

From vernacular to collage city

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Abstract

The Federal District in Brazil was created in 1956. Within its borders, it included the small centenary town of Planaltina, 40 kilometres to the Northeast of the Pilot Plan of Brasilia.

The urban area of Planaltina has sharply increased throughout the last four decades. Space Syntax is used to describe its morphological process. We have three different phases: 1) the original vernacular town, up to the dedication of Brasilia, in 1960; 2) the modernistic improvements dating from the 1960's through to the 1980's; 3) the isolated condominiums – mainly constituted by the irregular parcelling of land, public or private – that began to flourish in the last ten years or so.

An attempt is made to characterise these three phases by means of configurational measures, mainly integration, intelligibility and dispersion. Two levels of analysis will be carried out: 1) a global level, by which the configuration of this urban system will be analysed as a whole; 2) a local level, by which some of the characteristics of its parts are depicted.

As a whole, integration and intelligibility have fallen, and dispersion has increased over time. The impact of such variation on the use of the city is analysed, in terms of the relations between co-presence ratios and other morphological measures. In addition, a metric stance is included, as far as the measure of dispersion is concerned, in order to evaluate distances between houses and services. The potential of analytic tools such as GIS software in doing so is tested. Finally, the social logic behind these physical changes over time is hypothesised.

1. Introduction

At the time of the dedication of Brasilia (1960), only two small settlements existed in the territory of the Federal District: Brazlandia and Planaltina, totalling 15,404 people. The rest was land occupied by cattle-raising farms. This paper focuses on Planaltina.

Keywords

Planaltina/Brazil,
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The Federal District (FD) is divided into 19 “cities”, which are in fact administrative regions, with varying percentages of urban area/urban population. The impact of the building of the Capital in those two settlements was strong. Planaltina Region now 147,114 inhabitants, 7.17% of the population of the FD. Most live in urban areas: 134,663 people.

Planaltina did not simply increase in size: it changed morphologically, incorporating trends which happened in other parts of the FD, as well as elsewhere. This came together with problems of desertification of public spaces, under used infrastructure and greater distances between houses and urban facilities.

Is it possible/feasible to reconstitute a healthy urban fabric? Can Space Syntax help in doing so? The answer seems to be affirmative in both cases. The paper will end with a proposal for main guidelines – albeit very preliminary – by which this could be done.

2. Brief history

Planaltina dates back to 1810. It was then called Mestre D’Armas, where approximately 200 families lived. With the dedication of Brasilia, the seat of Planaltina Municipality was transferred to outside the borders of the FD, where a new urban nucleus has developed (Planaltina de Goiás). This has not restrained the growth of the original settlement, now part of the administrative structure of the FD, without political autonomy.

In 1966, the first important change in its urban system occurred. An “East Residential Sector” was created, with six blocks of residential plots. An “Integration Sector” was also created, between the “Traditional Sector” (the historical area) and the new residential area. Institutional buildings of micro-regional importance should be located in this 500x1,360 meter of newly incorporated land, supposedly aiming at integrating old and new parts of the city.

New areas were later incorporated, both by government and private entrepreneurs. The Integration Sector today occupies the geographic centre of the city, but does not actually integrate anything, on the contrary. Analytic categories will clarify this.

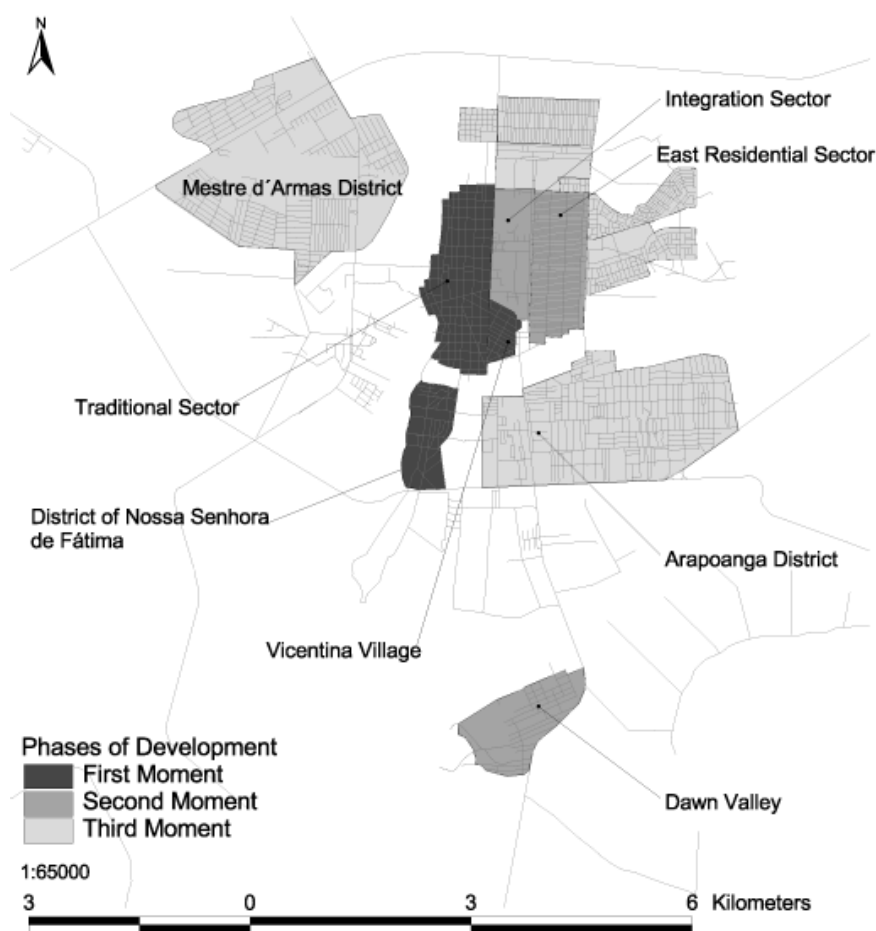
The analysis that follows will refer to three moments in its development (Figure 1):

a) The original vernacular town, up to the dedication of Brasilia in the 1960s, when the city was constituted only by the Traditional Sector, Vicentina Vil-

lage and the District of Nossa Senhora de Fátima.

b) The previous one plus modernistic developments dating from the 1960's through to the 1980's, when the Integration Sector, the East Residential Sector, and the parcelling known as the Dawn Valley were incorporated. These parts grew significantly in the 1980s.

c) Present day Planaltina, which further includes isolated condominiums as well as residential sectors created by the government (low income housing projects), like expansion areas of the East Residential Sector and the North Residential Sector.



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Figure 1: Planaltina. Moments of development

Each of these moments will be analysed configurationally and in terms of co-presence. The variables will be:

a) Integration: a key measure of syntactic theory. It refers to the relative accessibility of parts of the morphological system in topological terms¹.

b) Intelligibility: suggests the potential of highly integrated lines to be used by great numbers of people. It is the correlation between integration values and connectivity values of axial map lines.²

c) Dispersion: has not been traditionally present in syntactic theory.³ It measures relative distances people have to travel between parts of the city and its Central Business District (CBD).

- d) Land parcelling: considers size and form of urban plots.
- e) Constitutedness: considers relations between building interiors and exterior spaces by means of entrances.
- f) Land use.
- g) Co-presence: considers the way people use public space, over time.

3. The vernacular town

The vernacular town includes the area of the Traditional Sector, Vicentina Village and the District of Nossa Senhora de Fátima. The first had big residential plots (averaging 1000 square metres) distributed in a slightly deformed orthogonal grid; the second and the third had smaller plots (averaging 400 squares metres).

Integration is high – average = 1.07. The most integrated line (1.24) linked the Traditional Sector to the District of Nossa Senhora de Fátima. However, for historical and land use reasons, there are no central activities located here. The integration of the most segregated line is 0.40 (Figure 2).

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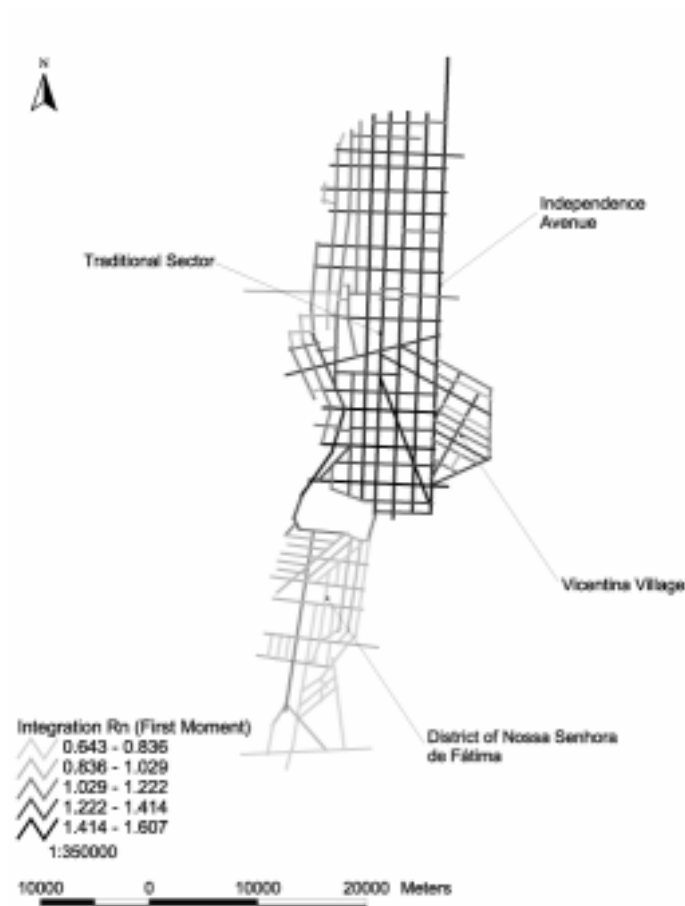


Figure 2: Planaltina. First moment of development

Although this moment had a more compact parcelling and a high integration measure, intelligibility was low: 0.33. If only the historical nucleus of the Traditional Sector is considered, intelligibility is near 1.00.⁴

Dispersion at the first moment was 1.16. In this case this measure is not quite accurate because there is not enough information about the number and location of the actually occupied plots. So the polygons relative to the demographic sectors reveal only the target population, not the actual one at the moment. Possibly, then, the city was more compact than the number above indicates. The Traditional Sector and Vicentina Village form a compact area and the District of Nossa Senhora de Fátima is an attachment linked to the system by the most integrated axis (Figure 2).

Plots tend to squares in the Traditional Sector and to narrow rectangles in other districts. Transitions between inside and outside of buildings are intensely distributed throughout the place: constitutedness is high. Blind walls are reduced to

a minimum. Residences predominate. Some shopping develops in the main streets. Institutional uses mix together with other uses.

There is intense use of public space by pedestrians, mainly along streets with shops. Public squares are used as pedestrian pathways and leisure places, particular during traditional parties.

4. Modernistic developments

The introduction of the Integration Sector and East Residential Sector brought many morphological changes. Average integration increased to 1.37, and the most integrated line now measures 1.71, depicting its change in scale and greater global importance. The most segregated line also reflects this change: 0.46 (Figure 3).

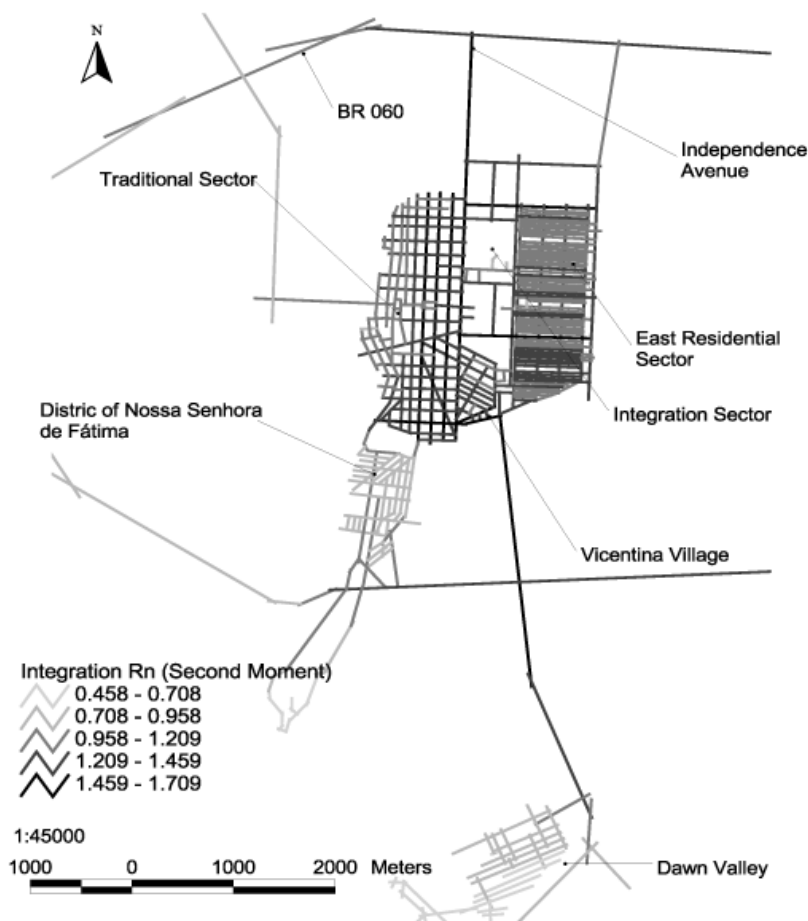
The intelligibility measure has fallen to 0.14, indicating the discontinuity of the urban tissue.

Dispersion in the second moment was reduced to 0.77. As before, polygons refer to the target population. This decrease shows the segregation of the sectors, mainly after the incorporation of the Dawn Valley, which is located at a distance of more than 6 kilometres. The CBD is located inside the Integration Sector, where there were not people living at this time.

The Integration Sector has commercial plots measuring 26x26 metres, most of them with openings to Independence Avenue. Lateral facades that have doors or entrances open to parking plots. It also has a football stadium, a gym, a multifunction building with two sport courts, a bicycle arena, a skate ramp and three football pitches. Most of its sport facilities do not have doors and access is free. Access is not free to the buildings, that occupy 16.19% of the area.

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Figure 3: Planaltina. Second moment of development



The seat of the Regional Administration and the Court of Justice are inserted in plots and have openings to the road WL 2; the rest of their facades have no openings to the exterior. The bus station has openings all around it, allowing the passage of people through the building.

Big plots destined to be schools, for the city Hospital and for the Nursery School are surrounded by walls or fences, making access difficult. Schools often do not have vehicular access: one has to circumnavigate the buildings to find their doors.

The Integration Sector was supposed to function as an urban centre in the modernistic style: it should have plots exclusively destined for institutional uses of regional importance.

The most integrated avenue of Planaltina – Independence Avenue – is the borderline between the Traditional and the Integration Sectors (Figure 1). It has buildings of commercial, institutional and residential use. Most of the residences are located in the Traditional Sector. The plots occupied by residential use are going through changes in use and form: the ground floors have become commercial and other floors have been added for further residential use.

Road NS2 is the borderline between the Integration Sector and the East Residential Sector (Figure 1). On its East side, it contains residential plots and has only one point of significant co-presence: the Vegetable Market that receives people in business hours. On the Integration Sector side of the road there is the Market of Imported Goods, which opens daily, but which is more intensely used on weekends.

Located in Independence Avenue, the Bus Station is the only place intensely used everyday at any time.

The majority of plots in the Integration Sector do not develop activities that favour co-presence, particularly in non-business hours. Schools, although opening also at night, have their activities restricted to the interior of the plot.

A Shopping Centre was built, which included movie houses, snack bars and clothes stores. It has now only a supermarket and household appliances stores. Life style in the city was not yet able to support such an institution, despite the fact that it was located near the Bus Station, the place with the greatest concentration of people in town.

Nowadays the Federal District government has implemented the “Sport at Midnight Program”⁵. This has improved the use of the Sport Sector at night-time, but the Football Stadium and the football pitches are still used only at the weekends. Public school students use the sports courts at school times.

Significant co-presence is limited to the borders of the Integration Sector, where one finds shops, the markets and the Bus Station. The diversity of activities developed along Independence Avenue favours its occupation during many hours of the day. There, we can find commercial and residential uses in the same plot.

The other sector introduced in the city was the East Residential Sector. It is divided into long blocks of contiguous residential plots. At every twenty blocks, there was a set of plots for commercial, educational and religious use.

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The residential plots here are rectangles of 10x20 meters. In the project, the principal facade opened to the vehicle streets, while the back one opened to a green public space. Almost half of the plots were divided into two parts, and now two buildings occupy the same original plot. The public green area has been transformed into another vehicle street. Most plots thus have independent openings to both facades. This has significantly improved the constitutedness of open space in the area.

The district is also divided into three parts by two avenues. These long avenues were intended as purely circulation axes, including buses, and were defined only by blind facades. They now present great circulation of both vehicles and pedestrians, and corner plots have opened doors onto them. No surprise: these avenues are the most integrated axes of the sector. The government has changed building rules for those plots in order to adapt them to these real and legitimate demands. Now commerce is allowed at the ground floor level and residence in upper ones. The few number of original commercial plots, as well as their relatively segregated location, explain this change. Some of them are still empty.

Walls surround the Educational and Church plots and they have only one opening each. Their plots have been enlarged, thus reducing the public area.

5. Present day Planaltina

At the macro scale, Planaltina does not belong to the integration core of the FD and is connected to the other cities only by the BR 060 road, the integration measure of which is 0.71 (Figure 4). This shows the relative segregation of the city, for the most

integrated axis of the Federal District is the EPIA⁶ - 1.04. Such syntactic segregation is made worse by geometric distance: Planaltina is 40 km away from the Pilot Plan - almost one hour by bus.

Many new developments have been founded in Planaltina in the last decade. These settlements have been sprawling in all directions increasing its urban area, and changing to morphological attributes.

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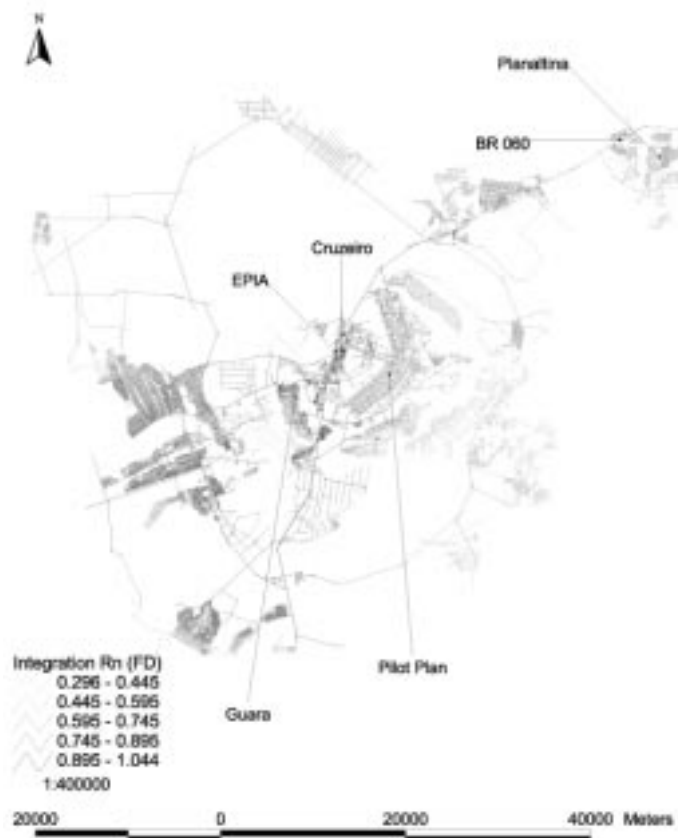


Figure 4: Federal District, Axial map

In this third moment of analysis, the integration measure depicts the strong discontinuities of the system. Average integration now falls to 0.99. However, the most integrated line still reaches 1.69 (Figure 5). Note that although the Integration Sector was incorporated into the urban system in the 1970s, it was only in the 1990s that it came to be included in the integration core,⁷ thus becoming the morphological centre of the city. These results also suggest that the average integration depicts more clearly the changes in the system than the highest measure. According to integration measures, this is a place of good potential in terms of co-presence. The problems found here are thus related to other factors, some of them already commented in the previous section (Figure 5).

Figure 5: Planaltina. Third moment of development



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Intelligibility, in this moment, remains 0.14, which can be explained by the great number of separate parts that were incorporated to the city, linked among themselves by only one street. The city lost the continuity of the first moment.

Dispersion in the third moment has increased to 0.98. The great distances between the new residential sectors can explain this. Although some of them are located near the residential sectors implemented in the second moment, the bigger ones, Mestre D'armas and Arapoanga Districts, that are occupied by a large population, are located at more than 2 kilometres away from the CBD.

These new settlements somehow rescue the orthogonal configuration of the first moment. Facades open to the circulation of both pedestrian and vehicles, distributing the constitutedness along the streets.

The government created Mestre D'armas District by the aggregation of many particular plots. It was necessary to grant the population access to infrastructure, education and health.

The size of residential plots has been reduced to accommodate larger numbers of people. They vary from 125 to 180 square meters. When the front facade opens to an important avenue, commerce can happen in the ground floor.

These settlements aim at low-income people and many of them are not totally implemented/occupied. Commercial and institutional plots are empty, what reduces the possibility of co-presence. To buy their goods or to study, people have to travel to the CBD. The movement of people walking or travelling by bicycle or vehicles in the street that links the new residential area to the CBD has increased.

6. Conclusion

Planaltina is a segregated city in the system of FD and it has segregated areas inside its urban tissue. As it is suggested by the results of the dispersion measure, there are many unused spaces and deserted areas. The introduction of settlements near its consolidated area would make the city more compact, but the implementation of large and distant developments has interfered in the dispersion measure with great force. Dispersion may be strongly reduced by the occupation of these empty enclaves.

The parcelling of the areas mentioned above must foresee the implementation of institutional plots to attend to the demand near Mestre D'armas and Arapoanga Districts, mixing with commercial and residential parcels.

The great number of well constituted streets in the East Residential Sector contrasts with the lesser number in the Integration Sector. As the concentration of people is directly related to the number of openings to the streets, avenues here exhibit intense co-presence.

From the processed axial map of Planaltina, we learn that the Integration Sector is located in the integration core of the system, and occupies its geographic centre. It thus presents important characteristics for a dynamic nucleus, but in practice it is not so. As follows, we will comment on some attributes that may explain the fact.

At a global level, intelligibility is low. Research has shown that this may seriously jeopardise the probability of encounters in the most integrated parts of the system. At a local level, constitutedness of public spaces is bad, only big parcels of land are found here, land use excludes housing and shopping. Institutions located in the Sector “feed” public space with people only at limited hours of the day (with the exception of the Bus Station). The Integration Sector constitutes a mostly deserted enclave in-between two intensely constituted and used parts of the city.

Still, on its Eastern border (neighbouring the East Residential Sector) an unforeseen great concentration of commerce and people has developed. This was

directly linked to configurational factors. Here we find some of the longest and most integrated lines of the system, and this gives us clues for future projects. Circulation of vehicles and people, brought here by high integration, were directly linked to the development of commerce. Flexibility of land use has allowed the use of space by the community at all times.

A renewal of the Integration Sector must learn from these lessons. Some guidelines can be pointed out:

a) Creation of new plots. By reducing over dimensioned public space, it will allow a better use of it.

b) Flexibility of Land Use. As seen above, there is a greater concentration of people at different hours of the day when different land uses coexist in the same plot or sector.

c) Definition of pedestrians circulation in the Educational Sector, surrounded by commercial areas that work at different hours of the day, thus giving more security to pedestrians.

d) Creation of residential plots at the Sport Sector and near the NS2 Street. These places have a low occupation ratio, constituting a deserted area. New housing programs can produce a better use of the space.

The three moments of Planaltina's development illustrate the trend towards a collage city in two senses. First, it is constituted by parts separated among themselves by "no-man's land", reproducing, at a smaller scale, the logic of the multi-nucleated metropolis to which it belongs. It mimics the modern "horror" of the big continuous city, of which Brasilia is a telling example. Second, even its contiguous parts also constitute a collage because they contrast among themselves as far as configurational properties are concerned: more recent parts invest in blind spaces, exclusive land use, uniformity of land parcelling – either big plots or small plots in each area – in contrast with the highly constituted, mixed use and mixed plot sizes of the previous vernacular town. Both issues have been analysed in the literature as corresponding to a decline of the quality of the public domain, with elitist social consequences.⁸

We are optimistic concerning a reversal of such process. Urbanity is being considered around the world as a value to be rescued in contemporary cities. The preliminary indications above will help in the definition of the necessary interventions in the city of Planaltina, towards a greater urbanity. Of course this will depend on the acceptance of the corresponding values by its population. This is only the beginning of a long journey.

Notes

¹ The urban system is reduced to axial lines, and the integration is calculated in terms of the topological distance (i.e. intervening lines) between each line and all others of the system (Hillier & Hanson, 1984).

² Connectivity measure of a line is the number of other lines that it crosses.

³ This approach has first demonstrated in, together with other syntactic measures, in Holanda, 1999. Dispersion measure indicates the way a city is organised as far as the distances of various sectors to the Central Business District (CBD) are concerned, as compared to the average distance of the points of a circle, of similar area as the total area of the city, to its centre. This is based on Bertaud & Malpezzi, 1999.

⁴ As in Holanda, 2002.

⁵ Sport at Midnight Program- governmental program that join young and adolescents to practice sports at night-time.

⁶ EPIA - Industry and Supply Park Road, located near to the Pilot Plan of Brasília and the cities of Cruzeiro and Guara.

⁷ The set of most integrated lines of the axial map.

⁸ Sennett, 1974.

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