Study of the New Neighborhood Units in the Chinese Context

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Abstract. New Urbanism proposed a TND (traditional neighborhood development) model and a series of laws of form, to deal with this issue from the urban typology levels to face the suburbanization of America. Current Chinese urban environment is becoming more sophisticated, to deal with all kinds of urban problems by blindly applying New Urbanism law is impossible. This paper proposes a new unit of neighborhood paradigm based on the way of life under the Chinese context, trying to experience the type of development approach, from the topological level to deal with urban Chinese context.

1. Introduction

As the basic constituent unit of the city, the ‘neighborhood’ is usually defined as a specific geographic area with a set of social network functions. After the Industrial Revolution, the composition of social networks changed dramatically with the development of machines and information industries, and the structure of the modern city changed accordingly. The neighborhood is losing their role as spaces where social relations intersect.

2. Distress of Western City and New Urbanism

The Industrial Revolution brought mankind to the Industrial Age. The production methods of big capital brought more labor to cities, accelerating urbanization while gradually changing the spatial structure of cities pursuing efficiency. "If there is any meaningful political law for the growth and development of cities in the industrial-technological period, it is that it has to be following the basic principles of utilitarianism. Principles." [1] The emerging of new techniques as reinforced concrete, frame structure inspired some pioneering architects such as Walter Gropius and Le Corbusier to initiate a movement that emphasized the importance of function. "the house became a machine for living" [2]. In 1933, " Athens Charter" was proposed by CIAM (International Association of Modern Architecture) concerning dwelling, work, recreation, and transportation. Zoning Law essentially divided the United States into many small private lots with different functions. Monotonous residential houses and buildings were duplicated and dispersed in the city, split and linked by highways and automobiles. This leads to the reduction and intersection of public activities. This mega-structure not only annihilate the diversity, humanity, and complexity in social and spatial levels of traditional towns but also changed the human perception of time and space. In pursuit of a more desirable living environment, the middle class migrated to the suburbs and suburbanization started. To adapting to the automobile age, Clarence Perry proposed a Neighborhood Unit theory in which the “cellular city” becomes the basic composition of the residential form. Whereas, the scale of the city still slipped out of control, leading to more complex social and spacial.
American scholars started to introspect this growth model resulting in unlimited suburban sprawl and inner-city decay in the 1960s. Robert Venturi and Jane Jacobs’s suggested that the Zoning Laws pursuing efficiency by eliminating the high-density, small-scaled neighborhoods, diversity, and historical context in traditional urban space. During the 1980s to 1990s, the urban theory transferred from “marginal urbanism” to “New Urbanism” responding to suburbanization. In 1996, the Charter of New Urbanism described a model of metropolitan, community, and neighborhood where a compact and elaborate urban development model was adapted. Peter Calthorpe proposed Transit-Oriented Development (TOD) and Andres Duany and Elizabeth Plater-Zyberk proposed Traditional Neighborhood Development (TND). This walkable urban structure tried to change the situation of the city on wheels in the United States.

3. Urban Issues in Chinese Context
City is a complex network where contradictions vary according to the different context. Contradictions in the United States are the urban sprawl and suburbanization while conflicts in Chinese feudal cities lies in the requirements of public space between the peasant economy and the emergence of commercial trades. Compared with the United States, China has lagged in industrialization significantly for historical reasons. The proportion of the secondary industry in China in 2010 equaled the proportion in the United States in 1900. Chinese cities are undertaking the task of filling the gap of industrialization in their rapid development. On one hand, numerous satellite cities and residential areas emerged on the periphery of the city. On the other hand, convenient infrastructure, land value, and a broader spectrum of services in the downtown of the city still attract most people. This results in the division of people’s life: working in downtown and living in the periphery of the city. Accordingly, the suburbs spread indefinitely and the central city still keeps prosperous. The city sprawl aimlessly like a spreading pie.

China’s contemporary new city and neighborhood community has also lost their scale, diversity, and social network in the context of industrialization. Although the principle of “small districts and dense network of the roads” has been a popular concept among the city planning, new towns which were built at the beginning of 21st century adopted a transport-oriented and zoning mood in the city planning, resulting in mega-community (over 400meters wide and length). Highways with 6 or 8 lanes and automobiles connect the new town and the city, meanwhile, fragmenting the new town into an independent and isolated island. Unlike the low-rise high-density mood in the periphery city in the United States, most developments in the new town of China are high-rise residential buildings. Influenced by the technical standards and the interests of developers, besides functional purism, inadequate public space, and lack of the hierarchy and connection to the old city, these high-rise communities pursue functionalism through arranging the abreast masterplan. This leads to the decrease of public activities, lack of security and comfort and, lose of satisfaction of the residents.

The deeper reason for these contradictions is the unfinished and unstoppable industrialization in the process of urbanization, which means new cities have unique characteristics that distinguish them from anti-urbanization in terms of their demographic composition, architectural forms, neighborhood units, etc.

4. New neighborhood units based on lifestyles
When people talk about their memories of traditional life, they often mention Shanghai Lilong, Beijing Hutong, or Xi’an Hangzi, etc. These lively scenes take place in the traditional old neighborhoods, where the appropriate scale, pedestrian experience, and friendly architecture provide a comfort communication space. Although the form of the neighborhood might differ with each other, the importance of creating genius loci and lifestyle is in common among an active neighborhood.

Bardo & Hartman define cities as "social organizations that have certain characteristics and geographically bounding" at the sociological level. Geographically, F Ratzel defines the city as "a combination of people and buildings in a certain area. The spatial structure of the city changes according to the change of social organization and lifestyles in the city. Besides the suburbanization in
Chinese cities led by the development of automobile culture, the development of mass media, especially the emergence of social networking sites, has greatly replaced the social network which was restricted by time and space. It weakened the role of the neighborhood in traditional life. Information technology has made human beings access information more directly. The social activities are carried out in a point-to-point mode, which has an impact on the spatial structure of the neighborhood unit.

Cities in contemporary China and the United States in the last century share the same problems in the loss of scale, diversity, and size. However, New Urbanism, which was used to solve the problems in the United States, can hardly finish the same tasks in China. On one hand, some Chinese scholars tried to introduce the New Urbanism theory and apply it to urban renovation in China. Shanghai started a proposal named “One City, Nine Towns”, in which different designers around the world designed nine new towns around Shanghai by the New Urbanism principles. However, the development failed and most towns are still lack attractions to the citizens due to the difference in the lifestyle between the East and West. On the other hand, American scholars P Cordon and H W Richardson criticized the value orientation of New Urbanism as "spatial determinism", which could only be applied in some small-scale cities. Compared with even more complex urban issues in China, a neighborhood unit based on the Chinese lifestyle should combine the methodology of the New Urbanism and Chinese context.

Figure 1. Lifestyle based urban form.

5. New neighborhood Units in Chinese Context
The new neighborhood units based on the Chinese way of life are faced with two tasks: preserving a good way of life and designing a better way of life. On the one hand, after decades of new city construction, a new way of life has been gradually formed, which is rooted in China's new city context. On the other hand, the uniqueness of the new town is dismantling the way of life in the neighborhood and revealing the quest of its resident for a new way of life.

A study of Shanghai’s new towns including the Zhangjiang Hi-Tech Park residential area, Jiading New City, and Jiading Campus of Tongji University revealed a high degree of consistency: quiet environment and inconvenient life; inter-residential spaces without vitality and public spaces in remote park and malls; car trips and remote public transportation stations; separation of work, play, and residence, unique population ratio, etc. These results consistently reflect the out-of-control spaces and fading relationship. Combining the methodology of New Urbanism and the context of Chinese New Town, we attempt to reconstruct the new neighborhood unit. The reconstructed new neighborhood Unit will be based on the definition of a network generated by the new lifestyles in contemporary Chinese new towns, and will gradually renew the existing lifestyles. The following section will discuss the composition of the new neighborhood unit in seven sub-points.
5.1. Shaping the space-spirit of streets
Unlike the American TND model of New Urbanism, which places public buildings and churches at the center of the community, Chinese new towns are much larger. Overly concentrated public facilities are not convenient to live in, and most Chinese people do not have a strong religious belief. Since ancient times, street space has been more in line with the Chinese lifestyle. After the collapse of the Jingli system, the neibourhood system took on more in business and trade, connecting all aspects of society. The Song painting "Along the River During the Qingming Festival" depicts the prosperous and very place-spiritual street life of Bianjing. In fact, the 1:1-1:2 street cross-sectional dimensions of ancient Chinese streets have more closely resembled European squares of the same proportions. As we enter modern life, shopping is still an essential activity in the Chinese way of life. The living, working, and public space will be arranged around the main street, thus concentrating more activities in the street space and creating a strong sense of place in the city.

Figure 2. Shaping the space-spirit of streets.

5.2. Fuzzy marginality
Compared to American cities, China's new towns are larger, with a larger population and larger functional zoning and land parcels. The plots in Chinese new towns can be 300-400 meters long on each side. Expressway divides city into islands. On the one hand, the point-to-point lifestyle of contemporary people has exacerbated such isolation; on the other hand, through the arrangement of spatial locations of points, such as schools, vegetable farms and other public spaces at the edge of neighborhoods, the edges between neighbors are blurred, so that resources can be allocated more rationally.

Figure 3. Fuzzy marginality.

5.3. Appropriate spatial scale
Overly wide roads, overly tall high rises, and overly large squares make the scale of urban spaces become the scale of machines. Humans have been developing for tens thousands of years, yet their physical dimensions have not changed much. Although the human lifestyle has become faster with the help of machines, the urban space has also become larger, and the distance between people and urban space has also increased. When humans want to return to traditional street life, the out-of-control
dimensions are prohibitive. However, due to the interests of developers, the state-owned land system and the psychology of households, the number of high-rise buildings in China New Town is difficult to decrease. Only by adding transitional space between the out-of-control size, and the street can humans return to the street. This transitional space can be a podium, a tree, etc.

Figure 4. Appropriate spatial scale.

5.4. Walking range vs. Bicycle range
In 1929, Perry's neighborhood unit theory proposed a 1/4 mile 5-minute walk, which has been adopted by New Urbanism. There is not much difference in scale between Chinese and foreign human bodies, so a 5-minute walking circle is also feasible in China. The Chinese have a paranoid love for bicycles, and bicycles are not only a means of transportation and fitness equipment but also a way of travel between pedestrians and motor vehicles. The size of the new neighborhood unit should be between a 5-minute walk range and a 5-minute bike range.

Figure 5. Walking range vs. bicycle range and Geography and diversity.

5.5. Geography and diversity
The task of industrialization undertaken by China's new towns led to the adoption of a master planning model of zoning functional areas. The plots present a large scale, and each plot has a single internal function, which brings about the loss of population diversity. Due to the interests of the developers and various regulations, the communities in the new city gradually move towards single functionalism. The floor plan of the units is reasonable and economical, and the general floor plan meets the requirements of the regulations. As a result, a residential area with hundreds of households often only
has more than a dozen units. New neighborhood units require more options based on geographic characteristics and require more regional and diverse spaces.

5.6. Linkage based parcel division
The transfer method of contemporary Chinese land determines the inevitability of large land. The development model of large plots has brought about the weakening of the connection and permeability of the city, but meanwhile, it also provides a quiet environment for the community residents. This way of life has been accepted by people. However, the main street undertakes the task of neighborhood communication and needs to form more connections with other plots to promote activities. In terms of land division, it needs to be divided according to connectivity.

![Figure 6. Linkage based parcel division.](image)

5.7. Compact development principles and catalysts
The unique land development model of China makes it possible to use large-scale land in a short time, but unscrupulously developing new plots will further increase the trend of urban suburbanization, and people spend more time commuting. The built environment of the new city cannot be demolished and rebuilt. Therefore, finding the vitality points and catalysts for urban development, selecting appropriate sections in the urban sample zone, and advocating compact land use principles and smart urban growth are essential in the urban design and renovation.

![Figure 7. Compact development principles and catalysts.](image)

Based on the above seven points, we describe the topological relationship of the new neighborhood unit as follows. The public spaces are distributed along the main street, and the point-to-point lifestyles intersect on the main street, forming a network structure and a new neighborhood unit structure dominated by the main street. The topological network structure supported by the lifestyle is superimposed on the current determinant structure in China, forming a new neighborhood unit in the contemporary Chinese context. Compared with the illustration of the new urbanism TND model proposed by Du Anli, the new neighborhood units are more in line with the Chinese new town context in terms of lifestyle and spatial form.
6. Summary
Jan Gehl classifies human activities into "necessary, spontaneous and social activities" [4]. These three activities are intertwined in traditional neighborhoods. In the contemporary Chinese urban context, spontaneous and social activities are constantly being eroded by the mega-urban scale, big machines, and mass media. The essence of the New Neighborhood Unite lies in the adjustment of the spatial form by adapting to the lifestyle and reintroduce the spontaneous and social activities into the neighborhood. In a word, the new neighborhood unit in the contemporary Chinese context is a kind of urban design method based on the perception and experience of lifestyles.

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