

Exploration of Beijing Dashilan historical and cultural block microcirculation transformation based on biological gene perspective

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Abstract. The renewal and transformation of historical and cultural blocks have always been the focus of urban planning. Beijing Dashilan area is regarded as the research object in the paper. Historic evolution and current situation are understood and compared for sorting principal gene, accessory gene and mutant gene categories of Dashilan historical and cultural block through gene analysis method with biological gene theory perspective as the entry point. The viewpoint of forming 'society, history, culture and urban spatial context 'information link' through mutually linking genes in the city organism is proposed, thereby discussing how to improve metabolic capacity in the microcirculation transformation of historical and cultural blocks, realize virtuous circle of the organism, obtain regional cultural continuity, development and organic growth of cities.

1. Overview of Dashilan area

Dashilan is the most intact historical and cultural block preserved in the core function area of the capital [1]. The blocks with history of more than 570 years contain Beijing hundred-year time-honoured brands, such as Ruifuxiang, Tongrentang, Neiliansheng, Buyingzhai, etc. It is always the focus of Beijing residence culture, merchant culture, civic culture, folk culture and Liyuan culture. However, the area is always in the situation of slow development in the past due to own population status, economic status, regional texture and other reasons of Dashilan area. Some architects and planners fiercely discuss and beneficially explores on how to inherit the traditional Beijing city characteristics, meet the demand of modern residents, etc. since the 1980s [2]. However, Beijing urbanization movement in the 1990s has highlighted the contradiction among historical protection, renewal and transformation, improvement of people's livelihood and urban development in the area. The remaining residents have single way of life and production, and poverty and decline have begun to emerge as a result of the backward infrastructure and the constant migration of elites. Experts and scholars put forward many ideas, methods and means of planning and transformation in the process, such as 'organic upgrading' theory proposed by Mr. Wu Liangyong, Professor Bian Chunlan proposed gradual and small-scale planning method based on 'courtyard settlement' as unit [3]. The follows are proposed in 2004 'Protection, politics and revival plan of Beijing Qianmen Dashilan area' that historical blocks should be protected scientifically, it should be updated locally, reasonably and organically, traditional business vitality should be stimulated, and space environment quality is improved as the planning objective [4]. Chapter 4 of Beijing city overall plan (2016-2030) released formally at the end of 2017 clearly shows that Glass Street - Dashilan -Qianmen is regarded as one of 13 cultural essence blocks, it is necessary to further explore history sites with cultural deposits and vitality, thereby keeping life continuity of historical and cultural blocks [5]. Meanwhile, we know that time of several years is required for displaying urban plan formulation, actual implementation of policy guidance and plan positioning as well as evaluation of implementation effect. Culture heritage, lifestyle and city memory should be respected from rather than rigid demand of urban planning during the period. Urban planning, history landscape, building form and culture regeneration should be comprehensively considered, and organic updating and transformation of Dashilan historical and cultural block in accordance with urban development context should be discussed from many perspectives and many scientific views actively.

2. Analysis on Dashilan historical and cultural block from the perspective of biological gene theory

Gene is the basic unit of biological 'inheritance'. Characteristics of Dashilan historical and cultural blocks in streets, lanes, alley, road grid, building types, history, culture, etc. are sorted for revealing human relationship with space division layout, commercial economy and regional residents, neighborhood society, etc. In the area, searching genetic information capable of keeping own characteristics. Meanwhile, genes damaged in the process with 'mutation' can be restored or self-healed, thereby realizing local and even overall virtuous circle. Therefore, the genetic genes can be divided into principal gene, accessory gene and mutant gene based on the uniqueness and dominance gene recognition gene recognition principles.

2.1 Unique and complete geographical position-principal gene

2.1.1 Planning layout

The urban planning and construction thoughts of capital cities in China are mostly related to 'front royal court and rear market' in 'Art Observation'. It is the basic criteria of commercial layout. Beijing is gradually deviated from the principle with economic development in Ming and Qing Dynasties. The position of Dashilan business center in the city is inverted from south to north. The phenomenon is very rare in commercial layout of China ancient capital city [6]. It can be concluded that the layout is a natural choice for Beijing urban development. It is also a flexible and changeable expression of the ancient people in the planning and construction of the capital according to the objective reality.

2.1.2 Traditional street and lane pattern

Street and lane pattern of Dashilan block is not changed basically for about 700 years from the early Yuan dynasty to the modern times. Longer and more important streets, lanes and alley have been shaped in Ming Dynasty. Regional network system of 'three vertical roads and four horizontal roads' have been roughly formed. Dashilan West Street, Tieshu Byway, Yangmeizhu Byway, Yingtao Byway reflect some history traces from Jinzhongdu and Yuandadu to Ming and Qing Dynasties. Langfang No. 2 Street, Langfang No. 3 Street, Menkuang alley, Quanyechang, etc. still maintain original space features, and there are more historical heritages. The process of city northward movement in Yuan Dynasty is recorded by the four byways. Standardized commercial system during Yongle is recorded in Langfang [7]. Dashilan Commercial Street is adopted as an example. Streets and lanes are connected but blocked. Three internal corner space nodes are formed in the whole street, the byway pathway width is narrow, wide and narrow from east to west, thereby effectively controlling the street rhythm, which is beneficial for gathering or evacuating people. Space interest is formed in different areas. People can keep excited in the journey besides street interface with three-dimensional sense of depth as well as rich plane contour lines and skylines. (Figure 1)

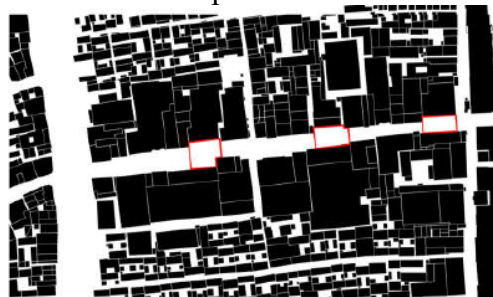


Fig.1. Internal corner space of Dashilan Commercial Street

2.1.3 Overall architectural features

The architectural style of Dashilan area reflects distinct era style. There are traditional Chinese architecture of Ming and Qing Dynasties, architecture of the republic of China combining Chinese and western styles, architecture at the founding of the People's Republic of China and traditional modern architecture of ancient style. The buildings are investigated and counted according to three categories of traditional architecture, archaized architecture and brand-new architecture. Traditional buildings account for 29.8%, archaized buildings account for 36.9%, and brand-new buildings

account for 33.3% respectively. The buildings are closer to the boundary, the regional traditional building rate is lower, brand-new building rate and archaized building rate are gradually increased from the west to the east. Traditional building are mainly distributed along northeast - southwest Yingtao Byway and Tieshu Byway. The historical heritage building quantity is gradually decreased from the middle to both ends. The urban well-functioning historical relies in these cities are in harmony with the traditional size of streets and lanes, thereby reflecting the development of commerce, traditional lifestyle and folk customs.

2.2 Blended symbiosis historical context and business context-accessory gene

Dashilan Block carries a variety of cultures, including Jingshang culture, temple culture, opera culture, folk culture, etc. The birthplace of Beijing Opera is located in Sanqing Park on Dashilan Commercial Street. It has been the most prosperous business district since the Ming and Qing Dynasties. Many old and famous brands are gathered together here such as Zhangyiyuan Tea House, Buyingzhai Shoe Store, Ruifuxiang Silk Shop, Hendry watch shop, etc. It experienced changes from Chinese handicraft industry to capitalism free trade and socialist commodity economy. It is the living fossil of Chinese business culture.

2.3 Accumulated people base-accessory gene

The most important value of historical and cultural blocks lies in reflecting local traditional lifestyle and folk customs. There were a lot of inn halls and clubs here in the history. Many businessmen and scholars settled here, a batch of scholars and dignitaries were attracted here at the same time, such as Ji Xiaolan, Luxun, Cai E, Kang Youwei, Liang Qichao, etc. It is a place for gathering together social celebrities. A large number of indigenous people still live in Dashilan alleys at present. Rich social neighborhood structure offers various living spaces and employment opportunities for people. They display urban life of Dashilan area, and attract countless people to feel the history flavor and life taste of the block.

2.4 Decay of material space-mutant gene

Many historic buildings have a history of nearly a century. A lot of historic buildings show commerce and residence integration model due to upgrading and transformation after the founding of China. In addition, the diversity of building property right and different local residents demands bring a variety of contradictions. Residents change and rebuild the buildings in order to improve the quality of life. However, effective regulations and supervision are not available. 'Further utilization' of various private buildings make the landscape 'confusion' (Figure 2). Historic buildings and street style are damaged. Most buildings are intact in main body, but additional buildings in the yard are severe, and they are mainly lack of dinning, sanitary, storage spaces as well as water heating facilities for ensuring life necessities especially through current investigation on courtyard living space (Figure 3). Limitation on local street and lane environment improvement quantity can be caused if concern on user living habits and life quality is deficient.



Fig.2. Yanshou Street channel before and after removal of illegal building (2017.12)

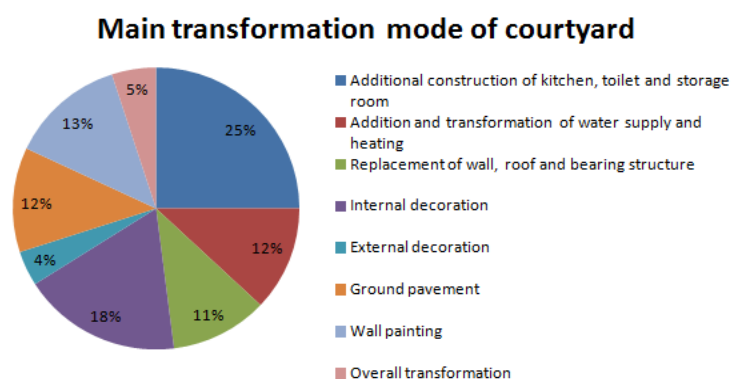


Figure3 Main reconstruction method of county-yard

2.5 Marginalization of commercial status- mutant gene

Dashilan area used to be the commercial and entertainment center of Beijing. Qianmen Dashilan, Xidan and Wangfujing in Beijing old city were listed as three major municipal commercial centers [8] In General Plan of 1993 edition. However, Dashilan's positioning as the municipal business center is highly inharmonious with its historical and cultural texture and traditional landscape. Its functions of citizen leisure and rest in the development process are not embodied [9]. The commercial space structure of Beijing inner city has been readjusted [10] especially since the 1990s. Many new business centers have been built in the third ring and the fourth ring, etc. Dashilan department stores are rapidly replaced by many emerging businesses, thereby leading to decline of old city business centers. Diversified business outlets are deficient in the region. Small shops, hotels and restaurants are excessive. Many old and famous brands are even changed into market. Dashilan's position as the commercial center of Beijing is increasingly marginalized. It is on a completely different path from Xidan and Wangfujing.

2.6 Transformation of attractive gene - mutant gene

The extraction of recessive genetic factors requires an understanding of historical block users, tourists and local residents. It is changed into previous living space for old Beijing people into a people which attracts tourists all over the country and even all over the world. Investigation shows that tourists from other cities (including foreigners) account for 75%, local residents only account for 25%, it is obvious that the service objects of Dashilan are based on tourist population outside Beijing. 80% people believe that goods from Dashilan are incomplete, shopping here is mainly focused on specialty goods rather than ordinary consumer goods such as clothes and food, etc. Therefore, it is regarded as a place of tourism and experience of Beijing specific culture here for citizens and tourists.

3. Inheritance, protection and repair of genetic genes from Dashilan area

If a city is regarded as a dynamic and changing organism composed of numerous cells, the 'cells' contain 'genes' carrying important genetic materials. Genes of Dashilan area jointly participate in 'metabolism' of Beijing- the historical and cultural city. Organic development attitudes of 'inheritance, protection and repair' should be upheld aiming at 'oldness and newness'. Rigid transformation mode reflecting 'large-scale removal and construction' on historical blocks should be refused, which should be changed into flexible mode of 'microcirculation and organic growth'. The vitality of Dashilan area has certain recession compared with the prosperous period of the history. However, the unique history settlement charm, diversified and international development potential reproduce vitality and power with the improvement of people's concern on Dashilan. Thriving people base provides place culture brought by common cultural environment and living environment for native residents in the region. The unique emotional connection is the basis of inheriting and developing the region. Architecture environment and street lane space beneficial for interpersonal communication, unique commercial atmosphere and cultural popularity are also the advantages of sustainable development. Meanwhile, we also observe that Dashilan modernization service and shopping environment are also in disadvantages under the impact of new era and modern culture. The attraction of old and famous brands to customers is decreasing. Crowded and narrow space as well as dense residential housings limit the space in the region for development, thereby greatly limiting the development of the commercial street block. Therefore, discussion on inheritance protection of genetic information in principal gene and accessory gene as well as self-healing and restoration of negative face in mutant genes is very important for realizing sustainable development of Dashilan area.

4. Discussion on microcirculation transformation mode based on biological gene perspective

Gene is a stable 'information kernel'. Own genetic information is still retained in the constant development and change. Dashilan area maintains material and non-material cultural heritage as well as delivery of dominant and contact information over hundreds of year basically because of the presence of these information. Dashilan updating looks like an 'information link' composed of mutually connected historical, cultural, social and city streets and lanes. Point-line-face development context can be produced through complex serial connection and parallel connection mode. Local organism benign microcirculation is gradually formed, thereby activating the whole block gradually. Historical and culture context of Dashilan is extended on the one hand, modern vitality is also injected on the other hand.

4.1 Connotation

Old city is an organism, constant metabolism and organic renewal are required. However, the improvement scale should not be too large and within our capabilities, and small-scale reconstruction is acceptable [11]. Its connotation is shown as follows: historical blocks are flexibly renewed according to the principle of integrity and unity during the progressive development process of the city according to urban development diversity, organic characteristic and overall characteristics, thereby protecting and improving material space quality of historical block, forming healthy and orderly economic and culture environment with rational scale. Microcirculation transformation involves resident housing condition updating and improvement, the employment, life and commercial environment of traditional residential zone, etc. The industry structure adjustment and social population structure adjustment of the whole area belong to in-depth transformation in the actual operation. It is a long process.

4.2 Fit of transformation mode and traditional spatial form

Dashilan has formed living spaces at different standards and different lifestyles due to the changes and development of history. Continued expression of genetic factors in principal gene and accessory gene of historical blocks are focused in microcirculation transformation mode. The influence on the whole environment should be minimized due to limitation of basic current situation conditions,

surrounding environment and neighboring space. The transformation mode is beneficial for protecting original alley texture and traditional architecture on the one hand, traditional neighborhood atmosphere can be powerfully protected, It belongs to an 'adaptive change' in urban historical context and original space structure. For example, 'crowded meeting room' in Tiaozhou alley belongs to a sample of implanting innovative space in old architecture structure. Old county-yard can form a public art space after transformation. It should be noted that the transformation of Dashilan historical block should not always focus on gentrification and gentrification mode, but it should not be deviated from the fundamental goal of microcirculation transformation.

4.3 Fit of multi-subject participation operation mode and improvement of people's livelihood

A suitable path is not accurately searched in transformation to guide residents for cooperation and participation, residents are lack of initiative in the process. The poor life, society and economic environment conditions of the block will continue to deteriorate. Therefore, residents and various social resources should be combined for participation and collaboration. Urban planners or architects, designers, artists, sociologists and wider range of groups are required to realize integration of government 'from top to bottom' and citizen 'from bottom to top'. Pilot construction of 'micro-alley', 'micro-miscellaneous courtyard', 'inner box courtyard', etc. have been completed in 'Dashilan Navigator' plan since 2011 [12]. Three keywords of 'peaceful residence, peaceful settlement and peaceful building' were discussed in 2017 with 'Dashilan re-sailing --Yangmei Peaceful Building; as the theme. Alley Huacaotang Project starts with lifestyle and demands of residents. Mutual exchange is formed through flower planting, vegetable planting and other natural forms, thereby creasing value shared by the community, restoring and reconstructing the artistic conception lost in old Beijing alley culture. The old blocks and new design are integrated and collided to provide new concepts for updating and activation of blocks. New patterns are introduced suitably through design force. Meanwhile, residents can obtain living and production entity space at high quality. Alley texture and landscape can be respected, and existing houses can be flexibly utilized on the one hand. More importantly, historical and culture blocks can be transformed from spatial structure into organic integration of transformation in the aspects of industry structure, society and culture, thereby guiding the public participation and community interaction, and actually promoting open development of the whole area.

4.4 Fit of culture creative industry and regional unique building

How to revitalize the traditional business district is discussed all over the world [13]. Cultural infinite production in limited space is the relationship between space and culture. Cultural creativity is used as a factor to activate Dashilan area based on spatial characteristics such as regional texture, historical features, etc. People's display of location and social function, landscape form and artistic and memorial performance on one region can be defined again due to the change, and even individual experience recognition can be redefined [14]. The form can produce coupling effect among points, lines and faces, thereby realizing prosperity and rejuvenation of regional business culture, updating and continuation of regional residents, neighborhood, space and social structure, and activating existing blocks. Dining room, bookstores, coffee and other new forms of business were introduced in Dashilan Updating Plan since 2011. Original natural ecological mode and transformation mode of historical and cultural block should be recognized firstly in the new patterns. The commercial culture mode formed on the basis are high-quality and luxurious. People here are willing to consume for culture. Culture confidence of local residents also can be improved through reinforcing culture identity and injecting fresh blood. Unlimited added value of cultural creative industry leads to cultural reconstruction of Dashilan historical and cultural block and harmony symbiosis of cultural creative industries, thereby forming a unique, healthy and sustainable development power, fully embodying the bench-marking demonstration effect of 'Chinese city updating by design', and achieving organic growth of cities.

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