

FROM STRUCTURE TO PERCEPTION – Investigating patterns of space and use at the beach (Fortaleza, Brazil)

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Abstract

This study analyses the variety of beach huts (barracas) in Praia do Futuro (Fortaleza, Ceará, Brazil), one of the main leisure areas of the city, although with medium topological accessibility and lower urban density compared to the active centre. The barracas are sea-side structures that support leisure activities in the area and occupy six kilometres of the coast, having developed more or less throughout the years depending on their urban location, also in response to a variety of users. Although generally prosperous, the huts have a fragile judicial situation, for they occupy the beach stretch, considered as legal federal property.

This investigation aims to acquire knowledge about the area, by researching the built environment and social life (space and behaviour) of its barracas. It combines the theoretical approach of Environmental Perception and The Social Logic of Space, also analysing the level of development of the buildings (type) through the following categories: capacity, landscape treatment and facilities. Relations were found between the type and location of the buildings with a variety of clientele. The public's views and perception about Praia do Futuro changes depending on the places they tend to frequent. Understanding the variety of situations that have developed in this area helps to understand its richness, as it assists on decision-making for the future of the barracas, by casting a limit to private development in order to assure the maintenance of public use of the beach.

THE PROBLEM, WAYS TO EXPLORE IT AND SOME FINDINGS

Praia do Futuro's development started after the construction of Mucuripe's Port in the 1960s, and is now situated in Fortaleza's main direction of expansion (east - Figure 1), despite this it has a low urban density, which is thought to be due to the strong sea air (making it difficult to maintain residential buildings). Although close to the integration core, the area has medium accessibility levels, taken at global scale (Rn), resulting from the application of space syntax analysis, as shown in Figure 2 (cf. HILLIER & HANSON, 1984). Its moderate accessibility is caused by the low density and discontinuity of the urban grid.



Figure 1: Location of the study object: a) Fortaleza in Brazil; b) Praia do Futuro in Fortaleza; c) Praia do Futuro's panorama.

The superb natural beauty of the wide beach stretch and the closeness to the city's integration core, encouraged leisure activities and the establishment/development of *barracas* throughout the years. Although these facilities were initially built as temporary, somehow makeshift contraptions they now include some solidly constructed complexes spreading out over six kilometres of shore, functioning as important sea-side entertainment venues (mostly bars and restaurants) which offer a variety of services responding to demands from an equally variable clientèle. Although they appear to be generally thriving, the huts are in a precarious judicial situation because they occupy the beach area, legally considered as federal property. Discussions round the *barracas* future: legislators and environmentalists defend their extinction, owners and workers defend their maintenance, while users and the local population express divided opinions.

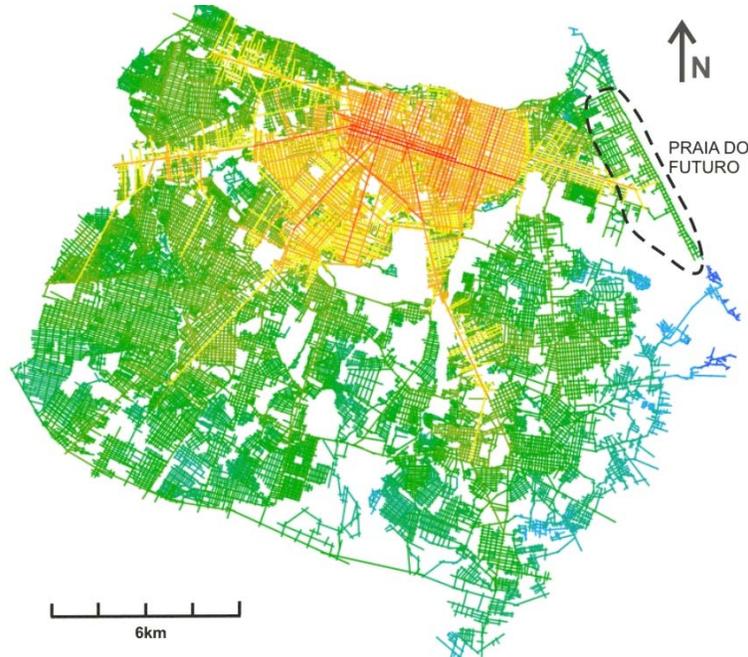


Figure 2: Integration R(n) of Fortaleza's axial map (global scale).

This study, part of a recently concluded master dissertation, analysed relations between the built environment and modes of use in a context of conflicts involving environment conservation, socio-economic vitality and quality of life as a resource for future decision-making. Understanding that spatial configuration has an important role in spatial cognition and uses, relations between configured and lived space are seen as complementary (PERDIKOGIANNI, 2007), combining analytical procedures from *The Social Logic of Space* and *Environmental Perception*. The morphological approach goes from global to local, focusing on relations between spatial form and structure with the functions they accommodate; within the more subjective perspective the perception and use of spaces (becoming places) goes from specific to general (lived space, TUAN, 1983). The nature of these studies differ (quantitative/ qualitative) and complement each other. Praia do Futuro's *barracas* were analysed relating: space structure, type of building (level of development), use and perception (Figure 3). They were then grouped in categories according to: (1) location in the urban grid, following different levels of **topological accessibility** – highly integrated, moderately integrated and segregated; (2) dimension or **capacity** – the area approximately occupied on the beach by the building and ancillary equipment; (3) the **landscaping** – gardening, visual programming; and (4) leisure and service **facilities**.

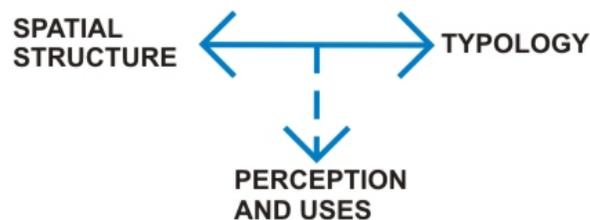


Figure 3: Methodological Approach.

Previous configuration studies have demonstrated that the renovation of spaces was related to the natural movement cycle: high accessibility attracts movement: more integrated spaces tend to renew and transform themselves more rapidly (HILLIER, 2007, MEDEIROS, 2006, TRIGUEIRO & MEDEIROS, 2003). At initial stages of the research it was found, for instance, that cases classified as “segregated” expanded less throughout the years, aggregated smaller *barracas*, presented poorly or non-landscaped grounds and simpler facilities.

A survey was conducted on cases representing distinct categories to test the chosen taxonomy, verify whether relations among case type, clientèle and modes of uses could be found and elaborate questionnaires.

The complementary association of morphological and perceptive approaches led to an understanding of the phenomenon and ways in which it impacts users and environment. The morphological diversity in the studied buildings and urban structure appealed differently to social groups and facilitates distinct modes of social interface, although the overall perceived image of Praia do Futuro – for most respondents – was referred to as one rich in natural and leisure attributes, a kind of restorative environment (KAPLAN, KAPLAN & RYAN, 1998). Those first findings strengthened the line of enquiry as follows.

CLASSIFYING BARRACAS: OF SPACE, BUILDINGS, AND USES

Space Structure

Praia do Futuro's scale of accessibility is situated halfway down Fortaleza's global integration values – (Rn), presenting little variation within its local grid. Therefore, in order to examine intra-urban variation in accessibility at local level, the axial representation measured inequality patterns concerning the location of the *barracas* (figure 4), embedded in a grid limited in the east by the way running along the coastline (Rua Cel. Jose Aurelio Camara, takes the name of Avenida Zezé Diogo as it continues to run southwards), and in the west, north and south by the areas where the street structure becomes sparse, meeting natural topographic features (river Coco valley, the harbour and the dunes).

The inequality in accessibility levels emerged from local configuration allowed to classify the *barracas* in categories (three groups): (1) **highly integrated** ones, located in the centre-north section; (2) **moderately integrated** ones, located in the centre-south section; and (3) **segregated** ones, located in the north and south ends of the area. Although located in an highly integrated area, the central portion of the grid was designated as a kind of buffer in view of its adjacency to a land tract designated as 31 de Março Square which is nothing other than a non-developed and usually deserted piece of waste land. It seemed inadvisable to ignore the presence of a spatial element that despite having been conceived as a means of permeability functions as an obstacle since people avoid passing through it. Due to this singularity the central area was considered as a dividing band between the two categories of more integrated *barracas*.

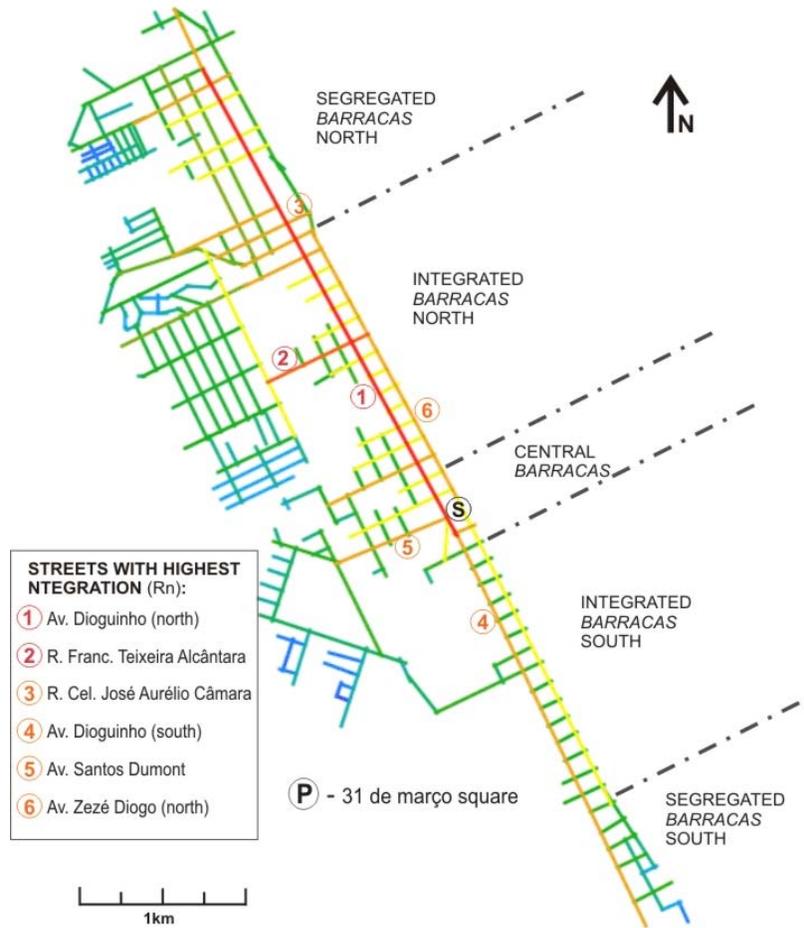


Figure 4: Local axial map and groups of *barracas*.

Building Types

As they developed for decades through a long stretch, the *barracas* have taken various aspects. However they all have elements in common, as the presence of small neatly ordered umbrella-like structures (*quiosques*¹) usually made of natural materials (wood, palm leaves) stuck on the sand to offer bathers protection against the almost equatorial sun. Besides these shelters, all the *barracas* house a kitchen, toilets and a covered table area facing both the sea and Zezé Diogo Avenue.

In order to examine relations between space structure and building types the 84 *barracas* functioning at the research period² were surveyed and classified according to variables, whose combination was considered suitable to ascertain the stage of development and degree of impact that they exert:

(a) Capacity – measured by the amount of *quiosques* occupying the sand, each one shades one table or a few (similar sizes). This number gives a proportion of public capacity in each *barraca* and of the space occupied,

1 The fixed *quiosques* are shelters for a table or small group of tables lying in rows on the sand, structured by means of one central pole (usually taken from the trunk of a carnauba palm tree) that sustains a round wooden structure covered with carnauba palm leaves.

2 From March to May 2010.

defining the groups: (i) **small**: 0 – 42 *quiosques*; (ii) **medium**: 43 – 84 *quiosques*; (iii) **large**: 85 – 151 *quiosques*; (iv); and **huge**: 152 or more *quiosques*;

(b) Landscaping – because of law restrictions concerning building occupation, the *barracas* boundaries are defined by means of landscaping and signage elements, which function as barriers to permeability (physical and visual) between the street and the beach. Three categories were defined according to landscaping: (i) **inexistent** – without gardening or grass around the *barracas* main structure (only sparse vegetation); (ii) **simple** – some gardening is perceivable and there is grass around the main structure; (iii) **elaborate**: gardens and grass surround the main structure, often includes components such as artificial ponds, fountains and elaborate signage.

(c) Facilities – measured by the **presence or not of swimming pools** in the *barraca*; emphasis was given to this component due to impact on the environment and influence on behaviour, tending to become focus of leisure activity, overclouding the sea/beach as main attractor.

Of Space Structure x Building Type

Relating topological accessibility to building type, we found that the huts with lowest integration values (segregated north and south) have small capacity, present no landscaping and no pools. The same applies to the central *barracas*, which although not being segregated in terms of their location on the axial matrix, suffer exclusion due to the inhospitable presence of a front facing deserted ground.

Amongst the Highly Integrated (North) the major concentration of large huts was found (table 1), although they tend to show simple or no landscaping and very few pools. Moderately Integrated (South) ones are mostly of medium size, however tend to more landscaping treatment and pools.

Only two *barracas* were classified as Huge, each located in one of the integrated groups: - Crocobeach (Highly Integrated, North) and Itapariká (Moderately Integrated, South). Both have elaborate landscaping and marketing elements, aquatic parks, shops, children's playgrounds and self-service restaurants, Crocobeach being the biggest premise of them all.

| BARRACAS GROUPS | | CAPACITY (quant. Quiosques) | | | | LANDSCAPE TREATMENT | | | PROGRAMME | | TOTALS |
|-------------------------|--------|-----------------------------|-------|--------|--------|---------------------|--------|-----------|-----------|------|--------|
| | | 0-42 | 43-84 | 85-151 | 152- + | NONE | SIMPLE | ELABORATE | NO POOL | POOL | |
| SEGREGATED | NORTH | 13 | 2 | 0 | 0 | 15 | 0 | 0 | 15 | 0 | 15 |
| | SOUTH | 11 | 1 | 0 | 0 | 9 | 3 | 0 | 12 | 0 | 12 |
| CENTRAL | | 10 | 1 | 0 | 0 | 11 | 0 | 0 | 11 | 0 | 11 |
| INTEGRATED | NORTH* | 8 | 8 | 9 | 1 | 13 | 9 | 3 | 23 | 3 | 26 |
| | SOUTH | 4 | 11 | 4 | 1 | 4 | 11 | 5 | 12 | 8 | 20 |
| SUB-TOTALS (categories) | | 46 | 23 | 13 | 2 | 52 | 23 | 8 | 73 | 11 | 84 |

*In this group there are two *barracas* that don't have *quiosques*: (i) Açai do Jojó, located on the promenade, has only a main structure; (ii) Biruta: Also has only the main structure and functions for events, using the sand temporarily (mainly at night); Both have small capacity, simple landscape treatment and no pool.

Table 1: Typology x Space Structure in the 84 *barracas* surveyed.

About Uses and Users

In order to ascertain users profile and modes of interface (affected by the forms of space and buildings), the studied variables were articulated and four samples were chosen to represent the variety of accessibility, capacity, landscape treatment and facilities. The selected *barracas* were: Tio Peixe, Vira Verao, Atlantidz and Crocobeach (table 2).

| BARRACA | SPACE STRUCTURE | CAPACITY (<i>quiosques</i>) | LANDSCAPE TREATMENT | PROGRAMME |
|------------|------------------|-------------------------------|---------------------|-----------|
| TIO PEIXE | SEGREGATED NORTH | SMALL (24) | ABSENT | NO POOL |
| VIRA VERÃO | INTEGRATED NORTH | LARGE (124) | SIMPLE | NO POOL |
| ATLANTIDZ | INTEGRATED SOUTH | MEDIUM (62) | ELABORATE | WITH POOL |
| CROCOBEACH | INTEGRADAS NORTH | HUGE (193) | ELABORATE | WITH POOL |

Table 2: Building types of the selected huts.

The information collected in the questionnaires included data to clarify the clients' socio-cultural profile (i.e. age, place of residence), habits concerning the area (i.e. likes and dislikes, frequency and time of use, reasons for choosing certain places), and environmental perception (the image associated with the area, their opinion about the *barracas* importance to the city).



Figure 5: Occupation areas of the *barracas*: 1) Tio Peixe; 2) Vira Verão; 3) Atlantidz; 4) Crocobeach.

In each *barraca* the environment, size and level of amenities varied greatly (figure 5 and 6), as did the clientèle and their environmental perception. In a general way, we discovered that the perception of Praia do Futuro is entangled with the users views concerning the *barraca* they tend to visit, although some also visit other spaces, depending on their mood or company. One exception was the Tio Peixe *barraca*, the segregated, small and more modest case, to which most of the respondents pledged fidelity.



Figure 6: Views of the *barracas*: 1) Tio Peixe; 2) Vira Verão; 3) Atlantidz; 4) Crocobeach.

Listening to respondents and (let us hope) to Reason

- 1) *Tio Peixe*: Located at the extreme north of Praia do Futuro (Segregated North), was the smallest and simplest *barraca* studied (24 *quiosques*), without landscape treatment and pool. The public is mainly local (79%), from which a large number of people come from poor neighbourhood and their ages vary the most among the surveyed cases. Customers of this *barraca* declared to be those that have been going to Praia do Futuro for the longest time (20% more than 24 years and 21% between 19 and 23 years). The frequency of visits occur on the weekends (58%), or once/ twice a month.
- 2) *Vira Verão*: Located amongst the Highly Integrated (North), with large capacity (124 *quiosques*), simple landscape treatment and no pool, allowing some permeability through the space, visually and physically. The public is mainly local (83%), young (62% are between 22 and 34 years old), frequent the area for a long time (52% between 19 and 23 years), suggesting that most of them enjoy the place since childhood. The frequency of their visits is on the weekends (45%) or once/twice a month (21%) with a

significant number visiting the beach many days a week (12%).

- 3) *Atlantidz* is a Moderately Integrated *barraca* (South), with medium capacity (62 *quiosques*), elaborate landscape treatment and pool (accompanied by a playground). Its entrance is located on a platform and its dense vegetation and building occupation allows no visual communication from the pavement to the beach area (and sea). Most of the public is young – 45% between 22 and 34 years old, but there is an older public as well – 11% are over 60 years old. There is a fair amount of tourists (40%, 11% being foreigners), although public is mostly local (60%), from which 43% live in neighbourhoods with high income. The period of use varies: while 16% had started going to the area for until 6 months, 16% had done so for more than 24 years. 29% declared to visit the beach when on holidays and 26% on weekends.
- 4) *Crocobeach* is the largest *barraca* (193 *quiosques*) located amongst the Highly Integrated, with elaborate landscape treatment and water park. Its vegetation (including a hedge between the pavement and the gardens by the entrance to the *barraca*), buildings and size doesn't allow for visual and physical permeability to the beach. Most of the public is between 22 and 47 years old (79%). This is the space with the most tourists (67% of the costumers), of which many are Brazilian (60%), the local public comes mainly from middle-class neighbourhoods (85%). It is also the *barraca* whose costumers declared to be acquainted with the area for the shortest time (38% until 6 months, 31% for between 6 months and 6 years), with the frequency mainly reflecting their visits to Fortaleza.

By articulating data from the studied variables some inferences relating users, location and building type were developed: the spaces with highest accessibility and largest capacities (*Crocobeach* and *Vira Verão*) attract the youngest public, while less accessible and smaller places appeal mainly to families (within varied age groups), showing the preference for spaces with more privacy. On the other hand, places with simple landscape treatment and facilities are mainly sought for by the local public, while elaborate landscaping and equipment tend to attract more tourists (*Crocobeach* and *Atlantidz*). The simplest, most segregated and smallest *barraca* (*Tio Peixe*) accommodated the public who have been using *Praia do Futuro* for a longer time and show considerable diversity in economic status. Medium-sized *barracas* with elaborate treatment and moderate integration values tended to attract the most homogeneous clientèle (affluent people including foreigners).

In all the surveyed *barracas*, natural attributes were considered important, especially as regards the image of the area. When questioned about positive aspects of the area and reasons for choosing this or that *barraca*, places with elaborate landscaping and facilities were referred to for their physical structure, while the people interviewed in simpler spaces mentioned social activities as more relevant, intimacy (*Tio Peixe*) and social animation (*Vira Verão*) being particularly praised.

When questioned about what they disliked about *Praia do Futuro*, comments referred mainly to aspects conspicuously noticeable at the *barraca* where they were: pedlars were mentioned in *Crocobeach* and *Atlantidz*, *Tio Peixe* mentioned violence and *Vira Verão* mentioned violence and pollution. Pedlars tend to surround mainly *Crocobeach* (and *Atlantidz* in a lesser degree), *Vira Verão* is adjacent to a parking lot with sanitation problems, and *Tio Peixe* is located further away, in an area sparsely occupied, near a poor neighbourhood. Furthermore violence and pollution are aspects more easily noticeable after a long time of use in the area, a fact that also exposes differences in perception depending on the respondent's circumstances.

Those who have been using the area for longer time periods mentioned the variety of spaces as an important factor, affording options for different companies or states of humour. An exception to this frame was the case of Tio Peixe, where most of the people declared being faithful costumers.

About the importance of the *barracas* to the city, many attributes were mentioned by the costumers, such as singularity, support for leisure, security, economy, and tourism (referred to by the majority of respondents). Some people said quite simply that the *barracas* were fundamental to the city and that, without them, Fortaleza would be nothing. The negative aspects that were recurrently mentioned, although by only 4% of respondents, were the private nature and disorganization of the huts.

The *barracas* were thus seen as fundamental for leisure, insofar as they offer shelter from the sun, plus comfort items such as seats, running water, food and drinks, besides a feeling of being safe. Understanding the variety of situations developed in this area helps to understand the richness and importance of diversity as the basis of urbanity besides contributing as a resource for decision-making about the future of beach huts in Brazil. It is here believed that there must be ways to compromise for reaching a balance between the private exploration of the *barracas* and the public use of long wide extents of beach space within a perspective of preserving the natural ambiance, which continues to be the main attraction. Such balance can be linked to simpler spaces, which give shelter to the beach use and allow a more public use of the beach, for they offer more permeability and occupy less the sand.

CONCLUSIONS

Although we consider out of the question any form of denial about the need to reinforce restrictions concerning environmental protection and free access to the beach, the present research findings, added to our own familiarity with the fruition of beach sites stress the urgent need for an ample discussion about the destiny of thousands such structures that dot the coastline north and south of the country. Our (in)famous *barracas de praia* have survived times of economic boom and depression, democracy and dictatorships, being wiped out of the scenery at irregular time intervals under allegations of illegality but only after years or decades of tolerance, in the absence of discussion forums for bringing together the stakeholders' views. In our context of economic imbalance, abundance of sea shores flooded by heat and brightness, and gregarious leisure habits we hope for reasonable solutions that might take the shape of simpler facilities for giving support to the use of the beach and the sea area whereas contributing towards a better and more sustainable environment.

Although the survey closely studied four different spaces, other patterns may appear with further researches to give more legitimacy to the present study, as well as comparisons with other urban coastal environments may highlight peculiarities in this areas. Further researches can approach the nature of other aspects that impact the beach, such as the existence or not of spaces of permeability between the huts (physical and visual) and environmental sustainability of these spaces (pollution of the beach, sewage system). This emphasizes the many variables in question to understand public and environmental problems in this area and ways to prevent them.

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