

Revitalization of the Docklands Region in Rio de Janeiro, Brasil: environmental preservation as a strategic indicator

Short outline

This paper describes the Urban Revitalization Projects developed to the docklands region in Rio de Janeiro, Brazil, an important landmark in the city history, and emphasizes the role of the social cohesion and physical preservation as a strategy being implemented by the municipal government as an indicator for environmental quality and cultural improvement.

1. Introduction

Like other colonial cities in South America, Rio de Janeiro's history was related to the aspect of being a maritime city, conditioned, economically, to naval and railway transportation. Throughout history, urban life developed along the bayside and, presently, the city is undergoing a full revitalization program for the docklands historical frontline and its surroundings.

The study area stands between the ancient docks, close to the historical city center, and the new ones, in the north direction, and is limited by the Central Railway Station and the Guanabara Bay, being enclosed by traditional residential neighborhoods.

The urban fabric still maintains its original frontline delimitation, testifying the docklands evolution, in three moments:

- the origin, back in the XIXth century, when the site was characterized by a series of beaches, wetlands and small bays, and the maritime activities were locally oriented;
- the international maritime commerce growth and the increase of storage structures, in the beginning of the XXth century, causing a series of landfills and road construction works;
- the urban expansion, in the middle of the XXth century, caused by increasing industrial activities, bringing up the docklands renovation and transportation systems diversification.

Recently, the Mayor of Rio de Janeiro developed a Revitalization Plan for the Docklands (*Porto do Rio*), which includes a new circulation system and a special zoning code to protect both urban and architectural historical asset and to provide a new mix of land uses, with economical, cultural and residential activities¹.

Among its goals, the program intends to reinforce the ancient coastal line delimitation, with special landscape design effects planned to preserve, in the future, a special trace of the past. Other important aspect is the urbanistic requalification of the residential areas, located in the hillside close to downtown, with particular morphological profile, defined by land partition and building types.

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In this context, we developed three urban re-qualification projects, between 2001 and 2003, with regards to restoration and urban re-design strategies, which are presented in this paper.

- *Morro do Livramento Urban Revitalization Project*
- *Pedro Alves & Santo Cristo Urban Revitalization Project*
- *Rivadavia Correa & Barão da Gamboa Urban Revitalization Project*

2. Historical aspects and the urbanistic plans

The urbanization process of the docklands of the city of Rio de Janeiro, which includes the districts of Saúde, Gamboa and Santo Cristo, began in the XVIIIth century, with the initial occupation of the hillside, according to Cardozo, caused by the construction of religious and military structures and the proximity to the sea ².

The presence of monasteries, churches and fortifications followed the principles of occupation of hilly areas in colonial times: territory defense and better sanitary conditions. Later, in the XIXth century, these hilly areas have testified the population densification brought by the docks activities and job opportunities. The peculiar frontline shape, the occurrence of wetlands and the rocky soil contributed to the isolation of this districts until the beginning of the XIXth century.

As described by Lamarão, the slave and salt commerce helped to enhance the docks and the trade business, attracting residents to this sector of the city ⁴. By that moment, in the middle of the XIXth century, the old properties, which once belonged to military, religious or farm owners, have undergone an intense land parcelling process, which followed the traditional Portuguese colonial model: straight and long lots, facing narrow streets and staircases with one and two storey houses enclosing them.

The occupation of the existing hills were differentiated, by the specialization of uses: religious and military, in São Bento, Conceição and Valongo; residential, in Livramento, Pinto and Providência; and mixed, including hospital and cemetery institutions in Saúde and Gamboa ⁵.

The expansion of the coffee plantation and trade activities, the construction of the railway lines, associated with the increase of the docks functions and residential concentration, have defined, throughout the second half of the XIXth century, the urban profile of the coastal line, surrounding the hills bottom part, along the sinuous streets which shape them.

The original landscape of the docklands districts was more dramatically changed with the urban renewal plan implemented in the beginning of the XXth century by the city's mayor Eng. Pereira Passos, as demonstrated in the schemes of Figure 1. For this region, according to Benchimol ⁶, this plan included the modernization of the Port, a major landfill work, causing the end of small beaches, islands and bays, and the re-design of the docks facilities, set in a linear way.

After that, two different urban morphological sectors were defined: the initial occupation in the hills, with the traditional one and two-storey buildings for residential and commercial uses, and the one found in the lower and flatter new quarters, with its new architecture types, like warehouses and storage buildings.

During the 1960's, the construction of the Perimetral Avenue, with its elevated structure built along the docks, has provided a new urban profile to these districts, transforming again the landscape of the coastal frontline. After that, metropolitan traffic and transportation systems were brought in the area, shaping up the atmosphere of the streets and avenues in the lower lands ⁷.

Nevertheless, the old ambiance of the hillside area and its limits were maintained and these districts are nowadays under strict urban preservation laws. The contrast between the colonial city and the modern one is of these neighborhoods characteristics.

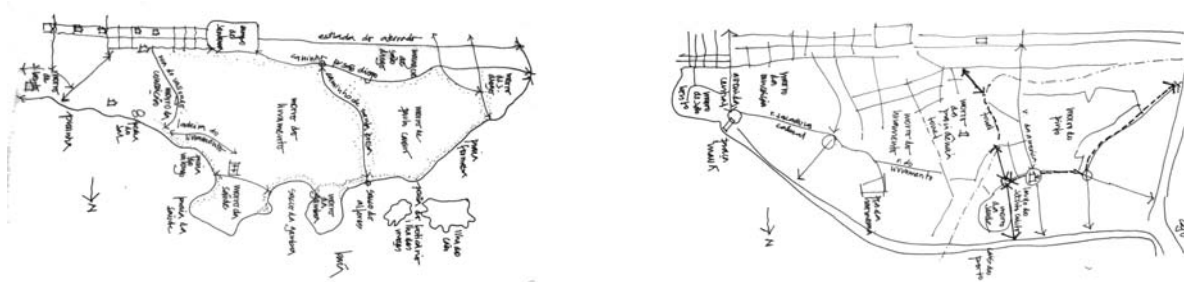


Figure 1: Schemes of the urban growth in the docklands area in the beginning of the XIXth century and in the beginning of the XXth century

3. Urban morphology characteristics

We observe distinct morphological trends when we compare the older innerland sites and the ones obtained through several landfill works. The land parcelling process as well as the specific occupation parameters ended up shaping different spatial relations.

In the hillside, as well as low sector, close to the old coastal line, we can see the presence of the typical Portuguese colonial urban lot, with dimensions of 5x50m in average. Up in the hills, the streets are narrow and the houses define their alignment. The lot partition system has not considered vehicle circulation, and the spatial interaction between the houses and the streets generate the public open spaces, whose meaning for local residents is the expansion of their housing territory.

There are houses from different ages but the hole set of buildings is uniform as are the dimensions and volumetric types. The same interaction between the houses and the public spaces, stablished since its original parcelling settings, is preserved in all its character.

The uniformity shaped by peculiar spatial relations gives the place a strong identification with the past, allowing, at the same time, for change inside the lots, where new constructions are built, in the back of the lotes, resulting in small alleys and row houses. These housing units are frequently put for rent, preserving the same ambiance and use as seen in the original occupation, back in the middle of the XIXth century.

In the lower sector, we can find diverse types of lots, buildings and streets, according to the land uses. There are railway facilities, which correspond to existing empty spaces, and the old warehouses, set aside the docks, closing the views to the bay, besides other diverse

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morphological relations. The storage and trading activities conditioned the forms of lot occupation and construction.

Some reminiscences from the link between the inner railway line and the docks are found in the area, like the tracks crossing the streets, old tunnels and station facilities. Some of these structures such as the warehouses and the Wheat Mill are still in activity.

4. The Docklands Revitalization Plan and Rio de Janeiro's planning tradition

Since the beginning of the XXth Century, several urbanistic plans and projects were made for the city of Rio de Janeiro and for the docklands. By analysing them, it is possible to verify the historical evolution as well as the importance of the study area for the cultural memory of the city.

The plans and their goals reflect the ideas and the urban culture context of their time period as described below:

- *Pereira Passos Urban Renewal Plan*, developed between 1903 and 1906 by the City Urban Improval Commission: meant the modernization of Rio de Janeiro urban structure, sought to solve infrastructure problems and to bring, at the same time, beautification strategies as found in the European cities of the XIXth century;

- *Agache Plan*, developed in 1930 by the french urbanist Alfred Agache: considered the first general urbanistic plan based on deeper knowledge and discussions about the city's destiny and growth;

- *Doxiadis Plan*, developed in 1965 by the greek office Doxiadis Associates: intended to respond to an increasing demographic and physical expansion, and is considered a Strategic Master Plan with emphasis on water supply and sewage facilities and on vehicle transportation systems;

- *Basic Urbanistic Plan (PUB-Rio)*, developed in 1977 by municipal government technicians to face the metropolitan growth and management, and proposed normative goals to define new urban legislation parameters;

- *Director Plan*, developed in 1992, was also made by the municipal government technicians and was set as a municipal law according to the Federal Constitution of 1988.

In this context, the Planning Department (IPP) proposed the Rio de Janeiro Docklands Revitalization Plan, which includes, besides the new circulation system, the new zoning code with historical preservation premisses as well as with the intention of bringing new density and land use parameters, for residential, economical and cultural activities.

If, by one hand, this Plan is set against the real state market investments, which has invested massively, in the past years, in expansion areas and residential suburbs, by the other hand, it is coherent with recent international trends, seen in other metropolitan areas, which are focusing on recuperation of old docks and central districts. These trends help promote "new uses, a pluralistic social fabric, public spaces, a territorial base for the civil consciousness", as described by the Secretary of Urbanism, Mr. Alfredo Sirkis.

The preservation of landmarks and historical buildings may contribute to the local residents sense of belonging and spatial identification, helping increase the social value of the surrounding environment.

In the Plan, as proposed by the Mayor of Rio, the common sense about the whole implementation effort is the understanding that it is a long range and strategic process. The principles, listed below, were defined after the analysis of other experiences around the world:

- Restore the old sectors, as the new ones uses are introduced
- Support the local economy
- Promote the diversity of uses
- Estimulate the public participation and mutual cooperation

The main environmental issue is the recuperation and de-pollution of the Guanabara Bay, with the controlled use of its water resources what will result in several social and economic benefits.

The balance between social development, housing use intensification, new cultural and commercial activities and the natural environment preservation is a central question for the planning and construction works and have to be integrated in order to bring sustainable urban development as foreseen by the municipality.

Following the principles discussed above, the Planning Department (IPP) has established the orientation for the analysis, programs and projects developed during the period from 2001 to 2003.

5. The urban re-qualification projects

The projects presented in this paper were part of a contract between the architectural firm *Mayerhofer & Toledo Arquitetura, Planejamento e Consultoria Ltda* and the Planning Department (IPP). The project areas are indicated in the docklands aerial photo of Figure 2.

For the projects development, we applied particular field analysis techniques, which helped us understand the landscape and urban structure, as well as the social environment characteristics.

We also studied the urban history and the preservation requirements as defined by the municipal laws. The infrastructure facilities, in particular drainage and street lighting systems, the public transportation and vehicular circulation systems were also analysed.

The characterization of the study areas conditions made possible the projects development, which included urban and landscape re-design proposals for the open public spaces based on the cultural and social profile of the resident population.

The proposals were integrated to the preservation efforts sought by the municipal Planning Department (IPP), oriented to improve the homogeneous urbanistic partition as a whole, not only the individual historical buildings.

Our concept was based on the establishment and definition of project **urban design patterns**, as selected by our team according to the communities social needs and cultural profile, for linear and continuous application, along the streets, sidewalks, stairs and alleys, and of **focal points**, for specific application in identified special open spaces and road connections.



Figure 2- General view of the docklands region with the indication of the study areas

5.1. Morro do Livramento Project

The distinguished characteristic of this project area, in Saúde district, was the preserved status of this historical hill and its homogeneous environment. The surface project area covers over 40.000 m² and was divided, for work purposes, in three blocks, following the hill's physical features: the eastern block, the northern block and the southern block.

As described before, according to both social and morphological features, our proposals were based on **eight urban design patterns**, to be applied in diverse streets, alleys and stairs, with physical dimensions ranging from 2.00 m to 9.00 m in width, and **seven focal points**, related to open spaces with particular landscape treatment, such as small squares, alleys and parks. Some examples can be observed in Figures 3 and 4.

The concept goals were to enhance local ambiance and historical aspects, promoting discrete and respectful intervention, always regarding the conditions of comfort, safety and

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accessibility, the need for infrastructure and the renewal alternatives. The project was concerned with the local dwellers needs and habits, and was aimed to increase the environmental quality indicators (infrastructure, tree plantation, lighting and drainage) and the sense of belonging, while providing better conditions for leisure and meeting points.

The most important aspect included in our methodology was the socio-cultural survey held in the beginning of the project, allowing us to understand the relation between the public spaces and the local residents, helping us to establish the chosen patterns and focal points.

Some of the places studied are under preservation codes and had specific proposals which obey the existing regulation, such as the stairway which crosses both sides of the hill (*Ladeira Costa Barros*).

The building materials, mostly natural stone made, as well as the lighting equipment and urban equipage were carefully chosen in order to enhance the ambiance without transforming people's environmental perception and daily activities.



Figure 3 – Proposed pattern in Ladeira do Barroso for preserving residents habits



Figure 4 – Proposed a pocket park close to local church at Na. Sa. do Livramento Square

5.2. Pedro Alves & Santo Cristo project

In this project area, in Santo Criso district, the first goal was to understand the relation between the hilly sector, already analysed in the study area described before and the lower lands, comprising: the sector along at the hill bottom part, which correspond to the original coastal line and measures up to 70.000 m², and the sector close to the docklands, a landfilled block where there once was a bay, with measures up to 20.000 m².

The second goal was the integration between the existing residential inner use - which includes large slum settlements over the Providencia hill, a big public housing complex and traditional Portuguese settlements over Morro do Pinto hill and the surrounding streets- and the new investments in public facilities, to be located in the landfilled antique bay- a cultural complex for the Samba parades and a sport and cultural complex, to be preferably used by the local residents, including the slum dwellers.

Our historical preservation strategy was focused on enhancing the old coastal line, as a way to retain memory over the environment, made possible through landscape and lighting effects. Our environment preservation strategy was to solve the drainage problems referring to the hills rainwater contribution.

To face social inclusion, we sought to provide specific focal meeting and leisure points in order to made the transition from the inner sectors, surrounded by diverse residential types and social groups, to the exterior public spaces where the new mix of uses and groups are expected. The new public circulation system proposed by the municipality, including a new vehicle route system and train tracks and the bike route, planned by our project, were an important factor of public accessibility.

The urban landscape shows traces of the different historical periods of occupation: the costal line and the continental limit until the middle of XIXth century; the urban blocks which were defined by the landfill parcelling lots, and the empty spaces, where major urban renewal works will take place.

Besides historical and architectural preservation features, in this case study the residential profile was determinant for the urban design patterns as well as to the selected focal points. The activities planned for these special open spaces relate to the communities which surround them.

We established eight **urban design patterns** and seven **focal points**, including existing and new public spaces, some of them presented in Figures 5 and 6.



Figure 5- Refreshments Square under the highway, serving Providencia community



Figure 6 - Largo de Santo Cristo Square, facing the Gamboa housing complex

5.3. Rivadavia Correa & Barão da Gamboa project

This study area, in Gamboa district, gives access to the old railway maritime station headquarters, and is located between the docklands, along the Guanabara Bay, and the Central Station, across the hills in the downtown area. It presents under-utilization of public as well as private spaces, shaping a decaying environment, both in physical as well as in social ways. The area faces the slum settlement of Providencia and social inclusion was again an important project premise.

As in the case described before, our strategy was based on integrating the new investments in public facilities, such as the sport and entertainment centers, to the existing inherited cultural values, since we believe that the increase of job opportunities will be an important strategy for socio-economic improvement of local residents.

Changes in the vehicle circulation, parking solutions and safe street crossings were needed in order to conceal the future to the present situation..Another issue was the connection to

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major bus transportation lines and the proposed train system to the bike route, enabling the residents and visitors to circulate inside the area.

The patterns planned for this project were conditioned to the the linkages: vehicle circulation; connection to public transportation; accessibility of local residents to the new facilities and activities, and the historical references enhancement. The focal points were designed to allow for transtition from the docklands to inner streets, presenting solutions for landmark preservation, in one hand, and residents leisure and social activities, in the other hand.

We established 4 **urban design patterns**, to fit street dimensions and functions, 4 **focal points**, including new squares and meeting points, as exemplified in Figure 7, and 6 **circulation connections**, where major crossings and transportation links are planned.



Figure 7 – Proposed entrance square to Providencia community

6. Conclusion

In developing the projects described in this paper, the project team faced questions comprised in the proposal for landscape and the urban design alternatives for such particular historical environment, having in mind the future changes that will occur in a near future in the docksland region as a whole, according to the municipal government regional plan.

The concern was how to fix the local residents, preserve their inherited values and their relation to the urban physical environment and, at the same time, promote their connection to new activities, public facilites, sport and entertainment centers.

One of the main aspects considered was the existing residential use with diverse characteristics: the traditional colonial settlements, related to one and two-storey row houses, dated from the original Portuguese occupation in the end of the nineteenth century, up in the hills and in the lower lands; the housing complexes, from the beginning of the twentieth century; the major modern housing complexes from the middle 1950's, and the slum settlements of Providencia community, which started in the beginning of the twentieth century, located between the docklands and the downtown area.

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Along with the maintenance of the local population cultural inherited values, we had the concern of regenerating decaying areas and old structures which we consider a valid strategy for environmental preservation.

The Plan for the Docklands has established the alternatives for economic improvements and sustainable development, as expressed in land use, transportation, vehicle and pedestrian circulation proposals. These are necessary actions for the people that live and for those who will visit the docklands in the future.

The analysis of this future scenario was a fundamental framework which has conducted our concepts and premisses that can be resumed to: the need for social inclusion and maintenance in place of local residents, avoiding gentrification and migration; the search for respect for their values and habits; the struggle for reinforcement of local identity and community empowerment; the enhancement of particular landscape and historical traces.

Along with these premisses, the strategy of creating new open spaces, designed for the people's needs and environmental improvement as well as the selection of specific patterns proposed to fit the different categories of urban requirements were valid methods to promote responsiveness and sustainability to deal with a singular territory such as the docklands in Rio de Janeiro metropolitan context.

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