

## REVIEW ARTICLE

# Green urban planning opportunities in northeastern Argentina: Urban resistance

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## ABSTRACT

This work is carried out within the framework of sgecyt approved research project “environment and sustainability in architecture and cities” (PI c007-2013). It aims to explore the planning of an intermediate city with innovative concepts or optics, understand its relationship with natural physical support, and find mechanisms to solve a large number of complex aspects of urban problems after appropriate diagnosis. Taking urban underground engineering as an example and based on the actual work of A5 UPC, this paper makes a useful reference. It identifies four categories and proposes planning guidelines based on landscape environmental standards as the main tool for urban improvement.

**Keywords:** urban planning; sustainability; nature

## 1. Background

In the above research projects, some work has been carried out to explore the characteristics, standards, and categories of environmental standard planning, which we call “green planning”, following the example of Salvador Palomo, whose results were published at the scientific conference and in the paper “green city model of urban planning in Northeast Argentina”<sup>[1]</sup>.

In addition, the annual diagnostic and urban planning exercises for NEA cities at the Regional Urban Seminar (RUS) require reflection in order to reach a position on this issue.

This paper aims to reflect on the concept of a green city, determine its categories and variables, and explore its application prospects in Northeast Argentina.

## 2. Urban status

Post-industrial cities gradually lost the traditional relationship between the city and the surrounding farmland, and their products entered the market formally or informally by train or carriage. As a result, it also lost its relationship with farmers, who came here to provide their most valuable property, which was replaced by industrialized and globalized agriculture, and rural areas close to urban land became the object of speculation<sup>[2]</sup>. Since the 19th century, in the absence of planning and public investment, the process of replacing manual and household crops with industrial crops has led to a large number of rural immigrants to urban centers, resulting in a significant increase in population, rapid growth and expansion, and damage to natural space and leisure parks.

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To be sure, the general trend of the world population is to gather more and more in these areas<sup>[1]</sup>, because there are all kinds of opportunities: economy, culture and society, so it has become the most appropriate area for the development of human relations.

In Latin America and the Caribbean, the proportion of the urban population increased rapidly from 42 percent in 1950 to 75.4 percent in 2000 and is expected to increase by another 10 percent by 2030. However, in more developed countries, urban population growth is considered stagnant. According to S. Palomo, “due to the small impact and power of industrial stimulus”, for example, New York has increased by 2 million people in 40 years, from 1975 to 2015, while Mexico City has increased by 10 million people in the same period<sup>[1]</sup>.

Traditional urban design ignores suburban space, whether natural space or productive use space. These lands are often classified as undevelopable and excluded from any planning. This classification draws a boundary between the inside, the city, and the outside, which is called a suburb, a rural city, a suburb, and other terms indicating exclusion.

In this regard, in order to support the inclusion of peripheral areas, we must say that some voices, such as Corboz<sup>[3]</sup>, oppose or at least question the boundary between rural and urban areas as an opposition, adding that this opposition is being overcome because our cities are highly concentrated after agricultural mechanization, which is the land concentration required for the current agricultural export model. With the spread of mass media, they have realized “homogenization of lifestyle through cultural reflection”.

As cities spread to farmland, along with infrastructure and service facilities, natural landscape and topographic features, such as rivers, gullies, forests, gullies, and lagoons, are obstacles to urban development. In general, this expansion is carried out in an uncontrolled and unplanned manner, at least in our Latin American reality. Settlements do not know their territorial functions, such as their runoff system

or rainwater storage resources, and landscape values, so it is inevitable to have environmental problems, such as waterway pollution, soil pollution, waste accumulation, insufficient infrastructure and services, soil erosion and floods caused by deforestation, and soil waterproofing. In the 1960s, Mcharg said that land management affects water, and water management affects land processes<sup>[4]</sup>.

In addition, without understanding the logic of managing this landscape, the interweaving between nature and city or between nature and society loses opportunity. In this regard, we attach importance to the landscape as a decisive aspect of building cultural and collective characteristics. As a kind of cultural construction, it must become the basis of space and territorial order.

In order to develop plans for sustainable management, the territory needs to be carefully read and interpreted.

### **3. Some background of green planning**

Since the 1960s, in Anglo-Saxon and Northern conditional areas, people have tried to develop natural urban planning methods. We must remember that the Royal Horticulture Society has had a long tradition of landscape planning since its establishment in 1804. Society has always been interested in the relationship between nature and the city. Its representatives include “ability” Brown, Humphrey Repton, or John Nash. In cooperation with Repton, he launched the reconstruction of West London in 1813, aiming to combine the axis of parks and monuments<sup>[5]</sup>.

This book may have the greatest impact on the practice of ecological and landscape planning. It requires planning to carefully observe nature about 20 years before the emergence and dissemination of the concepts of sustainability and ecological development and to put forward a land analysis method (cover map) to be able to link land type and landscape shape with the use of land as a future land

management tool. The Mc Harg method emphasizes the difficult interdisciplinary approach required by the landscape, including hierarchical research from the oldest components, such as geology, to the most transient components, such as wildlife, and then stacking or combining them (superposition mapping) to reveal the landscape model.

Although the Scottish urban planner began to turn public attention to environmental issues, other voices began as early as the 19th century. For example, Perkins Marsh emphasized the study of human behavior in his book *Man and Nature*, which led to changes in the Danish natural system. In the same text, Mike Hager denounced the anthropocentrism position. He believed that nature “is only an irrelevant background in which human beings represent the so-called function of progress or interests”. Under this background, he proposed a paradigm shift, that is, “man must show that he has the ability to understand and manage the living world in order to ensure survival”. In order to do this, it must first recognize that, as the same author said, “nature is a single interactive system, and changes in any part of it will affect the whole system”. For example, “deforestation in highlands may have the same impact on floods as filling estuarine swamps”<sup>[4]</sup>.

In any case, the urbanization of the territory will affect runoff, erosion, and sedimentation rates, confuse water, and reduce natural conditions.

Therefore, land management affects water, and water management affects land processes<sup>[4]</sup>.

For his part, from the 1960s to the 1990s, Michael Hough proved in various works in his work on nature and cities that urban life away from natural processes was destructive. He advocated creating new landscapes and healthy lifestyles, and in the mainstream view, the role of human beings is to conquer and develop the natural environment for its exclusive use without considering future generations<sup>[2]</sup>.

If we look back at history, we will find a lot of history trying to make people reflect on the cities that developed industry in the 19th century without considering the excessive and accelerated growth and density, as well as the environmental pollution that these cities are experiencing. The loss of the relationship between cities and nature has damaged the quality of life of their residents. Its consequences are reflected in poor streets, housing, and working conditions because the infrastructure for population outflow is weak and rural migrants have benefited from industrialization. One of them is the proposal put forward by E. Howard in his book *Tomorrow*, which is an urban planning treaty. In the treaty, he proposed a model of garden city as a response to these conditions and promoted a self-sufficient city which would have direct contact with nature and cooperatives. These ideas were lost in the process of industrialization. In 1904, Raymond Unwin and Barry Parker planned to build a second Garden City in Letchworth, Hampstead, and a few years later, in 1919, Welwyn Garden City superimposes the concept of satellite city and the concept of urban garden, which has the characteristics of independent operation and direct connection with rural areas.

In addition, it is important to remember some plans for American cities in the late 19th century, such as the park system project in Boston or Olmsted Park Avenue.

## 4. Green planning: An opportunity for urban transformation

In the mid-1980s, some countries began to realize the importance of the natural environment as a prerequisite and necessary step in land planning with the deterioration of urban surrounding areas. Previously, the standard of functional urban design regarded the city as a collection of functional components, but the material support was irrelevant. As mentioned above, most Latin American cities ignore the characteristics of the natural environment and its logic and dynamics in the process of their crazy expansion, such as the growth status of rivers, precipitation, runoff system, soil absorption capacity,

the height of groundwater level, the morphology and behavior of natural ecosystems, animals, and plants, among other things.

In the green wind, Reuben Percy mentioned that although people's awareness of the protection of biodiversity and ecosystems has improved since the Rio conference in 1992, there is a big defect that "soil, as a territory, as human support, and as a landscape, provides us with the most exhausted and non-renewable resources. Therefore, its pollution forms are more complex in the final analysis as a habitat"<sup>[6]</sup>.

According to Pesci, the substantive issue is related to the implementation of property rights and inheritance rights<sup>[6]</sup>. Since the Roman Empire, land has no longer been "free support for free resources, such as water and air, animals, and plants, and has become the territory of its owners (domus domain). Since then, land has become an economic subject, especially in cities, which is also speculative. Therefore, in the face of this phenomenon, most urban planning has proved to be ineffective. Even symbolic cases of modern urban design, such as Barcelona's Zelda plan, have been diluted by unscrupulous speculation.

As stated in the green paper on the environment, green planning proposes to "review the principles and practices of urban planning and introduce positive environmental, ecological, and landscape components and constraints". Considering that urban planning is the discipline responsible for land management, its terms of reference should go beyond the urban suburbs themselves and cover the super-urban areas where complementarity and balance requirements can be achieved<sup>[1]</sup>.

According to S. Palomo, green planning includes three factors in principle that must be studied and considered in decision-making: environment, ecology, and landscape, or their combination<sup>[1]</sup>. The study of a city must be carried out from different angles. All these are complementary and the basis of green planning.

The impact of urbanization includes the impact on medium-sized cities, such as reducing the wind speed leading to the greenhouse effect and promoting thermal investment, waterproofing the surface, reducing rainfall infiltration, so as to reduce underground water storage, shorten the time of the runoff process, and having pressure or impact on the environment. The degree of impact depends on the scale and development of the city. Areas with vegetation or green space reduce the impact of climate change, control erosion, improve the quality of the landscape, and enable urban residents to connect with nature, which is beneficial both intellectually and socially.

In this sense, the Chaco resistance movement is one of the most symbolic examples of the NEA. It is built on the Fluvio Lagustre system of the Negro River and partially on the flood plain of the Parana River. Due to the need for space for urban growth, in order to obtain dry land for construction, actions have been taken to complicate the natural drainage of land, such as filling the important lagoon or ancient river channel of the Negro River as a rain reservoir. Dikes, fortifications, pipelines, and other infrastructure works have been built to control water resources, thereby changing the terrain and hindering the otherwise barren runoff of the territory. Therefore, although the water inlet of Parana is controlled through the defensive dike covering the suburbs of the city, in case of heavy rain, the water remains around the city and cannot be discharged quickly, so mechanical means such as hydraulic pumps must be used. This means that instead of adapting to the territory it supports, the city has systematically hindered its internal operations.

The defensive capability of the wall will only be verified over time, but its existence increases the area considered "exploitable" by the municipal government, further expanding the "fragile" territory.

## 5. Resistance box conflict between water, city and human settlements

The establishment of the Chak colony (the

resistance movement was the first colony established in Chaco territory) was carried out simultaneously with the consolidation of the urban legal system, which has changed and evolved in a few years. This

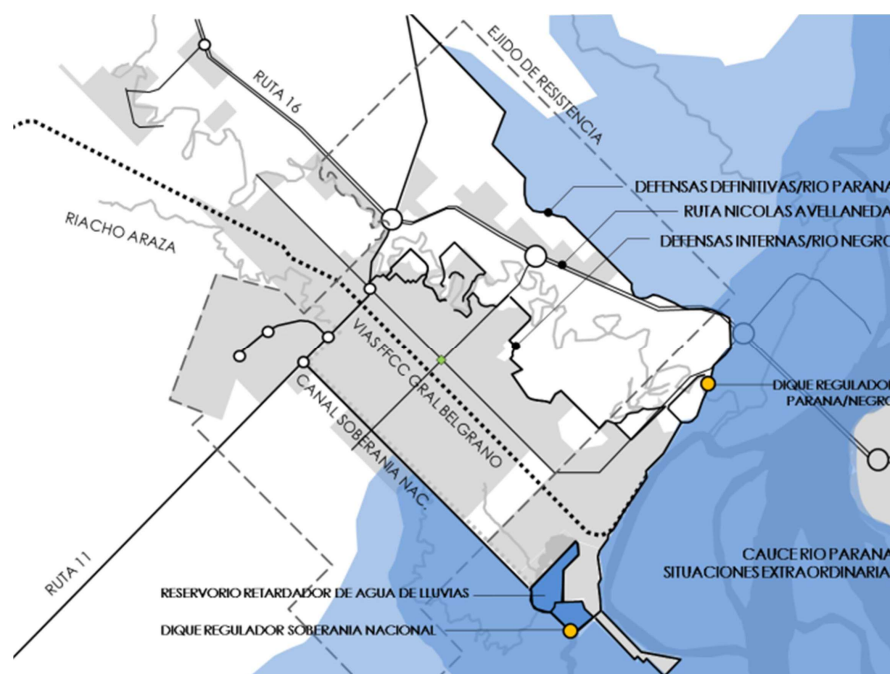


Figure 1. Areas affected by the rise of the Parana River.

is another reason why more than one measurement is required to comply with the law.

In 1875, the exploration committee of the surveyor Agustin Foster and the engineer Arturo Seelstrang drew a map of Guangzhou. Nevertheless, this route is still printed on the ground plan, which “doesn’t know” or denies the territory it extends in a utopian way, whether it is lagoons (originally 71, now 21 less than the last century) or indigenous residents who retreat with the advance of the military border.

Resistance is a new town which is established at a specific historical moment and is the deliberate product of a preconceived prototype plan. Although it is real, it is not the final form. Here, we can say that it maintains a certain abstract state. Therefore, the shortcomings of its location and scope are identified as the power of villagers, which makes its nature consistent with its consolidation as the core of the city, especially its role as the capital of Chaco national territory since 1884.

The city is made up of a perfectly regular parcel of land, which is composed of an orthogonal axis at an angle of  $45^\circ$  to the base point, and its boundary forms a perfect square of 400 hectares. The border of the colony is a building in Damero with a “four” central square, four at the end of the village border. The main street was intercepted in the square.

The development and rationalization of rural and urban land are addressed through the implementation of a network system organized in a territorial macrogrid, which provides an alternative for organizing agricultural production activities (within the framework of the reality of Argentine agricultural exports) and the equitable distribution of land. In this regard, “cities are no longer isolated outposts for conquering territories but are integrated by a rational, geometric, and abstract system”<sup>[3]</sup>. This means that the production conditions are similar throughout the territory. In the case of resistance, it proves its inefficiency, or perhaps a weakness, by trying to homogenize and summarize the situation by ignoring the specific background. In this case, the

choice of land is not conducive to the implementation of this model because most of the measured land is not suitable for the development of agricultural activities.

Another constant factor in the colonial process is the application of prototype models throughout the territory using laws and legal instruments in which local realities are excluded, leading to systematic and reasonable actual territorial occupation. The city consolidates and expands itself by repeating certain models in the original plan, confirms its basic paradigm, expands its scale, fills gaps, and risks “denying” the water risk situation brought about by the implementation of the plan.

From the perspective of ecology, the urbanization process of what we call “great resistance” is the same; that is, it corresponds to a single city. It is not only an isolated city but has also developed into an urban agglomeration. From the moment of land occupation, urbanization begins to flow north and south at the intersection of the Hei Alaza River as natural boundaries, respectively. The tense port interior (production) makes the growth of the historical axis.

Inadequate planning or development problems that constantly “deny” the characteristics of the seating area increase the water risk to the population and increase the mandatory engineering response to saving the city (naturally controllable, not understood). As a result of the combined action of these factors, the development of Amgr’s almost “amphibious” territory on different flood terraces of the Parana, Negro, Araza rivers have promoted the proliferation of settlements, resulting in the reduction of river space, the ancient reasons for its formation of lagoons, and the wetlands characteristic of the area due to indiscriminate filling and obstacles to its natural interconnection, if not eliminated. In this way, the receiving capacity of the river lake system through pipelines and fillers is deprived of the natural drainage capacity during rainfall in urban catchments, thus simplifying the conditions of river morphology and riparian biota.

In suburban areas, these factors are more or less manifested in the discontinuous occupation of marginal and flooded areas by new communities, land occupation, and various infrastructure (roads, purification, energy, industry, commerce, etc.), resulting in more or less integration of urban, industrial, and rural uses, which destroy the continuity of river and lake areas and lead to disconnection from rivers, their lagoons, and floodplains.

## **6. Outer edge self defense**

How can large-scale projects such as the national defense plan be coordinated with the new urban land allocation? What impact does it have on society? Urban planning is an action strategy for urban land production.

The so-called AMGR final defense system is a device designed to achieve territorial control of hydrological variables in the enclosure area or embankment. This is a structural change in the natural behavior of the territory. What values save or abandon these changes? You know the city and the river. Don’t you know much? Who decides to save or abandon social or collective heritage? Technical personnel, country, and society as a whole? Why? Or what kind of evidence<sup>[7]</sup>?

People believe that, in the face of nature, we should not use ethics but intelligence and inventive ability. However, in the “city” (human space) of human communication, wisdom must relate to morality, because morality is the soul of human existence. So far, all ethics live in this internal framework of human beings and abide by the action measures restricted by it within a time range related to the persistence of life and space and human neighbors and roles.

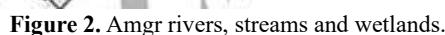
The production logic of our city endows space with social significance, form, and function, which essentially expounds the simultaneity of current social practice and should aim to achieve better

other. There is a lack of timely planning and control at all levels of the state. But most importantly, social institutions, land managers, and urban managers lack awareness of and a lack of environmental sustainability standards. They left the fragile territory on which we live.

## 7. Inner edge contact between urban land mass and gap

The occupation of the Negro River banks and lagoons by private actors makes it difficult for people to enter, use, and enjoy the area, and sometimes even hinders the area. These reasons are not only related to law and legal order but also to an urban problem, in which human habitat in turn depends on a good relationship with the surrounding environment. This is a political issue because conflicts arising from collective coexistence must be resolved, and policies must promote the distribution and exercise of power in the interests of common interests. This is a social problem, as the existing polarity reflected in the unstable urban settlements on the edge of the Black River and lagoon must be eliminated.

In the short history of AMGR, the “disorderly” acceleration of urban growth is favored by eternal factors on the one hand and land speculation on the



purchased by residents in these areas.

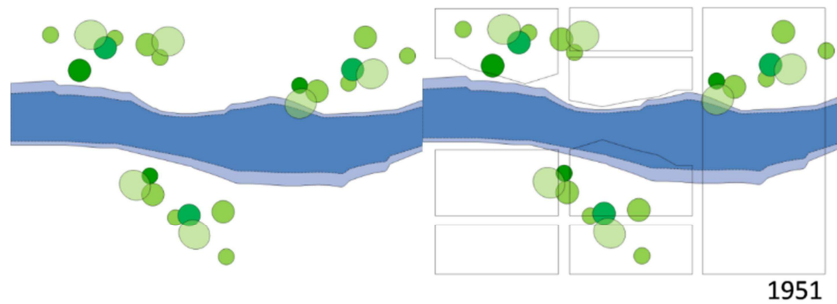
The use and occupation of the Negro River are summarized as follows: The resistance city has been developing continuously since 1920, filling the lagoon for the first time by occupying the open space of the flood valley of the Negro River and



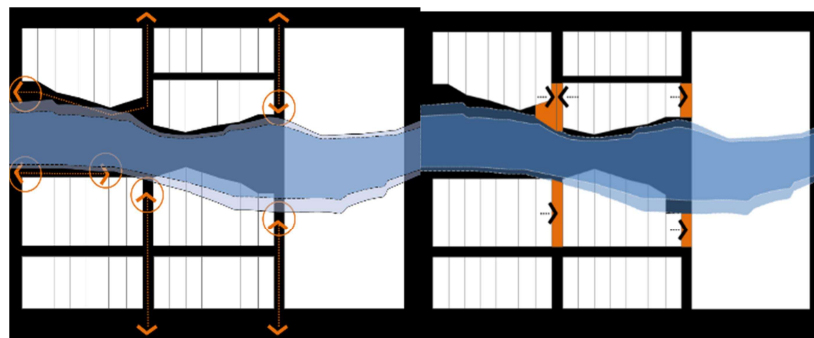
then occupying it, exceeding the proposed limit of the first colony.

Those areas that used to be lagoons are now buildings with different uses, residential areas, businesses, institutions (schools and government entities), and road infrastructure networks. At present, the degradation of the fluviolacustre

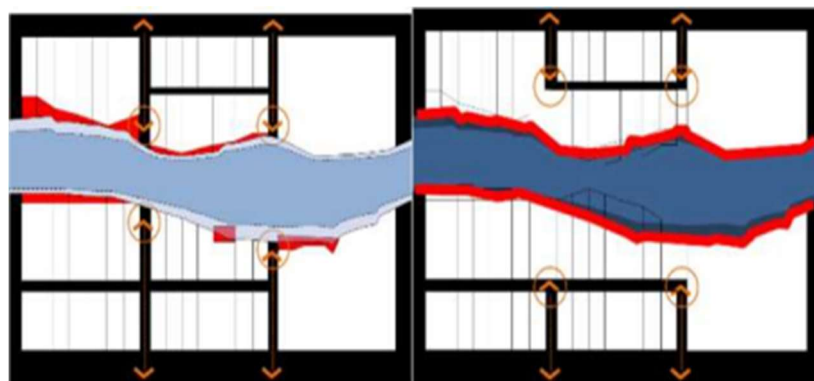
system is due to the occupation of the edge of the lagoon, and the filling of soil for residence, entertainment, or the formation of informal settlements hinders their natural connection. Increasing land levels from fill materials distorts natural runoff and limits the ability of the fluviolacustre system to treat excess water.



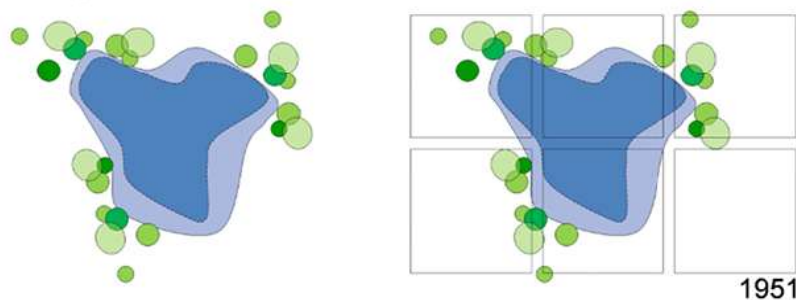
**Figure 3.** Outline the initial situation of Chaco Province.



**Figure 4.** Traditional lottery plan occupies public streets.



**Figure 5.** Occupy riverside space occupy public streets.



**Figure 6.** Outline the initial situation of Chaco Province.



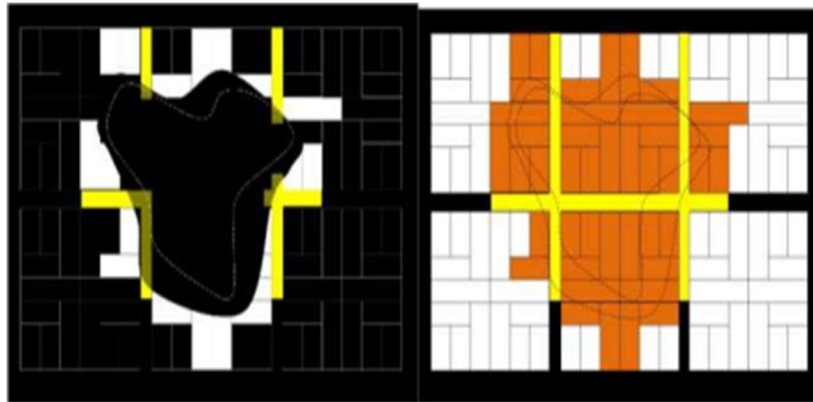


Figure 7. Traditional lottery plan occupys public streets.

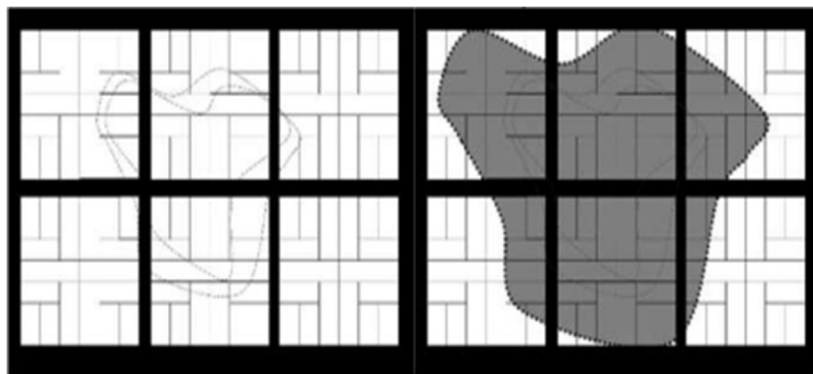


Figure 8. Occupy riverside space occupy public streets.

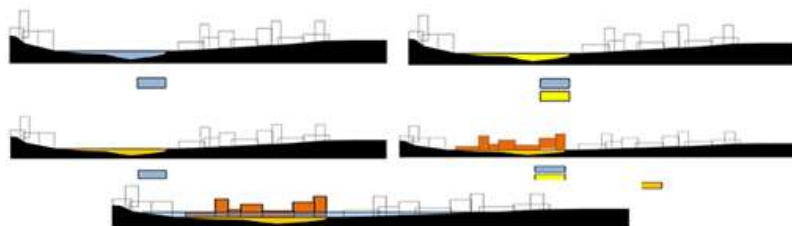


Figure 9. Overview of the process of occupying the lagoon and subsequent floods.

## 8. Green space as an opport unity

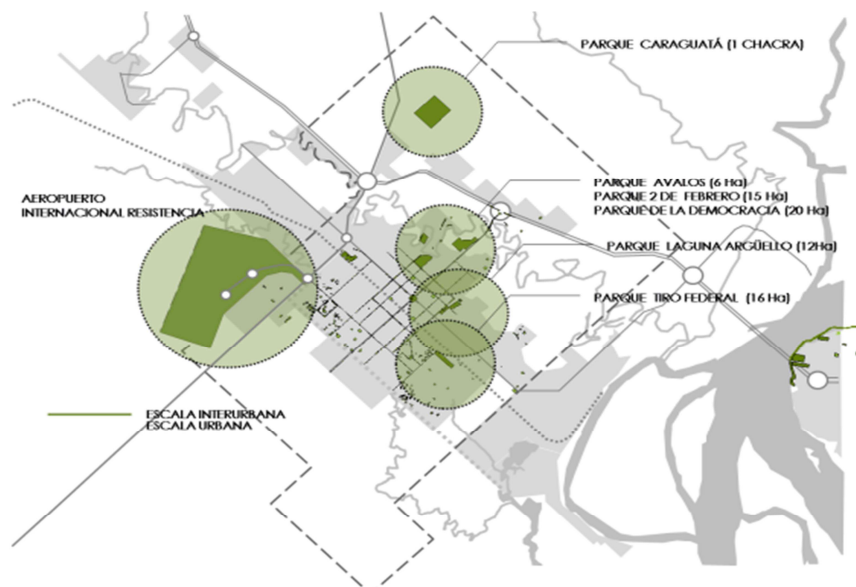
Green space is important equipment because of the activities carried out in it, such as leisure, meditation, and sports activities. They also have the function of improving environmental quality by enriching oxygen, absorbing flue gas, filtering water in the soil, and acting as regulators of wind, rain, and noise. Similarly, they also help shape the image of the city.

There are two types of resistance. One is barrel-shaped. They usually have the characteristic size of an apple, including entertainment and game areas for children of different age groups, rest or assembly places, bleachers, and open spaces for spontaneous

sports activities. Residential scale: they are small in scale, and the scope of use refers to the nearest residence and, in some cases, the expansion of churches, schools, or community organizations.

In order to analyze this situation, a chart was drawn to show that there are no houses and community parks on the red-marked farms, so we think there is a serious shortage.

The problems of underground public green space include overuse and degradation due to the lack of entertainment and sports space, the influx of



**Figure 10.** Map of the park area, amgr.

Source: Authors' own creation.



**Figure 11.** There is great resistance to urban planning and insufficient public green space.

Source: It is compiled according to the data of resistance city.

people into the most attractive places, coupled with the lack of maintenance and abuse, leading to the initial degradation of space. Unsafe, especially in places with insufficient lighting at night. It is difficult to enter due to the long distance and building obstacles of people with different abilities. Illegal occupation takes place in the suburbs, where the public green space is empty.

In addition, serious shortages have been found in furniture and services, coupled with the loss of an appropriate proportion between green quality and building volume, which is particularly important in hydrological systems such as climate and AMGR. Although Fit and Fis have formulated specifications in Resistencia City to control the ground waterproofing of new residential areas, no remedial measures have been taken, and this has not been considered for the large area previously developed.

In the recent process of urbanization, some changes have taken place in the central department, which exacerbated the problem, including the size of  $100 \times 100$  apples and the size of plots, thus losing the possibility of protecting apple-free hearts with appropriate surfaces so that they can have a hydrothermal impact on the surrounding houses. The width of the street is reduced, so the area of the quarry on the sidewalk is reduced. The requirement of 1 hectare per hectare of Freedom Square has been lost, even if any new urbanization requires 12% of the land for future green space or equipment. Its scope is much smaller.

In addition, the urbanization afforestation of these spaces and community construction have never been synchronized but belong to the land of the future, which is ultimately used to settle the lost equipment or occupied informally by families. In this

way, the jackal can become denser without ensuring a minimum green area.

Street greening is only carried out on the road, but it has not really become a part of hydrothermal projects or the urban landscape. In view of the richness of local flora, this means a waste of landscape and identity creation resources, which is in

sharp contrast to the impression of some residential areas in the city center.

If we strictly abide by the civil code and respect the 15-meter river bank area, we will have a broad public space where we can design coastal walking and entertainment places to serve today's large residential areas.



**Figure 12.** The plan of the study area determines the riparian line with 35 m as the riparian zone.

Source: Authors' own creation.

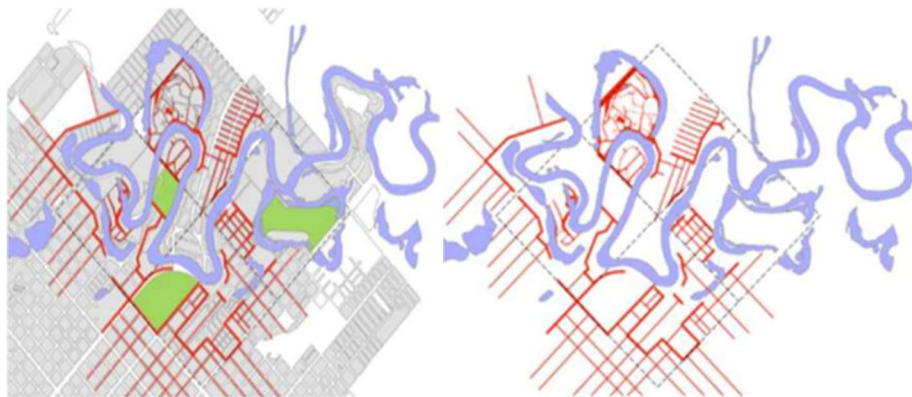
The reality is different. The private sector at different socio-economic levels has made progress in this debt bondage step. For people living in low-lying areas, the situation is very dangerous, and the rivers are polluted by the surface and face increasing risks.

Urban design in some communities different from the traditional urban grid has led to the rupture of the urban structure, and finally formed an "urban slum", which is difficult to integrate into other parts of the city. This led to the rupture of the urban structure.



**Figure 13.** Plan of the study area, occupation caused by current riparian plots and lagoons/photos. Houses built along the Negro River.

Source: Self prepared/self prepared documents. Arrested in March 2015.



**Figure 14.** The blueprint of the research department indicates the rupture of the urban plot in red.



## 9. Restoration and definition of Negro River banks and lagoons

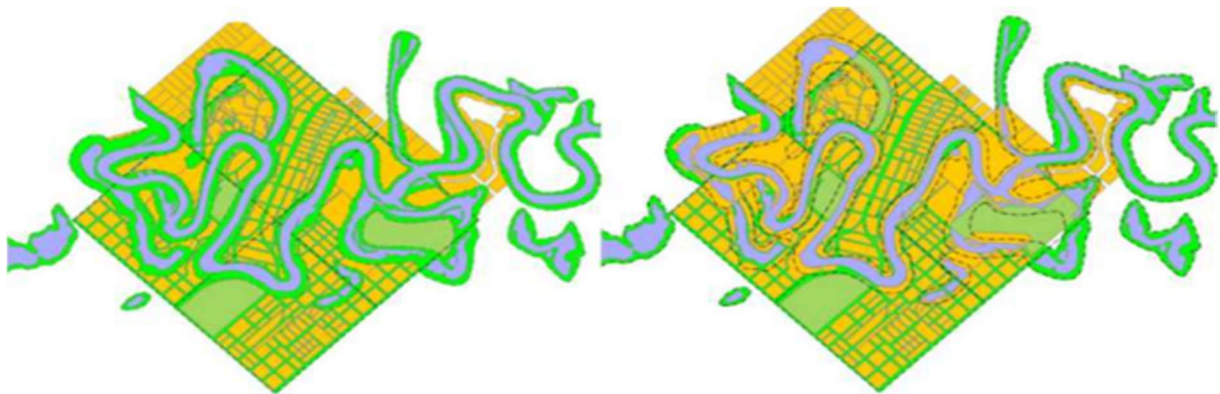
The boundary between the Negro River and the lagoon shall be legally demarcated through the traces of the riparian line determined by APA. According to this, the next step will be to delimit or dismantle the site and then take over the site by integrating urban use activities, considering the existing water and landscape conditions, as well as the restoration of environmental conditions and potential.

In different jurisdictions, different methods of edge restoration should be adopted according to specific circumstances. But the most important thing is to establish a team between the APA and the municipal government to monitor the border situation.

## 10. Last thought

“Every city has its own questions and answers”<sup>[8]</sup>. We can say that public space is an integral part of the city because it has physical space and social and cultural meanings, which describe it as a general, common, collective, universal, and higher field of social integration in a single physical space.

But what is the essence of urbanization today? It is necessary to “think about the city” and take the city as a social project of our living environment. The urbanization process we are carrying out is not synonymous with “urban” production. Traditional urban design, the study of the spatial imprint of social behavior and the space generated by some types of behavior, or “modern urban design,” has changed this bipolar relationship and transformed it into a connection between perception, reasoning, and behavior. These connections relate to a regulatory and regulatory environment, which cannot provide effective answers in the contemporary era.



**Figure 15.** The plan of the Department to be intervened, and the boundary is determined by delimiting the river bank line, ideal situation and actual situation.



**Figure 16.** The plan of the intervention department, the situation along the Negro River and the lagoon.

We should put this problem under the urban conditions inherent in the social structure and deal with ourselves, the environment, and people as a functional, multi-dimensional, and dynamic whole that is “forever” and permanent at the same time. What are the dynamics of society that we must promote in a specific space and establish the support of the correct spatial intervention?

Considering the city as a collective project is a relevant social responsibility, so it must exist forever, but it should not be based on theory or academic dialectics. It must be rooted in real society, and its project will fall into predictable mistakes again. Human rights are the most difficult to realize and often deprived. Society has the right to plan its own future.

“When human beings try to improve the environment, it is not a problem that human beings try to decouple themselves from the environment. It is not a problem that human beings try to improve the environment in this field. The two are inseparable.” Therefore, we can establish a correspondence between the perceived physical forms and the use of social actions in physical space and the resulting or assumed meanings of citizenship, community, and citizenship.

This is a blueprint on the horizon and a reference point for guiding action, but we must fully recognize the limitations and difficulties we face; otherwise, we will lose the opportunity to do

our best and waste all our efforts to achieve the impossible goals.

## Conflict of interest

The authors declare no conflict of interest.

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