NEW 'WORLD' MORPHOLOGY: OUTLINING THE CHINESE MEGABLOCK URBANISM (CMU) BLOCK MORPHOLOGY AND PHYSICAL CHARACTERISTICS

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ABSTRACT

If we reexamine the question of scale, the "mega" remains a significant concept to our understanding of the contemporary territory. In the past forty years, China, has experienced an unprecedented scale of rapid urbanization within human history, urbanizing from 17.9% to 58.5% in this time (NBSC, 2018). In order to achieve this rate of urbanization, new tools and scales were indispensable. As such, mega planning has been become a key concern at both the national and local scales of Chinese spatial planning (Yin, 2010). As evidence, this has resulted in mega projects becoming a dominant form for all types of urban habitats or spatial typologies.

Existing urban morphological studies of China have yet to provide a clear perspective of the mega-scale project under the background of rapid urbanization. In this paper, the focus is on mega-development at the urban block scale, which can be termed the 'Chinese Megablock Urbanism' (CMU) phenomenon.

In this light, we question if the CMU has become the new tool to sustain rapid urbanization? Moreover, how can the study of megablocks contribute to the understanding of Chinese morphology and its spatial conditions? The cases shown will act as comparative analysis, discussing the specificities of configurations, spatial distributions and FAR conditions to outline the complexities of the 'mega' form. It will conclude on the possible revisions of morphological parameters, and fully comprehend this new tool to assess Chinese urban form within a sustainable paradigm.

Keywords: Chinese megablock, rapid urbanization, block morphology

INTRODUCTION

There is no denying the significance of understanding "scale" in urban studies in China (Miao, 2003). In either daily life or theoretical analysis, the 'mega' scale has become part of the Chinese context intuitively observed by researchers, citizens or even outsiders as a key and foundational role in all dimensions and formats of urban issues. But indeed, if one traces history of this country, China has been united with its vast territory and large population since the first feudal dynasty: Qin, at 246 B.C. Huang Renyu (2001) pointed out that since ancient time, China prematurely formed a centralized state of centralization, but also because of this factor of scale, all aspects have encountered arduous challenges. This allowed ambitious projects such as connecting walls along the northern border, eventually developing into the Great Wall of China. On the basis of Huang Renyu, Zhou Xueguang (2016) pointed out that the traditional Chinese governance system is subject to the super large scale and the scale load it brings, so it has to rely on the relationship between the political system and the non-political system, and between the name and the real of the central government. Until nowadays, we often hear the expression of "big country thinking" (see for example Hao, 2015; Wang, 2015). However, if we compare to the ancient Greek philosophy, Plato had a thorough discussion about the size of the polis which has been regarded as one of the most classical and influential theoretical

frameworks in understanding Western cities. It emphasis on the size of a city or country should be controlled to a reasonable scale, which has longstanding impacts on western countries' governance. As a result, one should be aware of this cultural difference of how different countries and their people look upon the concept of urban "scale".

The broader framework of this research starts touching upon the question of Chinese 'mega' scale as a discernible scale paradigm. Focusing on its radicalness of speed and scale, this paper specifically aims to investigate the formative and material definitions of Chinese mega-development at the urban block scale. Cases are highlighted with their morphological characteristics, of what is defined as Chinese megablock urbanism (CMU). Such so, CMU has become instrumental, as a tool of limitless urbanization, that is yet remaining undefined.

NEW 'WORLD' MORPHOLOGY: CHINESE MEGABLOCK URBANISM (CMU)

To understand the mega urban development in China, the existing urbanism theory should be review through a critical perspective. Apart from building up the theoretical background for CMU, the review of urbanisms is also aiming to collect comparative cases from precedent urbanisms theory, to test the hypothesis that CMU is an unprecedented urbanism. In addition, to find factors with variables in urbanism theories that are related to CMU. The review of literatures in urbanism theories is intended to provide related background knowledges of how modernism thinking that gradually shaped urban planning discipline, during their periods and with their characteristics, into what we see today. Their influences of CMU are both distinguishable and durable.

Hall (2014) believed that the modern cities planning differed from traditional strategies which only focus on urban forms in a way that it represented an integrated approach to balance social and economic concerns. The 'Garden city movement', firstly initiated in 1898 Ebenezer Howard who was firstly inspired by planned communities by charities along industrial sites, forms the initial model of modern urban planning theory, by advocating to improve living environments of workers and call for social reformation. Utopian and garden city planning are worth to be further reviewed as they are relevant to Chinese mega development: with a socialism and utopian program as planning model.

In the socialist points of view, megablocks appear to be one of most ideal development of human community where people work and live collectively in a harmonized environment as pointed out by Shane (2016). Moreover, Haar & Marshall, (2012) referred that the megablock pattern is preferred in China due to the historical sense of possession in ancient time. Studies by Xie & Costa (1993) have illustrated that modern socialism pioneers in China have been using urban planning to address various issues in the society, including urban environment, traffic, social contradiction, in an integrated manner.

Evenson (1970) summarized that the modern urban planning theory by Le Corbusier regarded residence as the most important element of the cities. In other word, the scale of the residential units in cities would determine the scale of urban blocks. Fishman (1982) further explained that the megablocks development mode is preferred by many distinguished figures during modernism period because megablocks was referred as way to re-organize social lives, and address social issues, such as traffic problems. In addition, Neighbourhood unit, originally raised by American architect Perry (1929), together with Radburn planning by Clarence Stein (1933) integrated residential units with lawns, public facilities with pedestrian and automobile system in a megablock scale, activating the local community with little interference from external traffic. Le Corbusier proposed the concept of "City of Tomorrow" in 1929 and with megablocks ideas to drive urban planning which he further developed in the plan for Chandigarh, providing local residents with vast of green land and activities space.

Under the socialism context, Sxelenyi (1996) believed that a number of urban planner preferred megablocks which are intended to create more integrated, safe and joint ownership community, demonstrating the advantages of the socialism urban planning pattern, the "micro-district" model in Soviet Union can be the best example. Most importantly, Tang (2000) thought that it appears that the

megablock pattern of urban planning would be only applied extensive in a socialism society. When the concepts of huge blocks were first raised, especially prevailing neighborhood unit at its time. Silver (1985) believed that many western countries attempted to adapt the megablock residential pattern but most of the experiments did not went far due to political and social constrains, thus the idea was not widely accepted. Mumford (1954) further explained that due to the private ownership of most of the land in western countries who operates in capitalist system, land ownership is clearly defined and independent. Plots of land were divided into small fractions for each landowner to form the traditional pattern of small scale of blocks in western countries. In contrary, Sxelenyi (1996) argued that many socialism or semi-socialism countries with public land ownership schemes, such as Soviet Union, China and Netherland, have the conditions to promote the megablock urbanization pattern in a widely spread area (see figure 1).

Figure 1. Arial photos of Moscow, Beijing and Amsterdam in the same scale.

Accordingly, to Shane (2016) with the support of public land ownership system in China, residents are freely to enjoy the common area of green land, social space and public facilities within the gated community or megablock, realizing the advantage of the socialism system and making the dream of urban planning pioneers. In China, Oakes (2016) considered urban planning policies as public administrative policies that affect every single individual in the country. For the above reasons and context, megablock has become an effective and practicable development model in China, which can be regarded as a “socialism with Chinese characteristics” urbanization practice.

RESEARCH SCOPE AND METHODOLOGY

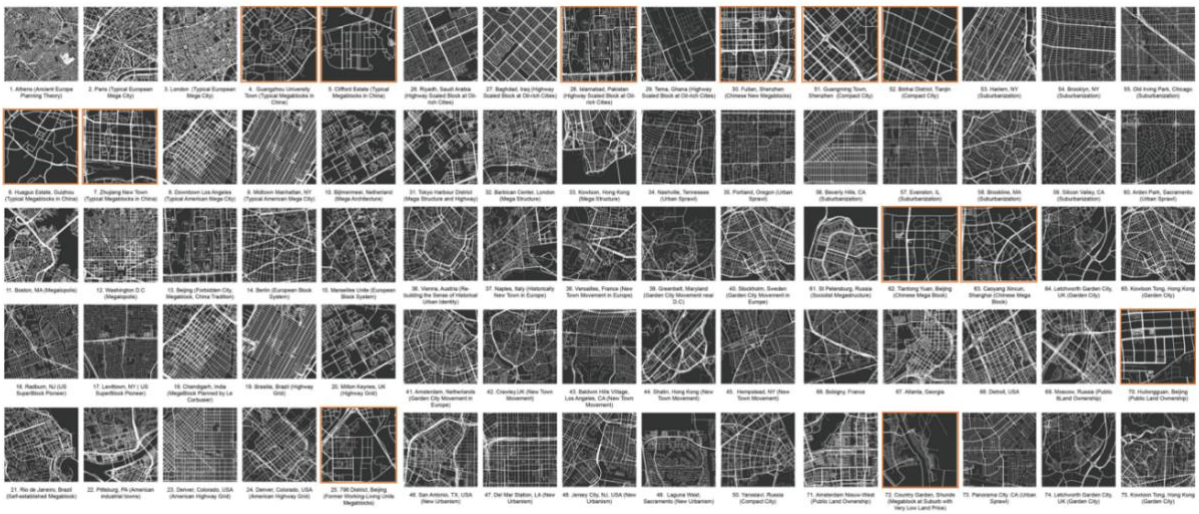
Since the nature of this study, which is defining and morphological analysis of the CMU phenomenon, there are key elements that needed to be extracted from the process of critical literature review, which is one of the main research methods in this paper. To be more specific, two main aspects are regarded as outputs from the literature review: 1) Exemplary cases that will be analyzed later for the comparison of urban form, the “urban form collector”, which are shown in the form of figure-ground maps 2) Factors and variables that can represent valuable characteristics of CMU, and also need to be further selected by criteria of CMU framework.

The research also applies spatial analysis of massive case study, aims to provide a well-informed basis for the development of a block morphological framework from CMU perspective. This purpose will be achieved by detailed examination and layering of the physical structure of urban forms. The disciplines of architecture, urban design and urban planning will become highly integrated within urban morphology, when the complementary relationships between small-scale changes and macro-scale variants are understood and interpreted in the research framework.

URBAN MORPHOLOGICAL STUDY

After scanning of related urbanism models world widely, representative cases are selected to compare their urban morphology with the CMU. In order to understand spatial properties of CMU, the first part of this section is studying the urban form in term of the relationship between road and block.

As they mutually shape each other, the most effective method to understand this morphology is by analyzing the figure-ground map, which have been named as “urban form collector” (see figure 2), which can intuitively visualize features like size of block and street, density of road, total length of road, total number of joint and density. In order to get the massive cases maps, coding and



programing tools are applied to assist the study becomes more efficient and prepare files for further analysis on other platforms such as ArcGIS. The research worked with Python on JupyterLab with OSMnx package.

Figure 2. “Urban form Collector”, with CMU cases highlighted.

In addition, for each of these cases, other spatial properties have also been investigated such as building plot (figure 3-b), centrality (3-c), routing of 2km /30 minutes’ walk (3-d) and node analysis (3-ef). To give an example, if we zoom in the case study number four of Guangzhou University Town (figure 3), a set of urban morphological tests have been conducted. Horizontal comparison between megablock urbanism and other types has been incorporated by the broader part of this study, aiming to provide detail morphological attributes of CMU model.

Figure 3. Spatial analysis of case NO.4: the Guangzhou University Town

From the comparison of cases, there are three main aspects that this paper wants to point out:

1. Density of road network. We can discover from the figure-ground maps, CMU cases has larger block size and wider road width comparing to other urbanism models. CMU cases appear distinguish characteristic of “wide road, sparse network” structure. The total length of road is inadequate, meanwhile, the 8-10 car lane arterial roads has taken substantial amount of urban surface, both lead to a low level of road density. The insufficiencies of low density of road network has been noticed by Chinese planners, therefore changes are being made. For instance, from the latest Technical Standards for Detailed Controlled Planning in Shanghai, network density of residential zones is increased to 2-4 km/km2 for both major and sub roads, and 8-12 km/km2 for minor roads.
2. Connectivity. From the centrality test (see for example figure 3-c), the CMU communities have high dependency on boundary and arterial roads. Meanwhile, quantity of road junctions and access of megablocks are insufficient and limited compares to smaller block system. These spatial configurations directly affect the connectivity between megablocks, as well as their accessibility to the larger urban network. In February 2016, the State Council and the Communist Party's Central Committee—the nation's highest authorities—adopted new guidelines that call for compacter cities with denser networks of streets, more pedestrian and cycling lanes, better public transport, mixed-use zoning, and more green space. New open residential communities will be joined with public roads, and the old gated residential communities will gradually open to the public (Normile, 2016).
3. Influence on everyday life. Megablock morphology directly impacts on residents’ commute and quotidian life. From the routing (see for example figure 3-d) analysis, we can see that within 30 minutes’ walk, the reachable area is limited to a few blocks which indicate a low walkability in terms of opportunity to reach different functions. As a result, CMU model is highly dependent on vehicle, which aggrandizes pressure to the urban road network and results in traffic congestion at peak hours. In many existing CMU cases, their actual modalities are gated communities, walls and gates have separated compounds from each other, form urban enclaves from its structure. In addition, the overscale morphology also affects the interface between megablock and street. As the block size does not encourage inhabitants to walk on these neighborhoods, the vitality of street life has been reduced. Therefore, the regeneration of CMU cannot be simplified as demolishment of walls, but a reformation of road network and urban morphology.

CONCLUSIONS AND DISCUSSION

The results from above study show that Chinese rapid urbanization took place at an exceptional scale, which reveals a peculiar morphology. Accompanying with context of the largest growing urban population in the world, and its socialism background, development models and tools differ from foreign countries, especially in terms of scale and density thus has been generated to achieve this radical urban growth. Through the study of its background and cases, CMU reveals intriguing spatial characteristics and qualities that worth to be further investigated. The study has investigated into western urbanism theories and cases of planning and scale, as well as reviewed Chinese conditions of various aspects. The coinitial findings reveals that this research cannot be only related to FAR or morphology, it might be a scale-density-morphology hybrid description that it has to be further formulated, as a part of the CMU model.

Moreover, adaptations and interventions of analysis tools for the CMU are essential for the future study. This research is an attempt to open up a discussion of CMU, which has abundant limitations as it positions at an on-going research. However, lessons that we could learn from the Chinese rapid urbanization has not raised enough attention from neither the western nor Chinese scholars, especially under the nation’s strategies of “The Belt and Road” and “Asian Infrastructure Investment Bank” context. How can we regenerate the existing megablock, and how can this development model be gradually shaped into a more sustainable direction, remain crucial for the future application.

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