raw materials - which was the case of the so called industrial and agrarian eras. Hence, the resource that really matters is skilled people capable of working in an innovative manner and producing new knowledge, those who can also be called "creative people".

As discovered by Richard Florida, creative people do not choose a place to live according to jobs opportunities, but chose a place that they like first, and then look for a job there¹⁰. This means that today leading firms need to establish themselves in places where these creative workers want to live.

This new situation makes the physical configuration of cities really essential. Cities nowadays have to be very attractive and well infrastructured in order to attract these top-workers from around the world. Thus, the urban experience became crucial for economic growth, making place, "the key economic and social organizing unit of our times."¹⁰

Following this reasoning, can't we say that those cities which pursue rich natural and cultural resources have now a strong competitive advantage, as they are more likely to be perceived as attractive places to live? As many cities have been strengthening their natural and cultural landscapes - enhancing their parks, waterfronts and cultural options - it seems so. However, being simply beautiful doesn't seem enough in such a hyper-competitive globalized economy. Desirable cities to live, work and play still need to perform efficiently, which points out to the need of also being well connected in the global and local levels. That's why mobility plays such an important role.

I will now discuss some of these cases in order to illustrate how some cities are specializing as centers for technology, creativity and logistics.

Technopoles

Technopoles, or science-parks, can be defined as nodes in which "technology-advanced industries (...) play the role of growth engines for the development of countries and regions".¹¹ Their origins can be traced to the Silicon Valley in California: beginning with massive investments by the U.S. Army for the development of military technologies, that region ended up becoming a breeding ground for a series of new high-tech firms - some of which are well known today.

Following the success of the Silicon Valley, technopoles began to be built in many cities in order to foster high-tech firms formation. Usually nearby a University - which acts as a catalizer -, the strategy is to create a synergy between academic researchers and new firms, in such a way that the discoveries of the first can be commercially applied by the second. In order to do that, financial grants are given for new firms directed by leading researchers, employing some of their best students.

In their research about Technopoles, Manuel Castells and Peter Hall described some cases around the world: Tokyo, New York, Paris, Taiwan, etc. These technopoles were built under different circumstances and have achieved different success levels in acting as engines for the development of their regions. In the end, the authors concluded that old urban centers, such as London, New York and Paris, have kept some advantages as centers for technology due to their dense networks of infrastructure and talented people that generate the before explained agglomeration benefits.

Jane Jacobs is recognized as the first to be aware of this agglomeration logic and its positive effects, as she explained in 1969: "in cities with many organizations supplying so many bits and pieces of work, it is possible to start a new exporting organization while depending upon others for many of the goods and services one needs. Henry Ford did so, when he started the Ford Motor Company."¹²

Nowadays, strategic projects for Science Parks became common place around the world. The Zamudio technopark in Bilbao is a successful case, working in strong synergy with the city which has been upgraded with new mobility infrastructures and cultural venues. The Guggenheim Museum is the flagship project of the strategy: by redefining the image of the entire region it is essential in attracting not only tourists but top-workers to the area.



The Guggenheim Museum and the Zamudio technopark in Bilbao: catalysts of development.

Creative Zones

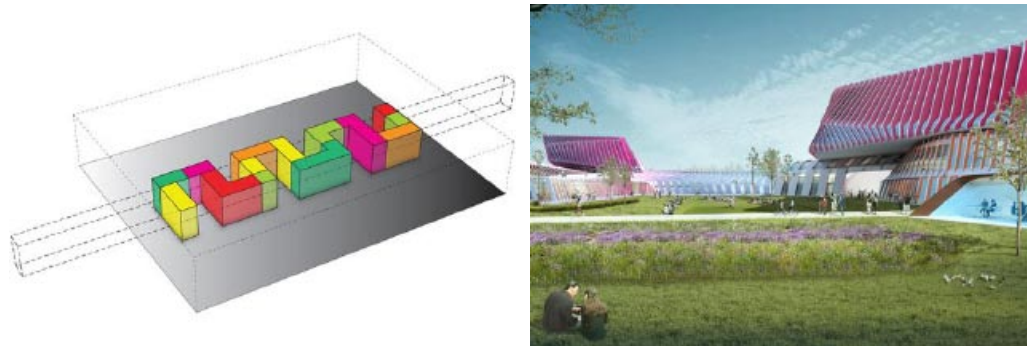
Creative zones, or creatives hubs, are areas of the city devoted for the creative industries - such as advertisement, design, art, medias, architecture, etc. These areas aim to generate a synergy between creative firms and cultural facilities, such as museums and universities.

Creativity is, of course, an essential part of the process of innovation, the other part being the commercial and financial means needed to put new ideas in practice (as one can create new ideas but may not be able to implement them successfully in the market). That explains why projects for creative zones usually try to provide affordable spaces and subsidies, aiming to facilitate new firm formation.

Creativity is only now, after the publishing of Florida's "The Rise of the Creative Class" (2004) becoming a very popular concept in the field of Urban Planning. However, it had much longer ago been demonstrated as a key characteristic of economically prospering cities. "The Economy of Cities", written by Jane Jacobs in 1969, did so.

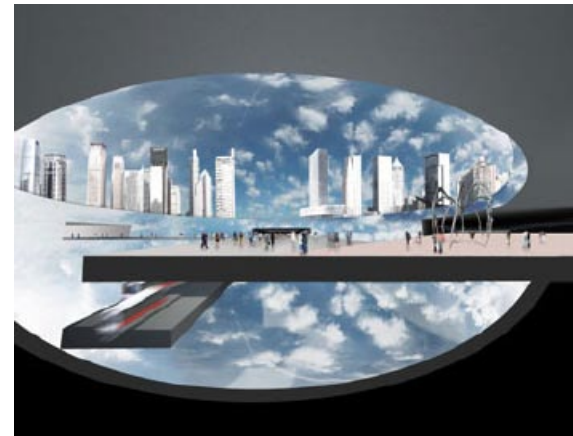
Being one of the most recent types of strategic projects focusing on clustering and specialization, we cannot present finished examples but only projects underway, such as Rem Koolhaas' Shenzhen Crystal Island, "a major new cultural center, transport hub, public landmark in the heart of the city of Shenzhen"¹³, and UN Studio's Beijing River Creative Zone, which comprises "four clusters of a products life cycle 'Think, Develop, Produce and Sell' as a continuous loop of activity"¹⁴.

Therefore, it's still early to say what works and what doesn't in the case of projects for Creative Clusters, as there is not yet empirical data about it. Florida argues that authenticity is very important and thus historical buildings are essential for the flourishing of a creative milieu. However, one might wonder if the strong creative program of Singapore, "a city that has continuously erased every trace of history from its site during the last 30 years"¹⁵ will not work simply because it lacks old buildings.

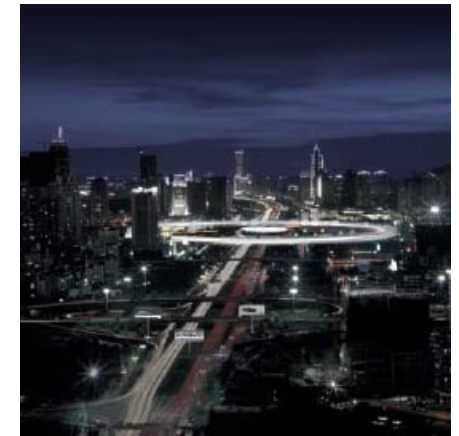


UN Studio's Beijing River Creative Zone: an interconnection of diverse uses.

Jane Jacobs saw in the historical buildings of New York an advantage for new firms too, but due to the fact that they are cheaper than new buildings. Thus, the main characteristic for successful Creative Zones might be affordability and face-to-face interaction, which is usually a characteristic of historical areas and their dense street nets, diverse uses and dense built mass. However, it seems unrealistic to say that new development zones can't achieve these goals, whenever some kind of governmental subsidy is available.



OMA/ Rem Koolhaas crystal island project.



Singapore's creative cluster strategy.

Airport-Cities

No other facility symbolizes globalization better than the airport: the main node where the international exchange of people and goods happens. Because face-to-face contact matters so much¹ and telecommunications (such as virtual conferences) have not replaced the need to travel, airports are more important than ever.

Therefore, having an efficient airport to create good accessibility is essential for any city willing to have a stake in the global economy. The airport is an indispensable infrastructure of the transnational urban system as it connects the global network of cities in a very physical sense.

The airport-city is the agglomeration, within the airport, of programs that were before situated only in the city: commercial areas, hotels, conference centers, office parks, and even housing accommodation nearby, becoming a second city center¹⁶. These programs do not enhance the original function of the airport – to transport people by plane – but take advantage of the airport good connectivity (in the global and local levels) and its image as an international, cosmopolitan place. Clustering more programs is the chance of optimizing incomes in times of high competition, when airport taxes are pushed to lower levels and funds are never enough to cope with enhancing or even keeping the airport's original infrastructure needed to transport people and goods.

Because of its hyper-concentration of programs and good connectivity, the airport-city becomes a regional provider of jobs besides an important place of exchange, forming important "regional development nodes"¹⁷. In Barcelona, for instance, the airport is connected to the seaport as well, becoming a hybrid logistic hub.



Schiphol Airport in Amsterdam: extra programs and connectivity - example of Airport-City.



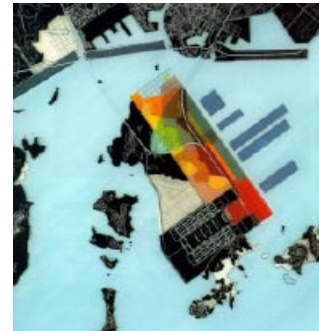
Similarities between the Strategic Projects

Having described those strategic projects we can now begin underlining similarities and differences between them. Technopoles and Creative Zones focus on the production of information and knowledge as means of innovation. That's why both are dependent on talented people and their creativity. While the Technopole as a strategic project has a focus on high-tech industries, the creative zone is more broad, focusing usually on culture: art, design, architecture, marketing, advertisement, etc.

Both projects need the availability of affordable space and/or subsidies whenever possible in order to make feasible for new firms to start and begin the agglomeration process. As said Dvir and Pasher: "Serious innovation requires significant investment in translating brilliant ideas into viable products and services. Innovative organizations allocate considerable resources to the various innovation phases: understanding customer needs, researching the environment, developing products, and testing them in the laboratory and in the market."¹¹

On the other hand, the Airport-city project is intended to be more a place of exchange than a place of production (although their office parks can produce innovative services as well, production is not their main function). However, Airport-cities play a crucial role in making a city hyper-accessible and therefore visible in the global arena. Maybe they could even be planned together with Technopoles, such as is the case of Koolhaas project for Seoul. And what about creative zones? Would it be desirable to plan creative zones withing the airport area too?

Florida's research found that creative people prefer historical, mixed and authentic places to live and work. This excludes airports as places for creative industries, as they are usually new, generic, peripheral, etc. But we wonder if a creative zone could not be developed nearby an airport as long as very well connected to a major city, such as is the case of Amsterdam's Zuid Axis: currently only an office park, could it host creative firms as well? As said Guller & Guller, firms benefit from the image of the airport, and maybe a well connected airport could be a good location for media and cinema industries that need larger spaces that are unavailable in the city centers.¹⁷



OMA/Rem Koolhaas' project for an Airport-City in Seoul: a mix of airport and high-tech zone.

Conclusions

The purpose of this paper was to try to understand some types of current development strategies (technopoles, creative zones and airport-cities) within a broader theory of the global economy. In this stage of capitalism knowledge is the main resource for innovation and cities are key nodes for its production, as they have high concentrations of creative people, capable of turning ideas into value.

That's why *place* is said to be the main organizing unit of our time: the contemporary economy is place bound. This brings a new relevance to cities as they have a high concentration of the resources that a flourishing knowledge economy needs: talented people and abundant infrastructure (transportation, cultural facilities, fiber optic cables, etc) needed to connect these creative people with the rest of the world.

The concept of creative class developed by Florida seems to have, nevertheless, some pitfalls that need to be taken into account. Florida draws a picture of the creative citizen which seems a bit caricatured: colored hair, tattoos, etc. This picture does not encompass, for instance, scientists and financial business people, which do creative work as well. From my point of view Florida's concept of the creative citizen ends up focusing on the arts, design, advertising and architecture sectors, leaving much higher value services outside.

Further Research

While the spatial organization of technopoles and airport-cities have already been extensively researched, creative zones as strategic projects are still in the very beginning. As it seems, the main issue to be discovered is to what extent historical buildings are important there. For Jacobs it was important due to their lower rents, while for Florida it is important because creative people like authentic districts (an identitarian reason). The question is, can't we create anything new that is also authentic? Maybe the place where this issue will be best tried is Singapore, because of its absence of historicity and its efficient planning system that is at this very moment implementing a strategy to enhance its creative industries. Florida's theory seems to fail in explaining why Rotterdam is such a hub for architecture and design without having much historical architecture. As well known, it has to do with the availability of cheap office space in former industrial and port sites (such as the Van Nelle fabric).

As discussed in this paper, the production of knowledge and the exchange of information is very important for the global economy. Therefore it seems to exist a consensus about the need to foster connectivity and interaction on all levels. This points out to the role of public space and publicness. Some scholars, such as Dvir&Pasher, have discussed the need of cafes and nice public spaces to foster a cultural environment in the city: "Historically, cafés provided a stimulating environment for rich conversations which led to the creation of exchange of provocative ideas and breakthrough in diverse areas such as arts, philosophy, psychology and politics."

Couldn't we then say that gated environments are nowadays a disadvantage for the contemporary urban economy? But how could we enhance the public spaces of major cities where high violence, specially those in the Southern Hemisphere, is a daily reality? How do we conciliate the need of publicness and the need of security for new firms and talented people to allocate in certain urban areas?

Although already researched, the contemporary airport could also be studied even further. Airport-cities, even though becoming a city in themselves, are usually connected within a major city - their initial *raison d'être*. This is, for example, the case of airports Charles de Gaulle in Paris and Schiphol in Amsterdam. One might wonder what is the urban economic potential of those huge airports, such as Atlanta International, which are more a distribution hub for other destinations than serving the city itself. Maybe this type of airport does not have the same potential to develop innovative clusters as the others do, simply because it does not have the agglomeration of talented people of those major cities. Since they hardly can be magnets for creative activities, big airports of the future might better be built nearby a major city in order to generate synergetic effects between them (which is of course difficult due to space availability in most urban areas, but might be possible within efficiently planned cities).

Another theme for further research is to discover what is really the potential of smaller cities as centers for knowledge production. Because smaller cities do not enjoy the same agglomeration benefits that major cities do, it seems to be more difficult for them to compete as places of innovation. A city like Delft might work as a technopole because it's networked with Rotterdam and The Hague in a larger urban system, but what about a small city like Calgary, in Canada? How could it manage to become such a hotspot for creativity? It seems understandable that not everyone likes to live in big cities, but since small ones don't benefit from agglomeration economies, they must offer other advantages in order to remain competitive.

- .
- .
- .

The theory of global cities as command centers which control networked peripheral sites might itself be challenged by the recent growth of developing nations and their rising production costs vis à vis the rising unemployment in the developed world. Nevertheless, the crucial role of major cities might remain, and with them, the need to agglomerate, specialize and network, and therefore the need to foster strategic projects that can allow them to perform in that way.

Notes:

- 1- SASSEN S. (2001), *The Global City*: New York, London, Tokyo. Princeton: Princeton University Press. p.171
- 2- HAYNES K. (2006), *Infrastructure: The Glue of Megacities*. Megacities Lecture. The Hague: Kenniscentrum Grote Steden. p.15
- 3- KOOLHAAS R., Atlanta. In KOOLHAAS R. and MAU B. (1995), *S,M,L,XL*. New York: Monacelli Press. p.835
- 4- CASTELLS M. (2000), *The Rise of the Network Society*. Oxford: Blackwell. p.11
- 5- CASTELLS M. and HALL P. (1994), *Technopoles of the World: The making of 21st century industrial complexes*. London and New York: Routledge
- 6- Oxford English Dictionary. www.askoxford.com
- 7- Lash S. and Urry J. (1994), *Economies of Sign and Space*. London: SAGE. p.3
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- 9- http://en.wikipedia.org/wiki/Research_and_development
- 10- FLORIDA R. (2002), *The Rise of the Creative Class*. New York: Basic Books. p. xix
- 11- DVIR R. & PASHER E., "Innovation Engines for Knowledge Cities". In www.knowledge-board.com.
- 12- JACOBS J. (1969), *The Economy of Cities*. New York : Random House. p.181
- 13- www.oma.eu. Taken on March 2010.
- 14- www.unstudio.com. Taken on March 2010.
- 15- KOOLHAAS R. (1995), *Singapore Songlines: portrait of a Potemkin metropolis or Thirty Years of Tabula Rasa*. In: KOOLHAAS R. and MAU B. (1995), *S,M,L,XL*. New York: Monacelli Press. p.1041
- 16- GULLER & GULLER (2003). *Del aeropuerto a la ciudad- aeropuerto*. Barcelona: Gustavo Gili. p.29
- 17- Idem. p.49

Sub-research question 2:

4- Can these voids form a backbone to support innovative businesses, becoming Rio's connection to a higher-value service economy? If so, how can poorer groups benefit?

In order to answer this research question, a design research was carried on, trying to demonstrate what could actually be done in these urban voids to turn them into an economic area of higher-value services. The design research begins with an overall Strategic Vision which unfolds in three specific Strategic Projects.

DESIGN

5. Strategic Vision

VISION: Rio's role in the Brazilian context



Brasilia



São Paulo



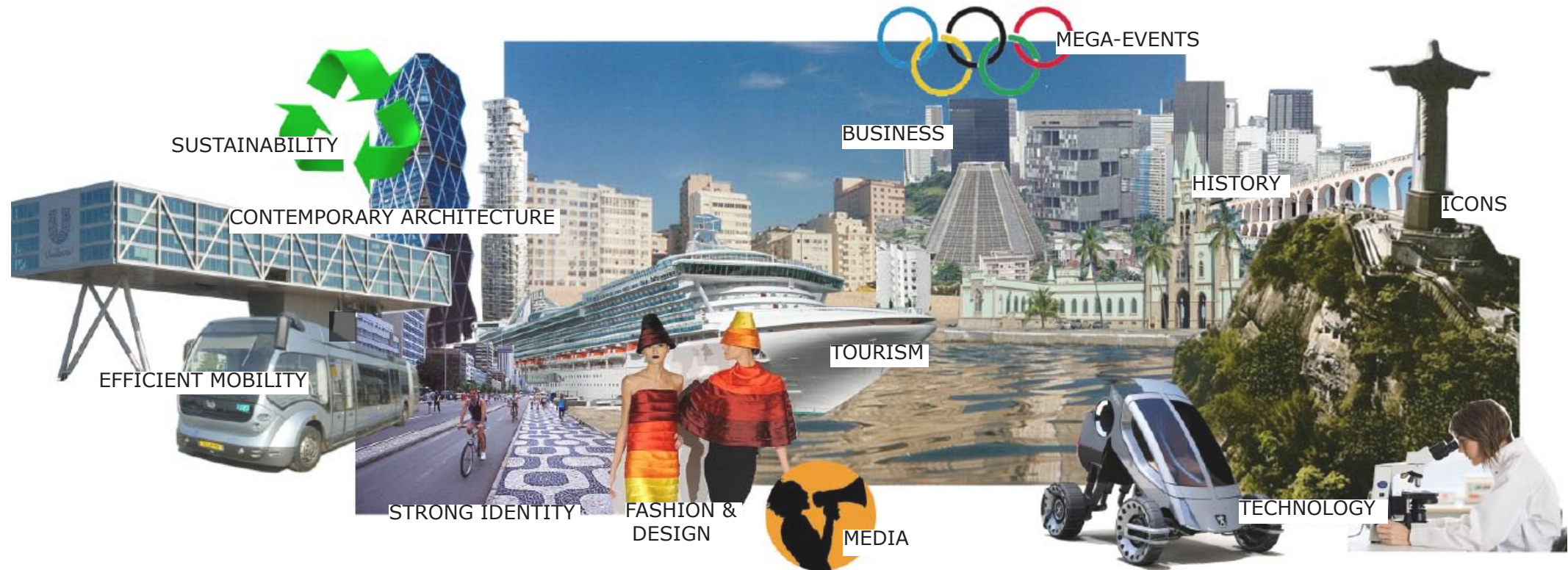
Rio de Janeiro

When presenting the Ongoing Projects in Rio (item 2.6) we spoke about the planned High-speed train connection between Rio and São Paulo. In that moment we discovered that Rio has a disproportioned amount of jobs in the creative sector, almost double as São Paulo.

After that, a research was conducted in the Informational Economy, which resulted in the article "Urban Opportunities in a Global Economy".

From this point we can formulate more clearly what role Rio de Janeiro could actually play in the XXI century: while São Paulo is stronger in the financial sector, Rio is stronger in tourism and the creative sector - even though the financial sector in São Paulo ends up boosting marketing and design services as well. This role should be taken into account when formulating Rio's Strategic Vision.

A top international destination of strong identity that exports its creative products to the world...



TALENT + TOLERANCE + TECHNOLOGY¹

To achieve that, an integral strategy - tackling jobs, housing and mobility - is needed.

jobs strategy

create innovation engines:

- an airport-city
- a technopole
- a creative cluster



mobility strategy

introduce a new mobility axis, connecting Rio's urban voids, the airports, Barra da Tijuca (Olympics). When doing so, multi-modal nodes must be created, fostering the efficiency of the entire system.

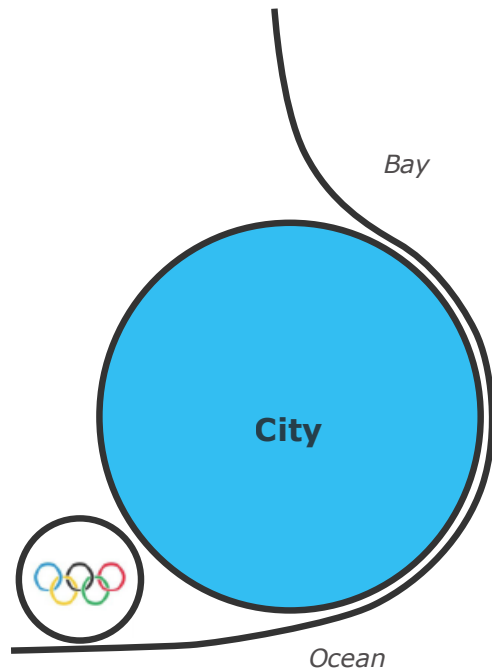
housing strategy

implement an affordable housing policy, allocating new developments in inner city voids, well connected to the transportation system and job opportunities.

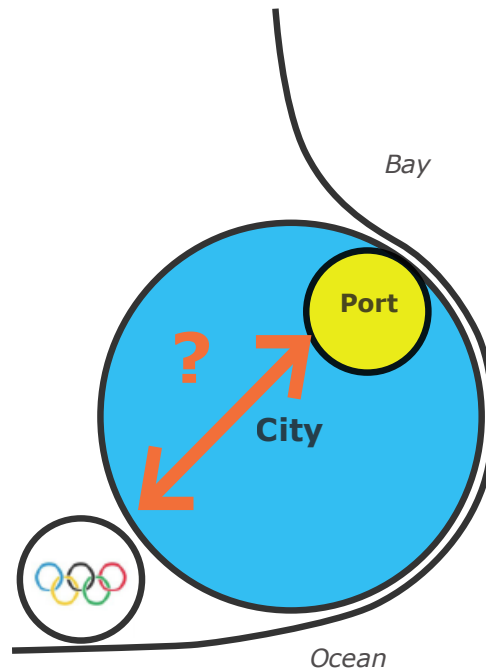
As exposed in this research, Rio's social inequality has engendered high criminality which has obstructed the city's potential as a top international destination for tourism and businesses, therefore losing many jobs that could be gained.

The strategy here is based on the idea of creating many long term jobs by fostering innovative businesses. These new firms could be established in Rio's urban voids, by developing them as opportunity zones. These areas would be well connected to the rest of the city and host affordable housing as well.

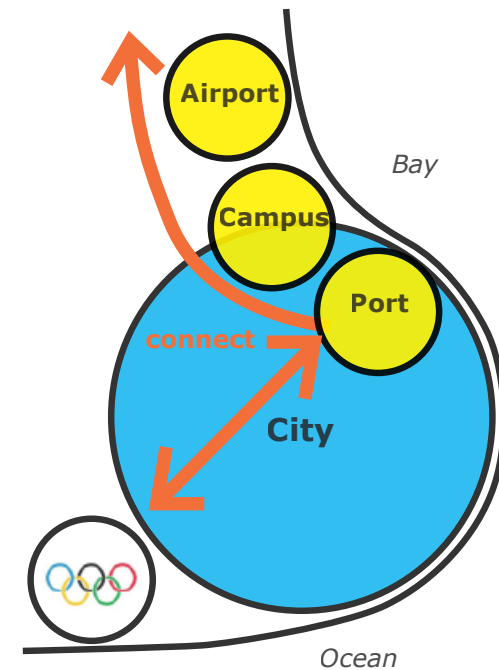
And specific strategic projects should be developed...



Olympic Games will happen in an expansion zone, outside the city's areas that need, and have potential to be, regenerated.



The Port is chosen by the city as a regeneration area. Even though capable of redefining the image of the entire city - something that the Olympic site cannot do - a credible plan is yet to be seen.



The proposal of the design research is to extend this regeneration area into three clusters, taking advantage of Rio's momentum, and build a long lasting legacy.

Rio's voids can host new businesses, forming an economic zone focused on innovation:



● Airport City

Airports nowadays "explore the potential of their situation developing real state in the surroundings of the airport and creating authentic commercial centers inside the terminals... (and) creating mobility networks and interconnections train-airplane."

SORT J. & VERBURG B., in GULLER & GULLER, *Del Aeropuerto a la Ciudad-aeropuerto*, 2002



Schiphol, Amsterdam

● Technopole

"... the biggest locational advantage of the spatial concentration of the companies and the research institutes is that the researchers and engineers meet each other constantly in a restaurant located in the Park... casual gatherings have provided them with opportunities to exchange ideas and information in a rather informal but very effective way."

CASTELLS M. & HALL P. (1994), *Technopoles of the World: the making of 21st century industrial complexes*, p.108



Bilbao's Technopolis



Singapore's Technopolis

● Creative Cluster

"Human creativity is the ultimate economic resource... the wealth generated by the creative sector... accounts for nearly half all wage and salary income in the United States." (p. xiii)

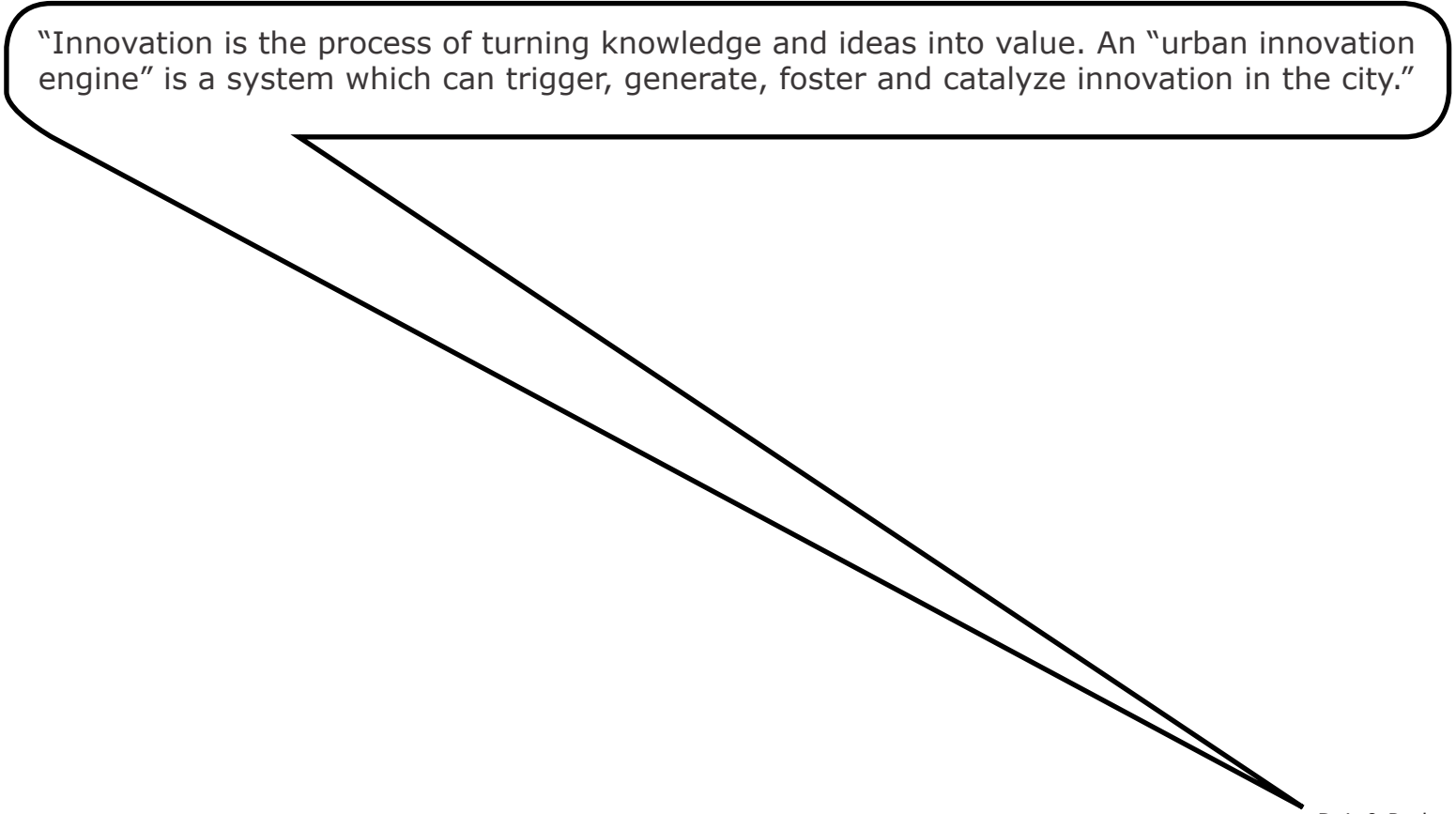
"creativity... is now the decisive resource of competitive advantage" (p.5)

FLORIDA R. (2004), *The Rise of The Creative Class*



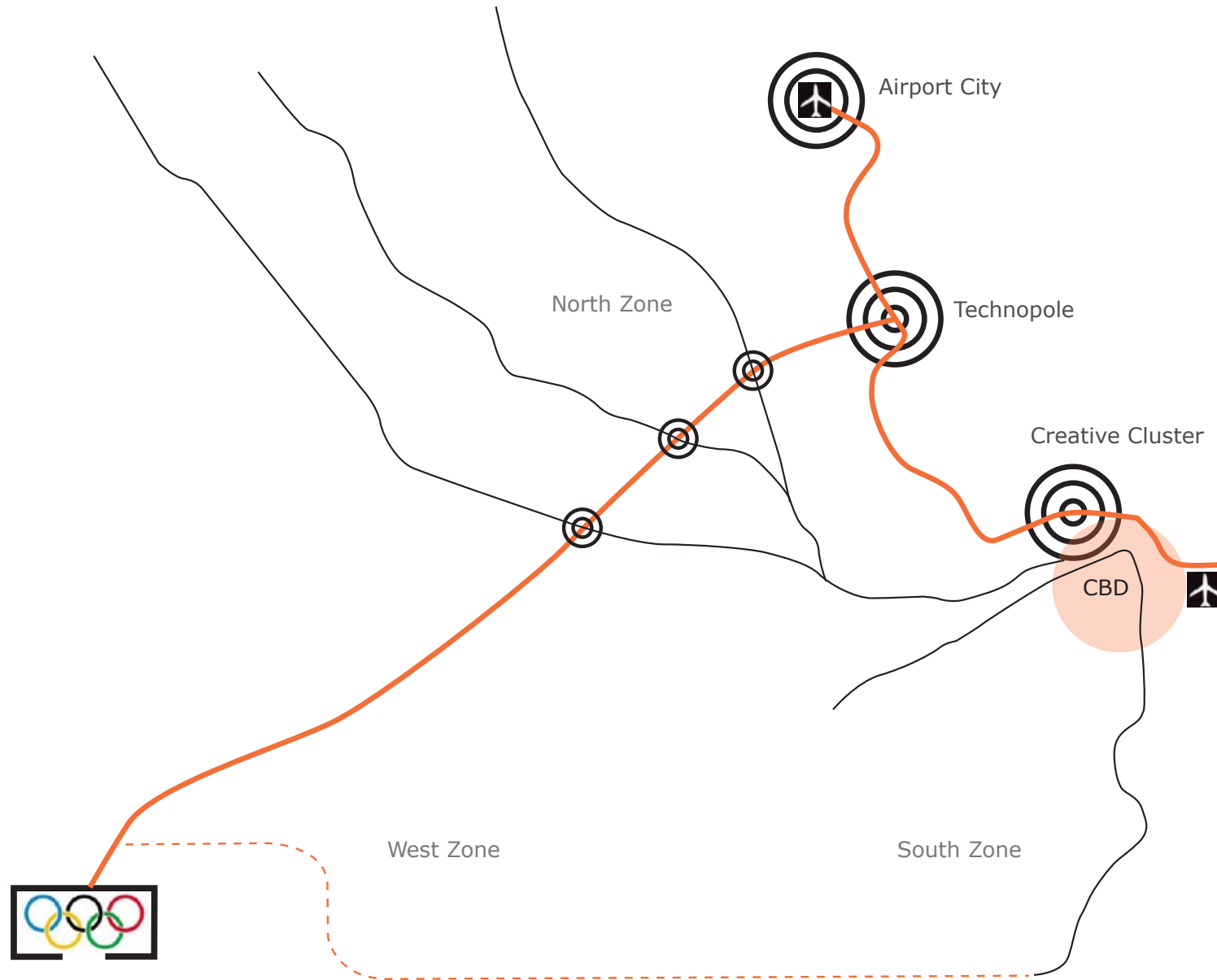
Amsterdam's NDSM creative factory





"Innovation is the process of turning knowledge and ideas into value. An "urban innovation engine" is a system which can trigger, generate, foster and catalyze innovation in the city."

Forming an innovation backbone: a true legacy for Rio de Janeiro!



After presenting the general Strategic Vision for Rio focusing on the innovation economy, we step further to the strategy's three main components: the Mobility Strategy, the Jobs Strategy and the Housing Strategy and speak about the Strategic Projects right after.

5.1. Mobility Strategy

The public transportation system in Rio is inefficient and quite polluting (see item 2.5). This is due to the fact that most part of daily mobility is done by buses, vans and private automobiles (59%) - even though the walkability is quite high (34%).

An strategy that aims to make Rio a more efficient and sustainable city should aim in raising the share of trains and metro (4%) and bikes (3%) in the city.

Thus, increasing the quality of the railway system should be a priority (better and more frequent trains, better stations,etc). A unified ticket, making possible to switch from different modes of transportation is also crucial to stimulate the cleaner modes of mobility. However, expanding the rail lines is a difficult action as it requires a lot of evictions throughout the consolidated urban fabric.

The metro has been expanded throughout the years, however expensive and time consuming. The current net of only 2 lines is over saturated (line 2 needs to be extended untill Carioca station, alleviating the transferring in Estacio station).

Therefore, it seems important that Rio creates a new transportation mode: non-pollutant, but faster and cheaper to implement than the metro and the trains.

Research of transportation modes:

	METRO	SURFACE METRO	TRAIN	RAPID BUS	ELETRIC BUS	TRAM
COST	✗ \$\$\$\$\$	✗ \$\$\$\$	✓ \$\$\$\$	✓ \$	✓ \$\$	✗ \$\$\$
IMPLEMENTATION PROCESS	✗ slow (digging)	✓ OK	✗ slow (landowners)	✓ fastest	✓ fast	✓ fast
MASS TRANSIT?	✓ yes	✓ yes	✓ yes	✓ yes	✗ no	✗ no
URBAN FABRIC IMPACT?	✓ 0	✗ -	✗ ---	✓ 0	✓ 0 (the cables are not nice, battery ones are coming)	✓ 0
FUEL	✓ eletricity	✓ eletricity	✓ eletricity	✗ petroleum	✓ eletricity	✓ eletricity
ADDED VALUE	✓ +	✗ 0 (used to be positive, modern)	✗ --	✗ 0	✗ 0	✓ ++
SCALE LEVEL	high	high	high	meddium	meddium	meddium
CITIES	many	Detroit, Singapore, Berlin	many	Curitiba	Mexico City, São Paulo	many

Conclusion:

Rio needs a new mode of transportation that is fast and cheap to implement, non-pollutant, and well integrated to the city fabric.
By analysing transportation modes in other cities, a table was developed to make explicit each modes advantages and disadvantages.

Instead of waiting for a comprehensive metro system, the best option for Rio would be a mix of Curitiba's rapid bus system with Mexico Cities eletrified buses: an eletrified rapid bus system.



Tram, Rotterdam



Tram line, Rotterdam



Electric bus, Mexico City



Surface metro, Singapore



Surface metro, Detroit



Surface metro, Detroit



Rapid bus, Curitiba

"The transportation of the future is on the surface... The best way is to give the bus the same (or better) performance than the metro, which means, 'metronize the surface'."

Jaime Lerner, urbanist. *Acupuntura Urbana* (2005), p.52

Today's cities are consuming three-quarters of the world's energy and causing at least three-quarters of global pollution... Over the next thirty years, a further 2 billion people are expected to be added to the cities of the developing world." (p.27)

Richard Rogers, architect. *Cities for a Small Planet* (1997), p.27

"The costs of petroleum will rise soon. In 2030, the (barril) might cost 200 dollars. In this level of cost, there is no way to make the world function. It's there the reason why we need new energy sources."

Jeremy Rifkin, economist and energy consultant for diverse governments. VEJA magazine #51, december 2008

Concept of the proposed new transportation mode:



Articulated bus: bigger capacity of passengers, less buses on the street



Eletrified transportation: non-pollutant & renewable



Accessibility & Confort: for disabled and to attract middle class users to the public mobility system.



Contemporary design and confort: attracting middle class users and improving Rio's image.

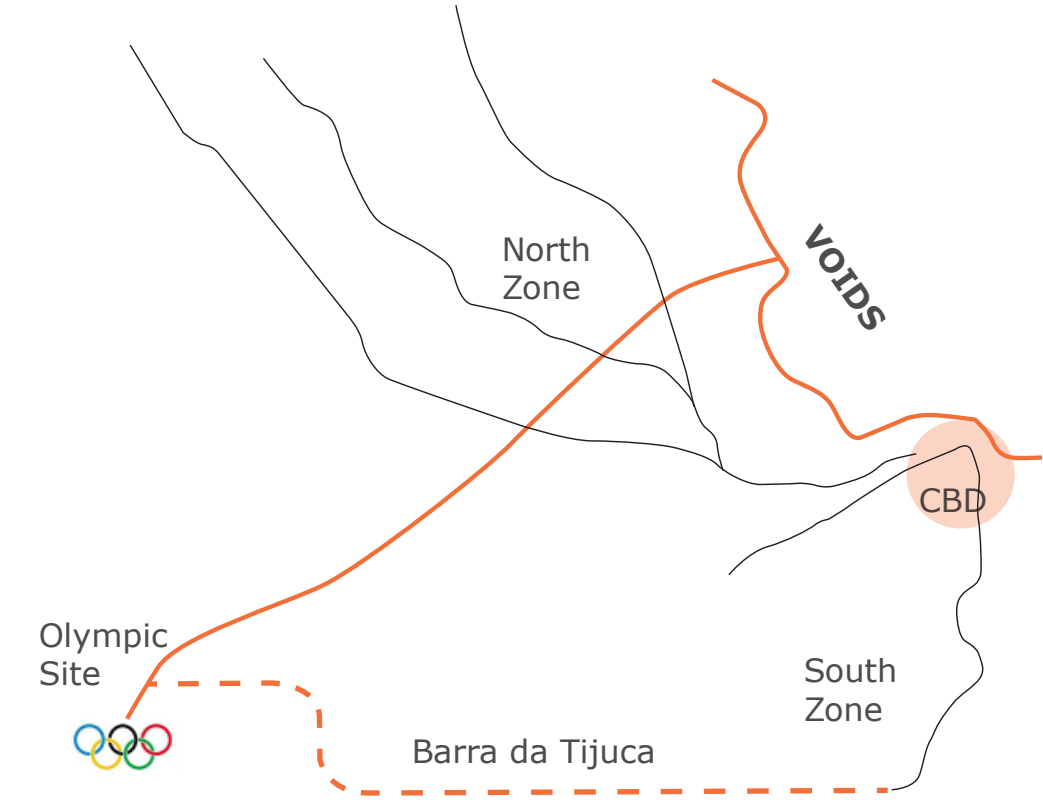


Bring bike in: for an additional cost, bikes can be brought in the bus



Political strategy: instead of announcing on the newspapers that the amount of buses in the city is excessive and should be diminished, the proposal here is to reach an agreement with bus companies (important to say, very powerful in Rio) based on an exchange: while the new eletrified infrastructure could be offered by the city, the bus companies are responsible for the new buses. This will make the implementation process feasible.

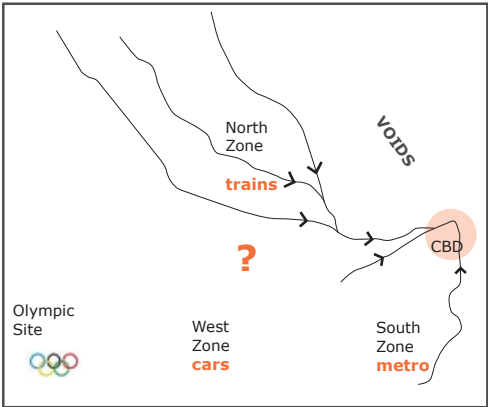
Voids zone, now structured by new transportation mode:



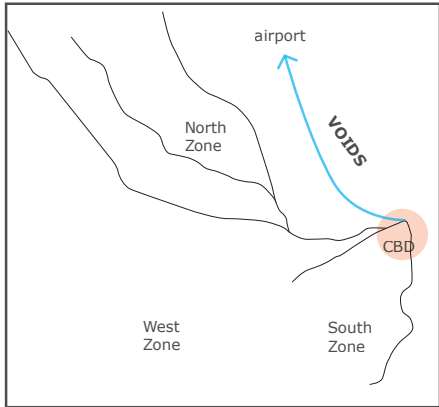
The proposed Rapid Bus, integrating the different zones of Rio, the voids and the Olympic site.



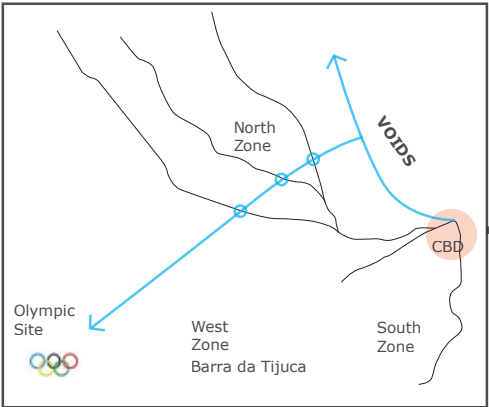
Collage of the proposed new mobility system: an eletrified rapid bus, connecting Rio's CBD to its urban voids (Port, University Campus and Airport) and the Olympic Site.



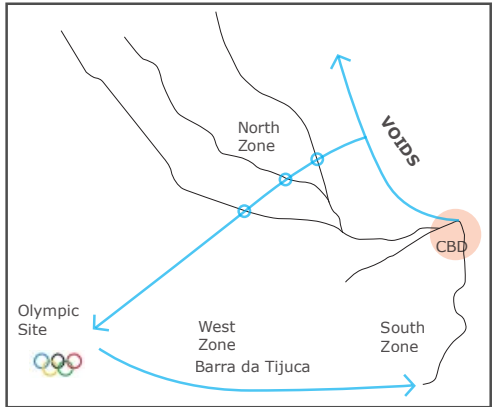
Existing situation: trains and metro do not cover the entire city...



A new Rapid Bus system connects the voids and airport to downtown...

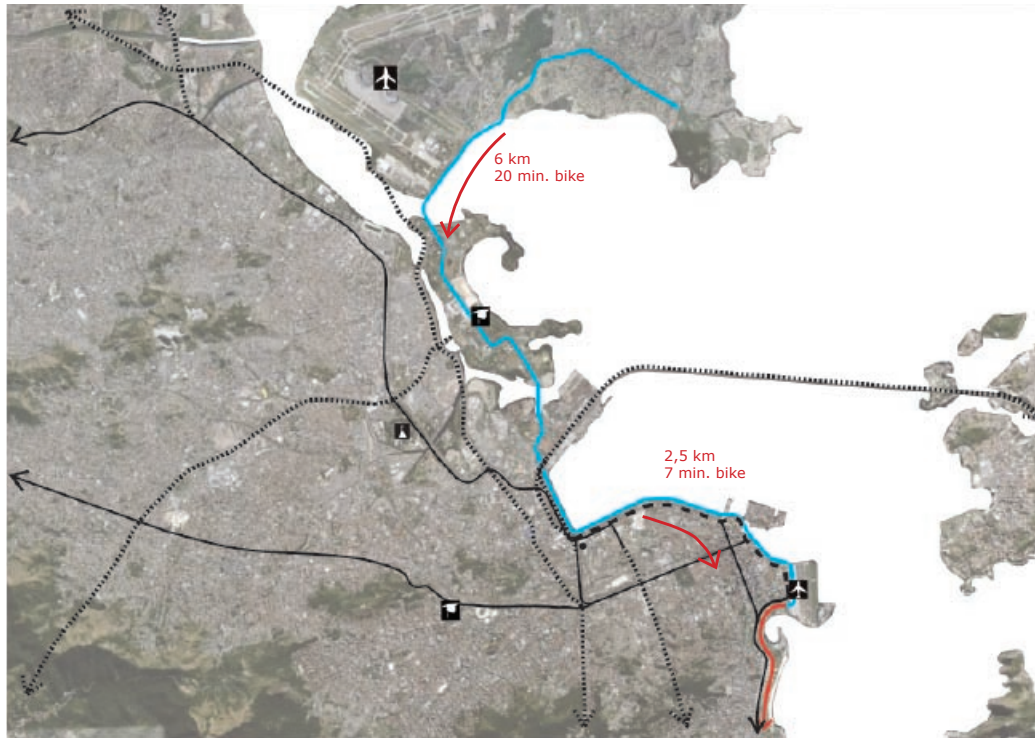


...from there crosses the North zone, reaching West and the Olympic site, connecting the train system...



...from the Olympic site the Rapid Bus crosses Barra and reaches the South Zone.

Stimulating biking in the city:



Source: trafficLinq

A lot has been said in the last years about stimulating biking in Rio, having as example many European cities. Bike is surely very important to reduce energy consumption in the city, alleviate traffic congestion and stimulate healthy ways of living (reducing public health costs). The problem in Rio is that there is no space to implement new bike routes, because the city streets were not planned for such.

Street sharing (1): a possibly working idea would be to implement bike lanes in current car lanes whenever space allows such an action. Smaller streets could have their paving switched to **bike paving (2)**, in such a way that cars go slower and feel like a visitor.



Rio has an extensive bike net along the coast, where it was possible, through landfills, make space for the bike route. Bike paths have recently been tried inside the fabric.

Source: <http://blog.ta.org.br/index.php?s=&paged=16>

Mobility strategy:

- ①- A new transportation mode (rapid bus, eletrified) that connects Rio's urban voids to the city, potentializing them as a new economic zone (TOD¹).
- ②- This transportation axis connects the existing airports and Barra, where the Olympics will take place.
- ③- A new bike route and pedestrian links enhance the connectivity on a local level.

Notes:

1- Transit Oriented Development (TOD):

- organize growth on a regional level to be compact and transit-supportive;
- place commercial, housing, jobs, parks, and civic uses within walking distance of transit stops;
- create pedestrian-friendly street networks which directly connect local destinations;
- provide a mix of housing types, densities, and costs;
- preserve sensitive habitat, riparian zones, and high quality open space;
- make public spaces the focus of building orientation and neighborhood activity; and
- encourage infill and redevelopment along transit corridors within existing neighborhoods

Source: Calthorpe P., The Next American Metropolis. Ecology, Community, and the American Dream, Princeton Architectural Press, New York, 1993.

5.2. Jobs Strategy

Whenever tackling job creation, local politicians end up speaking about income generation for the poor, and the common answer are low-value job programs that aim at creating positions as clothes sewers, garbage collectors, etc. This is usually done within the *Favela-Bairro* (slum upgrading) program.

These types of jobs are too low-valued to really make a difference in diminishing the current enormous income inequality. We propose here to increase the level of ambition and target creating jobs in higher-value sectors, focusing on the innovation economy. This does not mean providing jobs only for those better educated, which would not solve the city's criminality problem. The idea is to invest in training centers and give tax breaks for new innovative businesses. In the short term, older generations could benefit from lower paid jobs, but in the longer term younger generations would be catching up with higher-value ones, just like the Asian Tigers - Singapore, Taiwan, Hong Kong and South Korea - did.

To really solve the criminality in Rio it is certainly needed to have a better trained and paid police too: to reform this institution is a necessity! However, as this is not a spatial issue, we have to concentrate here in the job creation and the offering of affordable houses in safer places (out of the crime culture of the slum) well connected to job providers.

Towards a strong policy of job creation:

Income generation strategies are essential when aiming at providing better living standards for poorer populations. The slum upgrading projects in Rio, which aim at transforming slums into real neighborhoods, has income generation as one of its goals. However, we can now, after 30 years of existence of the program, say that what has been done in this direction has not been enough to really bring slum dwellers into more equal standards of living.

The criticism in relation to income generation is the same as is the case of housing provision: what has been done is the minimum that the government could do in 1980s, a decade marked by a very difficult financial situation in Brazil due to the IMF's Structural Adjustment Program which cut enormous sums of Brazil's social investments. Let's look, for instance, at the case of Fernão Cardim slum in Rio de Janeiro, which went through an upgrading project: "In an agreement between the Municipal Secretary of Labor and UFRJ's (Federal University of Rio de Janeiro) and the Technologic Incubator of Popular Cooperatives, 29 cooperatives were created (sewers, construction, cleaning and other services) gathering workers living in the program's area."¹

Why would such a partnership with a "technologic incubator" create only such undervalued jobs? As it might be the case, because those peoples received very poor education during their lives, and therefore are underskilled. Thus, **good training centers**, capable of preparing the slum dwellers to better job opportunities are essential!

The use of sport-events and iconic architecture as a way of bringing new businesses to the city is seen here as not efficient in creating long term jobs. It seems to be an excuse some city administrations use in order to convince voters about such expenditures, using Barcelona and Bilbao as examples. In reality, as I showed before, these cities have employed **comprehensive strategies** where some architectural projects worked as flagships (Bilbao made not only a spectacular museum, but also a technopark, etc), redefining the city's perception to help bringing investors into an already prepared urban environment. If integral strategies are not implemented the only **jobs created are in the construction**, hospitality and catering sectors, **mostly low paid and temporary**.

Because there is no expressive improvement in the work conditions of the lower income groups, their low wages become an extra difficulty in solving the housing crisis. That's due to the fact that the **financing of social housing** by Caixa Econômica Federal (the Federal Savings Bank) **is only available for those with a formal job and a certain income level**, which means, it does not reach the poorest groups living in slums. These citizens, besides not being able to get loans, end up stigmatized as "slum dwellers" and have even more difficulty in getting work opportunities.

Therefore the necessity to work from both sides: an efficient housing policy needs to make available some loans for the poorest groups, while a sound job creation policy needs to provide good training for them, besides developing specific projects, such as Empowerment Zones² - giving tax cuts or subsidies for new businesses in specific areas of the city.

Singapore, a study case used in this research, is a city which has engaged in a very strong job creation policy. Its successful public housing program was developed, from its beginning, in parallel with the economic one: housing and industry were the focus of Singapore's planning effort³, without forgetting to establish a good transportation system. Families living in slums, raising pigs in the center of the city, were relocated to public housing developments well connected by mass transportation systems. Besides, they received good training to catch up with the jobs in the flourishing technology industry.

In Brazil the lack of good education and training is a problem in providing qualified people for the local businesses. The public investment is 5% of the GDP, which is respectable, but this money is not efficiently applied - Brazilian children are in the bottom of the world rankings, according to OECD. Another issue is the difficulty in establishing a company in Brazil, because of the enormous bureaucracy, extremely high complex taxation.³

Therefore, it seems crucial to create special zones where certain economic activities could flourish due to tax breaks and workforce training. This is what we propose for Rio's urban voids: strategic projects focused on the innovation economy.

Sources:

- 1- Revista Cidades do Brasil. <http://cidadesdobrasil.com.br/cgi-cn/news.cgi?arecod=5&cl=099105100097100101098114&newcod=596>
- 2- See ROBERTS & SYKES (2000) Urban Regeneration: A Handbook. p.261
- 3- See GAMER R., The Politics of Urban Development in Singapore, Cornell University Press, Ithaca and London, 1972
- 3- The Economist magazine, November 2009

"The technological basis of countries and regions becomes critical for growth because, ultimately, the deficit in the balance of trade between high-value, high-technology producers, and low-value, low-technology producers creates an untenable disequilibrium."

Job creation strategy:

- ① A new transportation axis connects the voids to downtown, the airports and the olympic site, potentializing a new economic area.
- ② Tax breaks during 5 years for specific businesses in these voids: creative activities (design, art, architecture and media) in the Port, technology firms in the Campus and a mix of office park, hospitality and mall in the airport.
- ③ While in the Port the existing industrial sheds should be used for the new businesses, in the Campus new typologies must be developed: small garage spaces integrated to the living units and bigger sheds for larger companies - cheap space is crucial for new businesses.



The NDSM is a post-industrial area in Amsterdam where sheds are reused for creative firms.



References:



The Zamudio Technopark nearby Bilbao is a cluster of high-tech industries that generate jobs for the region.



Jalisco is home to more than 150 software companies and boasts two software parks, two high-tech incubators, and more than 380 specialized suppliers. Fueled by the collective power of more than 600 innovative companies, which together employ 78.00 professionals and combine nearly 40 areas of expertise. "The strong transportation links have also helped Jalisco become a major player in many sectors, with the state's fast-moving high-tech sector every bit as important as it's solid tourism industry which is built on hundreds of years of history." The state is "investing substantial sums in its universities and R&D centers to guarantee the availability of human resources of the highest caliber." Committed to sustainable development, federal funds have enable Jalisco to become the largest ethanol producer for Petroleos Mexicanos.

Source: Fortune magazine, January 2010.

5.3. Housing Strategy

It's true that housing is not only a problem to be solved by the city alone, but one that deals with federal institutions as well. Rio has adopted a policy of slum upgrading since the 80s, but it seems to be the time to make more ambitious demands, as the economic situation in Brasil has progresses since then.

In this section I will discuss the housing problem and point out to an overall strategy for it. Specific housing developments will be seen in the Strategic Project for the University Campus.

A morphological study was carried on in order to guide future housing developments.

Problem Statement:

As shown in the history section, Rio was developed under a process of socio-spatial segregation which engendered inequality and criminality. This process begun with the "war against tenements" in the end of the 19th century: a segregation process which aimed at excluding poor inhabitants from the city center, without giving any other provisions.

The contradiction that followed is that exactly because no affordable housing or cheap transportation was offered many poor people came to settle in the hills and swamps of Rio, forming what we now call 'favelas', again in close proximity to the rich classes. As noted Alfred Agache in his plan for Rio de Janeiro in the 1930s:

"The workers of modest condition that inhabit those (favela) find there, in the lack of salubrity and confort, the advantage of having a house close to work, convenience very appreciated due to the large extension of the city."¹.

and then concluded:

"It's inutil to supress (the slum) before having built adequated housing to host the unlucky that inhabit those and that, if merely evicted would establish themselves in another place under the same conditions."²

Because the upper classes need the worker's labor anyway, the slum was tolerated in its beginning. However, in the post-war, many slums, already quite big, began to be removed and its people relocated to distant peripheries. With the Third World debt crisis in the end of the 70s, due to the shrinkage of funds, slums began to be renovated instead of removed. As noted Mike Davis in *Planet of Slums*:

"The minimalist role of national governments in housing supply has been reinforced by current neo-liberal economic orthodoxy as defined by the IMF and the World Bank. The Structural Adjustment Programs imposed upon debtor nations in the late 1970s and 1980s required shrinkage of government programs..." (DAVIS, p.62), therefore "improving rather than replacing became the less ambitious goal of public and private intervention."³

Hence, Rio has, from the 80s onwards, tackled its housing shortage for the lower classes mainly through investing in a slum upgrading program called *Favela-Bairro* (now *Morar Carioca*) whose mission is "to integrate them to the formal city. In order to do so, complement or build the main urban structure - sewerage and access democratization; create environmental conditions that bring the reading of the slum as city."⁴

There is a polemic around the program, with some people for it (usually from the local academy) and a lot of people against it. A recent pool by OGLOBO newspaper exposed the fact that most of Rio's population favor de slums removal.⁵ - why would that be?

The slums got so big that environmental, transportation, employability, education and safety problems have grown exponentially, collapsing over each other in a snow ball effect. Local urbanists, such as Jorge Mario Jauregui, have largely denied the relationship between slum environments and violence, arguing that not more than 10% of their people actually get involved in criminal activities.⁶ We have agree that most of slum dwellers are not criminals, but it's clear that there is a concentration of drug and guns traffic in the slums, because of those people's lack of economic and social opportunities, which engenders a culture of poverty and crime. As says Roberts and Sykes: "Housing standards have demonstrable implications for health standards, levels of criminal activity and degrees of educational attainment."⁷

The defenders of the slum as a viable affordable housing option usually say that the slum brought a **democratization of Rio's urban space**, because many of them are located in the most expensive areas, facing the sea water in the same way high income developments do. However this may be true, this democratization of Rio's best areas is not a measurement for social integration: the informal city and its formal counterpart are **still very segregated environments**.

Besides, the slum as an option for affordable housing is a myth, as Edésio Fernandes - a specialist in Urban Rights and teacher at London and Cambridge Universities - noted: "this sole option is not good for the people neither for the city as a whole - besides not being affordable. Prices are absurd there."⁸

And how are the prospects for the slums now? "Brazil's slum population will grow to 55 million in 2020, reaching 25% of the population" says a United Nations report. This represents a growth of merely 0.34% per year, meaning that it's almost stabilized. The United Nations study, which classified each country in "the right direction, stable or wrong direction" says that Brazil is **stable** but that the country's effort hasn't been able to solve chronic poverty yet⁹. Hence, proving wrong the common saying that Brazil's upgrading program is a model to the world.

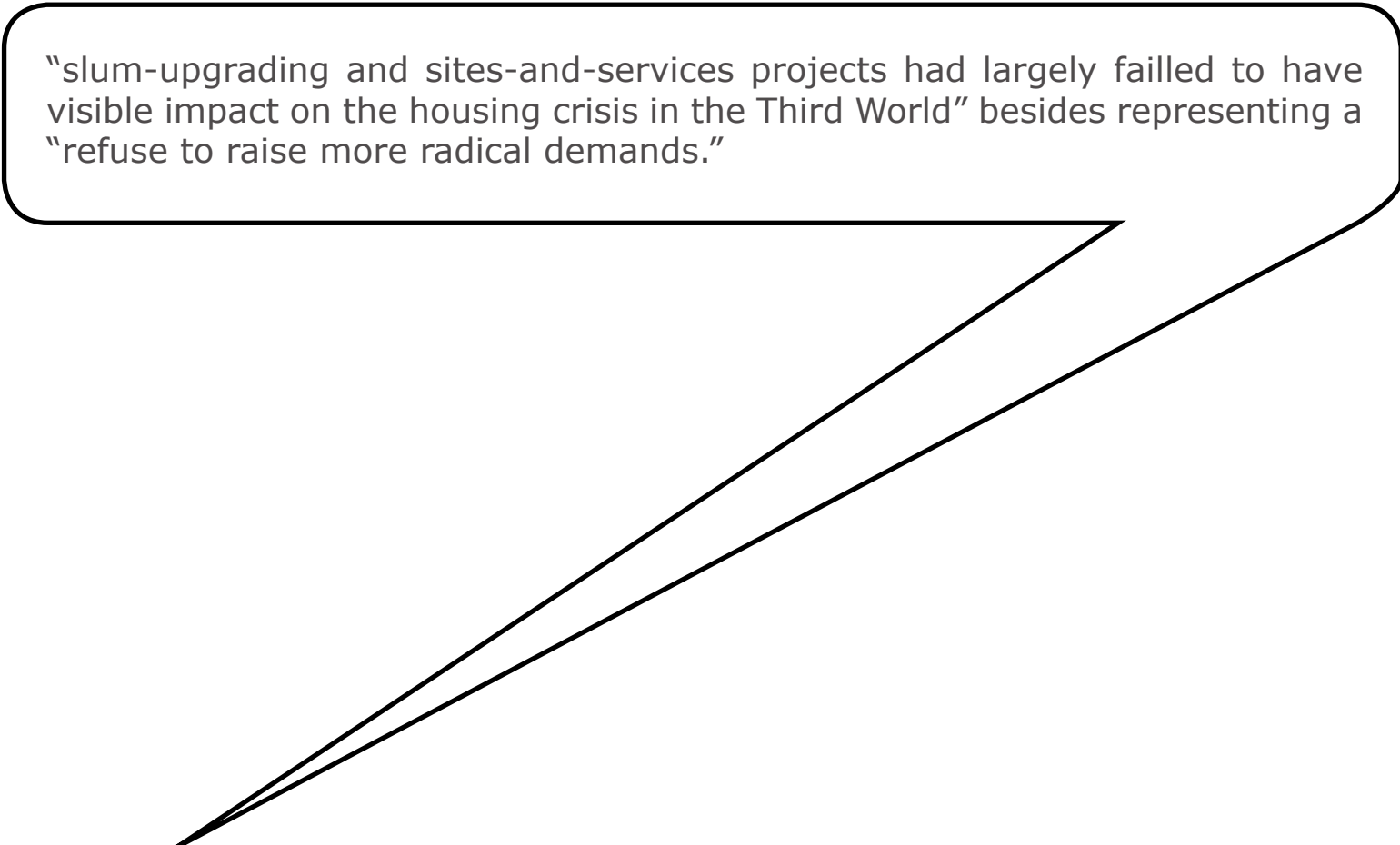
The truth is that **the slum upgrading failed in its core mission of integrating the slum to the city**. No matter how well infrastructured they are, the slums are still **seen** by everyone (even slum dwellers themselves) **as different** from the rest of the city, being identified as 'the place of the poor' due to their peculiar urban form. That's why they are still stigmatized, preventing social integration (formal city dwellers hardly ever socialize with slum ones, slum people have more difficulty in getting jobs, etc).

Because the economic situation has changed favorably in Brazil since the mid-2000s (due to the stabilization of the economy and the new petroleum resources found), **it seems to be the right time to rethink the current 'minimalist' housing policy based on slum upgrading**. It seems to be the time to **invest** in many well integrated **public housing developments** in Brazil as possible.

Sources:

- 1- Abreu M. *Evolução Urbana do Rio de Janeiro*, p.88
- 2- Idem, p.90
- 3- Davis M., *Planet of Slums*, p.71
- 4- O Rio de Janeiro e o Favela-Bairro. The Municipal Secretary of Urbanism / Instituto Pereira Passos (IPP) in Rio Estudos nº 120, september 2003. Taken from http://www.armazemdedados.rio.rj.gov.br/arquivos/64_o%20rio%20de%20janeiro%20e%20o%20favela-bairro.PDF in 2009. p.8
- 5- <http://oglobo.globo.com/rio/mat/2009/04/12/remocao-de-favelas-tem-apoio-dos-leitores-do-globo-na-internet-755243167.asp>
- 6- <http://www.vitruvius.com.br/revistas/read/minhacidade/06.063/1964>
- 7- Roberts & Sykes, *Urban Regeneration: A Handbook*, p.173
- 8- <http://www.estadao.com.br/noticias/suplementos,bolsoes-de-sonhos-perdidos,353554,0.htm>
- 9- UN-HABITAT 2006/7 http://www.bbc.co.uk/portuguese/reporterbbc/story/2006/06/060616_onu_habitat_novo_is.shtml

In an international housing conference a Singapore delegate, after hearing from a delegate from another country (poor and fast urbanizing) that his country had no housing problem, asks for clarification. The reply: "we have plenty of tents and hunts for everyone."



"slum-upgrading and sites-and-services projects had largely failed to have visible impact on the housing crisis in the Third World" besides representing a "refuse to raise more radical demands."

Towards an effective affordable housing policy:

After re-problematizing the housing crisis of Rio (demonstrating that the slum is still a problem and not the solution for housing the poor) we proceed here developing some general guidelines for a real affordable housing policy.

Housing Associations:

In every country where housing the poor is a solved problem - such as the Netherlands, New Zealand or Singapore - Housing Associations were set in order to deliver large amounts of housing units at reasonable costs. In Brazil these associations must be set too. How would it function?

Nowadays, in Rio, the profit from real state investment is around 20%¹. Whenever Housing Associations begin acting as developers, residential units will become available for at least 80% of current prices. If we consider making lower-rises without elevators (maximum 5 floors, as done in most of The Netherlands) or extra services that real state firms embed in current developments (such as swimming-pools, saunas, etc. in order to add-value to them), the final prices could fall to around 60% of what is now offered. This new affordable housing stock (social housing) should only be primarily available for citizens under a certain income, but maybe could include students and elderly people as well, resulting in interesting socio-cultural mosaics.

Urban Voids:

To make affordable housing developments available in Rio's central area, its best infrastructured zone, is very important to help de-segregating the city. As said above, Rio has an enormous amount of urban voids there and most of them are governmentally owned. The regeneration of the Port of Rio, for example, instead of selling all land to real state investors, could designate around 30% of it to affordable housing developments (such as done in The Netherlands). Rio's Director Plan actually says that the property has to serve a social function, but this is still not the case in practice.

By inserting poor people in places where they are not stigmatized as "favelados", the urban voids could be instrumental in fostering social integration and making

easier for the poor to get better job opportunities, therefore helping to diminish the crime in Rio.

Social Pixelation:

It's important that middle income groups are also living in these same areas, in order to prevent them from becoming ghettos of the poor. As said Roberts and Sykes: "The introduction of middle- and upper- income housing in such areas (poor) could bring benefits that reinforce the momentum of regeneration. Apart from the economic impact, these new residents will have greater political awareness and good networks that connect them to those influencing local policies."²

The architect Oscar Newman, in his projects for public housing in America, seems to have achieved good results that could be learned in Brazil. He has tackled stigmatization, a common problem in both modernist public housing and slums alike, in an interesting way. He realized that "the larger the concentration (of low-income families), the more residents felt isolated from the rest of society and felt their perceived differences to be greater. Project size affects stigmatization."³ Therefore, public housing developments should not be too dense or too extensive. This guideline also has implications to the functioning of collective spaces: "a large project provides a continuous area in which gangs can operate."³

Isn't the slum a kind of 'too big project', difficult to control, as well? It seems so. The slum has an extensive street network, separated from the rest of the city. A space where the residents of the formal city will never use, no matter how 'upgraded' they are. That's why we insist here that the slum is still a problem to be solved.









Thus, learning from Newman, in order to really integrate a lower income group to the rest of a city it's better to work with many smaller, scattered projects, instead of concentrating these populations in slums or large modernist developments. This strategy makes possible that different cultural and income groups use the same public spaces, schools, hospitals, etc., an important goal that was noted by sociologist Ruben Kaztman: "a poor child in a not poor neighborhood has a better living than a poor child in a completely poor neighborhood."⁴

Sources:

- 1- <http://eduardoquiza.files.wordpress.com/2008/03/mercado-imobiliario-no-brasil.pdf>
- 2- ROBERTS & SYKES, p.162
- 3- Newman O., *Creating Defensible Spaces*. p.28
- 4- http://web.observatoriodasmetropoles.net/index.php?option=com_content&view=article&id=220:desigualdade-segregacao-e-pobreza&catid=45:materias&Itemid=88&lang=pt

Because housing composes the most built mass volume of any city, we step further in analysing different morphologies in order to guide future developments in Rio.

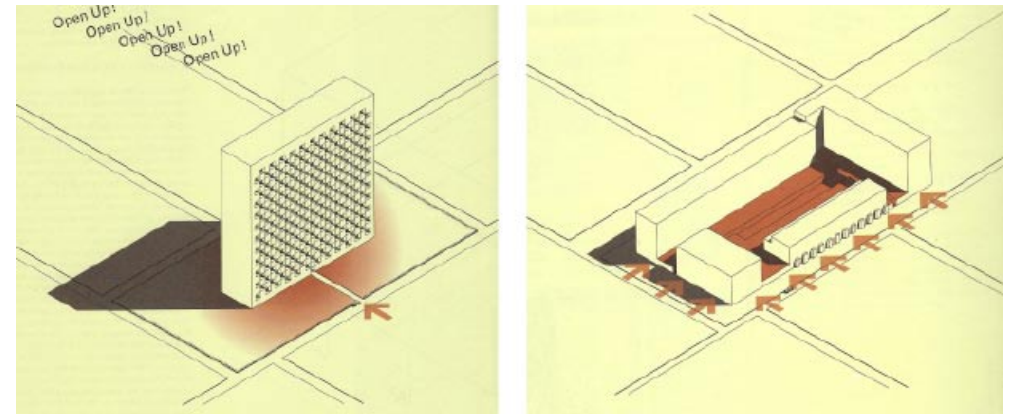
Morphology study: guiding new housing developments

COPACABANA		BARRA DA TIJUCA	
MORPHOLOGY	STREET TYPOLOGY	MORPHOLOGY	STREET TYPOLOGY
<div></div> <p>The morphology of Copacabana is characterized by compact blocks composed of buildings of around 12 floors, which are directly accessed through a dense street net.</p>	<div></div> <p>In the main avenues these buildings host commercial uses in their lower floors, keeping the streets lively and safe.</p>	<div></div> <p>The morphology of Barra da Tijuca is characterized by free-standing towers of around 15 to 20 floors, which are accessed through a highway network.</p>	<div></div> <p>Besides the towers, many commerce and services are established in low-rise typologies surrounded by parking lots, creating a not so pedestrian friendly environment.</p>
SOIL PERMEABILITY	STREET NET	SOIL PERMEABILITY	STREET NET
<div></div> <p>The built mass of Copacabana occupies a high percentage of the plots' ground floor, thus water permeability is quite low, except in mountains.</p>	<div></div> <p>The morphology of Copacabana is composed by a dense street net, which provides many corners and encounters - a true open city.</p>	<div></div> <p>The built mass of Barra da Tijuca has on its advantage the fact of having quite a lot of water permeable spaces, but usually inside gates.</p>	<div></div> <p>The morphology of Barra da Tijuca is composed of a weak street net, bordering gated communities, therefore not being good for walking.</p>

CONCLUSION: Copacabana, with its compact morphology and a dense street net generates a good environment for walking and using local commerce and services but its soil is not sufficiently permeable (its courtyards aren't green). In future projects we could better adopt Copacabana's morphology but enhance the water and wind permeability. The overall density is also something to be further studied.

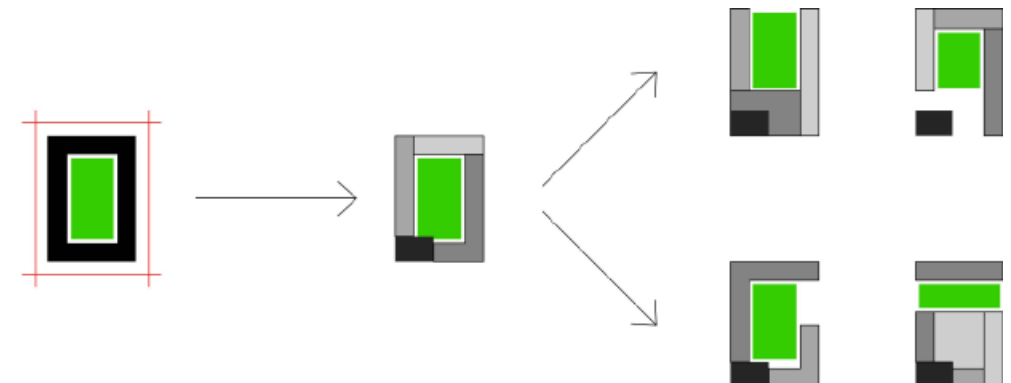
Concept of the housing strategy:

- ① Housing Associations, composed of public and private capital, must be created. These associations must be responsible for producing new housing units, instead of leaving this activity to informal/illegal groups or individuals, that always try to profit the most over them. The National Housing Bank, which was closed in the 70s, should be reopened to finance future developments. Besides, a meta for a certain amount of housing units to be built per year should be targeted.
- ② Housing should be planned per blocks (urban approach) and not as isolated typologies (architecture approach). These blocks must, whenever possible, be developed within the existing urban area (urban voids). They should keep green courtyards for soil permeability (flood is an endemic problem in Rio) and as safe space for children to play, enhancing social cohesion between the neighbors. However, these blocks should not be too big or too dense, but try to integrate well in the local street net and its morphology. The best is that they mimic with the surroundings, not being seen as public housing.
- ③ Mass construction. Bottom-up approaches have the disadvantage of wasting the economies of scale which are possible under a more centralized system. However, mass housing has the disadvantage of creating monotonous environments which become as stigmatized as the slum developments we want to avoid. Therefore, the creation of a catalog of varied typologies and materials should be developed. In some cases inhabitants could build the interior of their homes inside larger structures built from the government - allowing customization and benefiting from mass production at the same time.

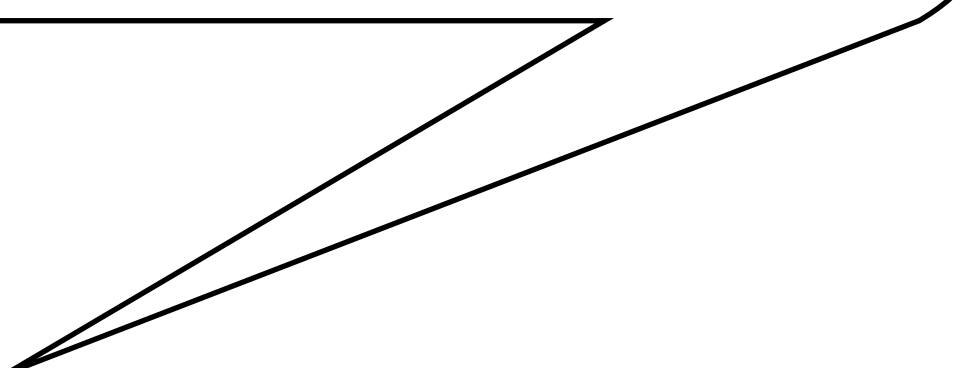


The tower in middle of the block, as developed in many places in Rio (specially in Barra) has the disadvantage of having a parking lot around and being fenced. Perimeter blocks create a more urban friendly environment which fosters walkability in the city.

Source: RIENIETS T., SIGLER J., CHRISTIAANSE K. (2009). Rotterdam: NAI Publishers

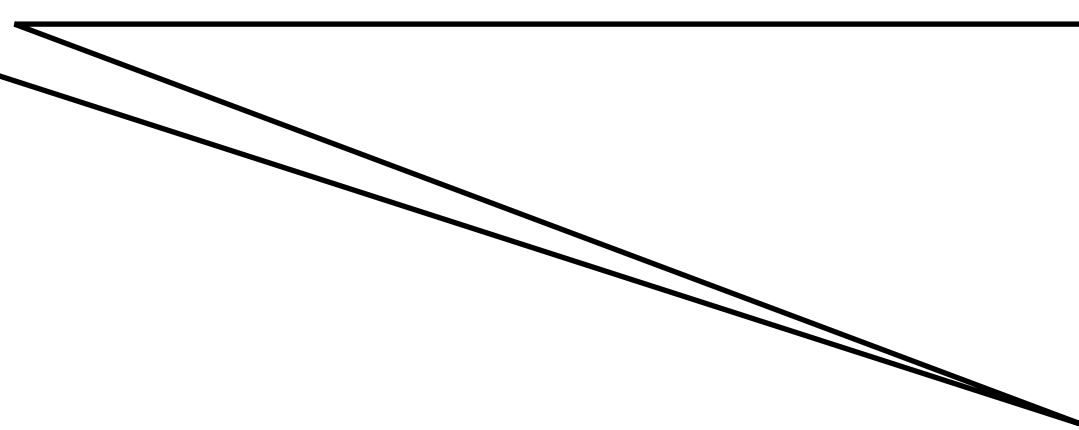


The courtyard perimeter block can be developed in a varied of ways, creating many different combinations.



Slums are the product of a society that paid insufficient attention to the living conditions of the majority of urban residents.

Peter Hall, in ROBERTS P., SYKES H., Urban Regeneration: A Handbook, p.11



"In some countries in Europe, and in New Zealand, housing is a social meta defined by the government.... it was a mistake to have closed this bank (Banco da Habitação, 80s), indispensable toll to the solution of the most serious and difficult to solve problem in Brasil: housing."

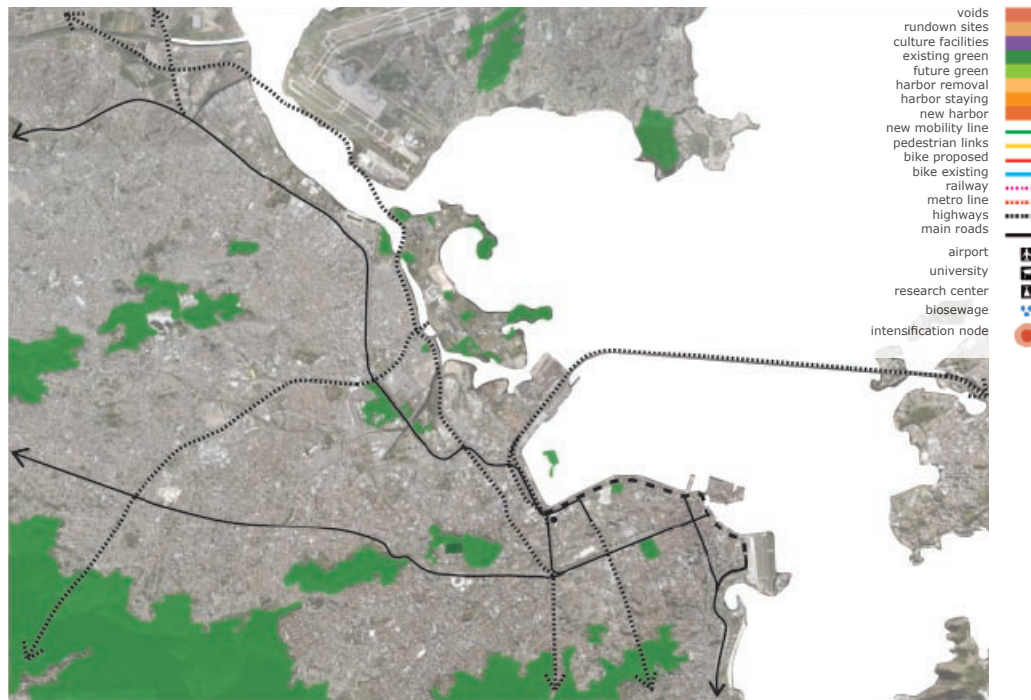
FURTADO C. EM Busca de Um Novo Modelo, p.18

6. Site Analysis & Strategy

Existing urban voids:



Existing green mass and water pollution sources:

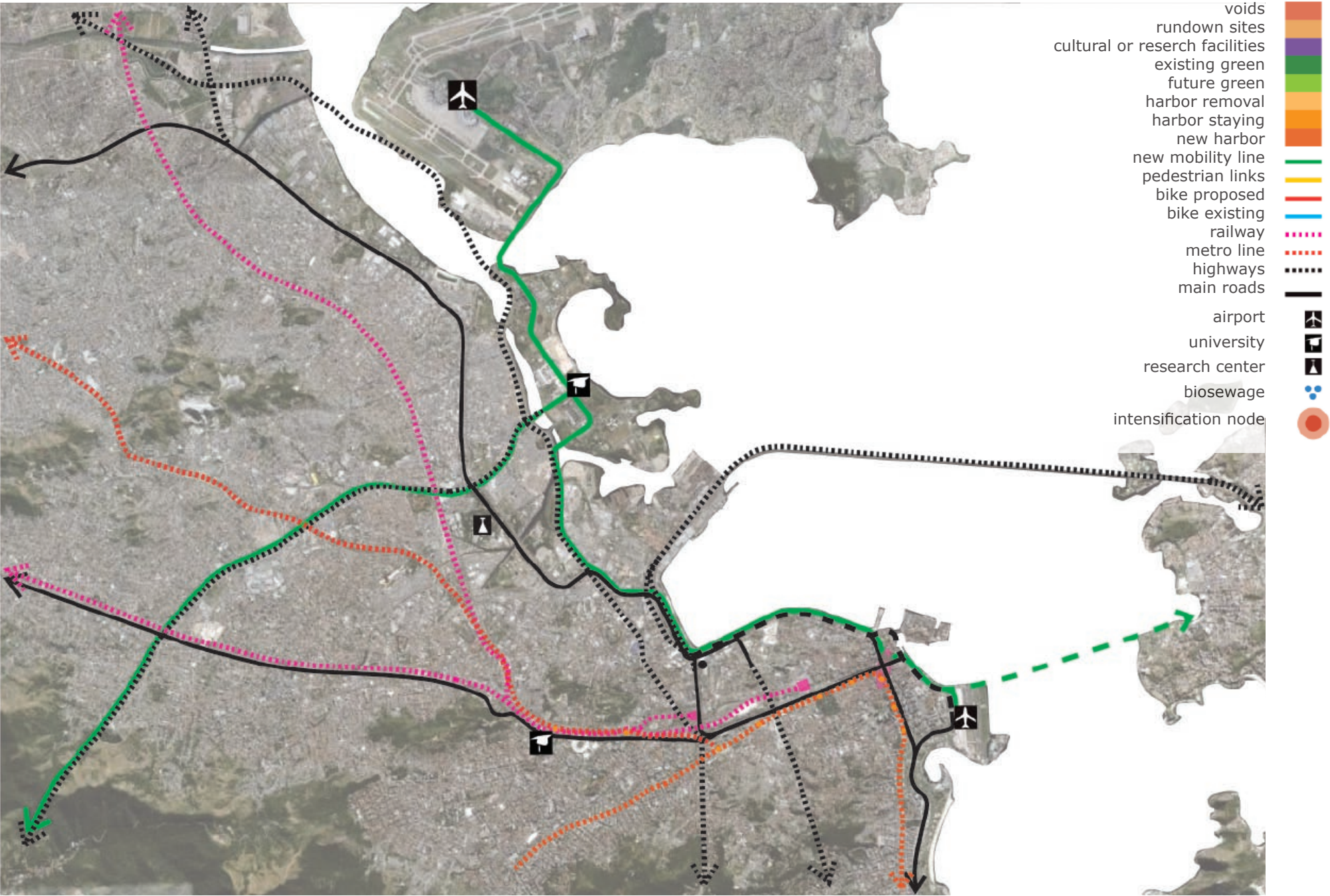


There are many green masses nearby the study area. However, many are endangered due to "favelization". Other some are not well accessible or visible. More parks could be created in those, in order to preserve them and offer more leisure space for the inhabitants.

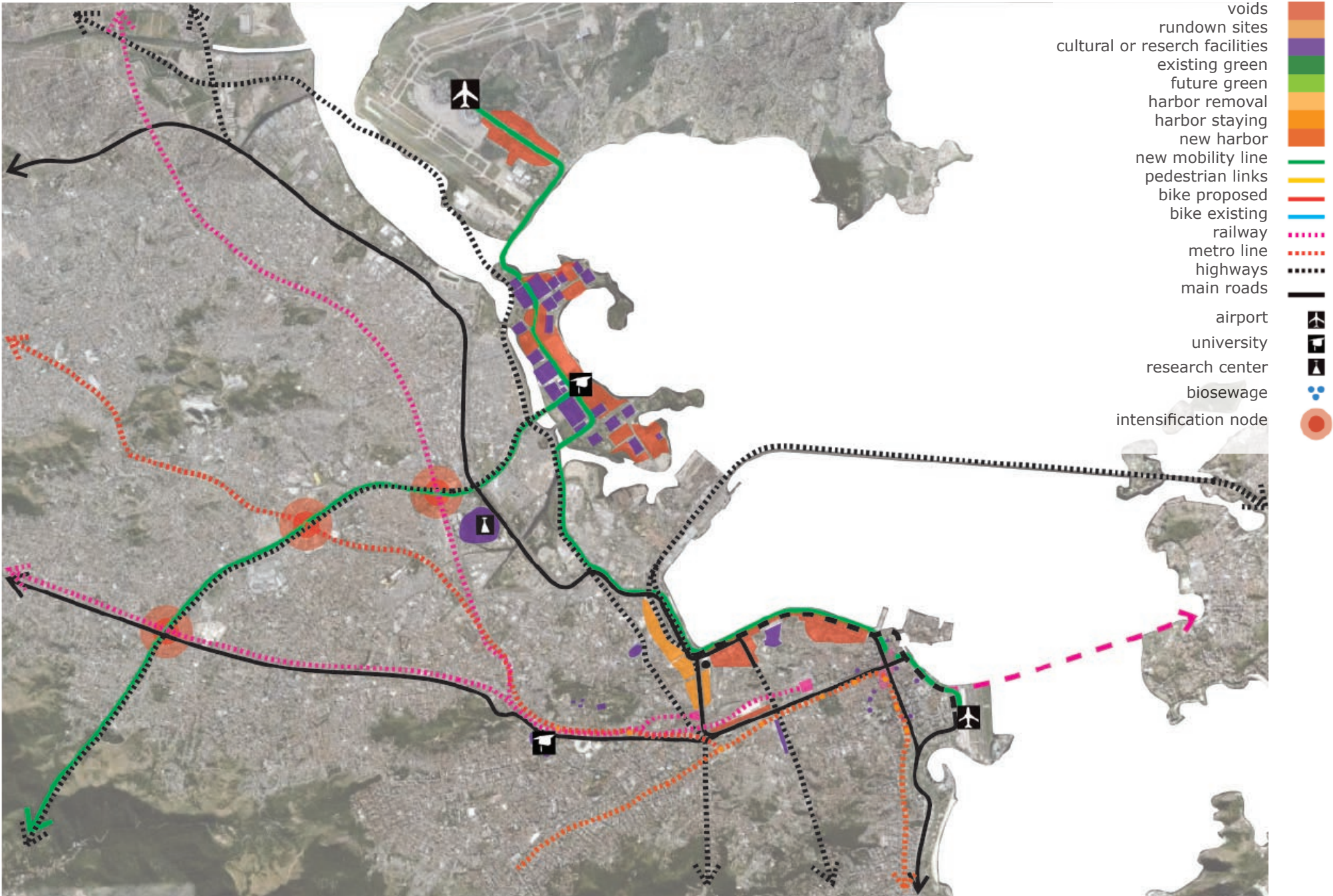


Guanabara Bay is, unfortunately very much polluted because many communities and industries throw dirty water there, without any treatment. In Rio de Janeiro State only 60% of the sewage is collected and merely 15% is treated!¹

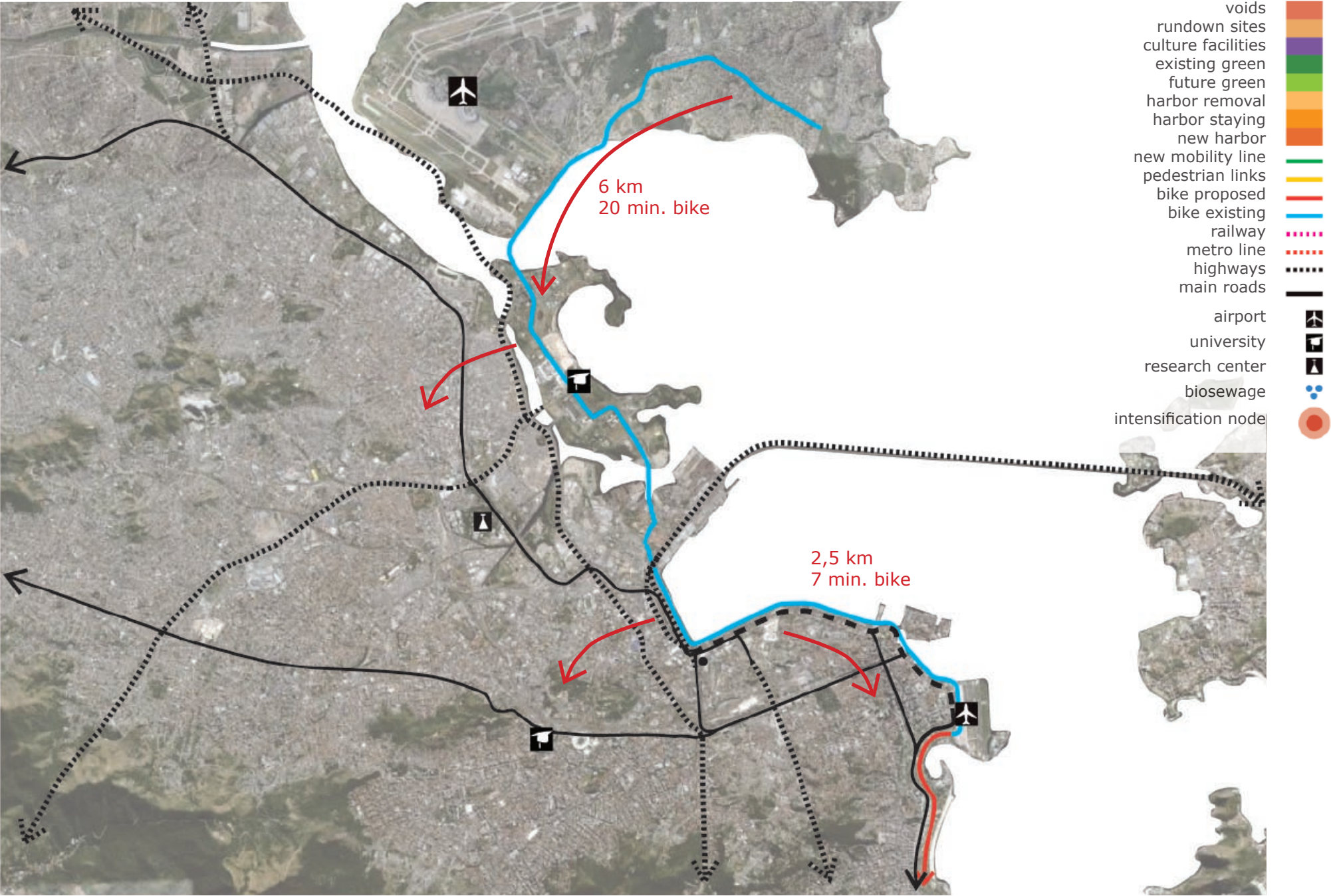
Proposed electric rapid bus line (green):



Cultural /research facilities and future nodes for intensification:



Proposed bike route:



Proposed transferring of port activities and opening of the waterfront:



The elevated highway is an important issue these days in Rio because the city wants to regenerate the Port of Rio (this issue will be discussed in the Port chapter). However, before doing that action, it's very important that the city is able to transfer the remaining Port activities from the old Port to more distant places like Caju and Fundão (the Campus).



In order to become attractive for a mix of new developments, the removal of the elevated highway (Av. Perimetral) could follow the removal of the port activities, reconnecting the Port area to the water. But this issue will be discussed more in depth in the Port chapter, as there are other alternatives to consider.

7. Strategic Projects

- Airport-City
- Creative Cluster
- Technopole

In this section I will present the strategic projects that compose the Strategic Vision. The projects are understood as the physical engines which make the vision work.

While in the vision we gave directions for what we considered to be the three most crucial planning issues that needed to be tackled in a metropolitan scale - mobility, housing and jobs - here we discuss three specific projects for the city: the Airport-City in the Governor's island, the Creative Cluster in the Port, and the Technopole in the Federal University Campus (UFRJ Fundão).

All these three projects deal with the before mentioned planning issues, with the exception that housing was not allocated in the airport due to noise restrictions (even though there are some housing developments closeby the airport we found not really suitable to add more residents there).

Untill now Rio has an absense of these kinds of ambitious and comprehensive urban projects. The Port, for instance, already went through many trials, always failing. As it seems, this is due to a lack of **planning capabilities**¹ and if we want to make something real, we have to begin paying attention to the following steps:

- 1- landownership purchase right at the start is crucial
- 2- planners with proven expertise must be involved
- 3- political capability is essential (not depending on support of specific groups)
- 4- stakeholder management
- 6- sufficient financing
- 7- media publishing only in the end

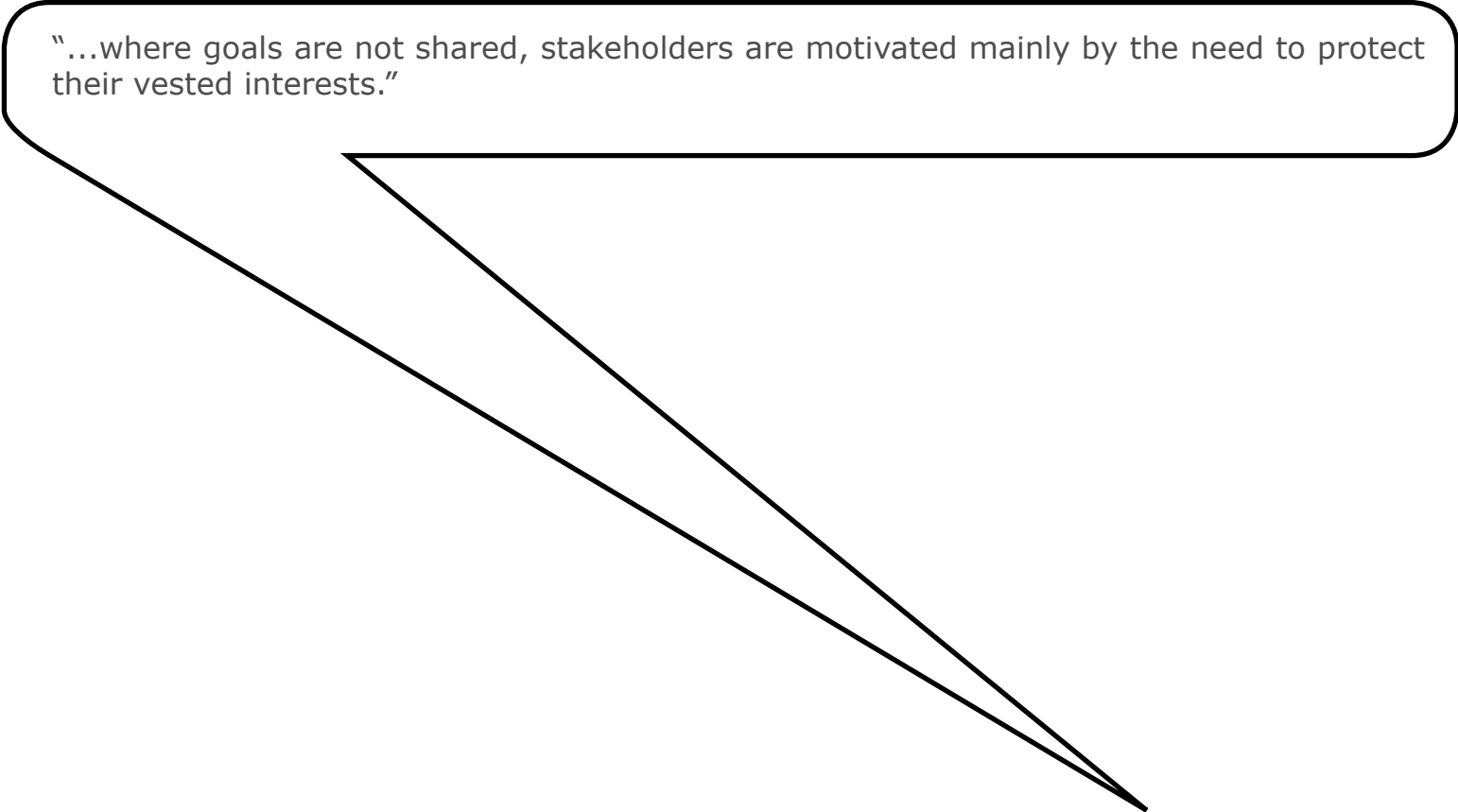
Besides that it seems essential that an Strategic Vision is developed for each urban project as a tool to achieve consensus between stakeholders. So far, much State-owned land has been kept vacant due to a lack of strong visions that could articulate those involved.

Source:

1- Gamer R., *The Politics of Urban Development in Singapore*, p. xix-xx

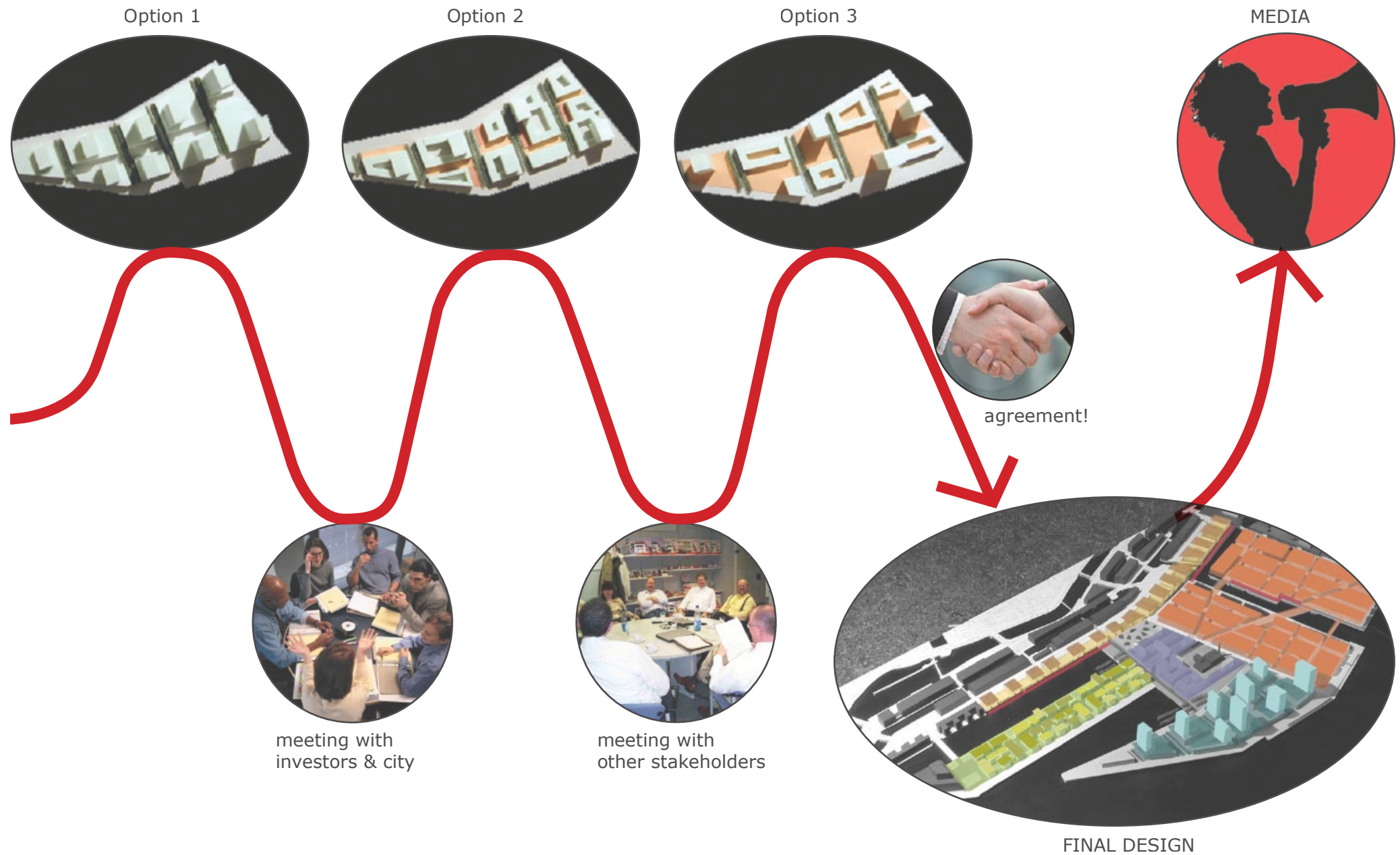
Common goals need to be shared by stakeholders:



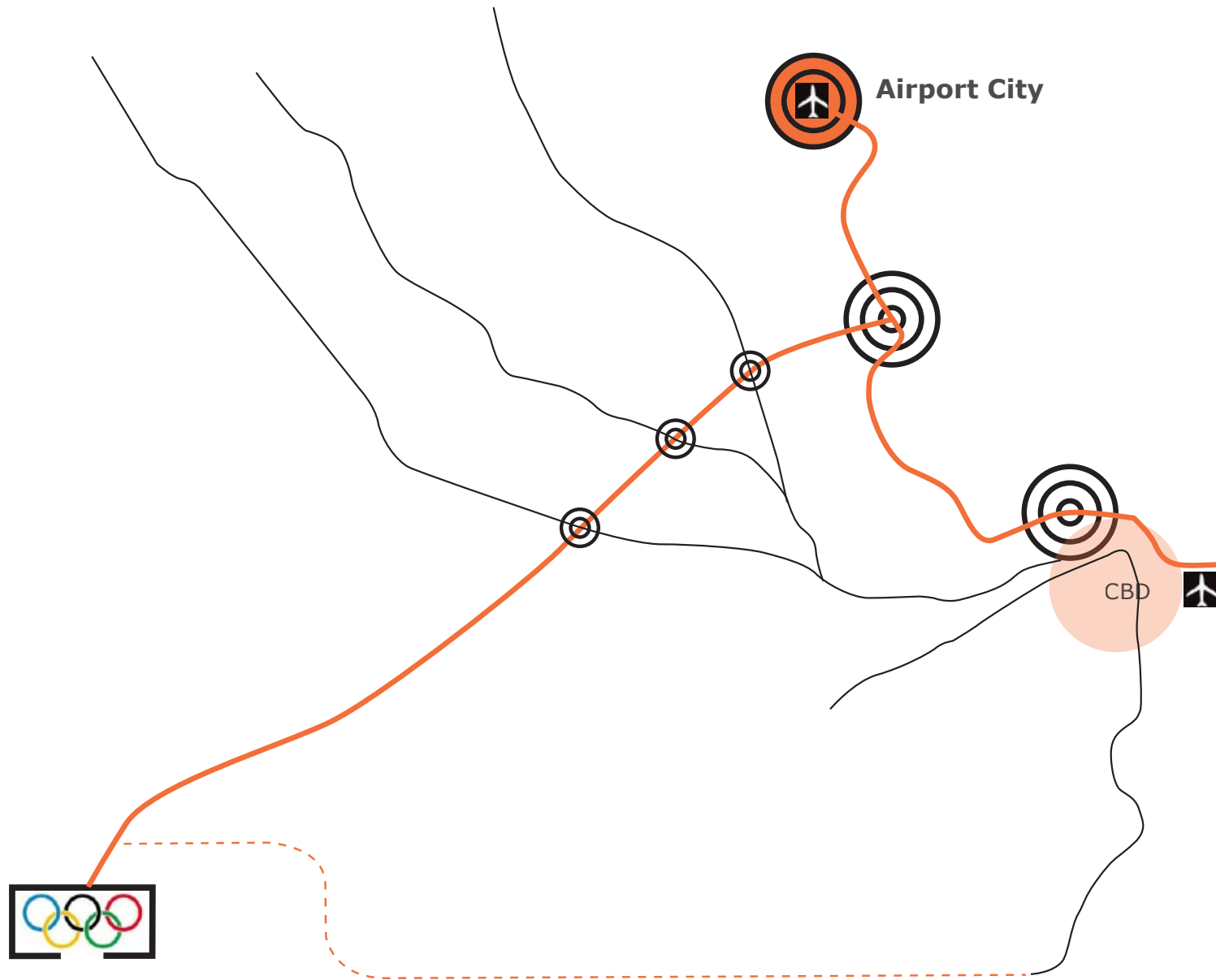


"...where goals are not shared, stakeholders are motivated mainly by the need to protect their vested interests."

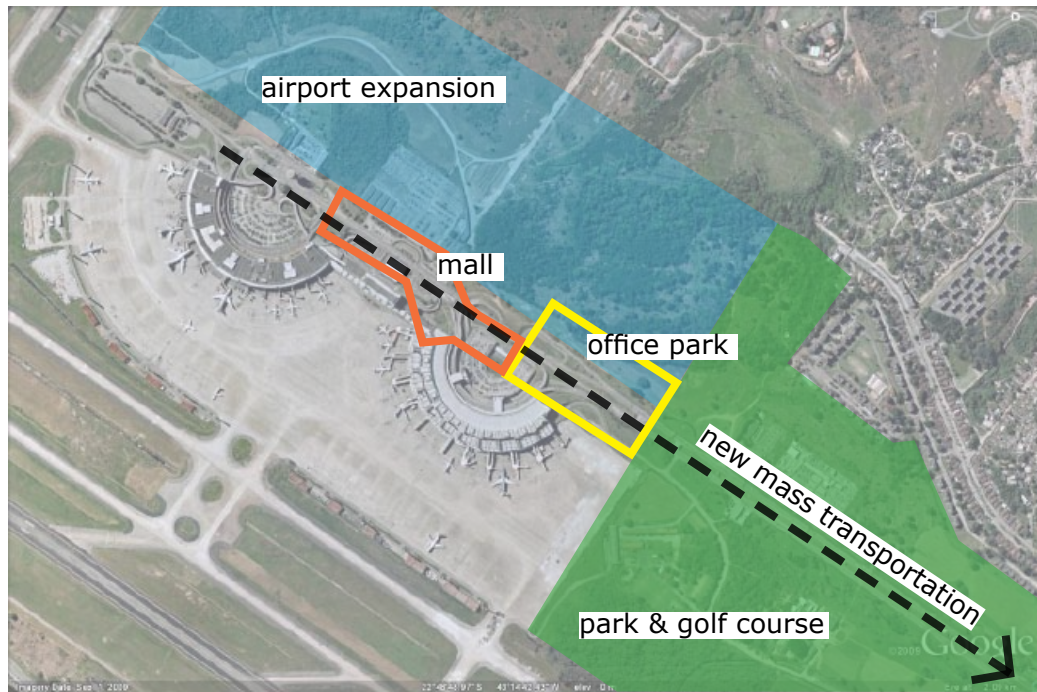
An evolutive design process is needed, adjusting to stakeholders wishes:



7.1. Airport-City Galeão



The Airport's Potential:

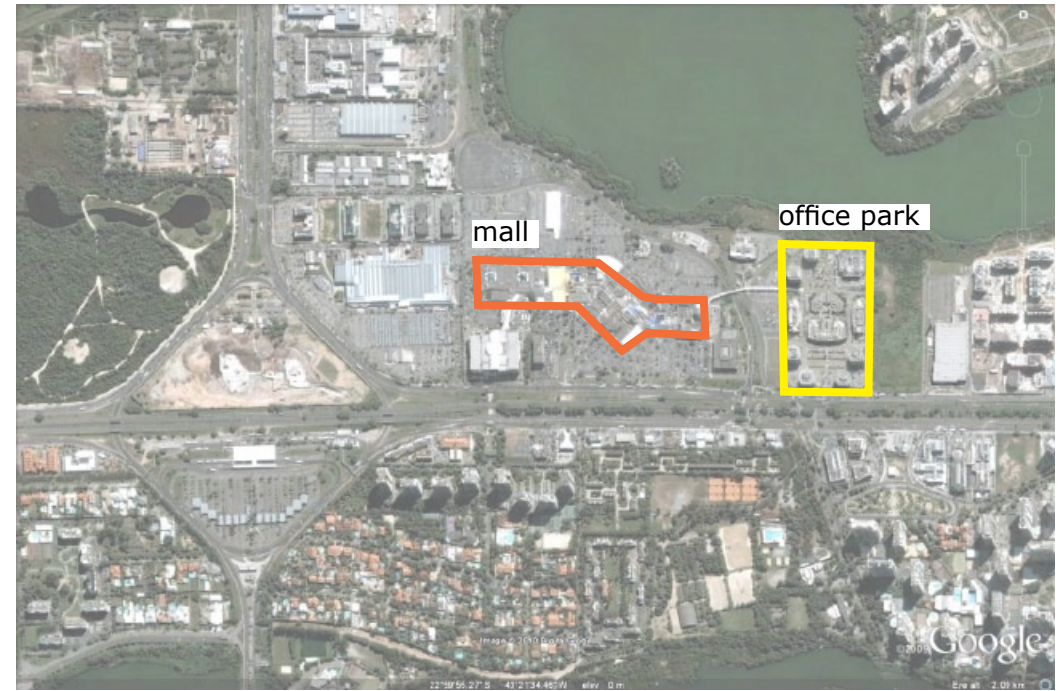


The International Airport of Rio could host new programs, such as a mall, an office park with hotel and a golf course, integrated to the city's future mobility system.

Rio's International Airport (Galeão) is desperately needing to increase its capacity not only to attend the future sport events but also to keep pace with a growing internal demand generated by newly established low-cost air companies - an extra demand which has provoked the so called "air chaos" in Brazil's airport system.

The airport has a lot of space to expand its main functions but also sufficient land to develop extra programs. Besides, if well connected to the city by a mass transport system (as proposed here in the Strategic Vision), it could become a true Airport-city: a sub-center of the city generating many jobs to nearby communities. A shopping mall, an office park with hotel and restaurants, leisure programs such as golf course could all be offered here.

An interesting possibility would be to develop the Airport-city in strong synergy with the nearby Technopole, becoming an interesting location for some high-tech firms headquarters - associating their brands with the cosmopolitan image of the airport. In order to do so, mobility between these two places should work out as smoothly as possible and a bike route, passing by leisure and extra housing, could also be available.



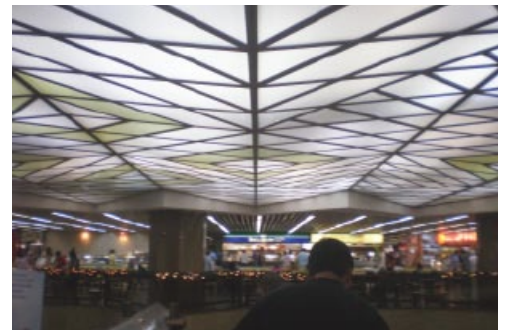
Scale comparison: Barra da Tijuca, showing the Barra Shopping Mall and its office park. This does not mean that these programs have to come in equal size.

After being schematically defined here, the Airport-city becomes more a project of architecture than one of urban design, therefore it will not be developed further in this research. Besides the need to connect it well to the rest of the city and absorb many new programs, we could also say that it would be important to have a strong, contemporary facade, changing its perception for the city dwellers and creating a good impression for foreign visitors alike.

However, in order to make this project really possible, a partnership between Infraero (the federal agency that manages most of Brazil's airports) and the local government must be fostered. It's expected that many airports in Brazil will be soon privatized and this could certainly foster the realization of Airport-city projects in Brazil.

If Rio's International Airport takes the Olympic opportunity and update itself it could maybe become once more the main gate of Brazil - a position it lost for São Paulo in the 1980s. The goal should be not only to attend Rio's visitors but also to become a distribution hub for many connection flights in Brazil and South America.

Existing situation:

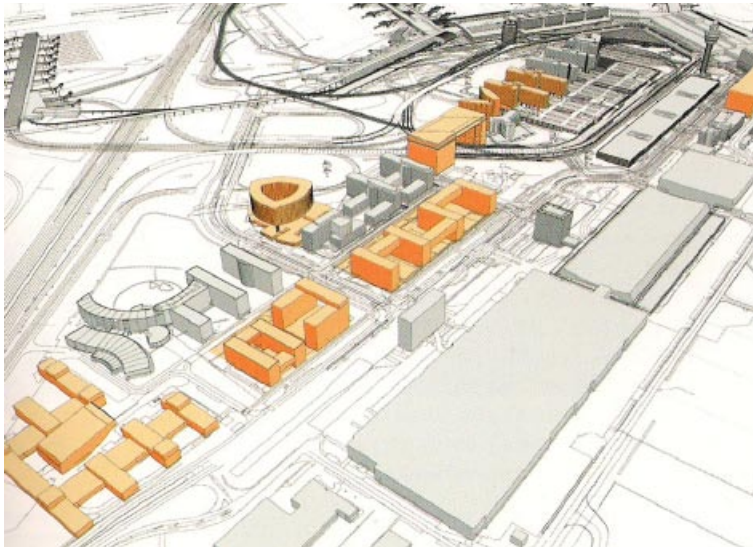


Rio's International Airport is lagging behind and needs to go through a modernization process urgently. The possibility of increasing private investment there could make this feasible.

Reference Project: Schiphol Amsterdam



Schiphol Airport in Amsterdam is a reference of airport-city that works together with Amsterdam as a sub-center. The airport is very well connected to the train network. In red, the business area.



Schiphol project, showing non-airport related program.



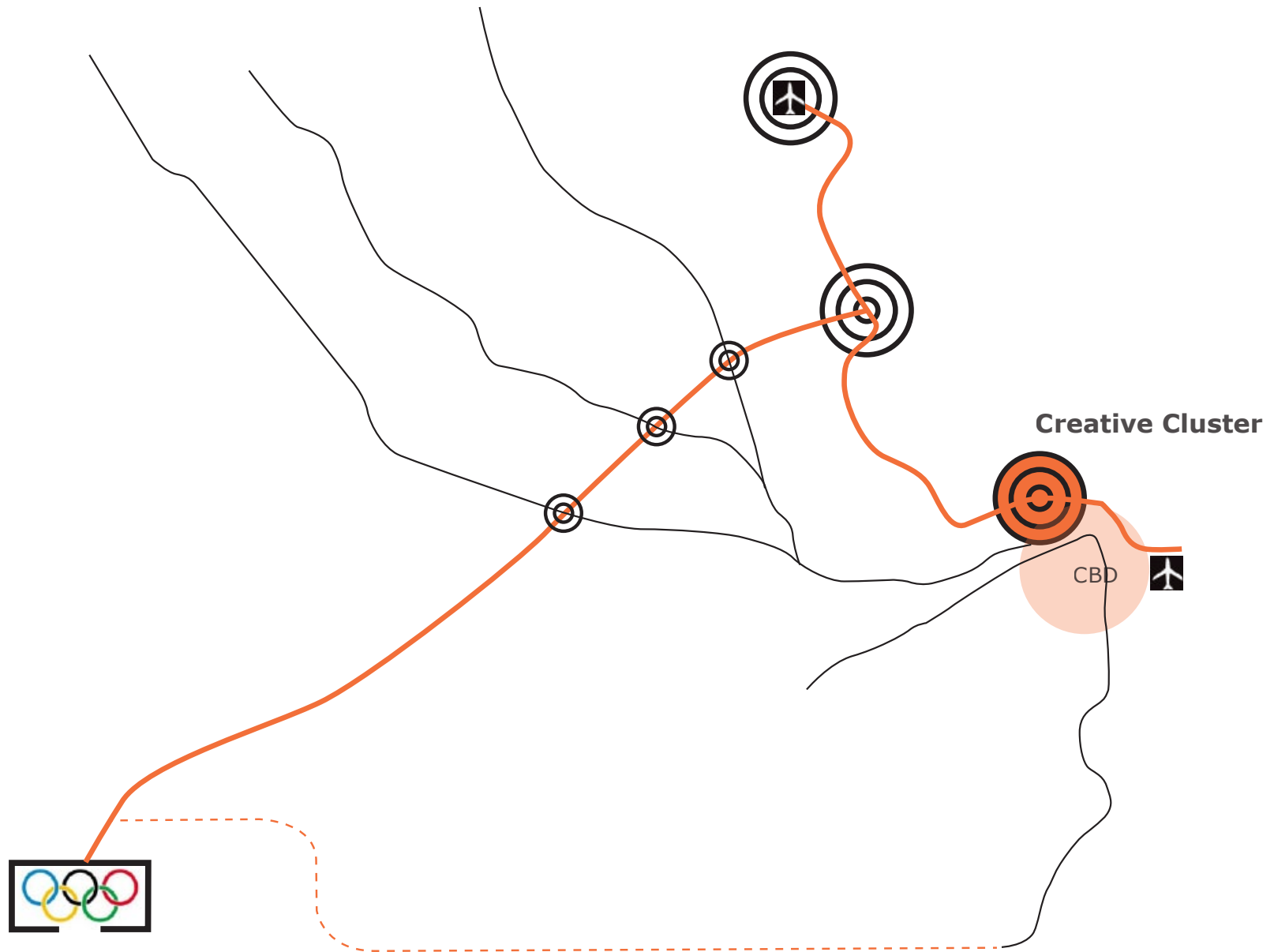
An exuberant park could offer Governor's Island and the airport a place to relax and regenerate the environment. A golf course could be included, offering leisure for business travelers that could be spending the night in a hotel there.



Schiphol airport facade: an entrance giving access to a plaza and transportation modes



7.2. Creative Cluster Port



Current plan - Porto Maravilha:



The city's vision for the area: removing the elevated highway and a banal landscape design.

The Port regeneration is currently being pushed by Rio's administration because of the realization that the Olympic site - located in a suburb for security and logistic reasons - can not redefine Rio's international perception as Barcelona did¹. Therefore, the Port appears as the city's sole opportunity of repositioning itself as a global metropolis.

The elevated highway is the most difficult issue in this task. To make the Port valuable for private investors, the viaduct must be removed. Hence, the current plan aims to bury the highway, paying the costs by selling extra floor space in future real state developments.

In interviews with a local developer it became apparent that there is not really confidence in relation to the highway removal. Besides, the plot's prices are soaring due to the announcing of a new museum in the Port (designed by "starchitect" Santiago Calatrava). Considering that developers are expected to pay for burying the highway, investment are simply too risky there.

Hence, we can say that the current strategy is not working properly and other possibilities must be studied in a consultation process with investors, local people and urbanists. An Strategic Framework, containing main shared goals should be developed: what kind of place we want it to become? Even though this urban design project was not undertaken in this research, some directions were presented.

Source: http://www.portomaravilhario.com.br/media/informativo/boletim_do_porto.pdf



The city's plan is based on increasing building heights, in order to capitalize resources for burying the elevated highway.

The Port as a Creative Cluster:

As defined in the Strategic Vision, the Port should be developed as a Creative Cluster. As shown before, Rio has double the percentage of creative jobs than São Paulo has. This seems to be due to its strong local culture, appealing landscape and bohemian lifestyle, besides due to the historic presence of Rede Globo (Brazil's biggest media company), which generates many direct and indirect jobs for creative workers.

Currently, Lapa and Santa Teresa, having an expressive amount of art and architecture ateliers and strong bohemian atmospheres, are accepted as Rio's creative neighborhoods. To push the Port, in the other side of Downtown, towards a creative economy role means to strengthen Rio as an innovation city in a global level. But which industries should it host and how?

Because the Port already hosts Rio's Fashion Week, it could be further defined as Rio's neighborhood for fashion, design and advertising businesses. Nowadays Ipanema has this role, but its high property costs make it prohibitive for starting firms. Therefore, while Ipanema could continue hosting bigger firms, the Port could host the more alternative, experimental ones.

These new firms could be established in existing sheds and future building's plinths. By offering tax breaks these starting firms could generate many jobs (both skilled and underskilled, such as sewers) and help the Port to gain a very strong cultural identity.

Site Pictures:



In Mauá square, where the Port meets the CBD, is being developed by the government as a museum district.



Empty sheds dominate the Port landscape, creating an atmosphere of unsafety.



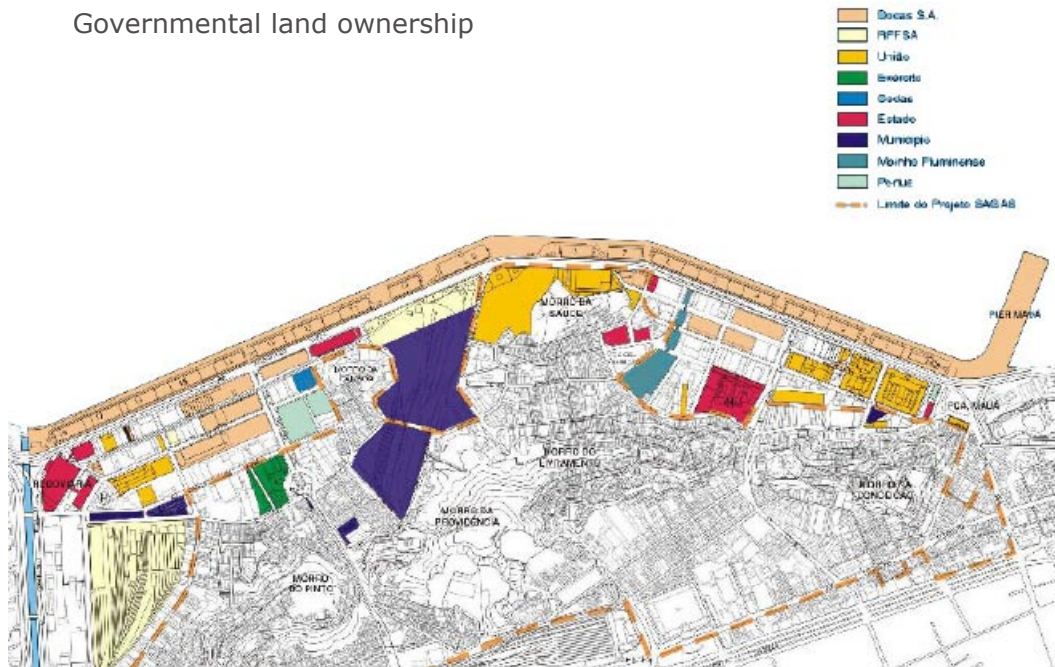
Events, such as Rio's Fashion Week, generate activity in the Port in short periods of the year.



The Port waterfront reaching the Central Business District and the Mauá pier - the place where cruise ships moor. The area will receive a museum designed by architect Santiago Calatrava.

Map Analysis:

Governmental land ownership



The land ownership is mainly governmental, but involves different levels and public companies. To unite this land in a single owner - the redevelopment company - is essential.



The Port is locked in between the elevated highway and hills.

100 ha voids!

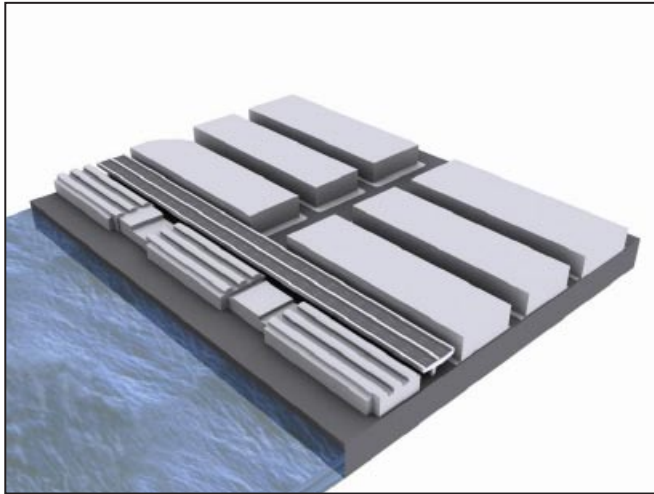


With 100 ha of empty land a lot can be done. The greater majority is not preserved because there is no architecture value. Some land could be offered for social housing projects.



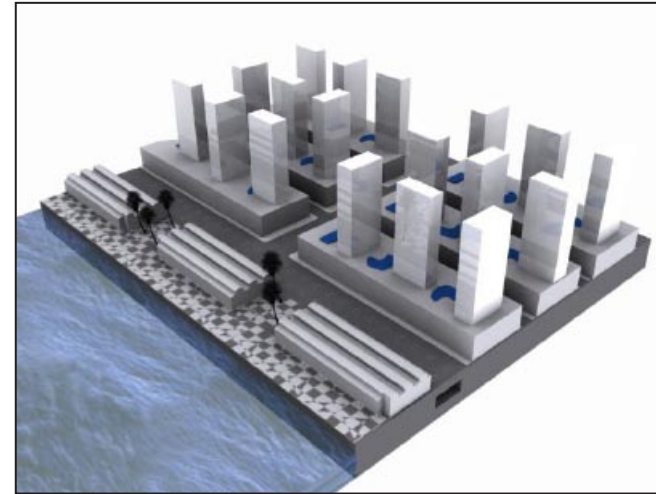
Praca Maua and Francisco Bicalho are the places with best integration with the city fabric. They could be developed as mixed-use clusters, fostering future developments in the area.

Spatial scenarios for the elevated highway:



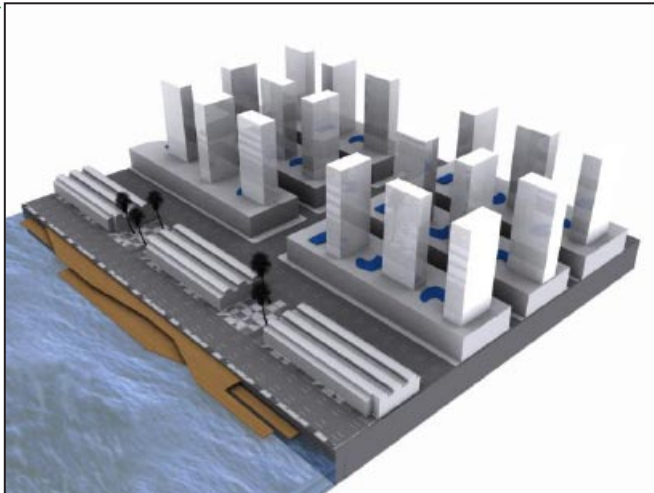
Existing Situation

The elevated highway that runs along the waterfront of the Port is the main obstacle to its renovation. This viaduct devaluates the land enormously and therefore diminishes private interest there. We studied three scenarios of possible solutions for the highway: the tunnel scenario (currently being pushed by the city), the waterfront avenue scenario and the wrapped highway one.



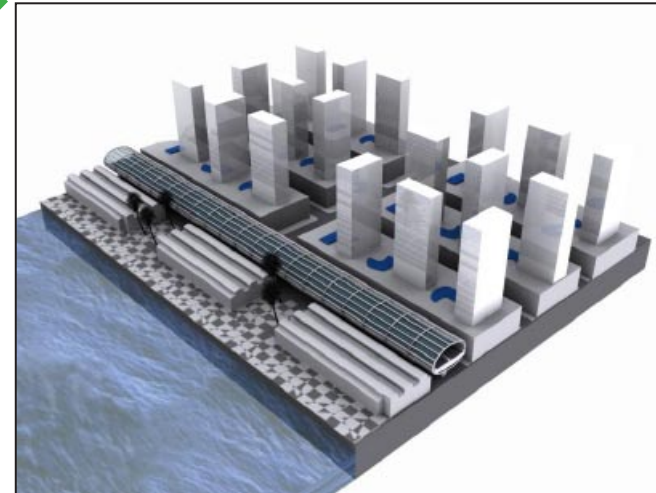
Tunnel Scenario

In the tunnel scenario, the most expensive one and currently undertaken by the city, the highway would be buried underground. This scenario seems logistically doubtful: where is the traffic going during the construction? And also spatially questionable: the CBD will lose its accessibility from the highway system.



Waterfront Avenue Scenario

In the waterfront avenue scenario a new boulevard is created along the water, where the current highway traffic can be redirected. It is a logistically feasible and spatially desirable as public spaces can be created in floating decks in the water. This is a very cheap solution. Its shortcoming is that the new waterfront avenue can become a barrier to the water due to the intensive car traffic.



Covered Highway Scenario

In the covered highway scenario the road is wrapped in a tube structure that solves the noise problem and gives it a futuristic appeal. This is a much cheaper solution than the tunnel scenario and easy to implement. Its shortcoming is that it can't do much about the dark space underneath the highway, but it surely makes available a lot of public space along the waterfront.

These scenarios should be financially studied and be brought for wide discussion with their stakeholders.

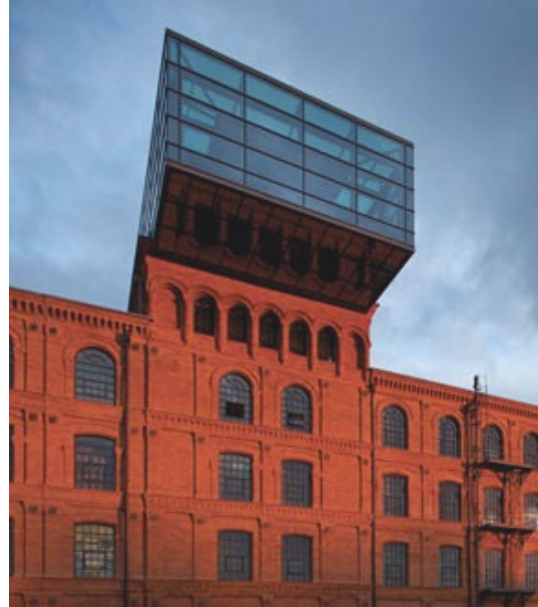
References:



Nova York, arq. Norman Foster



JHK Architects



Lodz, Jestico + Whiles



KCAP

Old + New:

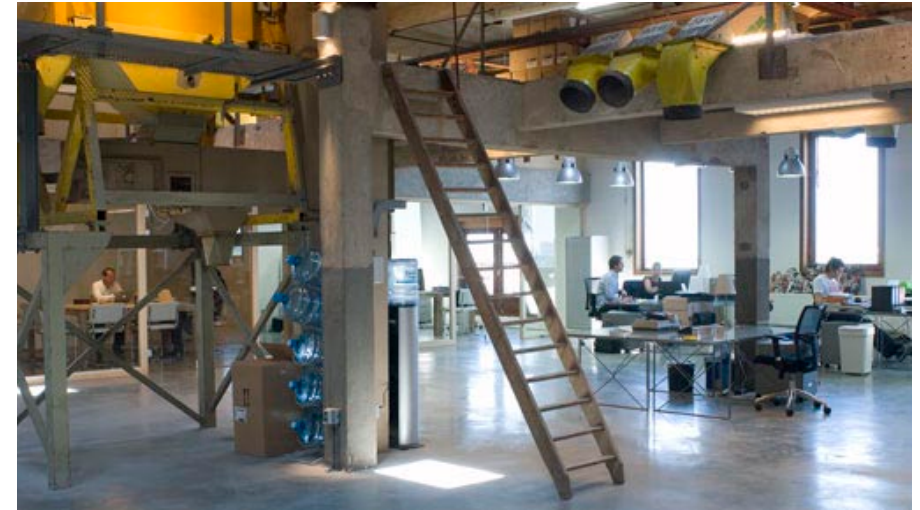
The Port of Rio has many historically valued and industrial rundown buildings that could be reused. To give a second life to existing buildings is a way of not only preserve its memory and industrial characters but also to enhance Rio's environmental and cultural sustainability. Thus, we propose that existing interesting structures receive adaptations and new anexes, composing strong images that render the Port a unique place in the city.



Bentham Crowwel



The Creative Factory in Rotterdam



Puerto Madeiro

Live + Work:

The Port could also be a place where people could live and work, instead of a monofunctional neighborhood. Industrial sheds can provide excellent and spacious atelier spaces, or even host bigger companies. Shops should be encouraged in the first floors of the buildings in order to produce a very lively and safe neighborhood. Besides, new typologies providing live+work units could be developed for the Port, as there is an increasing percentage of free-lancers in Rio's economy. These typologies can be instrumental in affirming the Port as a creative district, although, as we said above, tax incentives should also be available for creative firms to relocate there.



Claus & Kaan



Tokio, Emilio Ambasz

Green Architecture:

Besides sustainability being a main component of our strategy, it was also thought important that some buildings in the Port explicitly express that in visual terms. Green buildings not only contribute to the environment but also provide a special “nature” quality that can be very appealing to middle-class groups that otherwise would look for a house in the suburbs. Thus, by investing in these kinds of buildings we contribute for the Port’s social diversity and economic vitality as well. In the end, these green architectures work as flags of a broader sustainability strategy and help in marketing the place for its future residents and visitors.





Camezind Evolution



Herzog & de Meuron

Small Scale Programs:

In order to make the Port work as a real neighborhood at an early stage of its re-generation process it seems important that some small scale programs are scattered around the area. These new uses would be the pioneers of the site, bringing people to the Port during different times of the day. In this way the area would look quite populated at an early stage and this fact would make it more interesting for developers to invest there. Besides, it would begin forming its user groups, which end up contributing to a perceived socio-cultural identity of the area.



NL Architects



West8

Contemporary Spaces:

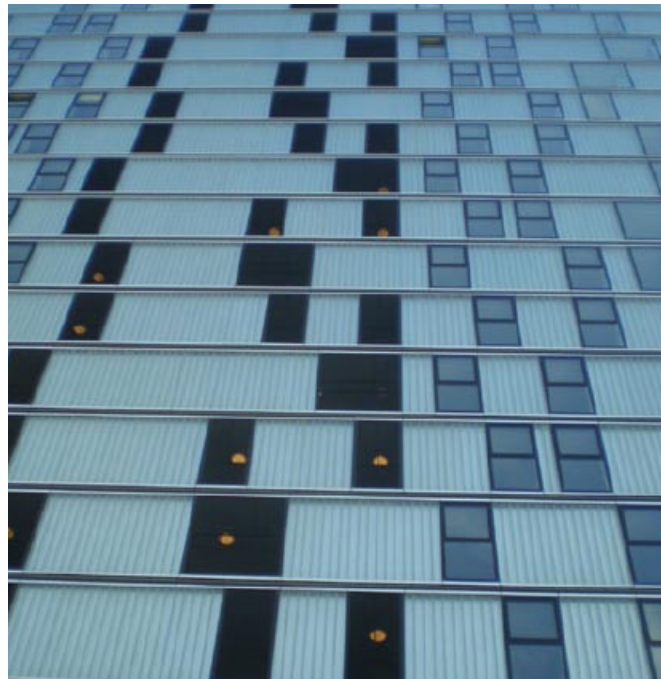
Public space quality is an essential ingredient in many contemporary regeneration strategies. Because the Port is such a historically relevant area and very close to the city center, we think that it could be an interesting site for tourists as well. Thus, besides reinforcing the public character of the area, providing many places where citizens could hang around, the Port could even contribute for Rio's image as a cosmopolitan, global metropolis.



Carlos Martinez



SANAA



Architekten Cie



Norman Foster



Arons & Gelauff

Contemporary Architecture:

If the Port really wants to become a strong option for living and working in Rio with a distinguished character, it seems important that its architecture is different from the other parts of the city: it has to be new! In order to achieve a special, contemporary élan, it seems important that architecture competitions are held for some of its plots. Because many developers are afraid of experimental projects done by young architecture practices, a system of partnerships should be organized by the city: these key projects would be designed by new firms together with more experienced ones, appointed by local developers.



Herzog de Meuron



Peter Clewes



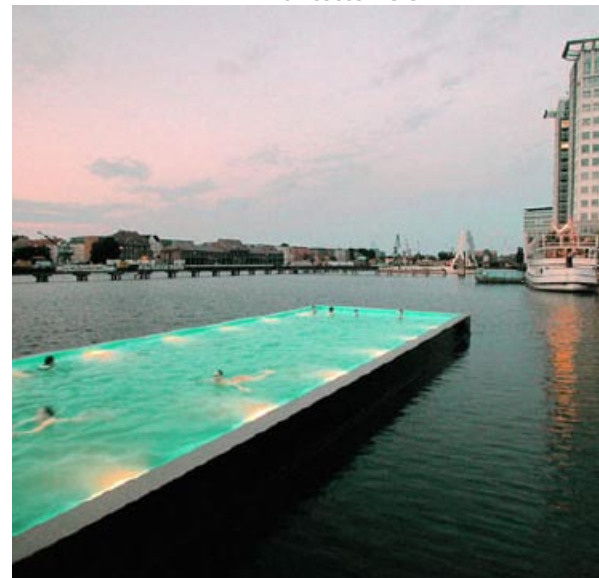
Architecten Cie



MVRDV

Water Environments:

In order to really succeed as a neighborhood in Rio, the Port has to build up in it's biggest asset: its waterfront. Nowadays, the elevated highway and the line of old sheds represent a barrier to the Port's integraton to the water. The solution of the highway problem (as shown in the scenarios above) is crucial, but also important is to program the waterfront with leisure activities and architecture types that really engage with the water.



DKV

Conclusions:

A Strategic Vision for the Port needs to be formulated involving its stakeholders: the city, state and federal governments, local communities, environmental and heritage agencies, and local architects and urban planners. This Strategic Vision would not contain an urban design plan yet, but only main goals for the future developments, such as:

- will it be a *sustainable neighborhood*? And if so, what does it mean? How can future inhabitants and the city as a whole benefit? Which actions should be taken and how will it be financially feasible?
- should the Port foster certain *economic activities*, generating specific jobs for the city? If so, which professional fields are going to be pushed? Besides tourism, creative activities seem to have potential there.
- will *architecture quality* be an objective? And if so, which mechanisms are going to foster it? Architecture competitions could be organized for specific sites and even some financial incentives could be offered.
- will *public space* be important in the Port? If so, which areas should be upgraded and for which roles (kinds of activities, contemplation of the sea, etc)?
- how will we deal with the *industrial heritage* of the area, most of them not under preservation laws? Should they be preserved? And for the preserved ones, what kinds of contemporary interventions could they go through?
- are there any specific *uses* the Port should try to foster, or should we leave this issue for developers to decide, according to market demands? It seems that a more mixed and lively program is the ideal option there.

After the Strategic Vision is formulated and agreed upon, a competition for a general **Masterplan** could take place (encompassing also accessibility, densities, etc), and maybe Urban Design competitions could be followed, dealing with specific sub-areas.

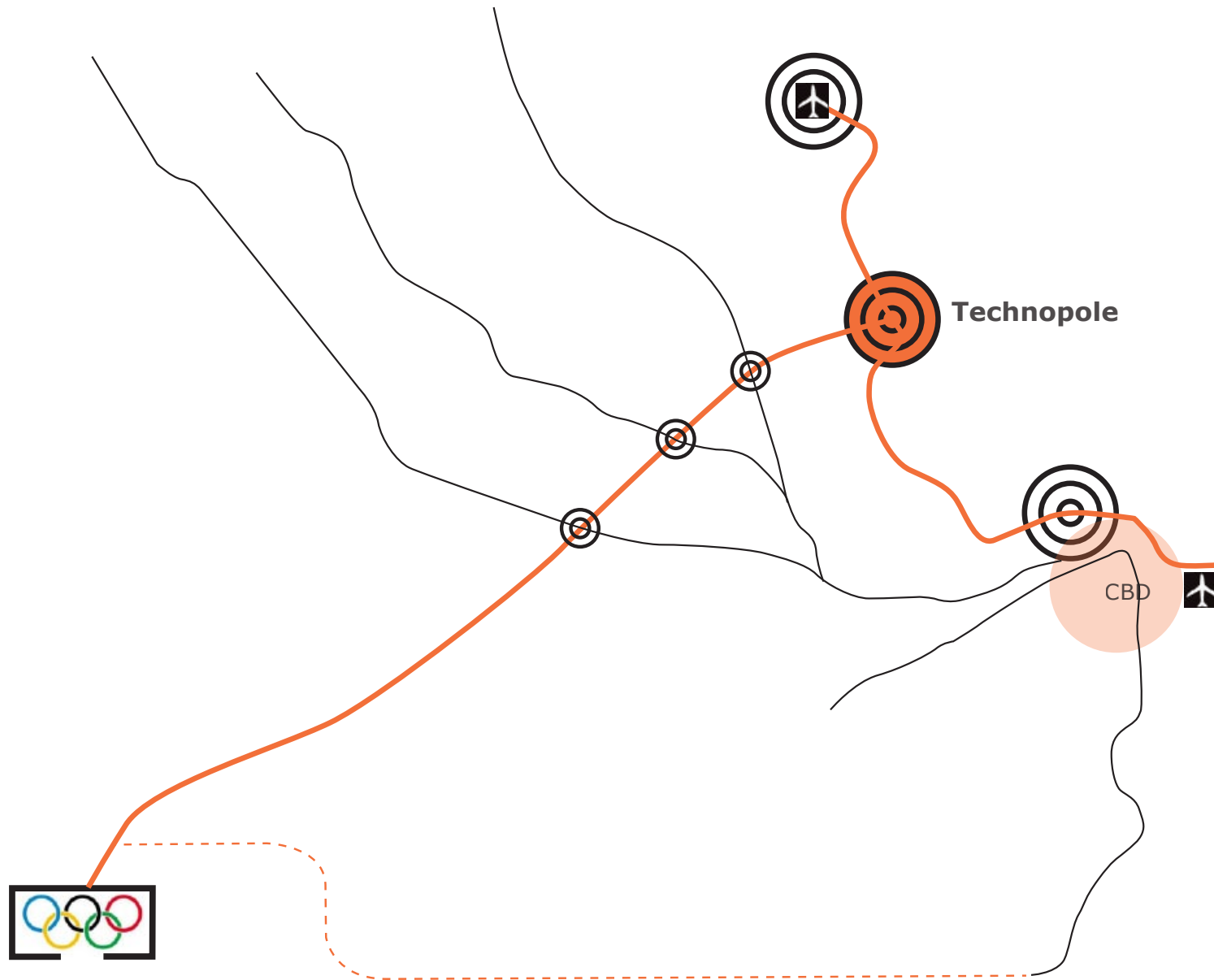
The Urban Planner as process manager: in order to make the Port regeneration really work a new role for the Urban Planner should be defined.

Instead of producing a final *Urban Design* proposal (blueprint approach - “good” from an architectural point of view) the most important seems to manage the stakeholders within a communication process (showing spatial analysis, possible spatial scenarios and references) in order to develop the Strategic Vision into a **Masterplan**. This process is interactive and the spatial solutions are flexible, not depending on specific architectural languages.

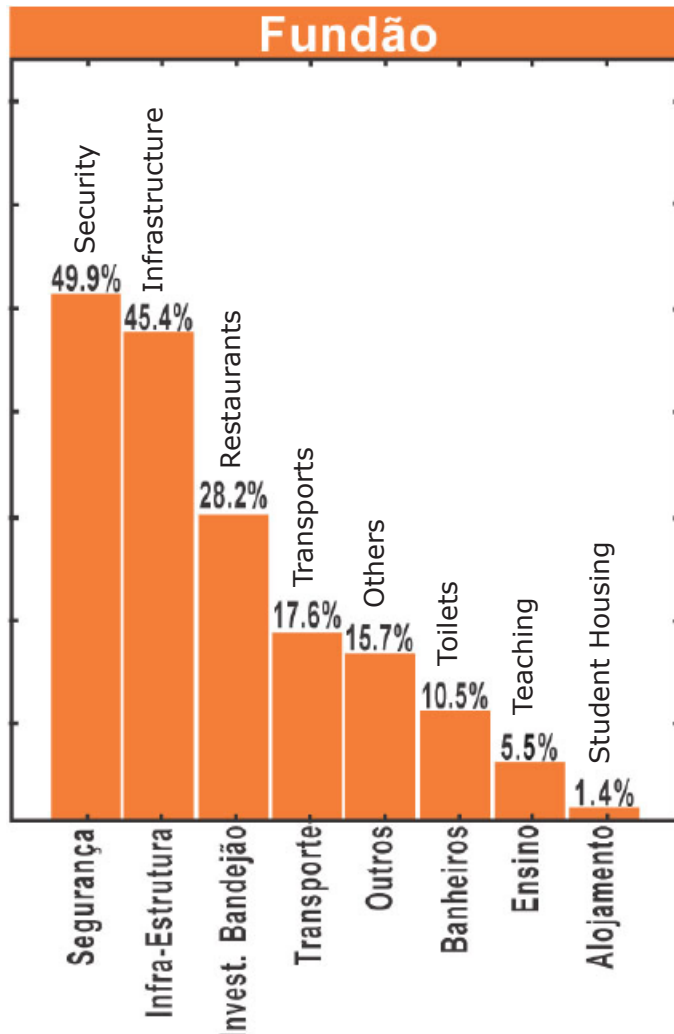
After the overall Masterplan for the Port is delivered it would also be good to have **Urban Design schemes** for different sub-areas. These schemes will be framed by the Masterplan and will set the guidelines for future architecture projects (and therefore will substitute the general city building legislation there, as it makes good architecture projects impossible).

7.3. Technopole

Campus Fundão



Problems Statement:



The Campus main problems, according to an interview carried on my the restaurant firm.

Source: AdUFRJ, March 2007

The campus of the Federal University of Rio de Janeiro (UFRJ) at Ilha do Fundão was inaugurated in 1970. The plan was designed by Lucio Costa according to the modernist principles of Le Corbusier: buildings as floating objects on a green landscape.

UFRJ, formerly called University of Brasil, was created in 1920 by the grouping of many independent colleges which were the first higher educational facilities in Brasil - the oldest one being the Politechnical School, created in 1792 by queen Mary I of Portugal, during the colonial times. Fundão campus was phisically created by making a landfill that joined many smaller islands along Guanabara Bay's waterfront (Rio de Janeiro's North Zone).

Fundão campus has 460 ha in total and 120 ha (25% of it) is empty. The campus is used by around 60.000 people per day (3.000 teachers, 10.000 workers, 43.000 students and 2.500 external workers). It currently faces two main problems: insecurity and the lack of proper infrastructure. Besides car robbery, students have been victims of assault even inside their classrooms!¹

Even though quite unsafe, Fundão's sole student housing building has an extensive waiting list, mostly from students comming from outside Rio - youngsters who need cheap accomodation and cannot afford daily commuting.

Mobility is done by 39 bus lines and around 10.000 commuting cars. Its users come mainly from the North Zone, 45%, followed by the South Zone, 21%, 17% from the West Zone and 3% from the Central Zone. 41% of the users spend around 1 hour in daily mobility, 39% spend 2 hours, 14% 3 hours and 4% spend 4 hours.²

Although Fundão was made as a unified space it's still badly integrated. As said in the new Director Plan: "It is still an island, isolated from the city. Actually **it's an archipelago of islands that do not connect to each other.**"³

Sources:

1- <http://rjtv.globo.com/Jornalismo/RJTV/0,,MUL1068717-9099,00-PERIGO+NA+ILHA+DO+FUNDAO+EM+UM+MES+SE+QUESTROSRELAMPAGOS+NA+UFRJ.html>

2- <http://www.open-output.org/filebin/images/3507/5954b93bb0eb6302c6f763e222fd39a.pdf>

3- http://www.ufrj.br/planodiretor/?page_id=53



UFRJ's other campus in Praia Vermelha (Urca neighborhood)

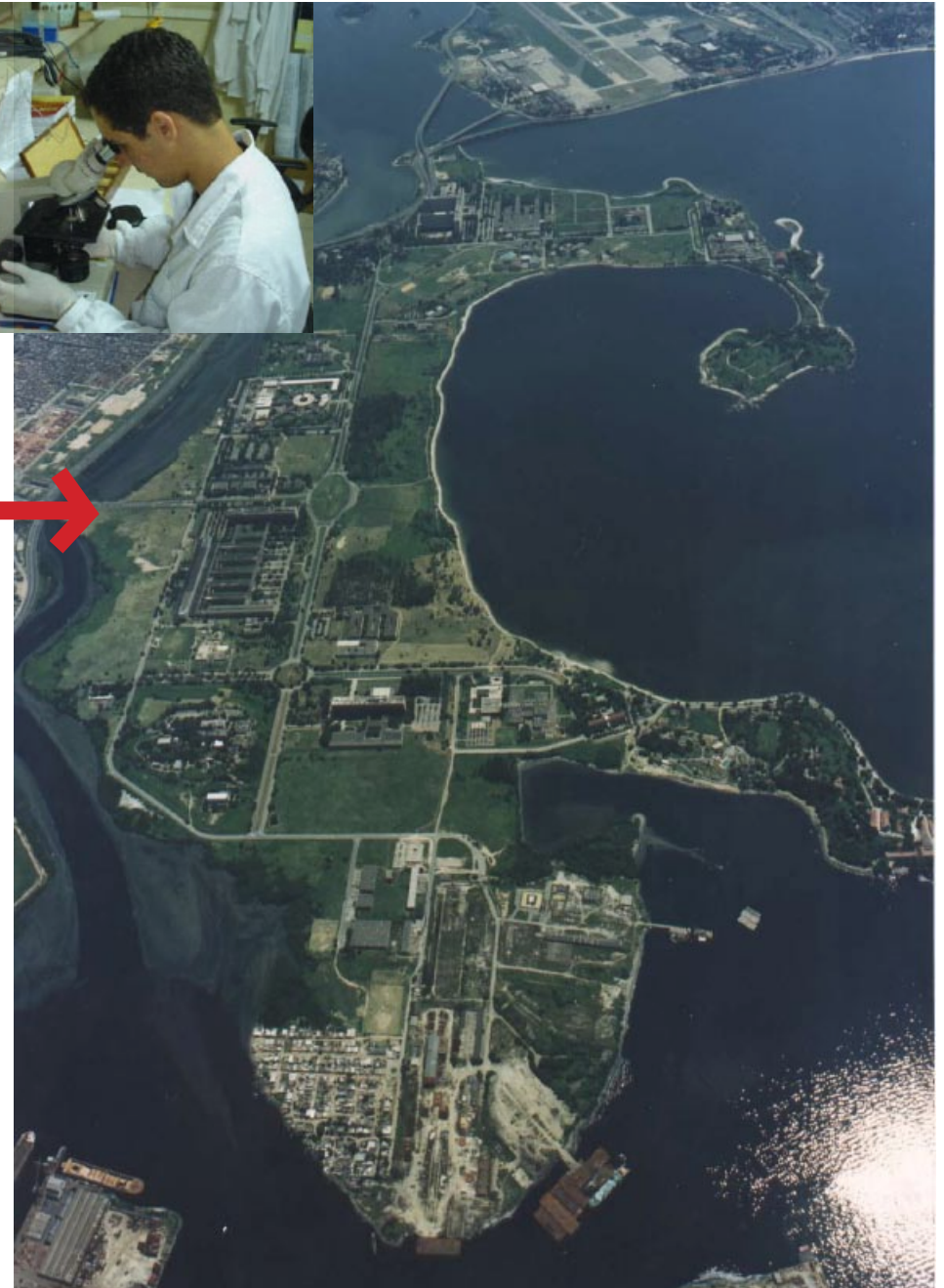
Site Pictures:



Fundão campus is characterized by an enormous green space crossed by high-speed roads and some extra-large faculty buildings. These buildings hardly ever engage with “public space” - they are not well articulated with the street, maybe due to the almost lack of sidewalks.

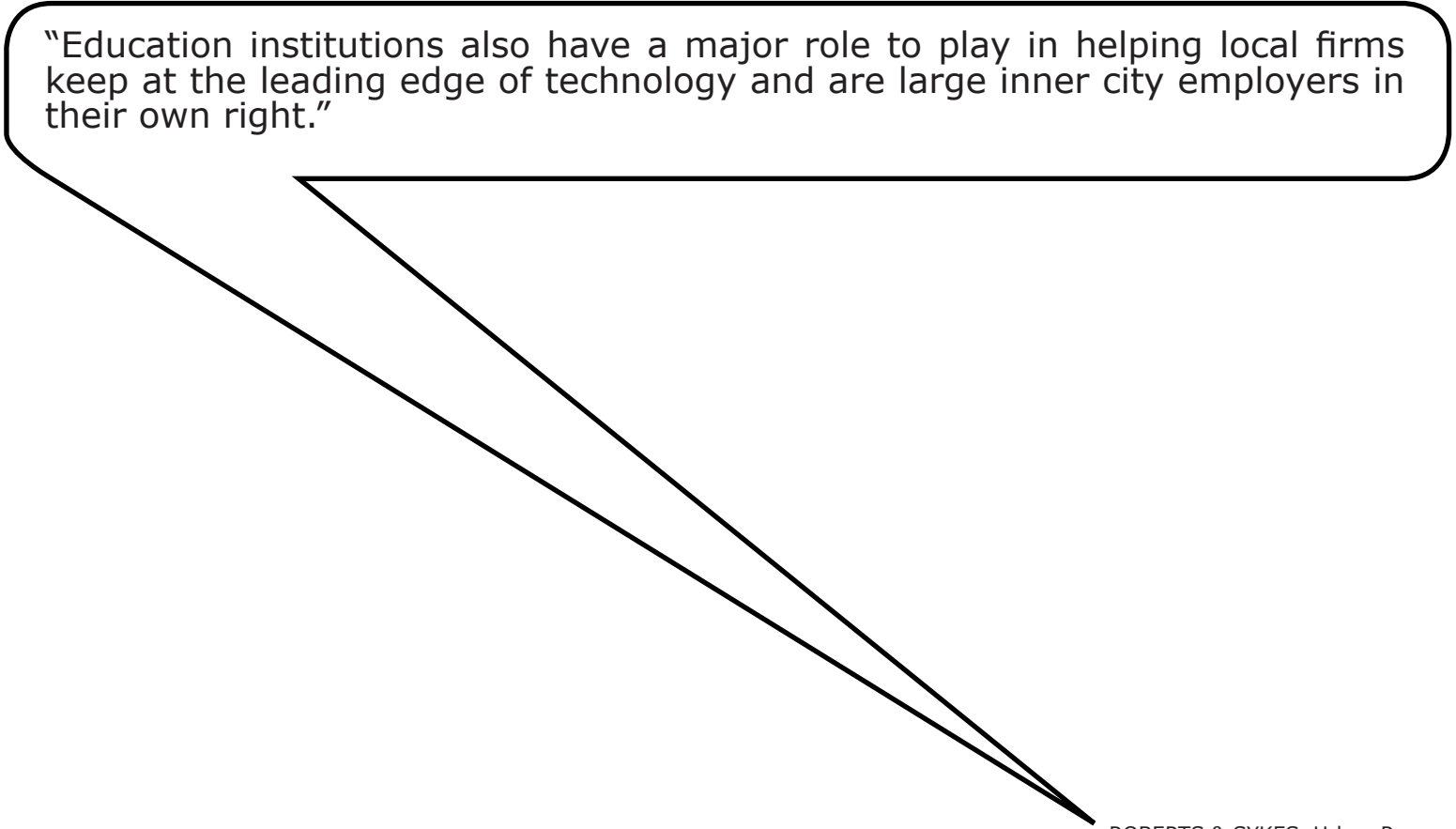


Maré slum complex and the University Campus:



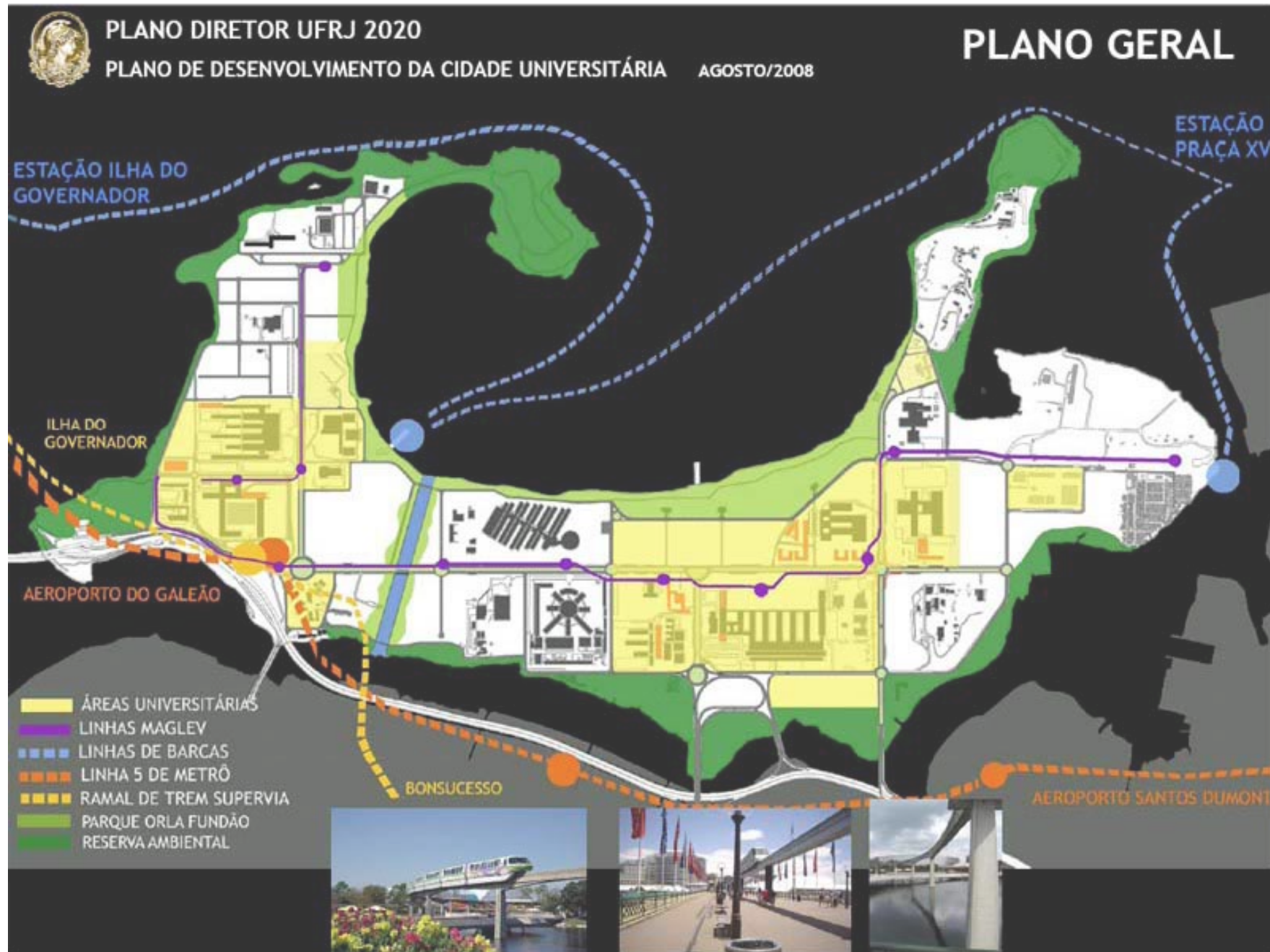
The campus and the nearby slum complex (Maré) are completely different, unrelated worlds.

This project aims to find a new relationship between them, one that could be mutually beneficial...



"Education institutions also have a major role to play in helping local firms keep at the leading edge of technology and are large inner city employers in their own right."

New Director Plan, timeframing 2020:



There is now a new Director Plan for Fundão, going through implementation process. Even though it seems good that there is something being done in this direction, there is very little practical actions being taken.

The plan speaks about bringing to Fundão the colleges which are scattered around the city, but that would fill the voids that can be used by other programs: starting firms to generate jobs, students housing and many other programs.

As said mobility expert Ricardo Esteves, in a phone interview: "While some years ago there was an active debate about what to do with the campus, the masterplan under implementation is not very ambitious. Only a bike route was created, almost as a statement. The transportation is chaotic since the new Technology Center opened. They say there is money already for the Maglev train, but I don't believe... besides, that's a project to be built only inside the campus, without connections... there seems to be a general lethargy in the process..."

Therefore, it seems crucial to develop an integral Masterplan for Fundão Island.

Map Analysis:

Accessibility:



Fundão Island is adjacent to a main Highway (Linha Vermelha) and a main Road (Av. Brasil), which provide it access. The island is not connected to the nearby railway or the nearby communities.

Time-distances:



The entire campus can be reached within 8 minutes cycling from its middle.

Built mass:



Fundão and the nearby slum Maré are very different in terms of built mass: while Fundão has a few large buildings spread around its landscape, Maré is packed with a compact mass of homes.

Urban voids:



The campus has around 120 ha of voids - larger than the Zamudio Technopark in Bilbao.

Strategy:

New mobility (Rapid Bus System):



The proposed new mobility line enhances the campus connectivity with the CBD, the airport and the Olympic site, besides improving exchange of flows with the roads and highways.

Research and Development areas:



The campus has around 120 ha of voids - larger than the Zamudio Technopark in Bilbao. Besides, nearby brownfields could be redeveloped for new technology firms.

Proposed bike paths:



New pedestrian and bike connections could link the campus to its surroundings, helping it to become a more lively place - a real neighborhood of the city.

Top 25 most prolific Brazilian research institutions, 1991-2003

Institution	% Share of publications	Rank
Univ. São Paulo	23.89	1
Campinas State Univ.	9.66	2
Fed. Univ. Rio Janeiro	9.20	3
State University São Paulo	6.54	4
Fed. Univ. Rio Grande do Sul	5.47	5
Fed. Univ. Minas Gerais	5.19	6
Fed. Univ. São Paulo	3.54	7
Braz. Agr. Res. Corp.	3.01	8
Fed. Univ. São Carlos	2.88	9
Oswaldo Cruz Fdn.	2.77	10
Fed. Univ. Santa Catarina	2.35	11
Fed. Univ. Pernambuco	2.34	12
Fed. Univ. Paraná	2.11	13
Fed. Univ. Fluminense	2.07	14
Univ. Brasília	2.03	15
State Univ. Rio Janeiro	1.94	16
Braz. Centre Res. Phys.	1.78	17
Cath. Univ. Rio Janeiro	1.6	18
Fed. Univ. Viçosa	1.56	19
Fed. Univ. Ceará	1.48	20
Natl. Inst. For Space Res.	1.45	21
Natl. Com. Nuclear Energy	1.28	22
Fed. Univ. Paraíba	1.2	23
Fed. Univ. Bahia	1.19	24
State Univ. Maringá	1.11	25

The Federal University is the third most productive in research activities among Brazilian universities and it has 120 ha of empty land. This leads to the idea that these voids could be used for new high-tech companies, to be managed by scientists already working there. FioCruz, a nearby research center of imunology, which is ranked tenth most productive, could be connected to the campus and generate sinergetic effects between them.



Biosewage System:



The worst environmental problem in the area is that many open sewage canals recede behind Fundão island. We propose that a decentralized system is made, together with stabilization pond.



Illustration of the park around the stabilization pond of the proposed biosewage system.

Increasing water connections:



Fundão island so far doesn't take advantage of its insular condition: whoever is in its public spaces do not see the water. We proposed to open new canals, helping to improve the landscape quality



Photo of the canal behind the Fundão Island. Besides polluted, the highway blocks its access.

Program intensification:



In order to make the campus start working as an integral system and also generate a synergy with its surroundings, a first phase of interconnected programs was proposed. Instead of a multiplicity of centers it's thought that the creation of a strong unified core is a better option: a place where everybody meets, accessed by bike and pedestrian routes.



Campus aerial view.

Built mass Framework:



The need of increasing the campus uses around the clock and strengthening the vitality of its public spaces calls for the allocation of a considerable amount of building masses facing open areas.

However, in order to keep the landscape green quality, a framework for the campus maximum occupation is needed. **We propose a Chessboard field consisting of a diversity of strong building masses which always face open green areas.**

Spaces marked in red are defined for development, programming (sometimes merely with kiosks) or densification (in case of those already having buildings in it) while those left unmarked are considered green spaces which, nevertheless, sometimes contain free-standing buildings.

In this way an equilibrium between built-unbuilt is achieved and the campus island is activated.

Street net study (Space Syntax technique):



Existing situation



Study 1: new connection links slum and campus



Study 2: new connection links slum and campus



Study 3: campus roundabout substituted by avenue



Study 4: more streets increase campus connectivity



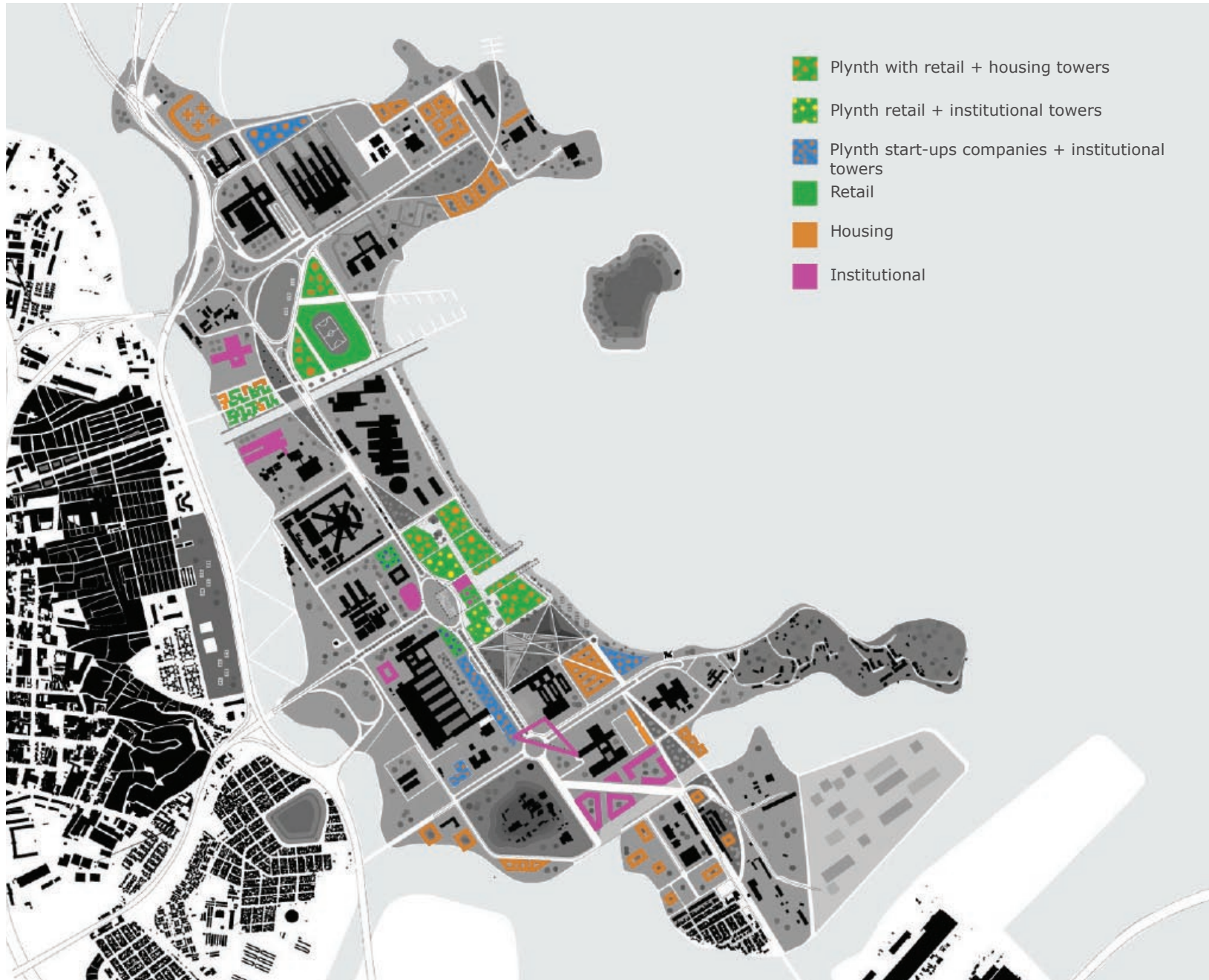
Study 5: more streets increase campus connectivity

An analysis of the campus street net was made using the Space Syntax technique developed by professor Bill Hillier and his colleagues. The program analyses how many connections each street has to other streets. Empirical research says that the more connections one street has, the best suited for commercial activities and the less susceptible to crime. In image one we see the analysis of our site, showing in red a piece of Av. Brasil and in yellow the dense street net of a grided social housing development inside Maré slum. These are the best connected places now.

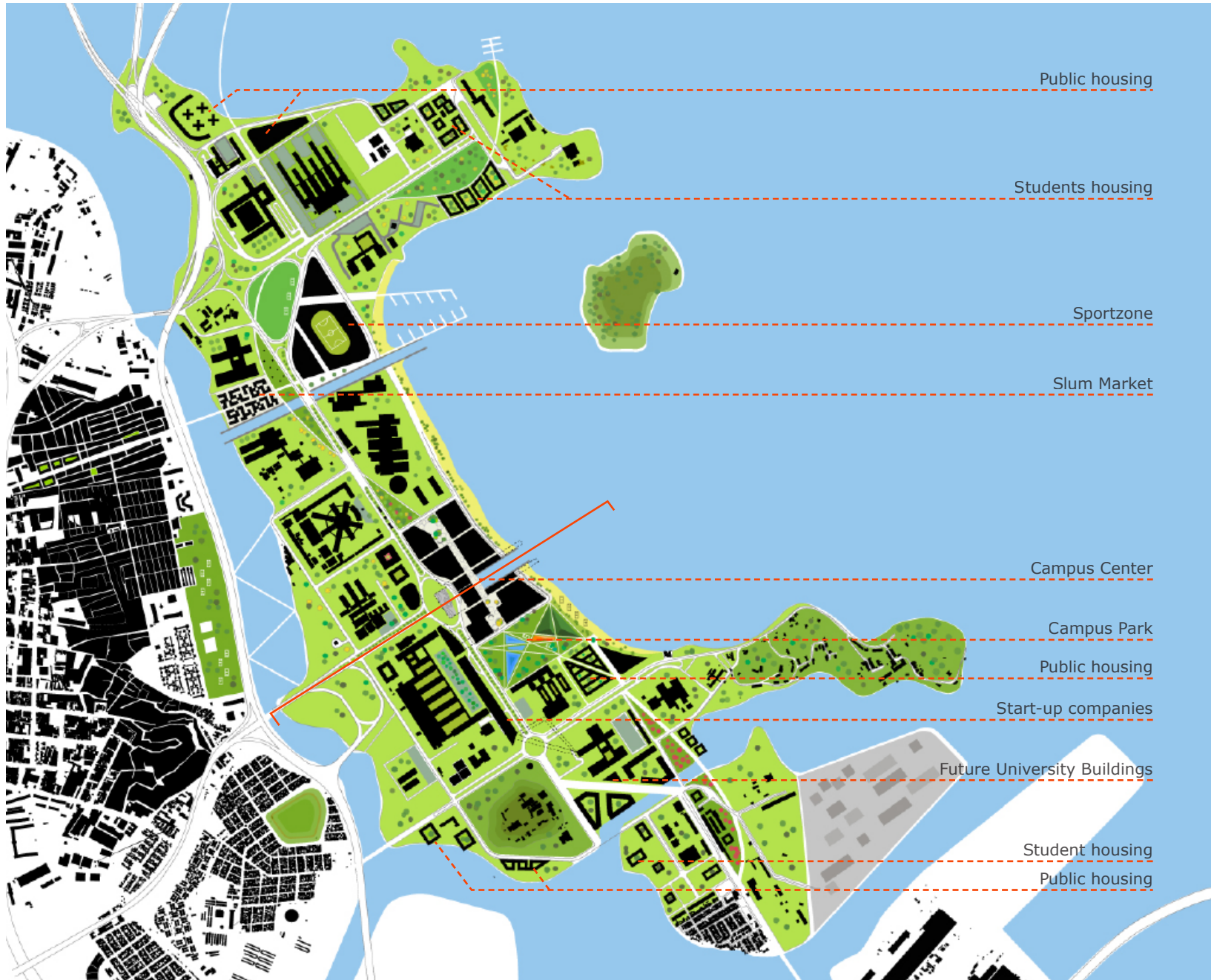
In the following maps we have a diversity of studies of possibilities for connecting the campus (the worst connected area) to this better connected environment, in order to potentialize the area for businesses.

As we see in study 3, if we eliminate the campus central roundabout its main street gets better connected. A profusion of smaller streets parallel to it increase it even further (4 and 5).

Masterplan - Uses:



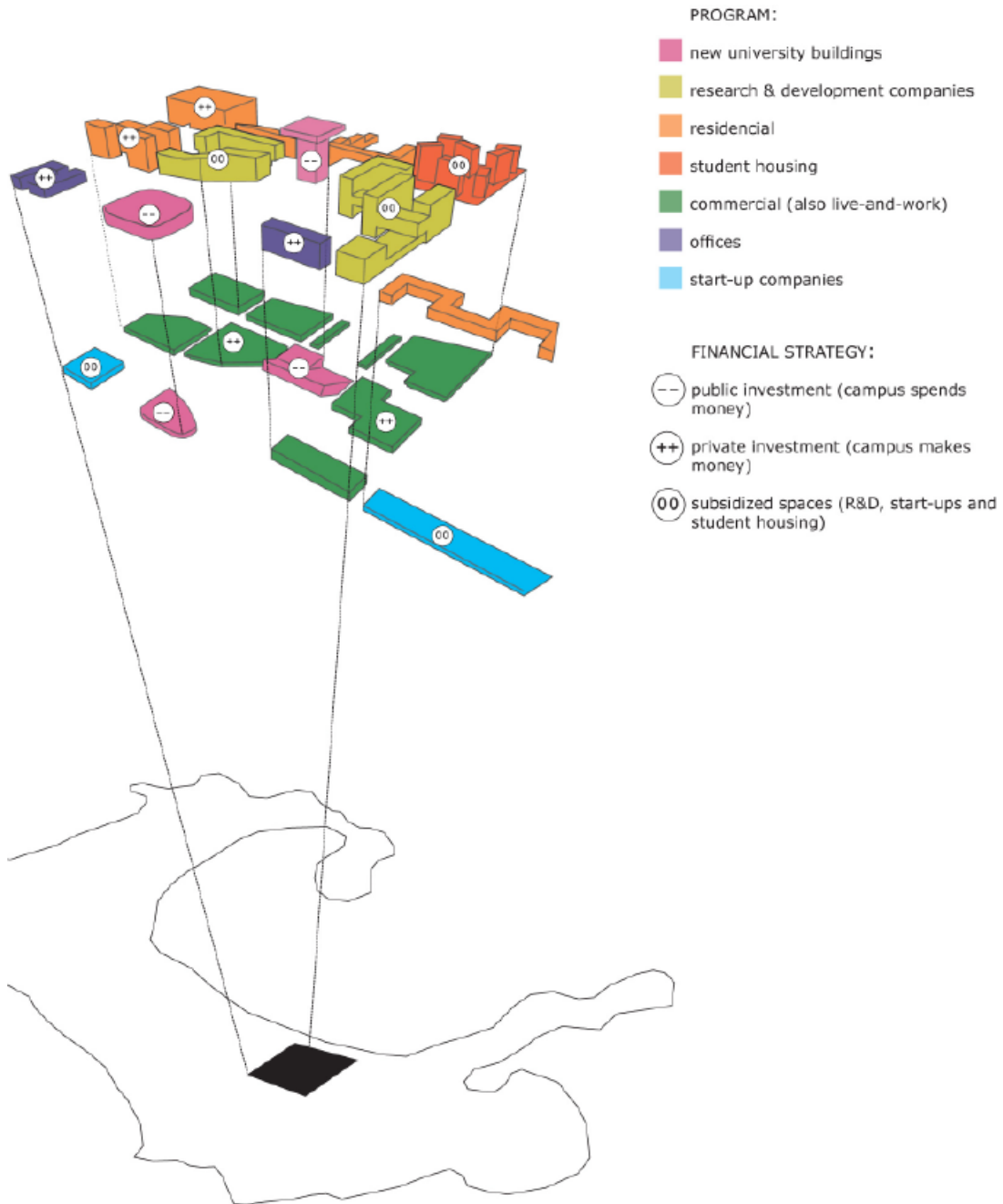
Masterplan - Massing:



Masterplan - bird's eye view:



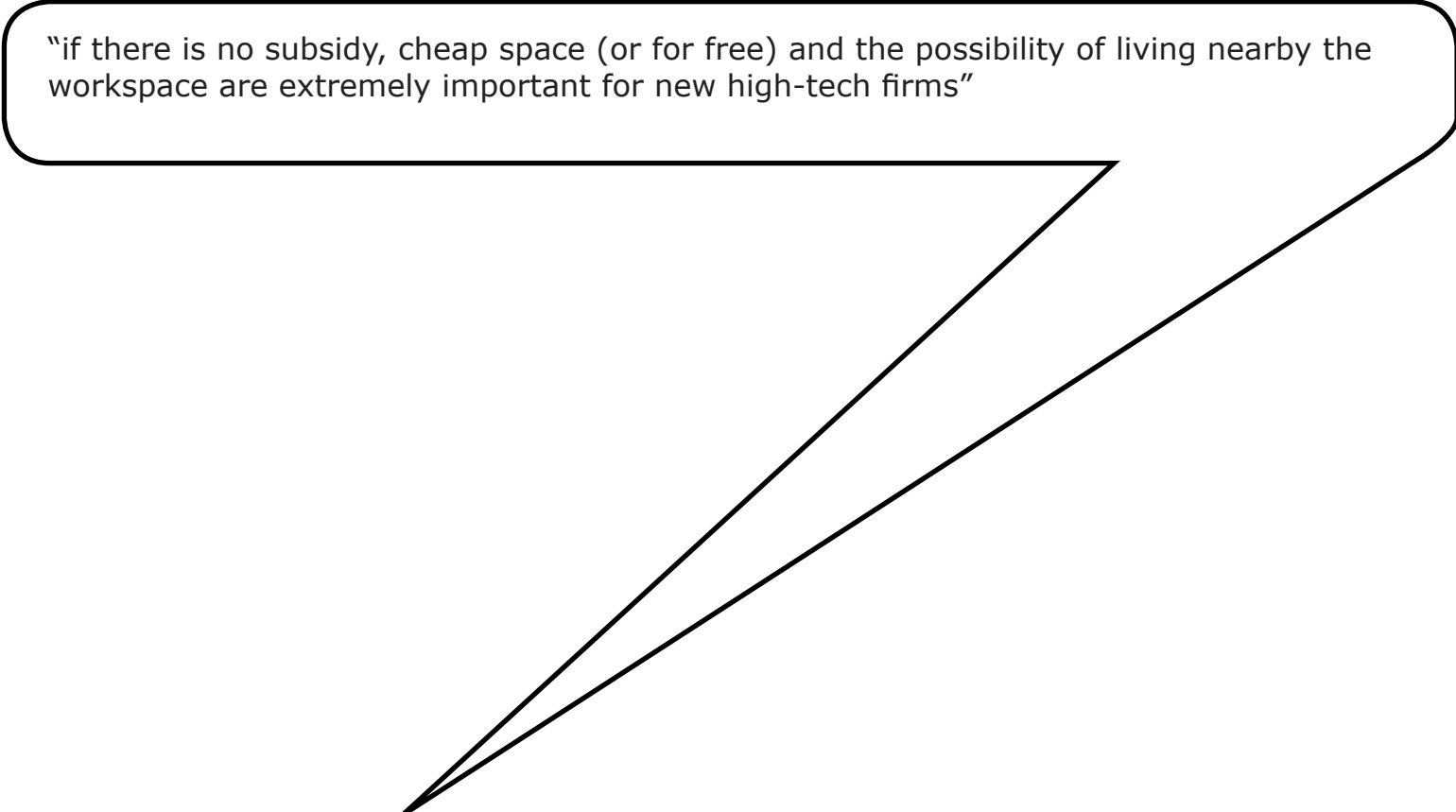
Campus Center:



Massing of campus center.



Campus center, public space facing waterfront, showing mix of functions and access.



"if there is no subsidy, cheap space (or for free) and the possibility of living nearby the workspace are extremely important for new high-tech firms"



Campus center new aula building, as an icon of the development.

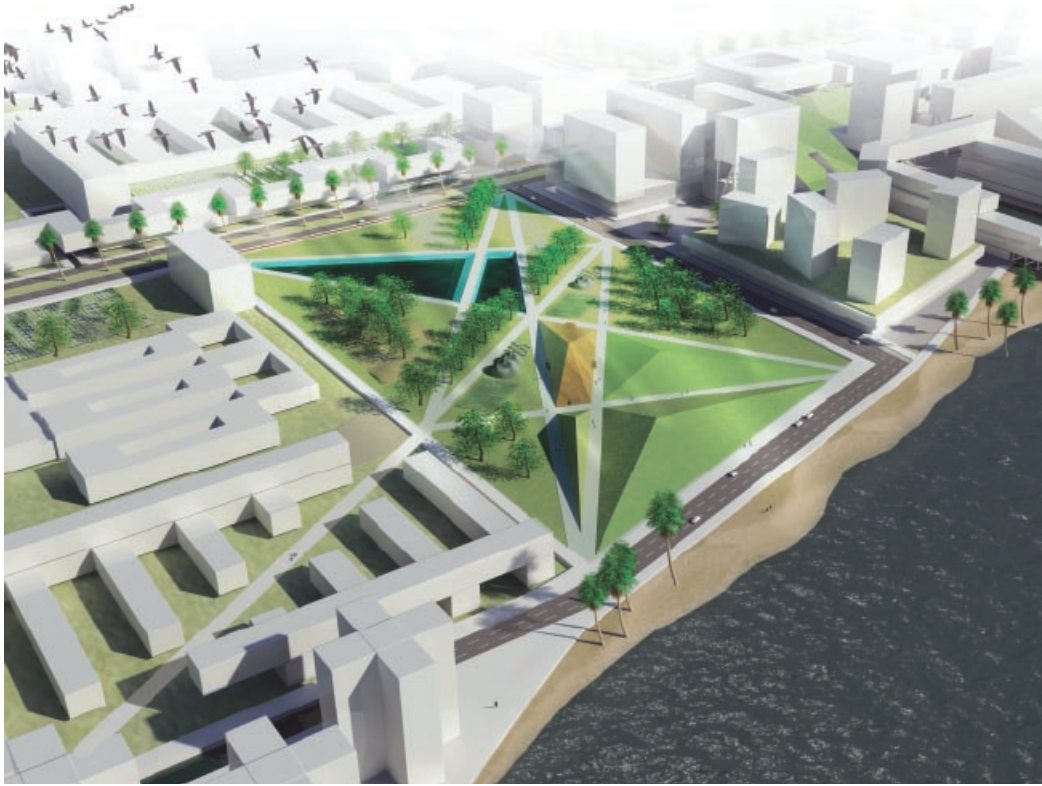


Campus center internal public space, showing a flea market use.



Slum market, where users can do shopping for affordable prices, while benefiting the slum.

Public green spaces:

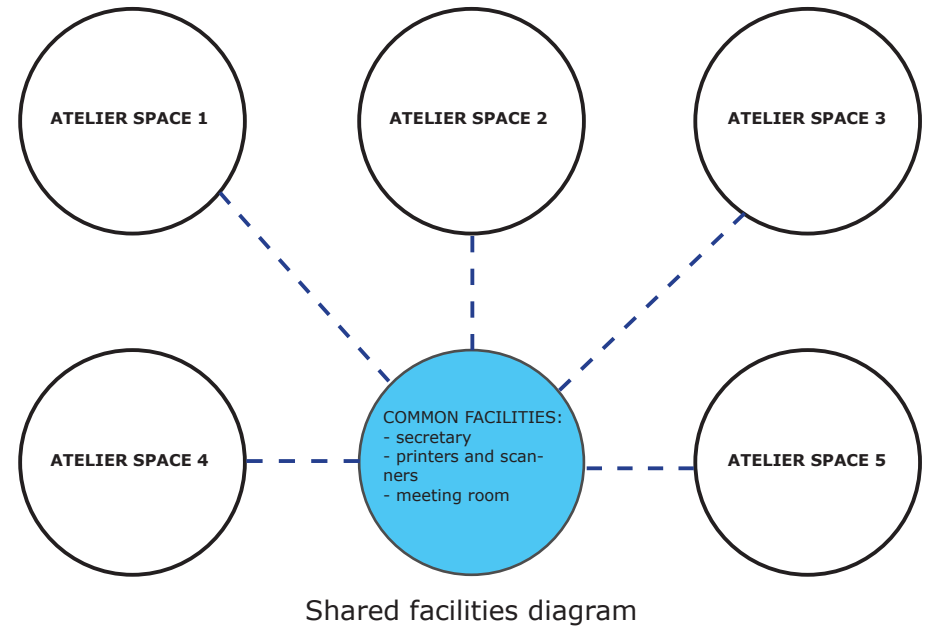
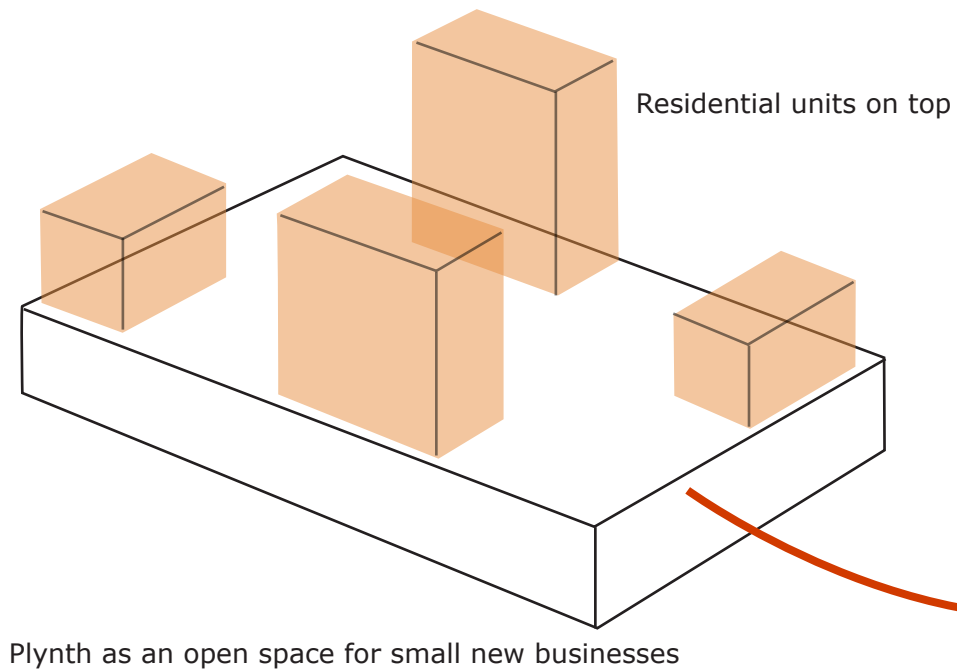


Rendering of the park next to the Campus Center, well defined by the new building masses, easily accessed and programmed.



Rendering of the park in the Sportzone. Besides the proposed campus stadium (background), many sport fields help to program this area.

Scheme for spin-off typologies:



In order to help starting firms to settle in the campus, a new typology needs to be introduced. Composed by a large plynth which can be subdivided in many smaller spaces, having residential buildings on its top. This plynth, besides providing work spaces for new companies should also provide common facilities to be shared by the renters (such as secretary, printers and scans, meeting rooms, etc), offering high quality workspaces at affordable prices.

8. Conclusion

Final Conclusions:

The purpose of this research was to develop an strategy that could enhance Rio de Janeiro's economy in an inclusive manner. This goal was set due to the fact that Rio has been developed under an exclusive, segregative process, which has engendered high urban criminality - as lower income groups are stigmatized and therefore have less work opportunities. Urban crime has damaged Rio's international perception enormously and this fact prevented the city from becoming a main international destination (Rio is only 40th most visited city) and generating many jobs.

Recent administrations have focused on building attractions and on organizing mega-sports events (the Pan American Games of 2007 and the upcoming World Cup and Olympics) in order to catapult the city in the world tourism ranks. However, as shown in this research, Rio still needs a broader Strategic Vision in order to attenuate inequality, lower crime rates, and then attract tourists.

Such an Strategic Vision needs to tackle Rio's main issues: mobility, jobs and housing - intertwined problems which affect inequality and crime, as with better mobility poorer groups could choose for living farther instead of agglomerating in dangerous slums.

jobs



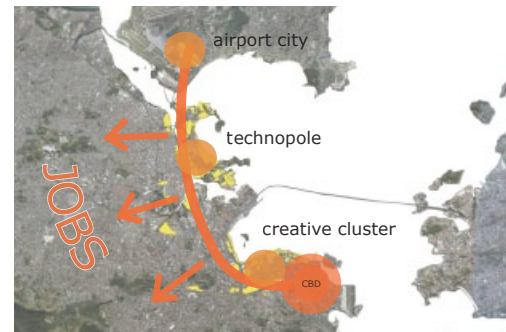
But isn't the city booming with new jobs nowadays? That's true, Rio has been profiting from the preparations for the World Cup and the Olympic Games, but we have to keep in mind that these jobs are temporary and, after the games are finished, all that will be left are expensive stadiums to maintain.

This does not mean to be against the games at all, although the placing of Rio's Olympic Site in a suburb does mean a loss in terms of urban legacy (unlike Barcelona and London which, by placing the games within their main fabric, could generate a synergy between the new investments and their cultural heritages). The new Rapid Bus System in Rio will surely ameliorate the city's mobility and we have to admit that the enormous influx of capital in Rio will not disappear completely after the games are over: money earned today by all kinds of professionals will continue to circulate in the economy afterwards.

The point of this research was exactly how to maximize the effects of the current growth in the long term, which means building a long lasting Olympic Legacy. In order to do so, besides thinking economically, Rio has to tackle the social and environmental spheres as well, as it's no good if consumption increases (due to economic growth) at the expense of the environment or in a socially exclusive manner.

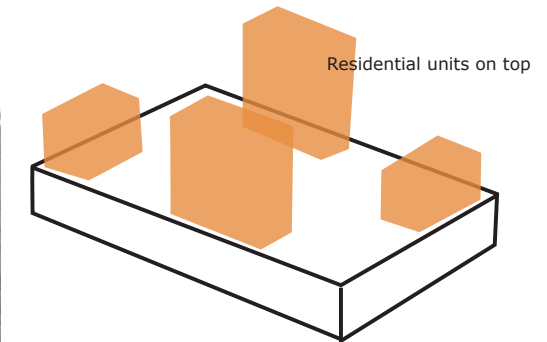
Planning in such an integral way, and within a transparent process, could also speed up the preparations for the games which are lagging behind schedule. As Brazil is a democracy, many groups that are not being heard are going to court against the city, provoking many delays. An integral approach could have avoided that.

No Strategic Vision would be complete without Strategic Projects to materialize it. In the case of Rio we proposed three projects that could be developed in Rio's central urban voids: the Creative Cluster in the Port, the Technopole in the Federal University campus and the Airport-city in the international airport site. These projects would be connected to downtown and the Olympic site by the rapid bus and provide affordable space for living and working. Tax breaks could further benefit start-up companies in the innovative sectors.



It might have seemed strange - specially for those with a Marxist background - to develop a strategy that aims at a more inclusive society and at the same time speak about enhancing tourism and Rio's international image. The strategy here is, of course, grounded in a political position, which has a pragmatic point of view: in order to generate jobs, companies (that means, capitalists) need to thrive as well. We now that this is not always the case. In many places politicians benefit local elites at the expense of the lower classes. This was the case in Rio too, as we showed in the historical development section. However, as we demonstrated, this segregative process engendered crime which had the effect of making Rio loose economic competitiveness.

Therefore, in our Knowledge Backbone strategy we try to make Rio more competitive, but that requires making it more inclusive too. This was the reason why affordable housing and office space was proposed in the strategic projects and tax breaks were offered for new firms. The Technopole project ended with a schematic typology which makes use of the plinth for those new firms while having housing towers on top.



Plynth as a shed for new businesses

This final report, which will be publicly available in TU Delft's website, aims at contributing for the development of the profession of Urban Planner, specially in Brazil, where very little is done in this direction and we continue to see - even in this moment of better economic conditions - cities growing but not exactly developing in social and environmental terms. Integral, cross-sectoral approaches are urgently needed in order to benefit all social classes and the environment as a whole.

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