



Dispersed city, urban morphology, and the relationship between space and society. Case study: Machala. (December 2022)

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Abstract— The present research work consists of the reading of the city and study of Machala through the bibliographic analysis of the urban morphology, the dispersed city, the compact city, the urban centralities, and the palpable problems at the sociospatial level, reviewing the scale at which a city must be built and the conflicts when an urban development model is not followed. The case study starts with the review of roads, urban grid, blockage, and land use to determine the errors in current planning, and how urban-social segregations have been created due to the centralities located in a single part of the city, economically empowering certain privileged sectors. Thus, its dispersion is appreciated through a methodology where the current state of the city is compared through five axes that make up the solution to the dispersed city, categorized as a compact city, to find a desired and possible solution in the current conditions of Machala, enhancing existing facilities that have transcended in a historical and representative way for citizens and the city.

Keywords: Dispersed city, compact city, urban planning, urban morphology and urban space.

I. INTRODUCTION

The relationship between space and society is a fact that has been continuously reflected in the influence of the environment, understood as a geographical environment in the life of man [1]. The deficit of correct joint planning of these two aspects has generated spaces with evolutionary limitations so it is necessary to focus the process on prioritizing the inhabitant as the point of study to carry out the theoretical exploration of spatial needs and project urbanism.

Machala is a city that has developed in a dispersed way, concentrating its greatest commercial activity and equipment in very particular points of its plot, leaving several sectors with greater residential use and limiting itself through the existing road network.

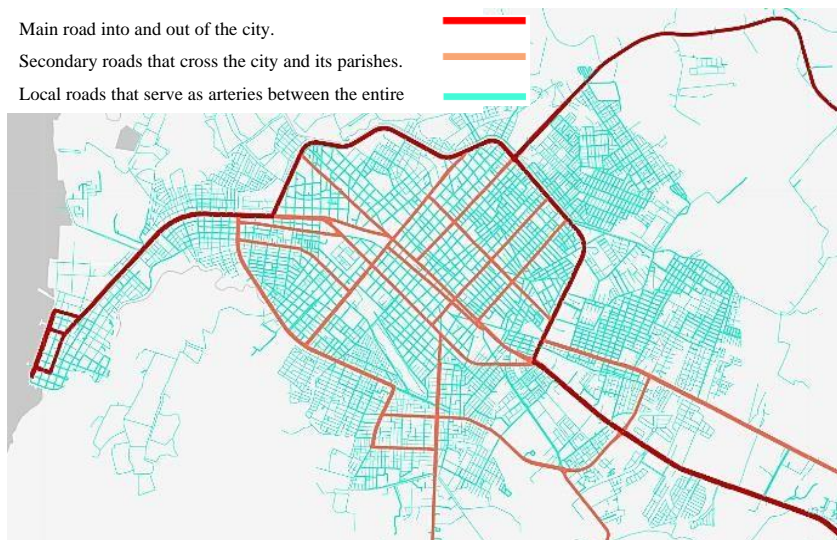


Fig. 1. Road hierarchy in base areas, Road hierarchy in base areas. Note: Prepared by the authors

A recurring element in various conceptualizations of space is related to how it has been conceived as something given and "natural", as a container or receptacle of objects, people, or events, and, in some cases, as a mere scenario of human endeavor. Thus, space appears under this gaze as something taken for granted and not as a process resulting from social relations that, at the same time, configures them [2].

II. MATERIALS AND METHODS

a. Scale of intervention in the city

The current conflict with the projection of Machala is the visualization of citizens as clients alien to daily reality, and not as people based in a common space of coexistence that defines the process of execution of their tasks, and that supposes to endure to future generations, obtaining environments with ephemeral essences, inefficient flows or morphological structures that hinder the natural activities of daily life.

So, it is necessary to focus on the real scale with which the city must be studied, generating a compact urbanism oriented by the inhabitants and that benefits it, exposing the aspirations of the people in the spaces, and molding the aspects that point towards inclusion, intimacy, and connection, necessary for the correct planning of the design.

b. Dispersion and morphology

The morphology of the canton concerning its blocks depends on the use of land and sector, it can be seen by differentiating the size of those located in the central commercial area and those of residential use (generally presented in greater density in its periphery).



Fig. 2. Morphology urban area Machala – Map style. Note: Prepared by the authors

With this panorama we can establish that their land uses are generated in a dispersed way, Machala has an irregular morphology, and as mentioned above, they are concentrated in very specific points of the city, generating traffic despite having wider roads unlike the other sectors of the canton, being specific areas and high incidence. This plot does not configure a grid, because its streets are discontinuous, with different road connections and multiple orientations, which generate sinuosity in the route and difficulty in the search for a place [3].



Fig. 3. Concentration of activities. Note: Prepared by the authors

Its historic center has a greater presence on its boardwalk in Puerto Bolívar, preserving elements that have transcended over time, such as its museums, its docks, and the church. This can enhance the generation of new centralities, taking advantage of existing historical and aesthetic resources. The urban center is composed of the streets Arízaga, Palmeras, Marcel Laniado, and Buenavista, enclosing its central and financial commercial activity in a perimeter that is established as a grid of high commercial and labor activity.

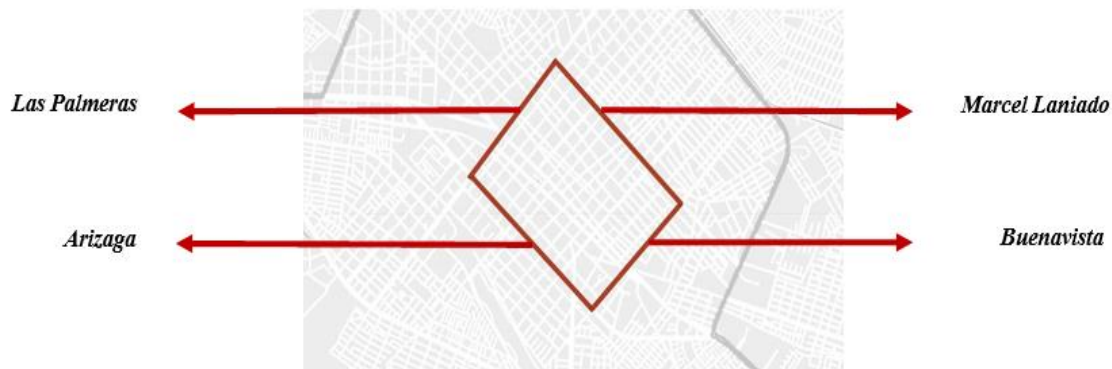


Fig. 4 Central and financial area. Note: Prepared by the authors

The residential areas can be seen mostly in Figure 3, located in the parishes of Puerto Bolívar, Jubones parish, and 9 de Mayo parish, among other smaller neighborhoods surrounding the canton, the invasion zones are established in sectors that still do not have registered use located on the outskirts of the city, there is not so much visibility of invasion in the most inhabited part of the canton [4].

Its leisure areas with a greater presence of shopping centers and others are located on the outskirts of the Machala canton, in the East sector, near the parish of Providence, being an area that generates a high concentration of social activity and entertainment. Its green areas are few, but the one of greater magnitude and human frequency is the Zoila Ugarte Park or also known as the ecological arch.



Fig. 5 Dimensioning of the leisure sector without equipment in contrast to the green area Note: Prepared by the authors.

III. METHODOLOGY

The research carried out contains a bibliographic methodology on dispersed cities and their solution as a compact/polycentric city performing the analysis applied to the case study (Machala), preparing a comparison between what characterizes cities, what is currently represented and could be represented as a solution in the city worked.

Tabares states that five axes characterize and differentiate each city model (compact and dispersed), the same ones, described in Table 1, are presented to be compared with each other, also comparing those characteristics that Machala currently has and those that it could possess when improving urban planning [5].

The compactness and dispersion determine the population density and proximity between facilities, the complexity and simplicity, the diversity of land uses, the efficiency and deficiency of the functional metabolism of the city, the integration and segregation of the socio-spatial entity and access that population groups have to services, and the urban green the set of existing green areas.

Based on this point, we can determine that monocentric models are a good approximation to the spatial economic structure of small cities, the formation of this urban structure responds mainly to the interaction between the positive and negative effects generated by agglomeration and the cost of transport [6] allowing more strategic concentrations where distances are minimized and access to citizens from all points that make up Machala.

IV. RESULTS

To determine a proposed solution, we start with a comparison of the two established city models and those axes that may exist

later in the city. Urban planning represents the achievements of an advanced, articulated, and democratic society that actively participates in the decisions that affect and interest it, such as the urban space where it lives.

Table 1 Axes of city types and their comparison. Note: Prepared by the authors

		Current axes of Machala	Axles applicable to Machala
City	Compactness		*
	Complexity		*
	Efficiency		*
	Socio-spatial integration		*
	Urban Green		*
City	Dispersión	*	
	Simplicity	*	
	Deficiency	*	
	Socio-spatial segregation	*	
	Scarce urban green	*	

Machala has four centralities already established (Figures 3 and 4), but they do not connect with the other sectors and do not connect, so it seeks to establish a compact city that rescues the other areas that do not have this high incidence of commercial activity through the empowerment of spaces with already established facilities and urban voids, where land use can be varied and a connection can be generated through networks of bicycle paths to establish routes at a palpable scale by the inhabitants.



Fig. 6 Urban centralities. Note: Prepared by the authors.

The compact city is the model that best adapts to a city of urban growth because it allows proximity, urban and social diversity, land use, reduced mobility, and the mixture of uses. In this way, as represented, the proposal gives a solution to the centralities required in the city, where there is a use of the land either by voids or by existing equipment that needs to be enhanced to revitalize the sectors that do not have a high influx.



Fig. 7 Network of parks and cycle paths between the sectors of Machala Note: Prepared by the authors.

A decade ago, Machala concentrated high amounts of the flow of people visiting the parks, spaces that stood out aesthetically and that provided life and security to the sectors, but that over time deteriorated due to lack of maintenance. The park, as a meeting center, can also promote the strengthening of family ties and networks of social organization, to a sense of belonging and identity with the place.

To achieve a compact and diverse city, densities, fragmentation of residential space, and the green of cities must be softened and controlled. In this way, a link can be made (which can be seen under a socio-spatial view) of all the sectors that make up the city, including the unconnected areas in the north and west quadrants of Machala, which, at the same time, are estimated to be enhanced by planning the centralities established in Table 1.

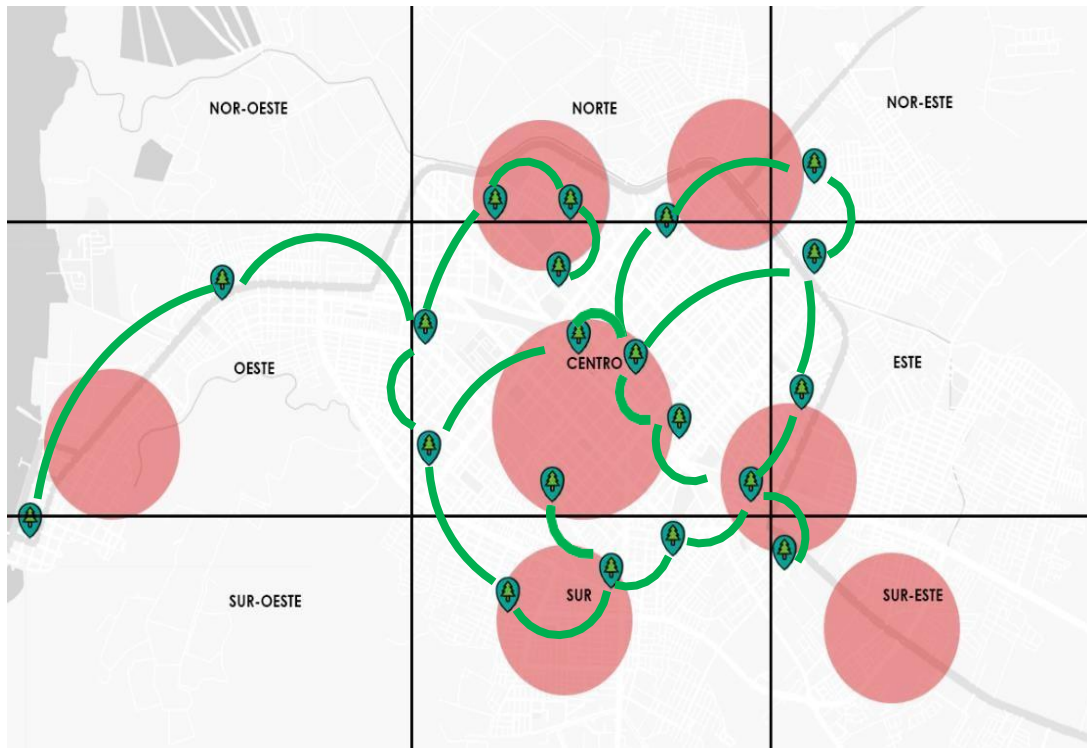


Fig. 8 Network of parks and cycle paths between the sectors of Machala Note: Prepared by the authors.

IV. DISCUSSION

The research carried out on the morphology of Machala and the spatial reasons reviewed through its plot that make it a dispersed city led to the estimate two resolutions that could be executed:

1. Promote the maintenance of existing facilities, taking advantage of cultural, historical, and representative spaces for the city or voids in the use of land.
2. Revitalize the parks that before their deterioration generated a high influx of people, generating a connection of bicycle paths that allows a flow through all the quadrants that make up the city.

Public space is constituted as an important element within the urban configuration. In addition to giving image and identity to the city, it is in these spaces that the inhabitants develop their daily lives through the different experiences and activities they carry out in it. Therefore, to make a compact city, public space must be granted to the inhabitants (obtained through the empowerment of POINT 1 and generate experiences and activities through them, so that a connection with space and society is established, obtained through POINT 2).

V. CONCLUSION

The compact city through the centralities in historical facilities and the connections between green spaces through bicycle paths are the urban planning model that best suits Machala, since it can generate the proximity needed by the unconnected areas that move away from the centralities, providing the possibility of reducing the costs of daily travel to areas that already concentrate a high degree of economic concentration, and helping marginal social groups that have grown up in these peripheries as a result of dispersion.

It is necessary to reaffirm that the incorrect planning of the physical fabric also implies a deterioration in its social fabric if we understand that the support of the relationships that nourish and give existence to community life in cities are the spaces of coexistence, of the crossing of the different realities that make a community with its characters express itself as such.

The spaces generated for the benefit of citizen well-being and that take as their objective the human scale, are those that can work in favor of man and solve the scenarios that present socio-spatial difficulties, on the other hand, urban morphology is a factor that, depending on how it is established, can participate in the generation of these segregations in the city. First, we mold cities, and then they mold us.

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