

COASTAL LANDSCAPES AND ENVIRONMENT Fishing Communities in Greater Resistencia, Argentina

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ABSTRACT

The development process of the Metropolitan Region of Greater Resistencia is characterized by the discussion on sustainable small-scale development practices and the high rate expansion of the urban sprawl. The former are small communities dedicated to small scale economic activities, rooted in a particular location. The latter have to do with the urban pressure on natural environments derived from the expansionist tendency of the city advancing on the territory. This paper presents the case of craft fisheries located on the eastern bank of the Paraná River, around the Metropolitan Area of Greater Resistencia, Argentina.

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1. Introduction

The development process of the metropolitan region of Greater Resistencia is characterized by the discussion on sustainable small-scale development practices and the high rate expansion of the urban sprawl. The former are *small communities dedicated to small scale economic activities, rooted in a particular location*. The latter have to do with the urban pressure on natural environments derived from the expansionist tendency of the city advancing on the territory. This paper presents the case of craft fisheries located on the eastern bank of the Paraná River, around the Metropolitan Area of Greater Resistencia. The action on this coastal landscape derived from fishing activities for subsistence, amalgamated with vegetable cultivation and animal husbandry on small scales, makes these communities a cultural landmark in the stunning natural landscape of rivers in the region, subject to periodic flooding fluctuations.

The first case study called "Barrio San Pedro Pescador", is a settlement of artisanal fishermen, that imprint the coastal landscape of the Paraná river a distinctive personality characterized by a strong socio cultural setup. It is located right in the heart of the metropolitan region that make the cities of Corrientes and Resistencia; administratively it is under the jurisdiction of the department 1ro de mayo, and the municipality of Colonia Benitez in the NE region of Argentina. The settlement arose from the great flood of the River Paraná in 1982, when fishermen living on the banks and islands were forced to leave their flooded homes and settled in the abandoned former building site of the interprovincial bridge "General Manuel Belgrano". Once the waters withdraw, many remain in the area taking advantage of the privileged location. Today the neighborhood consists of about 250 families who depend on traditional fishing activities to make a living for mere subsistence. The process of evolution of the neighborhood shows the emergence of a socio-cultural pattern derived from the need to preserve fishing resources and the environmental awareness of its inhabitants characterized by sustainable forms of community participation in the construction of an identity amalgamated with the coastal river landscape.

The second case presented in this paper is Barrio Tres Bocas, located on the port town of Puerto Vilelas, one of seven artisanal fishing ports, constituting ASOPECHA, Chaco Fishers Association, is the object of this work. Formed by a group of settlers whose artisanal fishery the eastern bank of the Parana River in the metropolitan area of greater Resistencia. The action that this group has on the coastal landscape derived from fishing for subsistence farming amalgamated with gardens and small livestock; The town of Puerto Vilelas, along with Barranqueras port is front facing the Rio Parana. From its origins is formalized as an industrial city since its foundation is related to the location of tannin industries that flourished in the early twentieth in the Province of Chaco. Has enormous natural wealth, typical lakeside landscapes of coastal wetlands, palm groves, and a wealth of both human and natural resources.

2. Research Focus

The research approach was carried out in the framework of a collaborative experience between students and researchers' of Pedagogical Unit "A" of the Faculty of architecture and settlers nucleated in ASOPECHA fishermen association, developing an urban project based on the needs of the local community and the sustainability of the environment.

The main objectives are:

- a) To examine territorial processes sine the scope of coastal landscapes,
- b) To review the relationship between culture and nature in the context of metropolitan dynamics.

2. Results and Discussions

The way in which the natural landscape is transformed by the action of cultural groups is the result of a multidimensional proceses traversed by historically determined and contingent processes that transform structures are the objectives that guide. A broad view of the urban environment must start from the recognition of the social fragmentation of the city, as a key factor of social and environmental vulnerability. From this category we can identify three fundamental aspects: on the one hand relations between society and its environment, or in landscape terms, between culture and nature, and on the other hand, relations between various social actors, as well as linkages between different jurisdictional levels established in the territory. The development of fishing activities on the shore banks of the Parana River is one of the main factors of transformation of the coastal natural landscape. Artisanal fishing is a sustainable economic alternative for the rational preservation of the fish resources and landscape. They constitute a diametrically opposed friendly alternative to the model of intensive exploitation of resources usually driven by local government and the provincial government.

Riverside Artisanal Fisheries: The development of fishing activities on the banks of the Parana River is one of the main factors of transformation of the coastal landscape. Artisanal fishing is a sustainable economic alternative for the rational preservation of the fish resources and landscape. They constitute a diametrically opposed friendly alternative to the model of intensive exploitation of resources usually driven by local government and the provincial government. The territory is the scene of conflicts and tensions marked by the divergent interests of different stakeholders. The purpose of this article is to highlight and try to explain these processes of transformation from a look of metropolitan riverside landscapes. We can define landscape as "a relationship of belonging and agency criteria defined by ethical and aesthetic values." Paul Claval (1999) "landscapes speak of the men who shape and that now and those that preceded them inhabit says. Report the dreams of today and the past. " Well understood the landscape allows us to review on one hand culture-nature relationship, and on the other the assessment of the perception of themselves the different actors have(social, political, commercial, real estate, etc).

2.1 Barrio San Pedro Pescador

The expansion process in Greater Resistencia is characterized by the generation of tensions in the natural environment. The occupation of low-lying lands, and the modification of waterways characterize the particular relationship of the city with its natural setup. The case of Barrio San Pedro Pescador, located in the heart of the conurbation Corrientes Resistencia reveals a process of territorial transformation as a result of the creation of regional infrastructures and processes of socio cultural development poor dwellers. The territory thus becomes the scene of conflicts and tensions marked by the divergent visions and conflicting interests.

The origin of the place : This village originates in an extraordinary flooding of Parana river of 1982, when inhabitants of the islands and coastal areas settle on the former building site of General Belgrano bridge. After the flooding many families remained in place taking advantage of the non flooding height of the place. Nowadays the settlement has about 300 families (about 1500 inhabitants) mostly dedicated to craftwork fishing activities merely for subsistence.

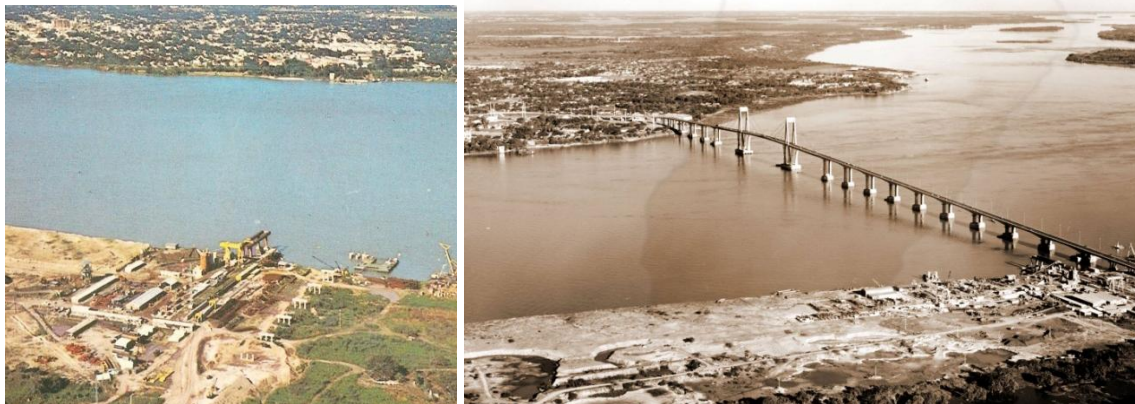


Fig. 1 a) Original Building Site circa 1970, b) Aerial view of the interprovincial Bridge General Belgrano, circa 1973.

The sector is at this early stage what Marc Auge (1995) defined as "no place". Anonymous space characterized by lack of identity that can not be defined as relational and historical space. "The space of no place does not create a singular identity or relationship, but solitude and similarity". The impact on the landscape of this regional infrastructure turned the bridge into a regional symbol, but the "no place" bridge building site slowly begins its transformation into a place of significance for people seeking refuge from the extraordinary flood of the Parana River 1982/1983.

The process of building a neighborhood identity was rooted in the development of small scale traditional fishing activities. With the formation of ASOPECHA, Chaco Fishermen Association the group of settlers known as "*inundados*" acquires social consciousness, and begins to develop activities to preserve fishing resources and maintain the environmental balance of the coastal territory. The main activity of the neighborhood, the "traditional fishing" is viewed by the group as opposed to exploitative fishing of "*malloneros*" that perform a merely speculative commercial practice. In this way it takes shape a truly appreciation of the coastal environment as necessary condition for the viability and preservation of fish resources.



Fig. 2 a), b) Arrival of fishing boats at San Pedro Pescador.

The neighborhood has a privileged location, directly opposite the waterfront of the neighboring city of Corrientes, capital of the province of the same name. Although administratively belonging to the municipality of Colonia Benitez, it has stronger ties with the most populated centers of the Metropolitan region, considering it is 12 km from Resistencia, 6 km from Barranqueras, and only 1,6 km from Corrientes. A large proportion of inhabitants of San Pedro takes advantage of services and facilities from the neighboring Corrientes. This privileged setting means they can offer their products to thousands of potential customers who daily cross the bridge in both directions. But this same situation puts them in a position of vulnerability due to flooding from the Paraná River.



Fig. 3 San Pedro Pescador in 2002

Few hectares of land are not flooded, this leads to extremely intensive land use in an unbalanced way. The settlement has basic infrastructure: electricity, water, pedestrian and vehicle channels, street lighting and a precarious set of urban facilities: a health center, and a school (both primary and Secondary). It lacks sewers and garbage collection is performed in batch mode, without proper waste management. The public space is messy and a bit chaotic, lacking furniture and adequate infrastructure for its functioning. Settlers still don't have formal land ownership and most plots are irregularly of the land occupied, despite the rights acquired on the ground due to over twenty years occupancy. It has little retail activity, except that related to the sale of unprocessed fish, and some small shops and drugstores. For the daily supply it requires transfer to the city of Corrientes, using a bus line as a means of transportation. The main economic activities of the neighborhood are artisanal fishing, brickworks, and small farms.



Fig. 4. San Pedro Pescador in 2013

The number of homes has gone from a hundred in 2002 to about 260 in 2013. The densification and occupation of lots is done in many cases at the expense of public space, as in the case of the occupation of the "neighborhood cancha" (football field) , for housing complexes, generally it also verifies a loss of direct river access pass restricting pedestrian view and the river and Corrientes waterfront.



Fig. 5 a), b) Erosion process on the coast of San Pedro.

Culture-nature relationship in the San Pedro Pescador is marked by the cyclical occurrence of floods which exempt the only strip of land that emerges from the waters of the Parana river: the original building site of the bridge. The river bank in this sector is subject to a constant process of river erosion and degradation that puts the population at serious risk. There are several houses on the verge of falling into the river. Comparing aerial photographs from 2002 and 2004 it is clear a receding coastline that lost almost 20 meters in just two years time.

Territorial conflicts in San Pedro: The nature of Territory is dynamic and complex, being the result of a multiplicity of different actors involved. Gradually over time groups take part in opposing sides and conflicts of interest soon arise as that appeared in 2010 with the attempt to impose a big Casino complex promoted by the Provincial Government in the old building site of the Belgrano bridge.



Fig. 6 a) Antequerita Casino Complex: parking area, b) Aerial view of gambling premises.

From this point two opposing viewpoints arise: on one side the affected population, and on the other the provincial government through Loteria Chaqueña agency. There is a sharp difference between the conception project of a Casino and entertainment complex promoted by the government, and the vision of the settlers, artisanal fishermen whose concern is assuring the fish resource for subsistence and sustainable development.

Researchers, teachers and students of the Faculty of Architecture UNNE made a proposal that effectively integrates sustainable development for the "Villa de Pescadores". This was achieved through taking into account people's ways of life, existing activities and local customs working in harmony with the natural environment, respect for natural and human resources. The study involved the recognition of the micro region, the system of artisanal fisheries, with a comprehensive view of the socio-cultural problems. The proposal of an entertainment Center and Casino sponsored by "Lotería Chaqueña" showed no intention to interact with their environment and the community, and urbanistically it does not make any contributions to the improvement of infrastructure and other basic equipment missing in the neighborhood. Furthermore the extensive propaganda of the project promoted itself as the first "window" to the river, neglecting the continual presence of the fishermen village for over 30 years in the place, and suggesting the possibility of more interventions of this kind in the near future.

This whole process was marked by the lack of articulation and dialogue between parties involved, who seemed to ignore each other when meeting face to face in the assemblies organized by Loteria Chaqueña, In which villagers claimed to have a more active role and demanded the government to exercise its obligation to reject the imposed project.



Fig. 7 a), b) Fishermen protesting against the Casino project.

The lack of social consensus in the development of large-scale projects run by the government, presented in untimely manner, without a comprehensive assessment of the environment and the needs of the local people can generate a negative social impact and severe environmental degradation. Proposed by the government agency team, the private investment to be raised in the very heart of the neighborhood had total incompatibility with the idea of developing a tourist fishing village in equilibrium with the environment, developing fully sustainable activities. The coastal landscape is transformed by the action of groups with visions and not converging interests. This is a multi-dimensional process is crossed by historically determined structures that are shaping the landscape in interaction with nature. Flooding and erosion continues endangering the coastline and poses an urgent challenge for government agencies involved, and to the community of fishermen who are concerned by the safety of their homes.

2.2 Barrio Tres Bocas, Puerto Vilelas

A broad view of the urban environment must start from the recognition of the social fragmentation of the city, as a factor of social and environmental vulnerability. From this category we can identify three fundamental aspects: on the one hand relations between society and its environment, or in landscape terms, between culture and nature. On the other hand, relations

between various social actors, as well as the linkages between different jurisdictional levels established in the territory.

The port town of Puerto Vilelas together with adjacent city of Barranqueras constitute the main port on the Parana River of Greater Resistencia Metropolitan Area. From its origins is formalized as an industrial city since its foundation is related to the location of tannin industries that flourished in the early twentieth in the province of Chaco. Puerto Vilelas municipal area has an enormous natural wealth: typical lakeside landscapes and coastal wetlands, palm groves, and a wealth of local human resources. Barrio Tres Bocas situated on the peri urban area of Puerto Vilelas is one of seven fishing ports down the Parana River between Isla del Cerrito and Riachuelo, which constitutes the province of Chaco Fishermen Association (ASOPECHA). The action that this group has on the coastal landscape is derived from fishing for subsistence amalgamated with gardens and small livestock. The way in which the natural landscape is transformed by the action of cultural groups is the result of a multidimensional process traversed by historically determined and contingent processes that transform structures and the objectives that guide the process.

The AMGR has suffered in recent decades a process of rapid population growth, fueled largely by internal migration. The explosive urban growth is often due as much to the expulsion of rural areas deteriorated, including poverty, landlessness and lack of job opportunities, as pull factors, including better jobs and social services the cities. [UNFPA, 2001]. As physical consequence of this process has been indiscriminately occupying the flat and low resistance natural support, filling and mutilating the delicate system of rivers and lakes in the floodplain of the Black and Parana rivers, which in turn seem further accelerate the dispersion process and urban expansion in all directions. The urban sprawl has acquired in recent decades a metropolitan setting that sum spatialities of four locations in what is known as the Great Resistance. The metropolitan area (AMGR) formed by the municipalities of Resistencia, Barranqueras, Fontana and Vilelas has a population of 375,000 inhabitants. It is set on the floodplains of the Black and Parana rivers, he grew in the last 100 years by extending the original grid ignoring the terrain (mostly rivers, ponds, streams). This situation becomes especially vulnerable to river floods and storm.



Fig. 8 a) Puerto Vilelas landscape. Former tanning factory chimney that gave rise to the town in 1917, b) Location AMGR.

The city of Puerto Vilelas constitute a particular case. Located on the first floodplain of the Parana River, urbanized areas are extremely low and vulnerable. Each urbanized sector has required successive defense polders to preserve most of the urban areas from flooding from the Parana River. At the same time, these barriers do not allow the natural runoff of rainwater, which requires each urbanized area depends on a pumping station to evacuate the surplus. Absorbed by the process AMGR conurbation, it has incorporated vacant cheap land, mostly used for housing and squatter settlements, without adequate support provision of infrastructure and services.

According to data from national population census conducted in 2010 the province of Chaco had about one million inhabitants of which 80% is concentrated in cities and 40% only in the AMGR. Located south of Resistencia, Vilelas is the least populated locality of the 4 that make up the Great Resistance, made related to the limited living area of the commune. Its population in 2010 was 8,210 inhabitants (INDEC, 2010). The intercensal population growth (1991 - 2001) for the AMGR is around 22%; while Puerto Vilelas ranks second in the AMGR above average with 32%.

Conditioned by the lack developable non flooding land for housing, the central district is a small area of a few blocks with very low density. The proximity to the capital Resistecia turned in the seventies Vilelas to be consolidated as "bedroom" town with the proliferation of social housing neighborhoods (FONAVI) promoted by the state. In most cases lacking services and infrastructure and located in flood prone areas. The nature of port and coastal city makes Vilelas attractive to the settlement of of some industries generally subjected to the vicissitudes of economic policy and the vulnerability by cyclical flooding. In recent decades urban sprawl was accelerated fueled by informal occupations lacking infrastructure and basic urban services.



Fig. 9 a) Central Area, b) Riverside fishermen neighborhood c) Defense Port zone

With much of the population not covering their basic needs and in a context of restriction of land suitable for housing low-income sectors, the city is constantly expanding. Those who have some savings capacity, access solutions provided by the state. Those who have minimal resources make it through informal markets or seek sharing options or occupy empty lots in outlying areas or in areas of environmental risk. Strategies focused only on specific projects at the neighborhood scale, do not promote adequate integration to the city. In this context, the actions and investments of the state are in severe risk diluted in a heterogeneous mosaic of isolated interventions that do not produce significant impacts in the city. Interventions and state projects are enhanced and amplified when they acquire strategic significance. Perhaps one of the most pressing problems of Latin American cities is the problem of the availability of developable land, especially those accessible to lower-income sectors. It is common to hear among municipal planners that much of the urban problems in AMGR arise from the scarcity of land suitable for urbanization. The problem is not the availability of land, but the availability of urbanized land, with basic services and infrastructure to enable integrated development of the city.



Fig. 10 Informal Settlements in Puerto Vilelas

The phenomenon of social and economic exclusion of large segments of population, coupled with the explosive vegetative growth and accelerated process of migration to the city, originates the settlement of population in public and private lands. Settled in marginal lots they are generally located in low lying lands, brooks or margins of rivers and lagoons, and along railroad tracks.

Environmental Issues in Puerto Vilelas: The debate over environmental issues has gone through various stages and approaches in recent years. The notion of ecological footprint is one of the central ideas to establish a measure of environmental soundness of an urban settlement. It requires analyzing the degree of dispersion over the territory and its role as both, a consumer of natural resources, and a producer of urban waste derived from human activities. A frequent approach of urban analysis linked to the idea of sustainability is the concept of ecological footprint, according to which cities try to solve their sustainability tending to expand indefinitely the theoretical territory from which it imports natural products, and to which they export waste (FERNANDEZ 2003).

The environmental issue is particularly sensitive in Puerto Vilelas in sight of the recovery plans of forest extraction activities with the installation of a pig iron plant required for steelmaking, currently under construction. The situation is particularly delicate for the residents of the coastal strip engaged in fishing. Environmental groups raised objections to the project: "neighbors of the former Tamet in Puerto Vilelas, drinking, their animals die because they take water that previously watered the dross of this plant, also harming their crops of fish, main food supply of these families." (NORTE 10/09/2012)

The population of the district is estimated at around 80 families, about 500 people with great portion of children and young people, related mainly to fishing activities and making occasional informal jobs. The houses are mostly poorly constructed with extensive use of palm tree "carandá", iron sheets and adobe walls. Elevated pole structures are frequent to reduce the hardship in case of flooding while creating shaded spaces on the ground level. Most homes have verandas and open areas for vegetable gardens and small livestock.



Fig. 11 a) Barrio Tres Bocas in 2002, b) Barrio Tres Bocas in 2010,

Despite the frequent abuse in the exploitation of natural resources resulting in soil degradation and disruption of natural ecosystems. the regenerative capacity of the natural environment that before cessation of operations, exhaustion or excessive soil erosion. In a relatively short period of time nature is able to regenerate ecosystems recomposing the diversity of animal and plant species. The neighborhood has a high degree of social organization that makes Fishermen's Association one of the engines of initiatives in achieving improvements for the neighborhood.



Fig. 12 a) Fishing for subsistence, b) coastal dwellings.

Among the priorities posed by students and the community are the creation of a community center, and the creation of fish processing plant to allow the production of specialty food for local consumption and retail. This would represent an improvement in the level of income of the inhabitants of the community, resulting in benefits that would increase their quality of life. While the Plan and the proposed actions may seem ambitious, application and development thereof may be a gradual manner, the urgent actions that relate to the preservation of cultural and natural identity of the neighborhood, to prevent the development of or inappropriate commercial real estate projects. From there, actions can be developed in an evolutionary and consensual manner through small steps, taking advantage of important local resources both human and natural.

3. Conclusion

Urban sprawl in Greater Resistencia is marked by an accentuated process of conurbation covering different localities such as San Pedro Pescador and Puerto Vilelas. In both cases location is crucial to ensure accessibility to metropolitan urban centers such as Corrientes and Resistencia, while allowing poor dwellers to develop artisanal fishing to assure a basic income and subsistence. The completion of the Metropolitan Defense system in Greater Resistencia enables the consolidation occupation of new defended areas, the provision of infrastructure and the filling of urban pockets in the city. Urban growth and uncontrolled expansion transcends the boundaries of the defended ring comprising even the peri urban area. The incipient industrial recovery with the establishment of extractive resource industries poses serious environmental risks especially for the coastal population must be tightened so that the precautions to avoid contaminating and unwanted effects that puts in risk the local population.

There is an urgent need to coordinate policies on a metropolitan scale so as to minimize negative impacts on deprived coastal landscapes. The sector has become somehow a reservoir of subsistence for low income people providing them affordable housing options. Divergent logics of different social actors in most cases crystallize fragmentation, discontinuity and segregation of the urban space. Through a process of limited occupation and controlled expansion of urban territories, it is necessary to regulate urbanization processes through preventive planning from the periphery to the central areas, and not vice versa.

The necessary (and palliative) interventions in urban infrastructure and services by the state, in the absence of efficient regulations, tend to favor speculative sectors, particularly those related to land and housing market at the expense of the most disadvantaged population and the deterioration of the environment. State action focused on regularization programs and neighborhood improvement seems to be producing negative results fueling the reproduction of the informal processes.

The coastal landscape is transformed by the action of groups with different visions and interests. This is a multi-dimensional process crossed by historically determined structures that shapes landscape in interaction with nature. Flooding and erosion continue to be an urgent issue on the coastline, specially in Barrio San Pedro Pescador. This implies an urgent challenge for concerning government agencies, and to the community of fishermen who feel threatened the safety of their homes. The articulation of different logics, conflicting interests and confronting views is the main challenge for the action of all Governments levels (Local, Provincial and National). A sound approach to human settlements should integrate and articulate different components: regularization, infrastructure, sanitation, housing, in conjunction with employment generation, social support, and fundamentally a strategic vision, essential to address the problems of urban sustainability. The viability of small fishing communities such as Barrio Tres Bocas and San Pedro Pescador depends largely on the implementation of participatory policies based on local community and on the preservation and enhancement of both natural urban environments.

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