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Assessment of Egyptian Neighborhood Spatial Configurations after the Revolution, Using Space Syntax Theories

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ABSTRACT

After the 25th of January revolution, many buildings have been erected without proper urban planning causing neighborhoods to lack their definitions resulting in being shapeless and configured in non-understandable manner. Hence, lacking individual's spatial cognition can have major negative effects on individuals dwelling in any built neighborhood. Thus people either abandon, or confusingly traverse the urban spaces that are spatially not configured in a well cognitive morphological order. Based on the direct correlation between the spatial configuration, individual's cognition and physical activity, the research, objectively, approach a neighborhood that is adjacent to the area where crowds used to gather to protest. Point down its spatial configurational problems and how the revolution impacted the neighborhood via surveys, graphs and observation. Aided by space syntax theories, a set of revitalization checklist is achieved to be applied on Egyptian neighborhoods for better intelligible spatial configurations and better spatial cognition, to enhance the individual's physical activity.

Keywords: Spatial Cognition; Spatial Configuration; Urban Intelligibility; Space Syntax; Physical Activity

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ASSESSMENT OF EGYPTIAN NEIGHBORHOOD SPATIAL CONFIGURATIONS AFTER THE REVOLUTION, USING SPACE SYNTAX THEORIES

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Abstract

After the 25th of January revolution, many buildings have been erected without proper urban planning causing neighborhoods to lack their definitions resulting in being shapeless and configured in non-understandable manner. Hence, lacking individual's spatial cognition can have major negative effects on individuals dwelling in any built neighborhood. Thus people either abandon, or confusingly traverse the urban spaces that are spatially not configured in a well cognitive morphological order. Based on the direct correlation between the spatial configuration, individual's cognition and physical activity, the research, objectively, approach a neighborhood that is adjacent to the area where crowds used to gather to protest. Point down its spatial configurational problems and how the revolution impacted the neighborhood via surveys, graphs and observation. Aided by space syntax theories, a set of revitalization checklist is achieved to be applied on Egyptian neighborhoods for better intelligible spatial configurations and better spatial cognition, to enhance the individual's physical activity.

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1. Introduction

The problem this paper spots a light on dwells in the Egyptian neighborhoods. Where after the revolution, urban problems piled up due to the increase of illegal built-up area where buildings are erected without prior planning. Causing a major loss of sense of place in the urban spaces, which in the first place is caused due to the disorder in the spatial configuration that resulted from the ill-planning.

The research's aim is to: Achieve a set of revitalization principles that can make a built neighborhood more intelligible for better spatial cognition to enhance pedestrian physical activity and experience, using the space syntax theories and technique, whilst trying as much as possible avoiding tearing it down.

2. Literature Review

Space syntax is a set of theories and techniques that are used in a manner to analyze different patterns and configurations of architectural and urban spaces, of all kinds. Hence, establishing

objective methods to evaluate and investigate the relationship between the morphological structure of man-made environments and social structures. Objectively, explaining human behaviors, movement patterns and social activities from a spatial configurational point of view [1]. As a starter; the term *Cognitive mapping* usually refers to human's mental representations that store the spatial knowledge of the surrounding environments [2]. It is argued that "*Human mind may in effect be a correlation detector searching for perceptual information from the local spatial configuration in order to predict global location.*" [3]. And that is what intelligibility of urban spatial configuration is all about, how easily the global integration can be read from the small parts of the local configuration. Moreover, it is the easiness by which people understand the route choices offered to them by the design, and how they perceive the surrounding built areas correctly with less confusion [4] and organize this information into a comprehensible pattern [3]. To measure integration; If the number

of spaces that must pass through to go from a specific space to all other spaces, was counted, and it was found that it comes to a total which is less than for any other space, hence, it has less depth than any other space in the complex. The less the depth the higher the integration value, i.e. the more integrated the space is, the better the quality of the urban space. [1].

Space syntax theories prove that people's spatial activities in different urban spaces can be easily predicted within the alliance created between street networks and programmatic attractors. Attractors like retail stores and commercial businesses, are more likely to base themselves on hierarchical important destinations that are reached in the least costly manner and change of angular routes. Moreover, one of the main targets in spatial design is to urge people to explore unfamiliar spaces, and one of the strong ways to take them from their routine activities to experiencing spontaneous encounters in any urban space is to create dense, less homogeneous street networks and avoid rigid street grid networks [5].

3. Research Methods

“Masaken Elzobat” neighborhood is adjacent to the area where the crowds used to gather for demonstrations during the 25th of January revolution. On this case study, two methods have been used, obtrusive and non-obtrusive survey methods. First the non-obtrusive survey method; Lynch's checklist of elements is used to stimulate the space syntax analysis [4]; hence, the factors that are observed include the following:

Paths: there are four main routes that cross or adjoin the neighborhood, and their intensity of usage by users is minimal. The neighborhood has a unified, rigid street grid network, jeopardizing the natural surveillance, playing a role in significantly decreasing the physical activities, resulting

in a “dead” neighborhood, fully dwelled in though.

Nodes: The neighborhood has four main nodes apart from each other, in which paths intersect with the neighborhood edges. Those are the only vital spaces in the neighborhood.

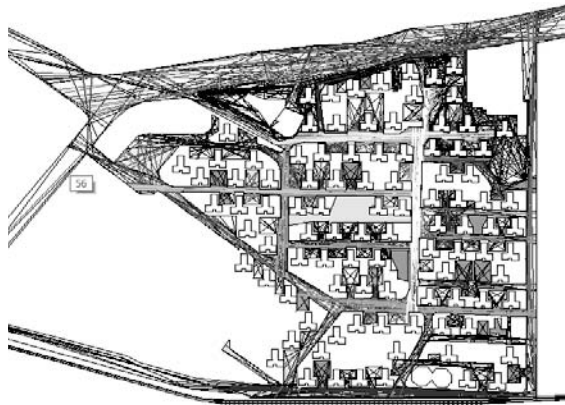
Landmarks: the neighborhood entrance from the North West side towards the seaside is occupied with large, shell-structured, theater, followed by two large buildings, one owned by two well-known restaurants and the other is a place for indoor games such as bowling and other activities. As for the neighborhood entrance from the North East side, a huge chain hotel takes place. In addition to; two famous coffee shops situated in the heart of the neighborhood, overlooking large parking areas that usually witness various and large numbers of social groups (usually of age groups 16-30) arriving in cars for a quick grab of bite or drink.

Edges: The neighborhood is defined by the Mediterranean Sea on the north as a natural edge, and the tramway as a man-made edge on the south. Moreover, two of the most important streets in Alexandria City, besiege the neighborhood from both sides, which carry out the job of arterial roads. Along with: “Moaskar ElRomany” street on the east and “El-Mosheer” street on the west (where crowds used to gather during the revolution).

Districts: The neighborhood is mono-characteristic (no sense of identity); that is all the buildings are of unvarying forms, cloned materials and details of the same manner along with worn out landscape. All the spaces, streets and paths are significantly similar with marginal differences in their size, shapes i.e. spatial configuration to the extent that pedestrians disengage easily from the routes they take and lose their paths. The neighborhood is mainly residential with minimal other uses,

such as few kiosks randomized across the neighborhood, few medical clinics and limited offices. This brings up the issue of the insignificant physical activities that take place throughout the neighborhood's districts, away from its landmarks and nodes. Hence, the neighborhood paths and districts are usually deserted.

Figure 1. Axial map for case study area (Source: Researcher with aid of depthmap computer



program)

As shown in the axial map, the highly segregated neighborhood caused by poor connectivity between spaces, coupled with several intervening lines to be passed while traveling from space to another. The darker the shades on the map, the more integrated the space is. As the integration values in axial maps are highly important as they crucially determine the density of movement through the whole urban grid structure. Hence, the neighborhood is only integrated around the edges and segregated at the heart. Consequently, hike in angular changes due to route impedances. Leading to high depth values, in role result in low integration values, thereupon, discouraging intelligibility of neighborhood.

Second, the obtrusive survey method; a sample of 20 to 30 people were requested to sketch a mental map for their normal errands or homes, balancing age groups, sexes, people who regularly use the neighborhood and dwellers. It was observed that orientation clarity is significantly disfigured. Cognition of mental map was observed to be dwarfed along with

inadequate sense of place and direction. Nodes and landmarks, mentioned above, are classified as the only areas frequently visited by users and of high value. Corridors and paths throughout the neighborhood are considered of low value due to, low integration levels, loss of identity and perplexing spatial configuration which by role is in responsible of confusion among users. Landscaping was not mentioned due to the lack of it.

4. Discussion and Conclusion

In quest of answers this research reaches bottom line proving that a tremendous part of intelligibility of spatial configurations depends on the connectivity and integration of spaces in the area. Along with justifying that perception and spatial cognition are boosted in the presence of intelligible, well connected, spatial configurations, facilitating mental mapping, subsequently enhancing physical activities. The following table includes some of neighborhoods revitalization checklist for enhancing Intelligibility and Physical Activity:

- Outward oriented homes with active frontages towards streets. Including active functions on ground floor and removal of blind walls.	- Enhance human activities - increase degree of natural surveillance
- Destinations should be reached with least angular changes. Hence, better integration of spaces.	- Enhance spatial cognition through intelligibility of spaces and various human route choices
- Mixed use of functions in the neighborhood - Creating routes between vital functions in the neighborhood that acts as magnets, and embedded in this route different secondary activities and uses Connect the neighborhood with its adjacent one through a common area containing vital	- Generates complex movements routes between various functions - Expand the neighborhood's accessibility on both local and global level

buildings and open spaces	
- Avoid unified rigid urban grids	- Discourage physical activity
- Avoid embedding industrial infrastructure elements within urban patterns such as : power canals and railroad lines	- They hinder the connectivity within the neighborhood
- Avoid huge bulky buildings acting as obstacles against formation of places for social encounters	- This obstructs the permeability to attractive sites
- Main route, going through the neighborhood, should be fully accessible and well-connected from other corresponding streets. with a clear street network	- Increase integration and vitality of urban spaces together.
- building blocks should be delineated to define a sense of enclosure	- they maintain density of movement in their urban spaces
- Placement of informational signage wherever needed.	- Decrease Informational gap.

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