REPRODUCTION OF TRADITIONAL GRID AS A CHANGE IN URBAN TRANSPORT MEMORY: WHAT "SUPERBLOCK" PROPOSES IN BARCELONA

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ABSTRACT

Grid urban layout was preferred as an effective pattern for many ancient settlements and contemporary cities. Barcelona city has started to experience the plans focusing on grid layout together with Cerda's plan in 1850s in order to respond the question of urban growth. Today, Barcelona is considered one of the cities, which owns a spectacular reputation regarding its grid structure and Gaudi's architectural interventions in the city. In recent few years, policy makers in Barcelona have initiated a process to make changes as a solution in grid structure to make it work more effectively due to several problems. This solution is called new Superblock structure -a new public transport regulation on grid system which enables to make changes physically on Cerda's grid system-. Transition process of Barcelona from grid to Superblock pattern has been carried out with also a change in urban transport memory on the minds' of inhabitants and tourists in the city. Here, what is meant by emphasizing transport memory is the existing perception of traditional grid and perception of prospective new Superblock design on transport pattern. In other words, existing transport memory is based more on car dependency due to current newly emerging congestion and pollution problems, and the contemporary Superblock design is expected to reveal a sustainable transport network with public transport walking and cycling.

Keywords: Superblock, Grid, Barcelona, Transport memory.

1. INTRODUCTION

One of the most effectively working urban patterns is grid layout which has been worldwide accepted since the ancient settlements in history. Barcelona represents one of the most spectecular strict grid pattern since 1850s as a result of new demands in urban development in the city. This research will handle the grid pattern from a different perspective focusing on a transition from grid to Superblock and a simultaneous transformation in urban transport memory. Therefore, research question is to reveal what Superblock proposes in Barcelona as a change in urban transport memory. In this context, firstly, grid urban layout will be defined with its advantages and drawbacks in general. Afterwards, the historical being of Barcelona's

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grid structure and Superblock idea will be presented. Here the significant point will be touching upon basically the change in grid pattern and its prospective contributions on new urban transport memory. Finally, transition from grid to Superblock will be critically discussed by considering the aspect of expected transport memory reformation.

2. GRID PATTERN AND HISTORY OF GRID URBAN LAYOUT IN BARCELONA

In grid urban layout, roads create a rectangular network which creates identical building blocks having the opportunity to extend in any direction. This structure has been criticized due to its prodigality in terms of having all the streets with the same standard, excessive use of land, aesthetical monotony and lack of focus. However, creating hierarchical grid by diagonal arterials and minor grid streets seems to be solution for this critique (Lynch, 1985). This urban form does not have any definite edges or does not need to have nodes regarding its phyical structure.

Grid pattern can be defined as a net of roads or diagonals without having a major spine in urban design of a city and without a certain boundary. The focal attraction points can be anywhere in the layout, which means the pattern does not imply the nodes or intersections. In this pattern, urban growth can occur towards antwhere inside or by extension to outside. The main advantage of grid is having high adaptability to growth and change that makes the pattern flexible. Main disadvantages of grid also are lack of focus -in non-hierarchical grids-, waste of land and confusion of road network (Ceylan, 2003).

In Barcelona, Catalan civil engineer, Illdefons Cerda, prepared the first plan for the urban extension, which was considered as a revolution regarding its emphasis on hygiene, easy mobility and transportation on a modern grid-iron urban pattern. Living standards were optimized by creating $6m^2$ volume of air per person within the structure of orthogonal city blocks with 113.3 m by 113 m (Figure 1). The pattern was supported with 35m large streets and big avenues. Cerda plan also proposed to increase green spaces and gardens in each block (Wynn, 1979).

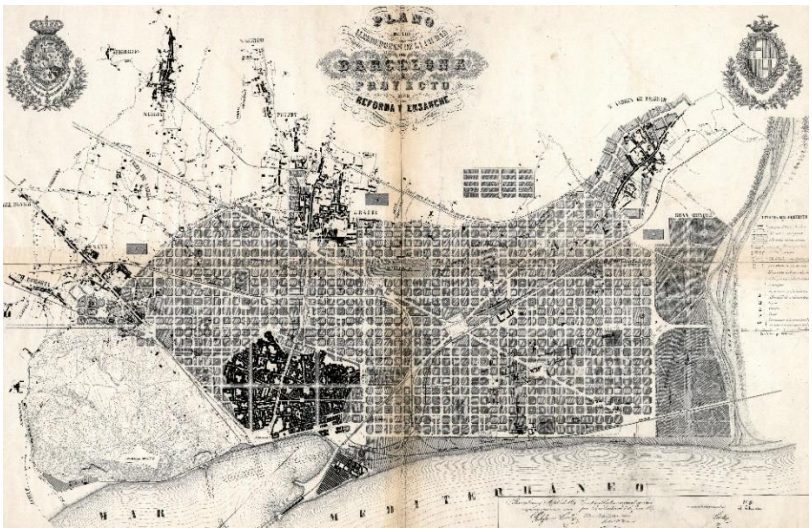

Figure 1. The Cerda Plan, 1859 (Source: Barcelona Municipality History Archieve)

The Cerda grid plan basically depends on continuity of infrastructures and productive and residential forms. The main goal of this idea was taken as a new modern concept of the combination of multitude of movements between inhabitants and the elements of the contemporary city, which was thought to strengthen the relationship between human, economic growth and public space. In addition, within this grid layout local streets constitute the orthogonal grid layout and diagonal avenues create territories. The streets also create built and unbuilt spaces. Big building blocks between streets were assigned as industrial or non-residential, and other square small ones were as residential functions (Busquets et al, 2009). In Figure 2, the residential uses in plan can obviously be seen as mostly square blocks. Besides, main arterial diagonals and minor cross roads create variety in urban layout in Barcelona by the formation of different-size building blocks for today's current situation. However, some serious problems have started to emerge within this strict grid Cerda plan making policy makers take new precautions on urban transport design.

Figure 2. Solid-Void Relationship between Built and Unbuilt Spaces of Cerda Grid in Barcelona (Source: http://tr.depositphotos.com/12853525/stock-photo-barcelona-plan.html)

3. BARCELONA GRID WITH ITS PROBLEMS AND SEEKING A SOLUTION

Cerda grid plan emphasized mainly the fact that Barcelona city needed to breathe ideologically and physically, and to distribute the population in the area evenly together with enabling green areas within each building block. However, almost all the grid lines were dominated by cars which also triggered pollution and increase in noise levels. In short, the reasoning that made policy makers think about the solutions against the problems of greening and health in 1850s has emerged again as a tough problem in contemporary grid of Barcelona (Bausells, 2016).
According to a research carried out by Environmental Epidemiology Agency in 2015, if Barcelona performed the air quality standards of EU, it was seen that almost 1200 deaths could have been prevented in the city. The study also notes how the number of hospital cases increased in recent years in Barcelona due to air quality problems. Moreover, noise levels in the city become 61% higher because of city traffic and congestion levels (Trentini, 2016). In addition, air pollution in Barcelona itself has resulted in 3500 premature deaths in a year and

also in detrimental effects on agriculture and ecosystems. Furthermore, some of the main reasons to generate a new Superblock grid pattern idea are excessive road accidents -9,095 occurred in 2015-, sedentary lifestyles mostly effecting the future of kids who have not been got used to walking and sport, and scarcity of green areas in the city –particularly open public parks and green spaces-. According to World Health Organization cities need to own at least 9m2 per inhabitant; however, the whole Barcelona city only has 6.6 m^2 green-spaces per capita -moreover, the pioneer implementation territory of Superblock project namely Eixample Neighborhood has only 1.85 m2 per inhabitants (Bausells, 2016).
As a result of environmental and health problems among inhabitants, policy makers of local government in Barcelona has decided to implement a new Superblock idea to decrease the occupancy of cars on urban space, increase the percentage of green areas and green streets and eliminate air pollution in the city. The specific project area in Eixample Neighborhood within one of the newly created Superblock basically focusses on formation of a continuous public interior connecting three Superblocks on one single green spine.

4. SOLUTION: 'SUPERBLOCK' RATHER THAN TRADITIONAL GRID

According to 'Agencia de Ecología Urbana de Barcelona' (2015), Superblock definition designed for Barcelona city as a new urban layout reforming the existing grid is mentioned as: "The superblock (in physical terms) is composed of a set of basic roads forming a polygon or inner area (called intervía) that contains within it several blocks of the current urban fabric. This new urban cell has both an interior and exterior component. The interior (intervía) is closed to through vehicles and open to residents, primarily. The exterior forms the basic road network on the periphery, and is approximately 400 metres wide for use by motorized vehicles".
Superblock consists of several building blocks in which traffic flow is reorganized around the outside of main roads. The priority inside part of a superblock belongs to pedestrians and bicycle users (Figure 3). Exceptionally, inhabitants in Superblock can drive inner streets with a low speed of 10km/h. those inner streets are also projected to fill with parks and recreational gardens. In addition, the new inner grid streets, left by cars, will become spaces of citizens for them to have new rights and functions such as commercial, culture and knowledge, participation and leisure time activity spaces in addition to use of inner streets as passageways (Peters, 2016).
The new Superblock renovation on Barcelona's grid will regain almost 60% of road space from car occupancy to citizens for different functions. Existing building blocks of the neighborhoods will be turned to Superblock which means joining almost nine building blocks into one continuing the orthogonality (Figure 4). The Eixample Neighborhood will be the first area selected for implementation. Main principles of Superblock design are humanizing public space, livability, sustainable mobility, green areas, biodiversity and local participation (Barcelona Architecture Walks, 2016).

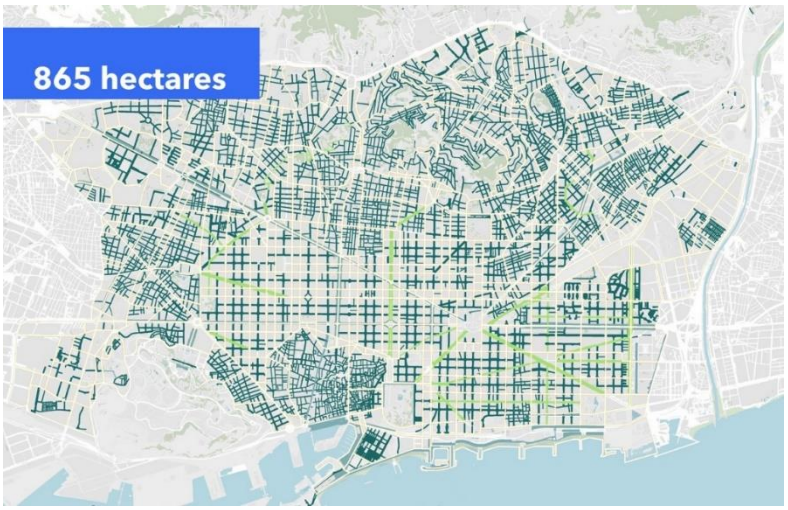

Figure 3. Entire Superblock Design Layout for Barcelona (http://www.barcelona.cat/ca/)

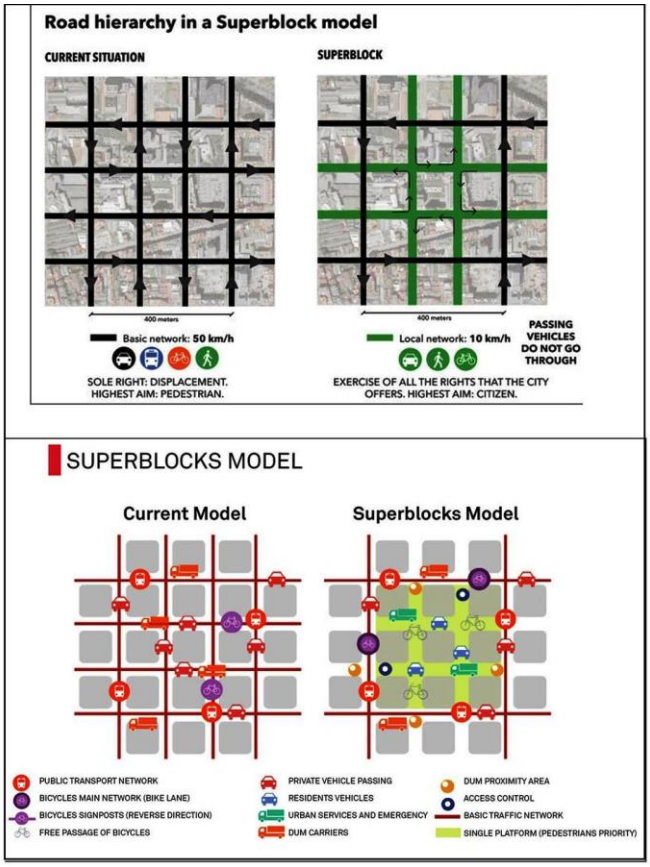

Figure 4. Functioning of Superblock Idea in Comparison with Current and New Situations (http://www.barcelona.cat/ca/)

5. RELATIONSHIP WITH URBAN TRANSPORT MEMORY: CRITICAL EVALUATION

To describe further what Superblock proposes in Barcelona related to urban transport memory, we need to know what memory, urban memory and urban transport memory are. According to Assmann (2001), memory can be defined as the mental ability of retaining and recalling past experiences and practices which is related to remembering and recollection. For psychology, some conscious processes lead to store experiences and learned information by means of memory. Various cultures and social being in urban environment constitute perceptual knowledge on socio-spatial processes, and those inputs are stored in memory.
Crinson (2005), classifies memory encompassing two closely interlinked aspects and touches upon urban memory concept as:
"The first is of a residue of past experiences that has somehow stuck or become active in the mind, and thus in our sense of ourselves, while other experiences have been forgotten; the second is of an ability or faculty by which we recollect the past... it (urban memory) indicates the city as a physical landscape and collection of objects and practices that enable recollections of the past and that embody the past through traces of the city's sequential building and rebuilding."
Cities have stood as the main components of social memory particularly after industrial revolution and as the intersection focus of cultural differences. City is one of the significant components of composers of social memory. Thus, urban memory presents a content including urban spatial development history, memories of inhabitants in the city, events and changes occuring in the city. In this sense, urban memory concept means the record of each sort of information and data related to city in the minds' of inhabitants (Selvi Ünlü & Gök, 2010).
To proceed a bit further, urban transport memory needs to be defined. First we need to infer some keywords from memory and urban memory concepts, and then to study their reflection on urban transport. These are;
-past experiences and practices
-remembering
-storing experiences and learned information
-perceptual knowledge
-socio-spatial processes
-experiences in mind
-recollection of past
-city's buildig and rebuilding
-urban development history
All these keywords can be thought highly related with urban transport. Consequently, urban transport memory is the stored information, experiences, knowledge related to past practices, and changes in mobility patterns in city related to past influencing socio-spatial processes.
In Barcelona, tradtional grid system inserted a sort of urban transport memory into the minds' of inhabitants which has been highly distorted in recent decades through car dependency. Therefore, existing transport memory in Barcelona only recalls congestion, fragmented passageways and pedestrian flows, waste of land and car dominancy on urban strets. Therefore, how can we consider traditional grid to Superblock change as a revolution in urban transport memory? Superblock intervention is for to heal the deficiencies in urban transport pattern in Barcelona by eliminating some of the roads from car domination and giving them back to its owners, namely to people living and visiting the city. After construction of new Superblock pattern, entire grid perception will change, and moreover, a new urban ransport memory will

be established depending more on a more livable and accessible city, namely on alternative sustainable modes as public transport, walking and cycling. It means that, after a few decades, it is projected to insert the new urban transport memory into the minds' of people which is grid-iron layout but three times bigger than the old ones to avoid abundanceof vehicular roads. As of the beginning of 2017, upcoming years of Barcelona is expected to mention a new memory through which people would present their transport behavior with more sustainable alternative modes.

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