



ANALYSIS OF THE URBAN SPATIAL STRUCTURE: THE CASE STUDY OF THE NEW CITY "ALI MENDJELI" IN CONSTANTINE

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ABSTRACT

The "new city", a tool for decongesting cities and balancing the urban framework, is taking on a particular dimension in Algeria because of its voluntarism. Few debates have marked the various experiences undertaken, brandished as panacea in the resolution of all the evils that eat away at existing cities. However, many researchers find the "new city" formula inadequate because of its inability to build the city and build urbanity. Ali Mendjeli in the region of Constantine is one of these "new cities".

To relieve the city of Constantine, cramped on its picturesque site, and quickly overwhelmed by population growth and lack of land to implement ambitious housing programs, the decision was made to build a new city on the plateau of Ain el Bey. The purpose of the present research is to verify whether the "city effect" sought was achieved in the entire territory of the new city and not only in the central part. In order to verify this hypothesis, a model of analysis has been adopted. It is based on an innovative method (Spatial Syntax), a tool which makes it possible to check the appropriateness of the conceptual choices and their consequences on the human behavior in the urban space, and validated by a field investigation.

Space syntax is a set of methods and techniques for modeling architectural and urban spaces. The network approach at the scale of cities, neighborhoods, streets and simple buildings, establishes a significant correlation between the topological accessibility of roads and phenomena such as pedestrian and mechanical traffic, orientation, safety against vandalism and incivility, the location of businesses and activities. (Porta et al., 2006) The analysis was conducted using a computer simulation using Depth Map © software (UCL, London) using the city map as a backdrop. The validation of the results was carried out by the traditional survey method by combining several research techniques (observations, questionnaires). It has also been shown that the choice of a dominant centrality has created imbalances, relegating to the background large

sections of peripheral neighborhoods that remain in spatial segregation, functional contributing to generate, in the long term, territories of lawlessness.

Key words: New cities, planning, urbanity, spatial syntax.

INTRODUCTION

It is a statement, widely shared today, that the Algerian city is sick. The evils that plague it are many: congestion, urban sprawl, exclusion and socio-spatial segregation, insecurity, vandalism and incivilities, functional gap between center and periphery and proven inability of tools and urban planning tools to overcome these deficiencies. Urban planning instruments suffer from their chronic maladjustment coupled with a rapid obsolescence, the result of unbridled voluntarism. In some cases, to the aforementioned problems is added that of the property base, too small and / or limited by a difficult site. This is the case of Constantine. Among the recommended solutions to decongest, the city, bloodless, comes the creation of the new city Ali Mendjeli.

THE NEED FOR AN EVALUATION

The postcolonial Algerian experience in urbanization remains weak and refers to the issues described above. One can notice that among the causes of this chronic incapacity to manufacture the city comes the functionalist and managerial vision bequeathed by the paradigm of centralized planning. In fact, this diagnosis is neither new nor original, the majority of space professionals, practitioners and academics, agree that we do not know how to "build" the city. The question of large ensembles is not new, either, and it dates back to the seventies. Much research has been conducted in different contexts and has highlighted the correlation between urban form and behavior (Jacobs, 1961) and the role of social control exercised by spatial conformation. (Newman, 1973) More recently, the "return to the city" literature has succeeded in emphasizing the correlation that may exist between the urban physical setting and social malaise. (Vaughan, 2005) However, the paucity of systematic methods for characterizing, evaluating, and even predicting the phenomenon has delayed its characterization in physical and formal terms, more likely to be supported by producers. Urban physical and social space.

MODELING TOOLS

Space syntax:

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traffic, orientation, safety against vandalism and incivility, location of businesses and activities etc. (Porta et al., 2006)

Analyzing Urban Space: From the Axial Line to the Axial Map:

The analysis of urban space is based on the concept of axial line that is a line of maximum visibility that connects spaces and stops as soon as the direction changes. It makes it possible to orient the walker towards visible spaces (accessible by the axial line) without having to resort to other means such as consulting a map or asking for directions. The more the axial line traverses a large number of spaces, the fewer changes in direction and the decreasing topological distance making the system accessible and shallow; the reverse produces a complex and profound system. The axial map thus obtained represents a succession of lines of direction of axial lines and is connected to the natural movement of resident and foreign persons; it makes it possible to model, to predict the movement, the location of various activities. (Chiaradia, 2004) The axial map is elaborated on a map background representing the spatial system formed by accessible public spaces (street, square, etc.). It is built from the minimum number of straight lines or "lines of direction" the longest. Once established, the axial map can be used to model and analyze the urban configurations of cities. Spatial configuration of interconnected and inter-accessible lines, it is then analyzed using topology, and the mathematical theory of graphs. (Chiaradia, 2004). Because of the complexity of the calculations, the determination of the axial map is supported by the computer that calculates the relationship of each space (channel) to all other spaces (channels) and gives the depth values of each line as well as than other values such as integration. The angular map by segment (map segment) came then as a natural development of the axial map and allows refining the results taking into consideration not the urban topologies but also urban geometries (fine changes of direction). (Turner, 2001).

Study of the new city Ali Mendjeli in Constantine city:

To relieve the city of Constantine, cramped on its picturesque site, and quickly overwhelmed by population growth and lack of land to implement ambitious housing programs, the decision was made to build a new city on the plateau of Ain el Bey. It should be noted that rarely site has gathered as many favorable factors as was the one to host the new city. (Côte, 2006) However, like all the cities created ex-nihilo, Ali Mendjeli started from scratch, with no kernel start, no primer, which removes any historical depth and stratification, even summary.

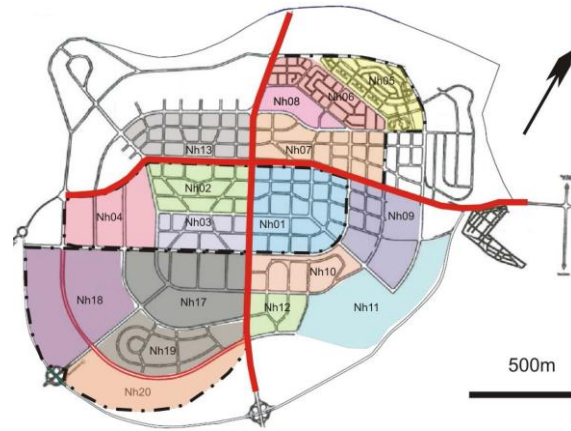


Figure 1: Master plan of the new city Ali Mendjeli. Source: DUC, Constantine, taken by the author

The general structure, conceived by URBACO, consists of an orthogonal canvas and of an organization in concentric rings, from the center, provided with equipment, and the periphery, exclusively for housing; the layout responds to a classic hierarchical order, in cities / neighborhoods / neighborhood units / islands. That is five neighborhoods of four neighborhood units each. Neighborhood units are intended for an average of 15,000 inhabitants; The tracks are also hierarchical in the main axis constituted by the big boulevard; in secondary axis perpendicular to the first and ensuring the connection between north and south; a primary and secondary road to connect the different areas and finally, a road serving basic units consisting of housing and local amenities.

Between a multiple centrality and a linear centrality, the design office has opted for the second option. It is based on the existing road between Ain el Bey and Ain Smara, is in the form of a monumental boulevard 1500 m long, and 80 m wide and around which are added the major infrastructures and tower buildings. This clearly shows the awareness of the initiators of the project and the obvious desire to break with the sterile urbanism of ZHUN. The project envisages the appeal of the new city in various equipment ranging from local amenities (schools, colleges, local shops) to regional radiation equipment (university, national institute, national level military hospital, hotels, etc.). To establish an identity to the city.

Willingness of designers to avoid the decried model of ZHUN and reconnect with an urban architecture by promoting options such as facades on the street, the structuring of roads by building, a pedestrian scale and animation necessarily induced by the presence many equipment. In addition, the city is articulated around its backbone constituted by the boulevard with towers (coming later because of the voluntarism of the authorities more than by conceptual will) and the buildings of five levels on average constituted by the majority of the remaining buildings for to reach a habitat of lower height in periphery.

The purpose of the present research is to verify whether the "city effect" has been achieved in the entire territory of the new city and not only in the central part; to check also whether the different

components of the city are organically linked, structurally but also functionally This research focuses on the overall scale of the city. The latter can be balanced but does not prevent dysfunctions at the local level to take place.

Review of some works:

Research work, between dissertations, theses and publications in specialized journals, has accompanied the genesis and evolution of the new city and are on different dates: Foura (2005), Nait Amara (2005), Côte (2006) and Benidir (2007) to name but a few. The few works reviewed that have made a provisional assessment of the state, it is true unfinished, of the new city Ali Mendjeli are quite divided. If there is a kind of consensus on the beneficial contribution of the new city on the decongestion of the city of Constantine and on the will of its initiators to break with the urbanism of the ZHUN, to avoid building an umpteenth suburb and to tend towards a certain urbanity, a lot of works were satisfied to make an inventory of the evolution of constructions remaining skeptical, in particular on the qualities "urban" which are slow in coming out and that it is difficult to perceive. The example of the 'monumental' boulevard, the character of 'ZHUN' found in many neighborhoods are the most recurrent remarks to date. The voluntarism of the local authorities and the hasty relocation of certain Constantine population in difficulty, those from neighborhoods suffering from landslides, the ruined old city and, the eternal shantytowns surrounding the city, is perceived as inhibitory factors of the emergence of a true urbanity and a social and functional mix (more than 60% of the built housing is of social type). What emerges, on the contrary, in the various studies is the absence of a deep analysis of the urban form and the typologies used, not as independent units, but as elements belonging to the same totality, which is the city¹. In addition, fundamental principles stated by the initiators were not the object of in-depth analyzes, we can quote by way of example: the island supposed close to that of the colonial fabric and whose attributes were never analyzed to demonstrate if he is really close to the latter and to define his urban qualities, real or supposed.



Figure 2: Global integration map showing the segregated neighborhoods (shaded) in the Ali Mendjeli system
Source: Author.

Centrality, accessibility and integration:

The Depth map generated the axial map of the whole city and the partial maps of the districts © software was generated automatically. Once the calculated syntactic properties, Depth map affects a color scheme from blue (low values) to red (high values), thus distinguishing the most integrated axial lines from the most segregated. The axial map drawn from the official accessibility map, shows a central integrated road system (red), the main boulevard and the street perpendicular to it have the highest integration value followed by the set of tracks that are directly or indirectly connected to them, forming a kind of super central grid. This result is, after all, logical since the checkerboard structure has a high permeability. However, several "islands" appear colored in blue, with weak values of integration; which suggests that they are segregated from the rest of the system (Northeast: UV35, UV6 and UV7); northwest (UV15) and southwest (UV17, UV18, UV19 and UV20). Figure 2

The local integration (of radius 3), highlights the emergence of secondary centralities which take in turn the red color. By superimposing the map of the local integration on the aerial photo, it turns out that the most integrated lines at the local level, generators of movement and animation, do not pass through the streets and places intended for this purpose. For example, at UV No. 6, (red polygon, Figure 2) two facilities, including a regional supermarket are located deep in the neighborhood unit, surrounded by residential buildings. The streets serving these amenities are blue, i.e. not having high levels of integration, unlike the streets crowning the UV and they take the color red, synonymous with strong integration. This way of

drawing the streets at the local level leaves them on the margins of the overall structure of the urban road network and consequently leads to their segregation. This situation is clearly perceptible in many situations in segregated parties. Each time the local centrality drawn by the planners does not coincide with the centrality resulting from the effect of the integration. The "magnet" effect of the market, capturing vehicles and people, cannot cover the fact that the most integrated tracks stop at the periphery, forming a crown, often consisting of monotonous and deserted habitat bars. ; The potential places of meeting and regrouping remain too deep to form continuity with the city.

Intelligibility and system choice:

The official spatial accessibility system remains unclear (Correlation Coefficient R2 = 0.49). Figure 3

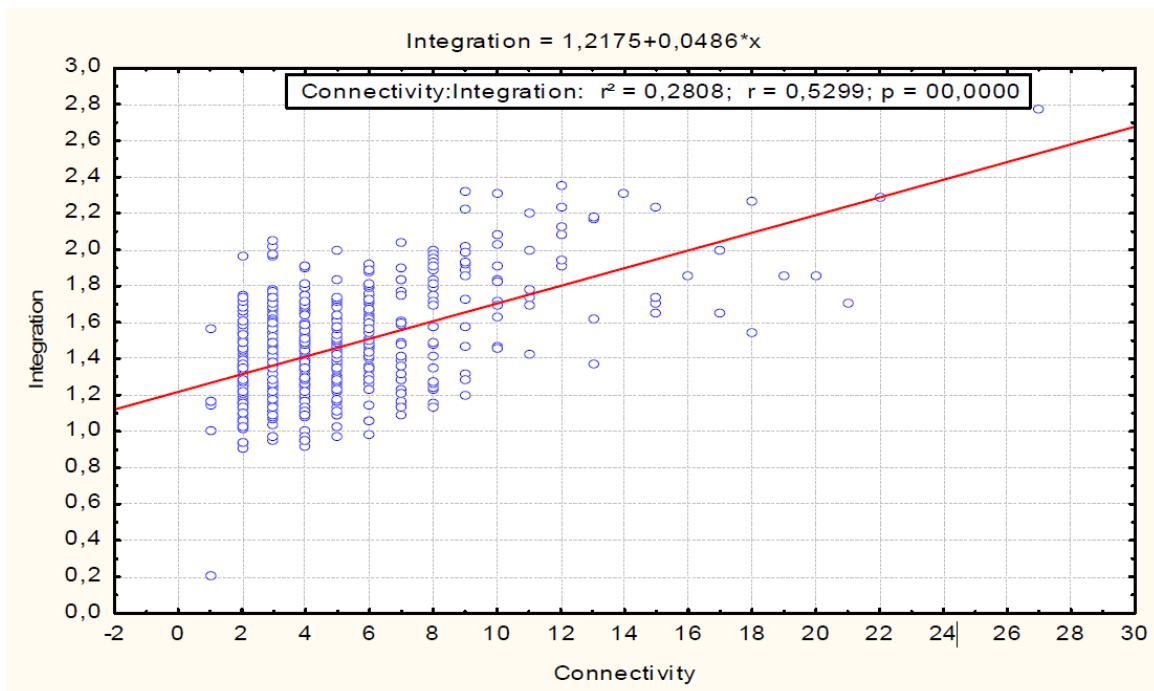


Figure 3: Intelligibility remains weak in the Ali Mendjeli system, as demonstrated by the regression between integration and connectivity (R2 = 0.28). Source: Author.

Centrality and accessibility outside the road network:

The pedestrian traffic remains dominated by the potential offered by the fields of visibility offered by open spaces between buildings and that the shortcut is a common practice, and then a model of spatial accessibility based on the potential circulation network gives an idea closer to reality. The axial map thus made accentuates the character already cleared of the first analysis; a core of central integration reinforcing a strong centrality and greater peripheral segregation, leaving entire sections of the city delivered to the throes

of spatial and functional segregation. Thus, it is easy to see that the entire periphery (all the residential areas) is not crossed and connected to the center by a structure constituted by a strong integration core, which would guarantee a continuous "irrigation" of the periphery by the center. The superposition of equipment (surrounded by white) on the integration map (all-line) shows that with the exception of a few, the majority of the equipment remains eccentric with respect to the main axes of circulation, in particular the two major axes defining the primary structure of Ali Mendjeli. The equipment in brown color represents the faculty residences. The latter, even if they carry large numbers of people in the adjacent urban spaces do not remain anti-urban months mainly because of two factors: the almost omnipresent fence and the few elements of animation to offer to the street. Another important point: the equipment in question is for the most part fenced and constitutes a barrier between the city center and the neighborhood comprising neighborhood units from 17 to 20.

CONCLUSION

This study has shown that the "good" intentions displayed during the preliminary phases of the new city project were not sufficient to create places of conviviality and urbanity. Many extrinsic parameters have certainly played a role in bringing about this result: the interventionism of local authorities and the desire to quickly house thousands of people in distress; non-compliance with the urban planning by-law; the lack of accompanying equipment, planned but not realized, are all inhibiting factors in the genesis of urbanity. However, a parameter seems to us decisive; that relating to the way of conceiving the new city. The latter was conceived in two independent times: the time of the geographers who drew the general analysis, the neighborhoods, the neighborhood units and the time of the architects who designed the buildings. (Coast, 2006) It missed to this city an intermediate scale; that of urban design. It is at the level of this scale of intervention that the intentions of the departure could have found a field of application. The current situation can only be generative, of bad life and of the absence of any identification with the inhabited space. The model of towers and bars, although having lived multiple avatars, remains the dominant typology in the way of producing the city "in the Algerian" according to a logic of zoning which gives birth to vast sets but fails to create places of habitat and sociability.

Spatial syntax analysis and modeling tools have been widely used and can now be used to model complex urban systems and predict their behavior, but it is necessary to multiply the case studies in the local context in order to popularize the concepts and to refine the results. This work must now be completed by a field survey, as exhaustive as possible in order to validate the results obtained.

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