

The Morphological Mosaic: Urban Vitality in Central Areas (Goiânia, Brazil)

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Abstract: The article explores the relationship between urban morphology and vitality in central areas of Goiânia (Brazil). The objective is to thoroughly understand the morphological strategies and patterns that foster the encounter of people in order to emphasize potentials to be explored in urban design. The analysis is developed according to the following stages: identification of different morphological patterns in the centres of Goiânia; registration of the configurational characteristics of these patterns; and verification of the relationship between the aspects of spatial configuration and levels of vitality. The study is based on the theoretical, methodological and technical premises of the Space Syntax or Theory of the Social Logic of Space, in order to further investigate the urban dynamics that affect the vitality in central areas. The results show that Goiânia, due to the origin of global planning based on the transfer of the new capital of the State of Goiás, generally presents a clear similarity in the regions analysed: the centralities are located mainly in areas with garden-city or modernist design, conveying the idea that green areas, zoning and the concept of neighbourhood unit influence the distribution of land use since it was established until the current day.

1. Introduction

The article explores the association between urban morphology and vitality in the central areas of Goiânia, based on the Theory of Social Logic of Space (Space Syntax). The centralities discussed here are those that concentrate several activities of commerce and services. The objective is to understand the morphological patterns that foster the meeting of people in these areas in order to emphasize potentials to be explored in urban design. In the research, the patterns are analysed by the layout characteristics according to the denomination used by Kostof (1991, p. 46) which divides them into: a) geometric; and b) “organic”.

The study works with the configurational perspective, which corresponds to the analysis of the shape of the city – consisting of barriers and permeabilities – and their relationships. The barriers and permeabilities are the structuring elements of urban settlements, which also receive the denomination of “masses” – buildings, blocks – and voids – roads, sidewalks, promenades. The way in which these elements are associated results in design patterns in the urban mesh.

Regarding the pattern of the urban network, studies conducted by Barros *et al.* (2009) show that the regular layout of the road system has greater potential for movement, and therefore greater potential for accessibility when compared to irregular meshes. In view of this, it is possi-

ble to infer that the design of roads is of fundamental importance for location of uses, especially in central areas that depend on the movement flow of people.

In terms of centralities, accessibility is essential because it is related to the following urban dynamics that affect them: 1) displacement of centralities: when there is migration of activities and services from the centre to other more accessible areas of the city, often promoting the loss of the main function of the old centrality and consequently its degradation (Trigueiro and Medeiros, 2000; Alarcón, 2004; Barros *et al.*, 2009; Holanda, 2010; Arrais, 2015); and 2) urban vitality: when accessibility is impaired by the more labyrinthine and segregated type of route that reduces the flow of people, leading to an idle infrastructure that does not allow life in the centre to be sustained (Arrais, 2015). The two mentioned aspects are connected to the loss of vitality of the centres; however, the first one refers to an analysis of the city as a whole and in the second, the investigation takes place at the local level.

Holanda (2013) explains that a configuration of the urban mesh, where people have to make numerous inflections to reach certain destinations, results in a network of paths that are potentially less chosen. Therefore, it is believed that networks with more geometric urban designs, and topologically with easier to reach axes are more widely used and receive greater flow of people than those with irregular shapes. The author states that the barriers and accesses that constitute the spatial configuration of a given settlement can promote the meeting of people and create more utilisable spaces, or on the contrary, encourage avoidances and generate idle or not very usable spaces. Such issues refer to the flow of movement of an urban system.

The “urban system” is associated with the city and, according to Medeiros (2013, p. 96-97), means “an integrated entity whose essential properties arise from relations between the parties”. The author adds that “the idea is linked to the etymology of the word, derived from the Greek *synhistanai* or *systema*, i.e., to place together or else a set of elements, materials or ideals, where one can find or define some relation”. The Theory of Social Logic of Space works with this systemic perspective for the urban environment and considers that the parts affect the whole and vice-versa, demonstrating the existence of interdependence between the structuring elements of urban space. For the reading and diagnosis of the urban phenomena, driven by the spatial configuration of cities – such as those related to the loss of vitality in central areas – the Syntax as a methodology is very useful, and in the case of this research, allows the interpretation and quantification of the flow of movement that affects urban life, as other approaches cannot do.

From these premises, and considering the case study, the article explores the theme by investigating the following research questions: 1) What are the morphological patterns of the centralities of Goiânia and what are their configurational characteristics?; and 2) Is there any synchrony between the configuration patterns of these centres and the degree of vitality?

In order to organize the information, the article is divided into three parts. The first introduces the theme and presents the case study. The second one deals with the methodology used. Finally, the third part presents the results, which anticipates the conclusions.

2. The Case Study

2.1. *Brief History*

Goiânia, founded in 1937, is one of the planned Brazilian cities and it was the result of the relocation of the state capital of Goiás to a new city. The political moment that the country lived in the 1930s was a strong influencer and issues related to the need to promote the development of the

State and supposedly remove it from the delay caused by the “incapacity of the current capital to boost progress” (Corrêa Lima, 1942, p. 5) were used as determining factors to justify the entire process of change.

The first planning stages of Goiânia had as designers Atílio Corrêa Lima – architect graduated by the National School of Fine Arts and post graduated in Urbanism by the Institut d’Urbanisme de l’Université de Paris, – and Armando Augusto de Godoy – engineer, graduated at Rio de Janeiro’s polytechnic (Gonçalves, 2003). The urban designers developed the plans for the city in the early 1930s and the urbanization plant was projected in 1947, respectively.

Atílio worked on the following aspects of the city layout: 1) topography of the land; 2) road hierarchy; 3) and zoning (Monteiro, 1938). In this last point, Pantaleão and Trevisan (2011) state that the sectorialization in Atílio’s project followed the modernist model of organizing the urban functions according to ideas proposed by Le Corbusier. The plan also stood out for the treatment employed in the public areas: widely forested roads and main gardened avenues; watercourses protected through the deployment of linear parks or park-ways; squares that “obey the rotating circulation system” (Monteiro, 1938, p. 142); and urbanistic elements that compose a radio-concentric route.

According to Pantaleão and Delfino (2017), the principles that guided the creation of Atílio’s urban design are references of the technical and rational urbanism of the French school, including: choice of site (Diniz, 2007); traffic management; implementation and dimensioning of roads; interaction with the hydrographic network through park-ways (Pantaleão and Delfino, 2017); and a proposed zoning (Corrêa Lima, 1942). Lima also makes use of the classical party adopted in Versailles, Karlsruhe and Washington to create the monumental effect in the city, especially its administrative centre (Corrêa Lima, 1942). According to Mello (2006):

The main emphasis was on the administrative centre, which was organized in a large central square from which the main avenues flowed. Three avenues, in particular (Araguaia, Goiás and Tocantins), formed the *pâte d’oie*, or “duck’s foot”, placing the Government Palace in perspective from three different points. In this way, the feeling of culmination of that building was strengthened (Mello, 2006, p. 37-38).

For Mello (2006), the urban planner makes the baroque influence in the conception of Goiânia explicit, by referencing the three cities, which have as a common element the design in the form of an “asterisk”, represented by the convergence of roads to a central point. According to the author, the baroque urbanism has a “tendency to the geometrization of forms, which demonstrated the need to control the space, and the opening of large avenues, often devastating the existing urban mesh. A classic example was the Paris remodelling (Mello, 2006, p. 40). The scenario then designed by Lima was one of avenues, boulevards and squares, organized in a geometric layout, similar to Haussman’s Paris (Manso, 2001).

As Atílio leaves, Armando de Godoy undertakes and starts to develop a new plan for Goiânia. Mello (2006) explains that, of Atílio’s project, Godoy maintains only the design for the Central Nucleus – composed by the “Civic Centre, commercial zone and residential zone of medium and high income” (Mota, 1999, p. 6) and Northern District- which included “the residential zone of medium and low income, and industrial zone” (Mota, 1999, p. 6) – since they were already under construction, and starts the project for the Southern District. Diniz (2007) also proves that the modifications were not limited to the layout of the Southern District, but that the dimensions of the commercial and industrial zones, the main avenues and blocks were altered and the layout of the Civic Square was redesigned, “which has come to have a radial

shape, with gardens and water mirrors, more open, unlike the closed, dry square, in the shape of a horseshoe from Corrêa Lima's plan (Diniz, 2007, p. 203)".

As pointed out by Pantaleão and Delfino (2017), the plan prepared by Godoy highlights the references of the English school, represented especially in the garden-city model designed for the Southern District. The neighbourhood – which in Atílio's plan corresponded to a sketch of rectilinear routes, like a “chessboard (Gonçalves, 2003, p. 54)” “ at that moment, it was modified to an urban meshwork of organic layout.

According to Graeff (1985, p. 14), Godoy aimed at the representation of a “genuinely” modern city that, therefore, had as its greatest representative at the time the cities built on the ideas of Ebenezer Howard. For this, he sought to know some of the existing examples as Mello reports (2006, p. 42):

It is significant that, before drawing up the plan for Goiânia, Godoy made a research trip to the United States to personally learn about the urban experiences carried out in that country. The design of the Southern District was inspired by Radburn, a U.S. city built in 1929 in New Jersey, for a population of twenty-five thousand inhabitants, according to the concept of Clarence Stein and Henry Wright. Its housing area was composed by neighbourhood units that shared common urban equipment. Vehicle traffic was restricted to dead-end streets or cul-de-sacs, freeing the flow of pedestrians from interfaces with automobiles. Radburn became known as a garden city adapted to the vehicles.

Thus, the urban design of the Southern District designed by Godoy was made up of cul-de-sacs, extensive green areas and neighbourhood units with internal park areas proposed to locate public equipment and services (Mota, 1999).

The plans of Atílio and Godoy reveal the various principles that guided the conception of Goiânia and according to Pantaleão and Trevisan (2011, p. 1) there is “an overlap of urbanistic theories articulated” to “the concepts of zoning, city-garden, neighbourhood unit (...)”. Theories and concepts that, as the capital was expanding, were being reproduced and generating patterns of design in the urban network, first by Godoy, who replaced Atílio, then by designers who were hired to plan new neighbourhoods in the city.

2.2. Urban Expansion and Centralities

Melo (2017) says that, until the 1950s, the urban space of Goiânia that was considered planned followed the guidelines of the city's urban plans. After this period, the city expanded beyond the limits provided due to the approval of urban parcelling for private individuals by the new Building Regulations Code of Goiânia. The growth takes on even greater proportions when the public authorities allow the construction of lots without the requirement of a basic infrastructure, with only the lease and openings of roads (Ribeiro, 2004).

From the 1960s on, Goiânia has undergone a series of transformations: the implementation of the official Master Plans, prepared by Jorge Wilhelm – official in 1971 – and that of Engevix Engenharia S.A. in 1994; the multiplication of lots, many of which were undocumented, from 1964 to 1975; the implementation of residential condominiums and road network interventions from 1975 to 1992; and the proliferation of gated communities from the 1990s on (Oliveira, 2005).

According to Alarcón (2004), with the increasing concentration of commerce, services and bureaus, the city centre was consolidated as the main nucleus in the 70s. However, from 1980 on, the centrality expanded from the Central to the Western District, moving towards the more morphologically accessible roads.

As Correa (2010) points out, the changes that occurred in past decades in Goiânia have pulverized some activities and produced new urban centralities. The author also says that close to these centralities are the higher income classes located mainly in the Western, Bueno, Marista, Nova Suíça and Jardim Goiás neighbourhoods.

In a more recent analysis of the urban system of Goiânia, conducted by Arrais (2015), it was noted that there is an even greater trend of the emergence of new centralities to the South of the settlements, which is explained by the large urban expansion that has been produced over these years in this direction, especially by the influence of the conurbated region of Aparecida de Goiânia. However, what became more evident is the significant increase of more accessible axes in the South-western region of the city and along Anhanguera Avenue, towards the North-western part of the capital and close to Campinas District. This data, compared with the studies carried out by Kneib (2016), allowed the ratification of the information on the origin of potential centres in the South-western and Southern regions of the city, in addition to confirming the importance of the Centre of Campinas. Both Kneib (2016) and Arrais (2015) demonstrate that despite the appearance of new centralities, the Traditional Centre of Goiânia continues to be the main city hub.

3. Methodology

This item presents the methodology that was developed in this work, based on the theoretical, methodological and technical premises of the Space Syntax or Theory of Social Logic of Space. The Space Syntax was proposed by Bill Hillier and Julienne Hanson in the 70s and it includes a reflection on the set of rules and principles governing urban space, in order to explore the relationships between space and society.

According to Holanda (2013), the way we organize space aims to satisfy and reproduce systems of interpersonal encounters, which are established from patterns of relationships composed essentially of barriers (masses: like buildings and blocks) and permeabilities (voids: like streets and pavements) of various types” (Holanda, 2002, p. 96). The present article works with this strand and selects as a case study the centralities of Goiânia. It is important to emphasize that they are potential centralities, because other variables are necessary to evaluate the reality that is not the purpose of this research.

For the analysis, the following methodological steps were performed: identification of the different morphological patterns of centralities; registration of the configurational characteristics of these patterns; correlation between aspects of spatial configuration and levels of vitality.

3.1. *Identification of morphological patterns*

Regarding the identification of morphological patterns, the procedures for analysis were:

- 1) Delimitation of centralities using as a basis the map developed by Kneib (2016):

The map results from a methodology developed and improved by Kneib (2016) to identify centralities, through the methods a) Delphi – based on experts and spatial analysis; and b) Krigagem – data interpolation procedure.

“The Delphi method allows the analysis of highly complex issues, based on consensus. It has, mainly, the following characteristics: use of specialists; anonymity; questionnaire application; feedback; and consensus search” (Listone; Turoff, 1975; Sáfiadi, 2001 apud Kneib, 2016, p. 18).

In the study (KNEIB, 2016, p. 18), “Delphi is used to spatially identify centralities in a given municipality, based on the consensus of a group of experts. After the identification of the cen-

tralities, a scale of points that allows the specialist to attribute values of importance to each centrality is also assigned.

The final map of the specialists generated by the Delphi method is improved through the use of Krigagem, a process of data interpolation that allows a greater approximation with reality. As Kneib (2016, p. 19) explains, this is a tool that considers “a statistical model of local and global effects, in which each point of the surface is estimated only from the interpolation of the closest samples, using a statistical estimator.

2) Identification of the morphological patterns and elaboration of the morphological mosaic of the centralities:

In this stage, the morphological patterns of the centralities pointed out by Kneib (2016) were identified as:

(a) geometric, characterised by regular shapes, consisting of a grid or chessboard, or circles and polygons as a radial model; (b) organic, which has a more sinuous layout (Kostof, 1991). Subsequently, the centralities were grouped together to elaborate the morphological mosaic of the centres and carry out a more in-depth analysis of the existing patterns.

3.2. *Registration of Configurational Characteristics*

After the elaboration of the morphological mosaic of the centres of Goiânia, the characteristics of the standards of these areas were recorded from the configurational point of view, through the map of segments produced by Arrais (2015).

The segment map comprises one of the tools offered by the Space Syntax, being developed through an axial map. The latter, in turn, results in the modelling of the circulation paths of a road network, resulting from an available cartographic base, and includes the layout of the axes that represent the smallest amount of the largest straight lines (Dias, 2014). The updated graphic representation of the settlement studied through these maps and processed in specific applications, such as Depthmap®, generates numerical values such as integration, choice, connectivity, synergy and intelligibility, among others, which allow the reading of urban aspects such as centrality. The resulting values are converted to a chromatic scale: in the case of the integration variable, for example, the most integrated roads correspond to the hottest colours, while the most segregated ones are presented in cold tones.

According to Medeiros (2013), the segments map considers as a basic element the existing section between two nodes or crossings, and allows a more refined reading of the accessibility potentials, including the values known as “integration” (whose normalized measurement is called NAIN). The interpretation of the urban mesh through these maps makes it possible to analyse the displacement in greater detail, in situations in which “it is necessary to identify the variation of potentials in stretches of the same axis (Barros, 2014, p. 73)”. When considering that the movement potential can really vary along the roads, producing different results, the analysis of the stretches becomes one more tool to characterize the problem that involves the centrality.

In the present study, the variable “NAIN” allowed the reading of the centres concerning the areas with potential for greater or lesser flow of movement resulting from the existing morphological setting. The configurational interpretation of the centrality in the segment map was done in a qualitative fashion, through the chromatic reading of the variable “NAIN”, in which the most reddish streets showed the most integrated and accessible areas of the system (greater movement potential) and the blue tones identified the most segregated (lower movement potential).

3.3. Correlations – Spatial Configuration x Vitality

The correlation between spatial configuration and vitality of the centres was evaluated considering the following:

- The values of “NAIN”: demonstrating whether the layout of the centre had “integration” values that turned the area into a more accessible place, which potentially favoured the encounter of people and their vitality.
- The displacement of the centrality to another area of the neighbourhood from the analysis of the correspondence or not of the analysed centre: a) with the most integrated or accessible streets of the neighbourhood; and b) with the centralities pointed in the study of Kneib (2016) for the city of Goiânia. In both cases, the correspondence of the centre with the more integrated streets – in the case of the Syntax approach – or with the centralities pointed out by Kneib suggests that the centre is active and endowed with vitality.

4. Analysis/Results

4.1. Morphological Patterns

Figure 1, developed by Kneib (2016), shows the centralities of Goiânia distributed in the following areas: in the Traditional or Old Centre (A); in the Eastern Region, covering Leste Universitário and advancing to Vila Nova District (B); in the West of the city, in Campinas (C), and in the meeting of Anhanguera and Castelo Branco Avenues with the GO-060 highway; in the South-western Region (D), comprising Bueno, Marista and Nova Suíça Neighbourhoods; in the South of the capital, located in Bela Vista and Pedro Ludovico districts (F); in the Southeast, in the region of Jardim Goiás (G); and in the part of the city which is conurbated with Aparecida de Goiânia, near Buriti Shopping, located at the Rio Verde Avenue.

Highlighting the centralities located in Figure 1, it can be seen that these areas have different morphological patterns, as expressed in Figure 2.

In the morphological mosaic of Figure 3, formed by parts of the centrality areas – in an enlarged scale – pointed out in Figure 2, it is possible to observe, in greater detail, the patterns of each centre. It is observed that there is a predominance of geometric shape: chessboard type on images (I), (II), (IV), (VIII) and (X); and radial, visualized at the centres (III), (VI) and (VII). However, although the geometric pattern represents most of the identified centralities, two centres have a winding urban mesh design, located in Jardim Goiás (V) and Southern Districts (IX).

The findings point to a similarity between the morphologies found in the layout of the more recent centralities and the urban design that guided the conception of Goiânia at its origin. It does not mean that having this type of design implies converting it into centrality, but rather that the existing centres have recurrence in a certain pattern. The geometric model of the mesh that refers to the modernist urbanism of the first phases of planning the capital is repeated in several centralities: in the orthogonal design of the streets and in the radial layout, composed of circles and polygons of the urban structure. The latter pattern is also quite expressive in many parts of the urban system, characterized by the presence of numerous “asterisks” in the city structure. There is also a strong influence of the garden-city models in the centralities found, such as for example in the areas located in the Southern and Jardim Goiás Districts, areas that

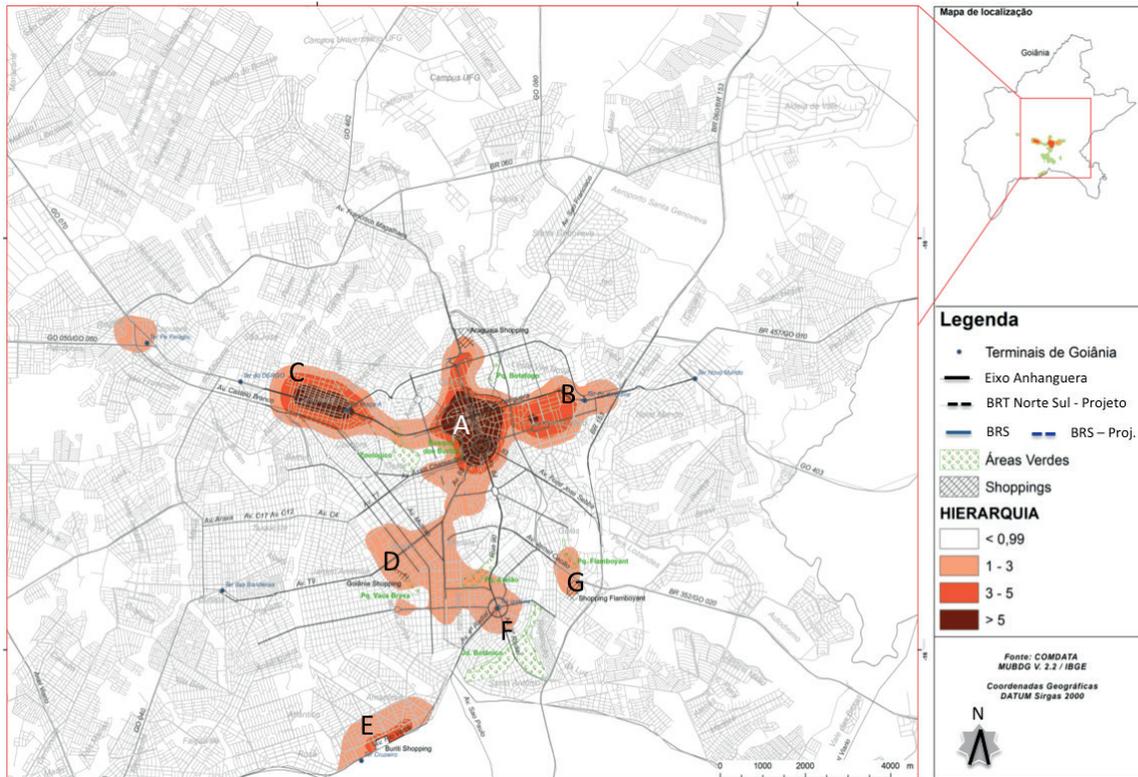


Figure 1. Centralities in Goiânia from Krigagem. Source: Kneib, 2016.



Figure 2. Centralities (KNEIB, 2016) and respective morphological patterns in Goiânia. Source: Google Earth, 2019.

stand out for the presence of extensive green areas, the sinuous layout and the conception of Neighbourhood Units.

4.2. Spatial Configuration

The configurational analysis of the centres of Goiânia was performed based on the map of segments developed by Arrais (2015), illustrated in Figure 4. As pointed out in the author's study, in the streets with red and warm colors are concentrated the potential centralities, which together correspond to the Morphological City Centre or Nucleus of Integration. In the Space Syntax approach, this Integration Core has a "Toothed Wheel" pattern, in which more integrated roads depart in all directions of the city (Arrais, 2015).

Considering the centralities identified by Kneib (2016), it is noted that they are located in the set of more integrated roads of the system, which allows us to conclude that they are more accessible areas. However, the centres located in parts of the system with geometric grid-type tracing demonstrate visually to have higher accessibility values and, therefore, greater flow of

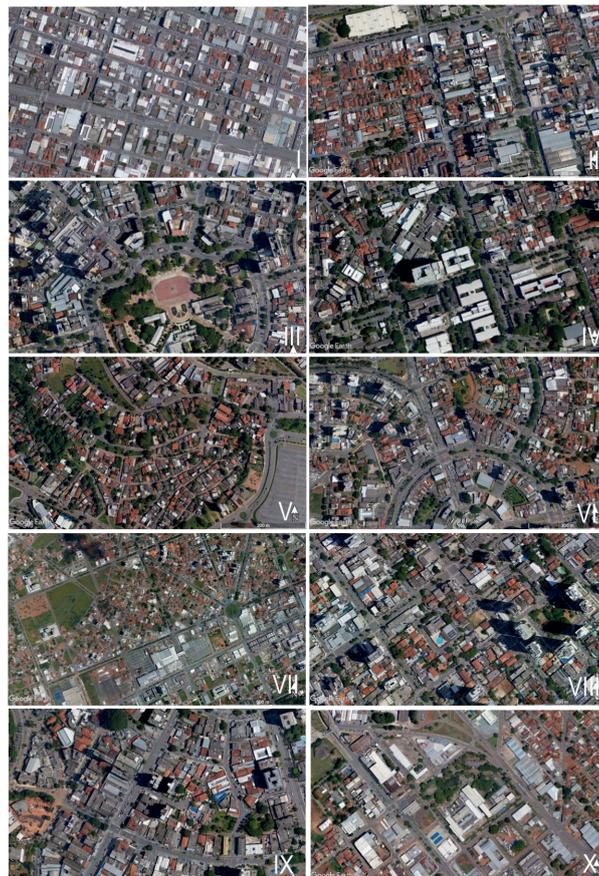


Figure 3. Morphological mosaic of the centralities in Goiânia – details of the patterns of the centres, in an enlarged scale, in the following locations: in Campinas (I); in the Northern Region, near the Bus Station (II); in the Traditional Centre, with views of the Civic Square (III); in Leste Universitário District (IV); in Jardim Goiás District (V); in Pedro Ludovico District (VI); in the area that includes Buriti Shopping, in Rio Verde Avenue (VII); in Bueno (VIII); in Southern District (IX); and in the confluence of Anhanguera and Castelo Branco Avenues, located to the West of the City (X). Source: Google Earth, 2019.

movement of people than the centralities present in places with the geometric trace of radial model or with an organic mesh.

4.3. Correlations – Spatial Configuration X Vitality

In order to assess the synchrony between the spatial configuration of the centralities and the degree of vitality, the correspondence of the centres pointed out by Kneib (2016) was observed with the most integrated streets of the urban system indicated by Arrais' map of segments (2015). Despite the fact that the most integrated streets in the system involve the centralities identified by Kneib (2016), some centres stand out for the higher values of accessibility represented by the shades in red, indicating that in these areas the potential for movement of people is greater and, therefore, they are areas that probably have greater vitality, if compared to other centres

5. Discussion/Conclusion

The article sought to investigate the relationship between urban morphology and vitality in the centralities of Goiânia, seeking to characterize the most recurrent patterns in its urban centres. The results show that the city, due to the origin of its global planning, based on the transfer of the new capital of the State of Goiás, in general presents a clear similarity: the centralities are lo-



Figure 4. Map of Segments of Goiânia, highlighting the areas with potential to become centralities. Source: Arrais, 2015.

cated mainly in areas with garden-city or modernist design, leading to the idea that green areas, zoning and conception of neighbourhood unit influence in the distribution of land use from its foundation to the present days.

The next stage of the study seeks to develop a more refined analysis and confront the morphological patterns of the centres in relation to other areas of the city, as well as explore aspects of urban vitality, based on variables such as real flow and effective diversity of land use.

References

- Alarcón L.E.L. (2004), *A centralidade em Goiânia*, Master Dissertation, UnB, Brasília.
- Arrais J.S.S. (2015), *Os espaços públicos em áreas centrais: configuração, vitalidade e infraestrutura ociosa no Centro Antigo de Goiânia*, Master Dissertation, UnB, Brasília.
- Barros A.P.B.G., Medeiros V.A.S., Morais M.P. (2009), *A configuração espacial para o diagnóstico dos assentamentos precários no Brasil*, in *Associação Nacional de Pós-Graduação e Pesquisa em Ciências Sociais – ANPOCS*, Proceedings, Caxambu, Minas Gerais.
- Barros A.P.B.G. (2014), *Diz-me como andas que te direi onde estás: inserção do aspecto relacional na análise da mobilidade urbana para o pedestre*, PhD Thesis, UnB, Brasília.
- Corrêa Lima A. (1942), *Plano diretor da cidade (Report presented to the intervener Pedro Ludovico Teixeira): Goiânia – a nova capital (Summary of a study)*, IBGE, Goiânia – Collection, IBGE Graphic Service: Rio de Janeiro.
- Correa E.A.L.C. (2010), *Lugares centrais e lugares periféricos de Goiânia: diversidade e complexidade*, n.2. Available at: <<http://www.uel.br/revistas/uel/index.php/geografia>>, Accessed on: August 1st, 2012.
- Dias M.L. (2014), *A malha e o deslocamento: um estudo das relações entre configuração espacial e mobilidade urbana em Goiânia*, Master Dissertation, UnB, Brasília.
- Diniz A. (2007), *Goiânia de Attilio Corrêa Lima (1932 -1935) – Ideal estético e realidade política*, Master Dissertation, UnB, Brasília.
- Gonçalves A.R. (2003), *Goiânia: uma modernidade possível*, Ministry of National Integration, Brasília.
- Graeff E.A. (1985), *Goiânia: 50 anos. Série: Oito vertentes e dois momentos de síntese da Arquitetura Brasileira*, MEC-SESU, Brasília.
- Holanda F. (2002), *O espaço de exceção*, EdUnB, Brasília.
- Holanda F. (2010), *Brasília. Cidade moderna, cidade eterna*, EdUnB, Brasília.
- Holanda, F. (2013), *10 mandamentos da arquitetura*, EdUnB, Brasília.
- Kneib E.C. (2016), *Goiânia: características, relações e potencialidades entre centralidades, sistemas e projetos de transporte na capital*, Projeto e Cidade: Mobilidade e Acessibilidade em Goiânia, Editora UFG, Goiânia, pp. 13-30.
- Kostof S. (1991), *The city shaped: urban patterns and meanings throughout history*, Thames and Hudson, London.
- Manso C.F.A. (2001), *Goiânia: uma concepção urbana, moderna e contemporânea – um certo olhar*, Author's Edition, Goiânia.
- Medeiros V.A.S. (2013), *Urbis Brasiliae: o labirinto das cidades brasileiras*, EdUnB, Brasília.
- Mello M.M. (2006), *Goiânia: cidades de pedras e de palavras*, Ed. UFG, Goiânia.
- Melo C.A.D. (2017), *Habitar o espaço público: reflexões sobre apropriação e morfologia urbana na Vila Itatiaia*, M.A. Dissertation, UFG, Goiânia.
- Monteiro O.S.N. (1938), *Como nasceu Goiânia*, Revista dos Tribunais, São Paulo.
- Mota J.C. (1999), *O Setor Sul em Goiânia: o espaço público abandonado*, 3rd Docomomo Seminar, São Paulo, pp. 1-13.
- Oliveira M.M.B. (2005), *O padrão territorial de Goiânia: um olhar sobre o processo de formação de sua estrutura urbana*, *Arquitextos*, Available at: <http://www.vitruvius.com.br/revistas/read/arquitextos/06.065/419>, Accessed on August 2nd.
- Pantaleão S.C., Delfino D.S. (2017), *Morphology and urban design: an analysis of the landscape genesis of Goiânia-Go*, (In Portuguese), in *Revista Mirante (online)*, vol. 10, pp. 97-116.
- Ribeiro M.E.J. (2004), *Goiânia: os planos, a cidade e o sistema de áreas verdes*, Ed. UCG, Goiânia.
- Pantaleão S.C., Trevisan R., (2011), *A cidade planejada e a cidade construída: entre paradigmas modernos e híbridos contemporâneos*, XIV Encontro Nacional da ANPUR, Proceedings, vol. 14, n.1, Rio de Janeiro, p. 21.
- Trigueiro E.B.F., Medeiros V.A.S. (2000), *Sobre ruas, relatos e vestígios: concatenando fragmentos de Natal em três períodos*, VI Seminário de História da Cidade e do Urbanismo, Proceedings, Complete work, Natal, pp. 1-17.