

investigating effects of two projects on the old town centre of Fortaleza

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Abstract

Fortaleza's old town centre, as those of many others Brazilian capitals, has been suffering a serious decaying process. As an effort to counteract such process, public authorities and nongovernmental organizations have implemented strategies aimed at "revitalizing" the area. Among these, two interventions carried out in the last decades have deserved national attention: the latest redevelopment of Fortaleza's most prestigious square, Praca do Ferreira, completed in 1991; and a building complex designed to accommodate cultural and artistic activities, the Centro Cultural Dragao do Mar, inaugurated in 1998. Both projects have been praised and criticised on various basis and much controversy has been generated. But whereas the latest renovation works of Praca do Ferreira is thought to have brought back part of the urban vitality of yonder days as a place of encounter and co-presence, the cultural centre has said to have drained animation in the surrounding area by negatively interfering in nearby places such as Praia de Iracema, a former dock area that had retained considerable activity as a focus of bohemian life until recently. Although notions of spatial disconnection and segregation are often brought into the debate concerning both interventions, these are not considered within a systemic perspective of interactive effects that may stem, at least partially, from morphological aspects of the urban design. Spatial properties such as global accessibility and its possible consequences on patterns of movement, land use and urban vitality have, therefore, been largely ignored. This paper aims to investigate these properties following the notion that vitality in town centre areas may result, at least partly, from space structures shaped by properties that facilitate (or even induce) interface among humans and between humans and artefacts such as buildings, squares, sidewalks etc. The research hypothesis is that whereas the redevelopment of Praca do Ferreira has generated spatial properties of accessibility and visibility that contributes to enhance movement and co-presence, the construction of the Centro Cultural Dragao has not.

1. Spatial properties and (dis)animation

This study brings some insight on the interaction between urban design and urban planning (Hillier 1996,111-112) by addressing relationships between physical attributes and functional performance in open spaces that have been targets of interventions aimed at improving sustainable vitality in the old town centre areas where they are located. It is argued that the alteration of spatial properties in terms of potential levels of accessibility and visibility caused by the interventions may have contributed to the diverse ways the developments responded to their original purpose. Design will, therefore, be treated as an independent variable.

The comparative morphological study that follows focus on two public spaces in Fortaleza, capital city of the state of Ceara, in north-eastern Brazil, a colonial military settlement turned into a village in the early 18th century and into a metropolis in the 1970s: Praca do Ferreira (Ferreira Square), an

old central square re-designed to its current configuration in 1991 and the open spaces that are part of the Centro Cultural Dragao do Mar de Arte e Cultura (Sea Dragon Cultural Centre of Arts and Culture), a building complex designed to accommodate cultural and leisure facilities that was inaugurated in 1998.

These cases are relevant in several aspects: they are both important urban landmarks located within the boundaries of the old town centre, developed or redeveloped in the same decade with the intent of generating vitality in a declining milieu, were both funded by an association of governmental, non-governmental and private supporters and conceived by the same designers, and have provoked strong criticism. Yet, despite the controversy relating alleged positive and negative outcomes of the two projects, the general view is that they function and affect their surrounding areas in very distinct ways.

Praca do Ferreira is one of the oldest urban references in Fortaleza. Its origins date from the early 19th century when the area, then known as Feira Nova (New Market), sited the principal street market in town. Because it has long functioned as a place that concentrates numerous and diverse uses, activities and social groups, besides being a distribution node for public transport, it has been termed “the heart of the city” (Lopes 1998,15). Other denominations, such as Largo das Trincheiras (Trench Courtyard), Praca D. Pedro II (D. Pedro II square) and Praca da Municipalidade [1] (Municipality Square) reinforce its relevance over time. The place was rebuilt three times in the 20th century: in the 1930s, a period that coincides with its apogee as the privileged locus of urban life in Fortaleza; in the 1960s, when the area was beginning to decline as the active town centre at global urban scale; and in 1991, as an effort to restore some of the area’s former animation.

Such effort marks a late entry into a worldwide transformation tendency referred to as the “Urban Preservation” phase of town planning, which sought to overcome some of the damages caused by the so-called “Urban Renewal” period. This period of radical change, often indebted to the tabula rasa paradigm of urban development advocated by mainstream Modern Movement planners was particularly intense in Brazil during the 1970s and 1980s, leading to the disruption of spatial relationships resulting from long processes of organic and small-scale planning (Vargas and Castilho 2006). Attempts to “regenerate”, “revitalize”, “re-qualify”, “re-valuate” old town centres became an obligatory item in government agendas, although proposals rarely took into consideration the need to investigate how spatial properties, especially those associated with local patterns of use had been affected by large-scale interventions or the expansion of the space structure brought about by the urban sprawl.

Most of what was attempted as regeneration strategies did not go beyond the local sphere, relying strongly in the power that certain attractors might exert. As part of this effort, new sites were developed, mostly to bring or enhance activities that could attract locals and tourists in non-commercial hours. Art and culture were then, in Fortaleza as in various other cities in Brazil and throughout the world, a favoured theme.

The Centro Cultural Dragao do Mar is an emblematic case in this context. It is located in a former dock area later developed into a coastal neighbourhood named Praia de Iracema (Iracema Beach), which although remaining for a long time poorly integrated to the social life of the central areas, was economically important as an exit door to most of the exports from the state of Ceara in the 19th century: cotton wool, coffee, leather and carnauba [2] wax. (Costa 2003) Most routes connecting hinterland settlements to the capital cities converged to the area, which sited the state’s customhouse amongst a number of warehouses, depots and wholesale stores, especially in the site known as Prainha (small beach) (Costa 2003, 94). Originally also a downmarket residential neighbourhood, Praia de Iracema sprang out of a long period of stagnation in the early 20th century to become a reference of bohemian life, with bars and restaurants populated by artists and intellectuals. As the century advanced the area gradually lost expression as a residential neighbourhood and expanded into a leisure and tourism spot. The Centro Cultural Dragao do Mar building complex occupies an area of 20.000m² and comprises various facilities: a theatre, an amphitheatre, an auditorium, a cinema, a museum, a planetarium, a bookstore, a café, restaurants and handicraft shops. It is also connected to the main public library in town (Biblioteca Publica de

Fortaleza). The original project included a connection with Praia de Iracema at a time when this beach was a postcard image of Fortaleza, after the revamping of the Ponte dos Ingleses (Englishmen Bridge) or Ponte Metalica (Metallic Bridge) and the construction of a walkway bordering the beach. Since then, Praia de Iracema has suffered continuous decline, the diversity of uses has shrunk and the open spaces have been emptied.

A heated debate respecting the two developments has flooded the local media (and beyond), motivating several pieces of research mainly engaged in pointing out successes and failures that vary according to diverse criteria, commentators and points of view. Many architects have criticized the art-deco-inspired re-design of Praca do Ferreira on the basis of a formalistic, fashion-prone conception influenced by alleged post-modernist ideas, to emulate the look of the square as it stood in the 1940s. It has even been said that the spatial formality of the new layout and its detachment respecting the local context concurred to increase social segregation while doing little to improve vitality in the city centre [3]. Historians, intellectuals, media people and the general users, on the other hand, tend to accredit a gain in animation and to contend that the place became better frequented after the renovation. This is the case, for instance, of Leitao (2002), who sees a positive first step for the regeneration of the area in an alleged return of passers-by and loiterers to the square; his literary voice also claims that the last development is "(...) perhaps the most beautiful of all Praca do Ferreira versions. Just look: people are back talking to one another there, meeting other people in late afternoons, reading the papers, just like in the good old times." (Leitao 2002, 21). Therefore, if such opinions are to be believed the Praca do Ferreira redevelopment brought back some of the vitality that was there when the square was the centrepiece of the city's business district, thus contributing to bring animation to the town centre or at least to the area surrounding the square.

Architects and planners have criticised the Dragao do Mar project on the basis of various aspects: its monumental scale dwarfs the older surrounding buildings; the complex concentrates activities that were distributed throughout the district; this is thought to have concurred to weaken businesses and movement in surrounding areas (Costa 2003; Paiva 2005), so that besides failing to attract diversity, such as other cultural venues, housing and business to the old town centre, the complex may have reduced its animation, despite the intentions laid out in the texts and blueprints. Praia de Iracema, where various bars and restaurants of distinctive character shut down, is often referred as a location particularly affected by the development, having lost its bohemian character to become just another spot of commonplace tourism and night entertainment.

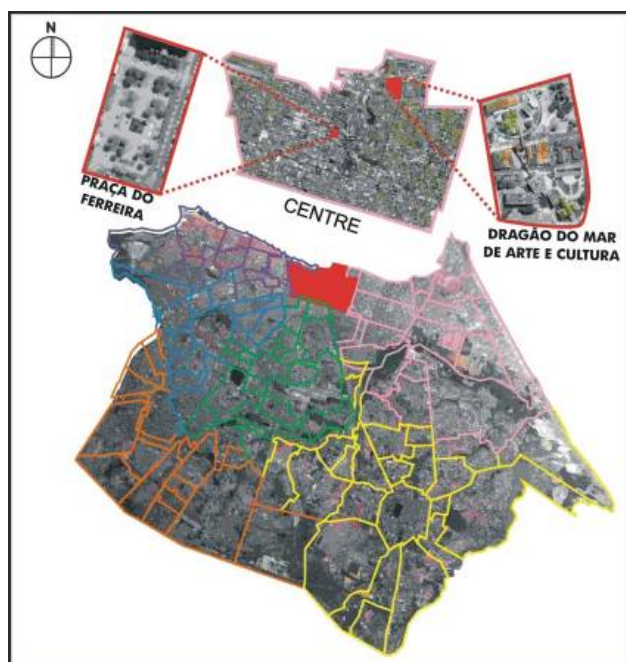


Figure 1

Fortaleza and its neighborhoods. In red, the centre of the city and the two analysed projects.

This study, therefore, investigates spatial properties of accessibility and visibility in the two developments in a comparative perspective, with the aim of shedding light on the following research hypothesis:

- Each development affected the surrounding areas differently, one – Praça do Ferreira – generating spatial properties that concurs to enhance movement and co-presence (maybe similar to the ones existing in the early and mid twentieth century), the other – Dragao do Mar – being comparatively poorly configured in terms of those same properties (maybe having led to a disruption of such pre-existing ones) in relation to its vicinity.

The analytical procedures utilised in this study were: (1) space syntax linear representation and quantification (axial maps) of the two studied developments at three successive levels of insertion within the urban network of Fortaleza – (a) the municipality scale, (b) the neighbourhood where each development is located and all the neighbourhoods adjacent to that, and (c) the limits of the development themselves; (2) the visual integration of the two developments, in their current states, taking into consideration the system of permeable spaces and barriers within the physical limits of the square and of the exterior areas of the Dragao do Mar, plus all the surrounding streets that give access to each case. The axial maps of the studied areas at the scales of the neighbourhood (1b) and of the development sites only (1c) were also reworked to represent the spatial configuration before the implementation of the two developments. In the axial maps that focus on the limits of the developments (1c), spaces accessible by pedestrian were also considered. All procedures were worked out by Depthmap. The spatial properties of accessibility were quantified with reference to values of connectivity, depth, and integration.

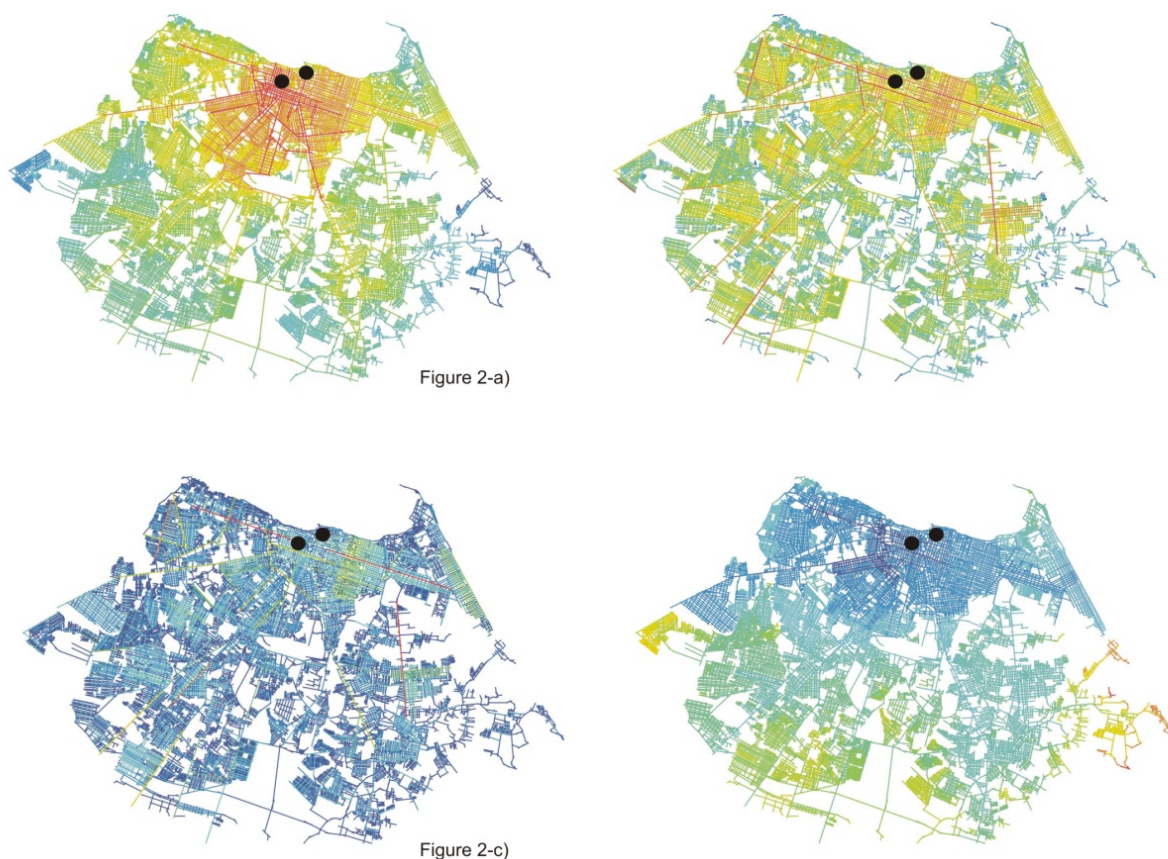


Figure 2

Fortaleza's axial maps. Figure 2-a) Global Integration (HH); figure 2-b) Local Integration (HH); Figure 2-c) Connectivity; Figure 2-d) Step Depth.

The axial maps shown in Figure 2 (Medeiros 2006) represent the municipality limits of Fortaleza in terms of potential values of connectivity (Figure 2-c), depth (Figure 2-d) and integration (Figure 2-a;

Figure 2-b). The street structure defines a radial arrangement with long lines – representing the city's main thoroughfares – that converge to the town centre, where the objects of study are represented by black dots. The axis with the highest potential integration value (R_n), representing José Bastos avenue, is located at the edge of the town centre and connects two other important radial axes: Mister Hall avenue, which links Fortaleza to other municipalities east of the metropolis; and Augusto dos Anjos avenue, which connects the city to southern municipalities. It is clear that the town centre concentrates the set of lines resulting from the largest concentration of highly integrated axes, that is, the integration core, as well as most of the shallowest lines in the system. Some of the best connected axes (i.e. Santos Dumont and Francisco Sa avenues) penetrate the town centre.

The mean values of connectivity, depth and integration respecting the lines that cross the objects of study (black dots in the figure) were calculated and compared to the respective highest and mean values for the system as a whole in Table 1. Numbers show that both projects are embedded in areas more highly connected and integrated than the average for the city's global configuration. Their locations are also less deep than the city's average values. However, Praça do Ferreira is located in a better connected, more integrated and considerably less deep network than that of the Dragão do Mar. These measures indicate a privileged topological position of the former in relation to the latter, thus suggesting a tendency for higher potential animation in and around Praça do Ferreira, following an assumption based on the notion of natural movement (Hillier 1996). On the other hand, because the very conception of the Dragão do Mar project was based on the idea that the building complex would function as a magnet to attract people to the town centre the choice of a site situated on a highly accessible network seems to have been less important.

Although worth mentioning as an important aspect of the interface concerning urban design and urban planning, spatial form and functional performance, and as a probable ensuing line of enquire, the question on whether the development succeeded to its original purposes as an attractor is beyond the scope of the present study. In the present stage our focus concentrates on how the two developments compare in terms of accessibility and visibility so that some parallels between spatial properties and public opinion referred in other studies and expressed in the media, can be outlined.

Spatial Property	System (max.)	System (average)	Praça do Ferreira	Dragão do Mar
Integration	1,235	0,8110	1,07289	0,9885
Step depth	28	9,80	2,33	7
Connectivity	69	4,978	11,44	7,71

Table 1 Potential accessibility as expressed by connectivity, depth and integrity values of the projects area

Spatial properties of accessibility respecting the two case studies were then compared in a diachronic perspective, taking into consideration the linear representation of the town centre and adjacent neighbourhoods Figure 3. Connectivity (Figure 3-c), depth (Figure 3-d) and integration values (Figure 3-a; Figure 3-b, at global and local levels – R_n and R_3 , respectively) were calculated and compared for the system before and after the implementation of the two developments (Table 2). R_3 integration, the integration value that calculates the number of connections in a certain spatial system taking into consideration all other lines and their connections up to three changes of direction, showed to be more adequate for discussing the findings since the axial maps picks lines located in the eastern part of the town centre that represent highly integrated streets at local level. This level of representation also shows a reduction in connectivity and integration values for some streets in the town centre, thus signalling that these streets are potentially more accessible at global than at local level. Such findings illustrate in topological terms, a gradual displacement of the integration core towards east, to the neighbourhood of Aldeota. This area, once a strictly residential neighbourhood is now the active centre of Fortaleza, where the most numerous and diverse range of activities are currently located. It is argued here that the appearance of some

potentially very integrated axes east of Praça do Ferreira contributed to the displacement of Fortaleza's active centre towards Aldeota, thus weakening the role of the Praça, as the core of urban life that has been praised by so many authors: "No other space was more prestigious or aggregated so many lines of public transport, cinemas, restaurants, shops and commercial premises. That place was the irradiating focus of the most important cultural and political events in town" (Silva e Filho 2000, 73-74).

After the project				
Spatial Property	System (max.)	System (average)	Praça do Ferreira	Dragão do Mar
Integration	4,62305	2,54515	3,4173	2,5703
Step depth	8	3,19	1,75	3,5714
Connectivity	47	5,8732	15,75	7
Before the project				
Spatial Property	System (max.)	System (average)	Praça do Ferreira	Dragão do Mar
Integration	4,625	2,547	3,3738	2,7240
Step depth	8	3,195	1,5	3,5714
Connectivity	47	5,8904	14,5	7,857

Table 2

Potential accessibility as expressed by connectivity, depth and integrity values, before and after the implementation of the projects focused in the study.

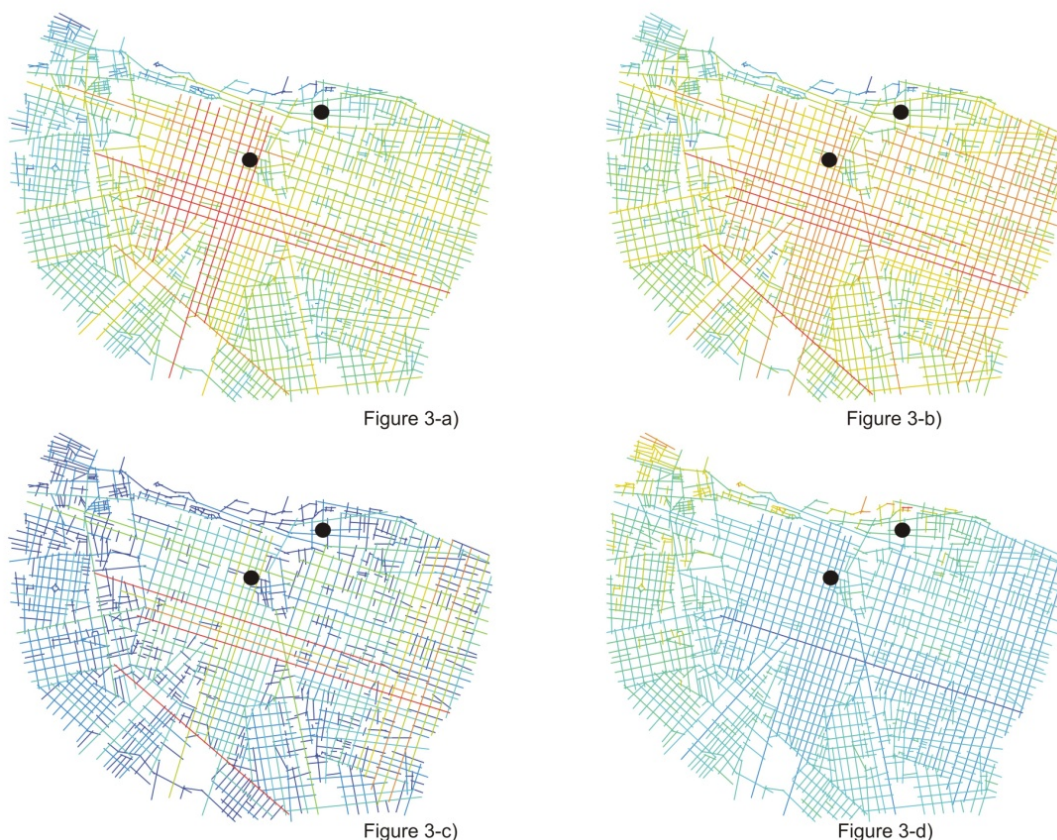


Figure 3

Centre of Fortaleza's axial maps. Figure 3-a) Global Integration (HH); figure 3-b) Local Integration (HH); Figure 3-c) Connectivity; Figure 3-d) Step Depth

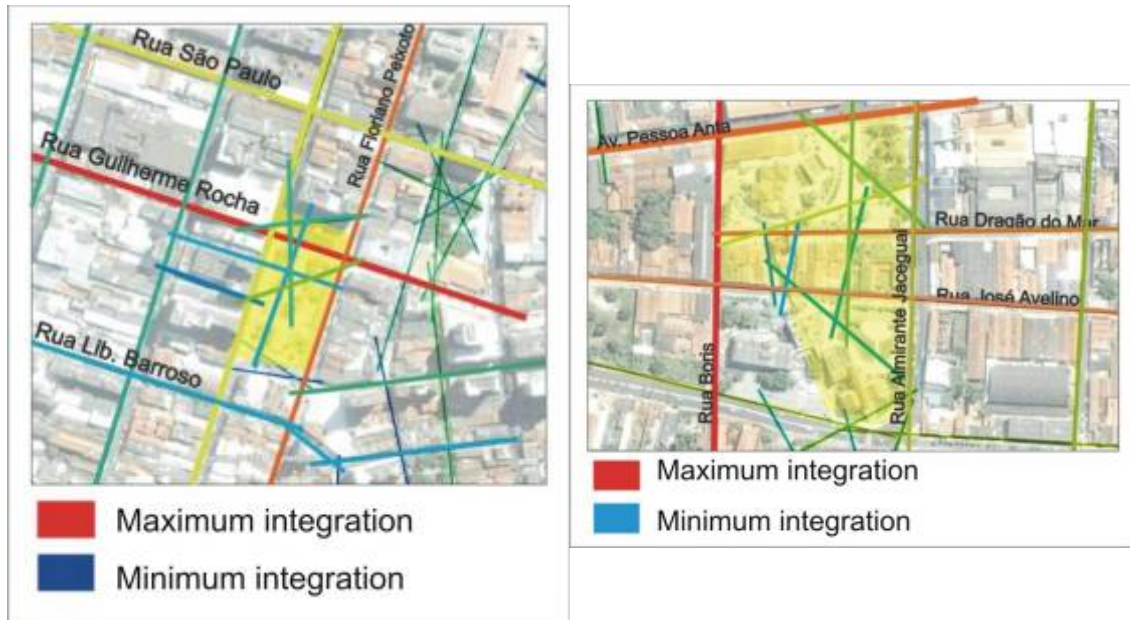


Figure 4 and 5

(4 – left) Praça do Ferreira's axial maps. In yellow, the open public space; (5 – right) Dragão do Mar's axial maps. In yellow, the open space

The axial maps developed for the town centre and adjacent neighbourhoods show that despite the gradual displacement of the integration core to the east, Praça do Ferreira maintains higher levels of accessibility in relation to the Centro Cultural Dragão do Mar. In addition to that, the comparative examination of the spatial configuration before and after the implementation of the two developments show that the area's potential accessibility (respecting connectivity and integration values) has decreased after the network was altered by the construction of the Dragão do Mar whereas the opposite happens to the area where the Praça do Ferreira development is located. There, both values of connectivity and integration increase, signaling a better insertion within the street network, even though it becomes slightly deeper within the global structure, which does not present relevant alterations in none of the examined values. Such figures reinforce the views, which point out that the Dragão do Mar project produced a less than successful outcome as concerns integration with the town centre as a whole and with its surrounding areas. The quotation below exemplifies the point:

"Integration with the commerce on Monsenhor Tabosa avenue did not occur, what was lamentable since this shopping centre has very intense pedestrian flows during daytime. That connection would have been very important for balancing movement between daytime and night-time. The absence of a physical link with the pavement along the sea [the "calçadão"] at Praia de Iracema, never executed in the development of the Dragão do Mar, was partly responsible for weakening tourism and leisure activities at Praia de Iracema, which was, to a certain extent "vampirized", losing most of the public that used to frequent its "calçadão" [the waterfront walk]". (Paiva 2005, 137)

The gains in connectivity and integration values brought about by Praça do Ferreira re-development do not seem to have been strong enough to alter the potential accessibility of the global structure, which does not present relevant differences in none of the examined values before and after the implementation of both projects. This may have something to do with the rather disappointing results of these, as well as other, interventions in central areas and reinforces the idea that Praça do Ferreira has become a kind of animation oasis within the deserted scenery of the town centre during non-commercial hours, as stated by Paiva (2005, 117).

"Despite its scarce use at night-time, the square still appears as a relatively animated spot in the Centre, as compared to the absolutely deserted aspect of other areas. This contrast affects the use

of the square negatively, in a certain way, as access to it becomes difficult especially for pedestrians who feel menaced by the apparent unsafety of most other nearby places”.

When the linear representation was reworked to account for the structure of the open spaces within the limits of the developments themselves (1c), some topological contrasts between the two projects became clearer. The axial map of Praça do Ferreira (Figure 4) shows that the most integrated axis, Guilherme Rocha street, crosses the square, defining a foot path suggestive of a powerful local accessibility potential that privileges those who go round the area on foot rather than by vehicle. In addition to that, by incorporating the potential accessibility of Floriano Peixoto street within the limits of the square, the project helped to extend another important circulation axis, at district level, for the local use of pedestrians. It can therefore be said that Praça do Ferreira project has contributed to potentialize permeability for pedestrians in that section of the town centre, as indicated by Campos (1997), who has found a direct correlation between the mean integration values of axes that cut through public squares and the intensity of their use.



Figure 6

Visual graphic analyses. (a - left) Praça do Ferreira's visual graph and its aerophoto; (b - right) Dragão do Mar visual graph and its aerophoto. Aerophoto from "Digital Google".

With the linear model reworked to represent the open spaces within the Dragão do Mar development perimeter (Figure 5) the opposite seems to have occurred. In the most integrated axis, Boris street, which runs alongside the complex and constitutes one of its main accesses,

there are car parks but no public transport routes. This absence of concern respecting those who do not come to the town centre in private vehicles goes against what is stated in the brief, which was written to explain and justify the complex conception at the time of the project submission:

This project was designed to create a public space of contact, to privilege the use of pedestrians of various social groups and ages through human interaction at the Centro Cultural do Estado do Ceara, in the historic zone in question, as a catalyser of development and renovation in the area (...). (Paiva 2005, 133-134).

It also contradicts a declaration by one of the project designers:

“Everything was worked out under this view [of an easy pedestrian circulation]. And communicates with the public space in a way to generate a building imbued of an urban scale, which is very hard to achieve with this kind of thing [sic]. It is a building, but the transition between it and the city is gradual, democratic and ultra open. Because it is actually a street in the air that connects to the ground.” (Nilo 2003 apud Costa 2003, 109).

The visual graphic analysis (Figure 6) developed for the sites reinforce the dissimilarities regarding the two cases. Whereas in Praca do Ferreira there is a coincidence between the most integrated axis and the most integrated visibility areas these do not coincide in the Dragao do Mar. It is also worth noticing that the stretch of Guilherme Rocha street, the highly integrated axis which extends across the square as a foot path, defines two highly integrated convex spaces at the points where that axis connect to the bordering thoroughfares, west and east of the square, signalling its main accesses. There is also strongly defined differentiation among more and less integrated visual areas, a fact that might encourage diverse modes of use in the square, as indicated in studies that have pointed out that less visible spaces tend to attract activities which require concentration or intimacy, whereas those visually exposed tend to be used as meeting sites, vantage points and circulation areas. Findings thus suggest that Praca do Ferreira current configuration favours diversity of uses, an aspect recurrently stated as a key objective in revitalisation plans.

The visual graph analysis for Dragao do Mar, on the other hand, shows that the most visually accessible areas are located on the edges of the complex, none crossing the site. In addition to that, some of the relatively well discernible convex spaces either do not go far into the complex (i.e. yellowish convex patch north of the site) or occupy very reduced areas within its perimeter (i.e. crossing point in the centre), whereas most of the development presents uniform medium levels of visibility (green and light blue) with a few patches of highly secluded spots (dark blue). This situation appears to confirm criticism based on a tendency for mono-functionality, on repeatedly alleged difficulties to find one's way round the cultural centre, and on a low level of perception of the organisation and dimension of the complex.

2. Mated heart and lone dragon

Some of the morphological properties associated with the potential accessibility and visibility of open spaces that were explored here – connectivity, depth and integration – have thus helped to move a step ahead in the study of possible effects of interventions in pre-existing urban structures which have been devised as strategies for improving vitality in dilapidated or unbalanced town centres, albeit considering that the studied morphological properties require validation by way of field observations, to be developed henceforth, and making allowances for the differences in the size of the two studied cases, which may affect results, particularly those ensued from the representation of a fraction of the urban whole.

Notwithstanding those issues, findings to date strengthen the views that endorse Praca do Ferreira re-design as a successful attempt to create a “place” in the sense of a space imbued of attributes that confer recognition and distinction from its surroundings, attracts pedestrian movement, favours co-presence and is appropriate to accommodate distinct uses, as well as those that denounce the Dragao do Mar complex as a fragmentary, hard-to-navigate, mono-function prone and segregating built ensemble.

If it is to be believed that vitality in town centres can be achieved, or at least improved, by devising and implementing strategies to enhance diversity of use, to strengthen the local ethos (or to foster a new one), and to encourage interface among distinct users and between these and the “place”, it is plausible to advocate that most of these qualities depend on or can benefit from spatial integration within the site itself and with the adjacent areas. In this sense the spatial configuration of the studied cases confirms the hypothesis that the two developments have affected the surrounding areas differently and dichotomically. The revamping of Praca do Ferreira strengthened spatial properties that tend to enhance movement and co-presence by increasing the values of connectivity and integration as compared to those prior to the project implementation, whereas the Dragao do Mar development has reduced those potential properties by causing a decrease in such values, a factor that might respond, at least partially, to the emptying process that affected streets and neighbourhoods in its vicinity, a setback in terms of an effort towards “revitalising” old town centres.

Therefore, we add to the chorus of those who, despite the chronicle process of decay which carries on dilapidating most of Brazilian town centres, devise a shadow of bygone glories restored to the, once, “heart of town”, while also thickening the laments of those who fail to recognise the power of a segregated sea dragon.

Notes

- 1 Because the municipal government building was located there.
- 2 “A Brazilian palm, *Copernicia prunifera*, whose leaves exude a yellowish wax (carnauba wax) used as a polish etc.” (The Shoerwe Oxford English Dictionary (Fifth Edition) on CD-ROM, v.2.0)
- 3 For further information see Paiva 2005; Fernandes 2004; Costa 2003.
- 4 Copyright of University College London, developed by Alastair Turner.

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