

Research Paper

Revitalizing historic urban quarters by Cityscape-control plan

The case of Xi'an, China

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Abstract

In globalization era, a large number of cities around the world are losing their features with the impact of powerful alien culture. Furthermore, China has been experiencing rapid urbanization. Full speed construction calls for the standardization instead of the uniqueness, which have brought threat to characteristics of cities. Homogeneous images of cities can be seen everywhere.

Local cityscape, as the identity of the indigenous culture, is becoming increasingly scarce resource and competitive power for city in the field of global competition. Cities in China, who have realized the importance of history and culture in recent years, started to preserve and improve local cityscape by the tools of urban planning and design.

Taking the historic urban quarters around the Daming Palace National Heritage Park as an example, the Cityscape Control Plan is researched as a method to preserve and optimize the cityscape in the historic area during the process of urban regeneration.

The project is located in Xi'an, a megacity with more than 9.6 million population. Daming Palace used to be the imperial palace of the country in Tang Dynasty (AD634-896). Quarters around it has become a decayed area with squatter settlements nowadays. The municipality tries to bring in new opportunities for the area with a Cityscape Control Plan, which offers a possible solution to combine global and modern function with local and historic cityscape.

Learning from the theories of city image, urban morphology and typology, the concept of cityscape and Cityscape Control Plan are defined theoretically.

Secondly, an integral cityscape structure for the area is constructed and several spatial guidelines are created in terms of morphology, street interfaces, building heights, architectural styles, architectural colours, etc. All the guidelines are integrated and detailed to specific form codes for each blocks, which can be used as an administrative tool to restrict all the related construction activities.

With these efforts, the historic features and innovative features are combined to identify a unique cityscape in this area, bring in a "glocal" (global-local) solution for the revitalizing of the historic mega city as Xi'an.

Keywords

Cityscape Control Plan, local culture, urban regeneration, historic urban quarters

1. Background

In the age of globalization, cities are located in the opening network of global capital, information, science and technology, which triggers the assimilation of cultural value. The mainstream culture in advanced countries has become the dominant culture all around the world, leading to continuous interweaving and conflicts with the indigenous cultures. During this process, as the material carrier of culture, cities are unavoidably impacted by alien cultures, and the original difference of cityscape expressed due to regions, nations and history gradually disappears, which has become a worldwide problem.

On the other hand, China is in the process of rapid urbanization. Full speed construction calls for the standardization instead of the uniqueness. As a result the traditions and features of cities give place to standard and simple modern architectural style, the pleasant urban space shaped by history is eroded, the cityscape all around the world is increasingly homogeneous day by day.

Facing the similar cityscape here and there, people start to introspect how to rebuild the sense of identity of their hometown by preserving culture and features of cities. The fierce competition of cities in globalization also let the administrators realize the importance of unique cityscape, which can add up the vitality, attract talents and bring investment and chances for their cities.

Therefore, Cityscape control plan as a tool to combine global and modern function with local and historic cityscape has been paid more attention. Each city that is situated in the global network is seeking for a possible solution, which is “how to become modern and to return to sources; how to revive an old, dormant civilization, and take part in universal civilization.” (Paul Ricoeur, 1965)

2. Concept definition

2.1. Historic urban quarters

The preservation of the historic city has experienced a long process. The protecting objects start from individual landmarks, monuments and sites (International Charter for the Conservation and Restoration of Monuments and Sites, 1964) to historic areas (Recommendation concerning the Safeguarding and Contemporary Role of Historic Areas, 1976), and then to historic towns and urban areas (Charter for the conservation of Historic Towns and Urban Areas, 1987). To sum up, the definition of historic urban quarters is increasingly enlarged and deepened, which includes not only physical environment but also social cultural structure, and consists not only buildings but also the continuous ensemble of the surrounding environment.

2.2. Cityscape

Cityscape is not an academic word in the field of urban plan. It originates from a literary concept, expressing the physical form of cities and the potential cultural connotations. Therefore, cityscape includes two parts: the visible part consists of the natural environment and the artificial environment of cities; the invisible part includes the social-cultural features that affects urban developing process, for instance, religion, history, ethic and law, etc. After it is applied into the planning field, the meaning of cityscape is enriched in a further way. It is

influenced by the trends of society, economy and culture, and made up of the several contents, including the construction of physical environment, the display of cityscape, the creation of urban culture and the extraction of urban spirit.

2.3. Cityscape control plan

As a new planning category, Cityscape control plan hasn't shaped a mature and systemic standard (Duan, Dezheng; Wang, Liyuan; Wang, Jin; 2013). In China, cityscape control plan is generally regarded as an assistant research tool for master plan, or as a special type of plan independently. In terms of content, it not only includes the overall cityscape of whole city on the macro level but also specific cityscape for each block on the micro level. In the practice of planning, the cityscape control plan on the macro level emphasizes more on blueprinting and qualitative description, which is hard to be used in implementation and management (Dai Shenzhi, Liu Tingting, 2013). On the other hand, the micro level's cityscape control plan has not formed mature planning method and the content of it is always confused with urban design. In this background, the paper attempts to explore an experimental planning method for the cityscape control plan based on the practice of the historic urban quarters around the Daming Palace National Heritage Park.

3. Case research

3.1. Introduction

The project is located in Xi'an, a megacity with more than 9.6 million population. Daming Palace used to be the imperial palace of the country in Tang Dynasty (AD634-896). The palace covers an area of about 3.2 square kilometres, whose size is 4.5 times of the Forbidden City in Beijing. The spatial structure of the palace is grand, and the architectures are exquisite. It is referred to as "the peak work of Chinese palace architectures." As Tang Dynasty declined, Daming Palace became a heap of ruins in a fire (896 AD). After the changes of several dynasties, Daming Palace quarter had been covered with farmland for a long time, until it became squatter settlements for displaced person in World War II. The narrow alleys, the crowded houses, the dirty sanitation and the high crime rate made up of the first impression that the decayed area. Since 1970s, the area started a regeneration project. Later on, the construction of the National Heritage Park (2010) and the reconstruction project of the railway station north square (2015) brought new vitality and tourists to the area.

The renewal of the urban quarters around the Daming Palace National Heritage Park is continuing. There are still about 0.75 square kilometres land to be updated, the old function (the place used to gathered large urban markets of building materials) cannot satisfy the diverse needs of residents and tourists, the declined landscape of the block is incompatible with the long-standing and elegant heritage park, and the messy streets and the squatter buildings cannot bring the sense of belonging for the neighbourhoods.



Figure 1 Land renewal proposal of the historic urban quarters around the Daming Palace National Heritage Park

3.2. Research framework

There are two main tasks concerning the cityscape control plan of Daming Palace area: Firstly, how to revive a historical area without architectural remains (there are only rammed earth ground foundation sites in Daming Palace National Heritage Park), and awaken sense of identity of communities. This area plays a significant role for the city and even the country, it stands for the cultural peak of Han civilization, and it is also an important tourist destination of the city, attracting a large number of domestic and foreign tourists every year. The municipality and planning experts are trying to seek for the cityscape that can represent the characteristics of this area, not only coordinating with the historical context, but also adapting to the diverse modern functions in the future.

Secondly, there remain a variety of old city quarters formed in different periods; for instance, the remains of Palace, the squatter settlements, the building material markets and the industrial zone. Although not every history period is enjoyable, as a unique memory of the city, they should all be respected, and we hope to keep all these remains and integrate them into the city life in a positive way in the future.

The regeneration system consists of two parts, that is function updating and cityscape improvement. Several specific guidelines and strategies are raised step by step, resulting to the planning documents that can be effectively implemented in macro to micro level.

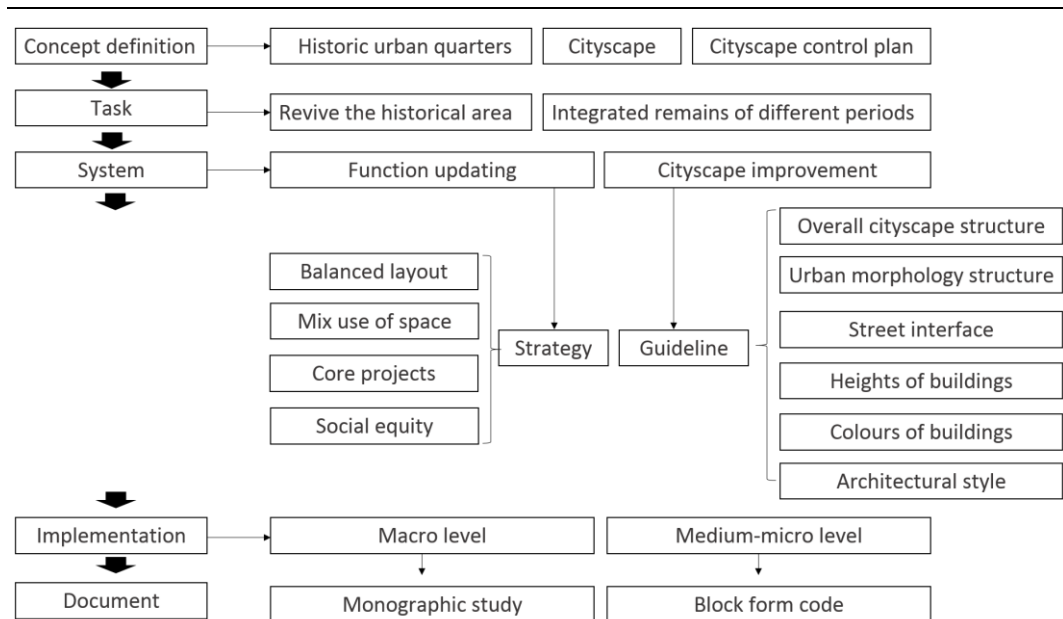


Figure 2 Research framework

3.3. Function updating

At the present stage, the dominant function of the historic urban quarters around the Daming Palace are building materials market and the residence. There are also a few cultural leisure and tourism service activities. According to the master plan, this area will become a comprehensive area where business, tourism and culture are combined together. According to the research, though the total squares of culture and commerce spaces in the area can meet the needs of tourists and commercial people, there are still four problems. First of all, the location of each domain determined by the master plan is too concentrated, which goes against the balanced development and continuous public space; secondly, the degree of mixed land-use is low, which has negative effect on the urban vitality; thirdly, there are insufficient flagship projects to driver the development of surrounding neighbourhood; last but not the least, how to avoid the gentrification influence brought by function replacement during the regeneration process.

Four corresponding strategies are proposed. Firstly, the balanced layout, it refers to disperse the centralized commercial, cultural and office space moderately, forming a pattern of concentrate partial and disperse generally. The second strategy is the mix-use of space, which means to mix the function of the blocks and buildings in three-dimension, creating more dynamic possibilities. The third strategy is to take transformation of industrial zone, northern art block, and the upgrading project of building materials market as three dominant projects, to combine commerce, culture, hotel, catering, leisure, entertainment together. In addition, rich activities such as design show, artistic performance, forum, history lectures, and signing sessions are planned, aiming to form a dynamic and comprehensive centre for the region and promote tourism and business as well. The fourth strategy is to make sure of sufficient living space, to build a variety of new apartments for different groups, including SOHO apartments for young graduates, social apartments for middle-income people, and serviced apartment for tourists etc., meanwhile, equal and friendly public space for the neighbours are constructed, such as museums, cultural palaces, squares, streets etc.

According to research, it will provide about 2500 residences and 20000 job positions for the society during the regeneration process.

3.4. Cityscape improvement

There are many factors that affect cityscape, and the decisive factor lies in the physical form of the city. Referring to the theory of morphology, M. R. G. Conzen (1960) divides urban form into three basic objects, they are town plan, building fabric and land utilization. Saverio Muratori refers city as urban organism, it includes city, block, architecture and detail. In *The Image of City*, Kevin Lynch (1960) classified physical forms of city into five elements: paths, edges, districts, nodes and landmarks. Based on the theoretical study, we can see that as a comprehensive system, cityscape includes the relationship from the whole to the part. Accordingly a framework for cityscape system from macro to micro level is constructed. In macro level, the structure of overall landscape, morphology of blocks, street interface, and architectural style are guided. In the micro level, the layout of the open spaces, the interface of street and the facades of buildings of certain block are regulated in detail, consisting the specific form codes for each blocks that can be applied to implementation and management of the plan.

3.5. Guideline for the overall cityscape structure

The overall structure of cityscape refers to the comprehensive of elements of cityscape in the form of point, line and surface (Fang Haojie, Zhou Yubin, 2012). The structure of the historic urban quarters around the Daming Palace National Heritage Park is mainly affected by the interaction relationship between the nodes of the heritage park, the metro station, the train station and the surrounding blocks. It is composed of 80% general blocks, 20% node blocks and three main street interfaces. The general blocks are regulated with strict guideline, in order to construct a coordinate and consecutive morphology. The node blocks adopt the way of flexible guidance, which emphasizes innovation and vitality, aiming to create attractive landmark space.

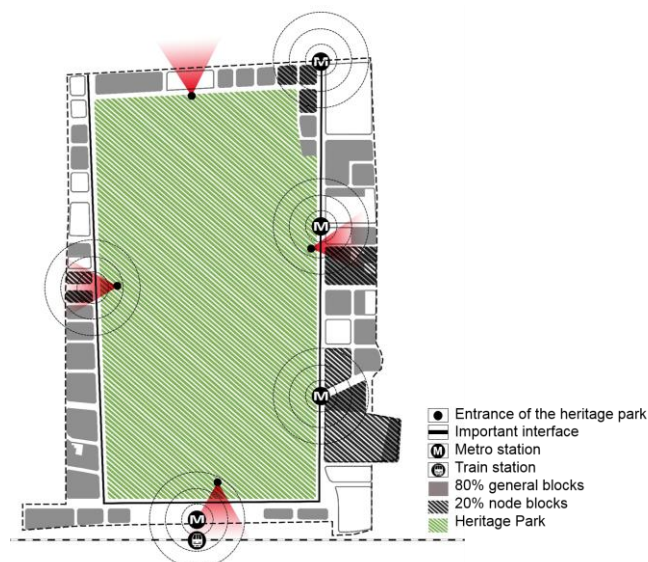


Figure 3 Overall cityscape structure

3.6. Guideline for the urban morphology structure

Morphology is the basic element of cityscape, which determines the texture and spatial form of the quarters. As the historic urban quarters around the Daming Palace have a long history, and the difference historical period left different urban formation. The quarters are regarded as sediment accumulated level by level; the building type and fabric unit of each stage are overlaid. Each block was matched with corresponding morphological module according to its original spatial fabric and updated function. There are five morphological modules in this area: traditional block with small courtyard, cultural block with building groups, shopping mall transformed from big volume market buildings, modern business building and residential apartment.

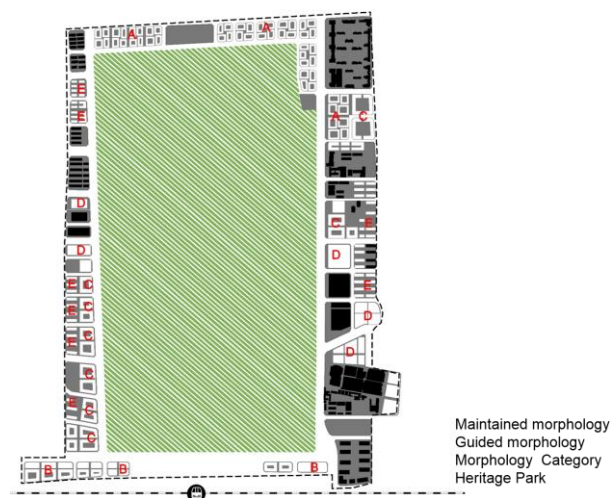


Figure 4 Urban morphology structure

Table 1 Urban morphology Modules

	A	B	C	D	E
Category	Traditional block	Cultural block	Office & Business	Commercial complex	Residence
Space	Block with yard	Building groups	Block with yard	Mall	Apartments
Height	1-3 stories ≤15 meters	3-5 stories ≤24 meters	4-9 stories ≤36 meters	4-9 stories ≤36 meters	12 stories ≤36 meters
Dimension	40-100m 40-100m 6-15m 	60-120m 15-25m 60-120m 	80-150m 80-150m 15-25m 	80-150m 80-150m 	80-150m 80-150m

3.7. Guideline for the street interface

The land utilization rate around Daming Palace National Heritage Park is relatively low, some part of the land is blank and the layout of the buildings is scattered. As a result, the interfaces of streets are relatively fragmental. Street as linear open space has a rich tradition in western countries and the façade of street is always supposed to be highly continuous as the displaying stages of city life and the security monitoring of the public activities. In

Oliveria's (2013) view, higher uniformity of architectures will bring higher urbanity, which means a form to promote urban activities. He put forwards a concept "alignment of buildings" as an assessing parameter of urban form. Harvey (2014) explains "Street wall continuity" as one of twelve streetscape skeleton, which means proportion of edge intersecting buildings on the more /less continuous side of the street.

On the other hand, the traditional Chinese wooden architectures and the unique concept of "set of etiquette" pay more attention to the architectural complex than the interface of the blocks and streets, making the façades of the street wall sporadic (Zhou Yu).

In order to meet the requirements of the continuous wall facade in modern streets and respect the tradition of Chinese architectures at the same time, the continuous street façade only focus on the bottom part of the building below 15 meters, which is decided by the perspective of the pedestrians. This part of building corresponds to the form of rammed earth stylobate of the traditional Chinese buildings, and they will form a continuous street façade by controlling "Build-to-Line Rate", that refers to the percentage of the continuous building façades in the whole street length.

The upside parts of more than 15 meters, corresponding to the main woody bodies of the traditional Chinese buildings, encourages flexible composition of buildings; and the unique streetscape comes into being consequently.

Table 2 Build-to-Line Rate

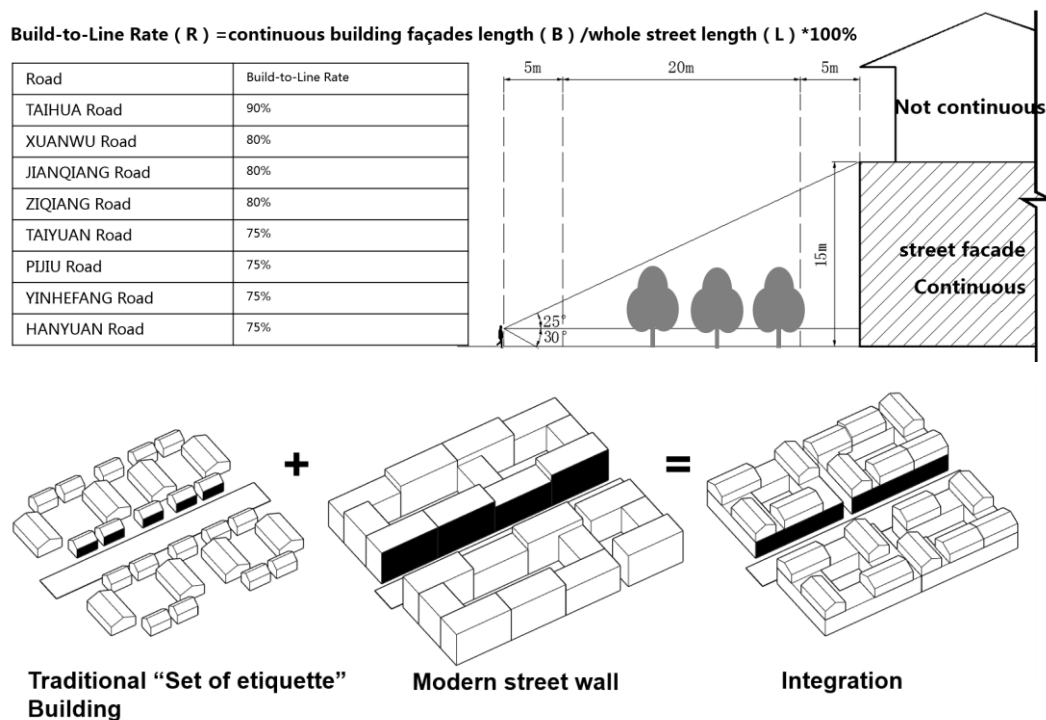


Figure 5 Combination of street wall and traditional "Set of etiquette" Building.

3.8. Guideline for the height of building

The height of building is the key factor that influences the transformation from the plane layout to three-dimensional space of city. The studying area is a part of the heritage protection control district of Daming Palace, so the cultural heritage protection department

authorize strict height control guideline for the surrounding buildings. Based on this, a further research of building height was made with hierarchical control method and viewshed control method. The hierarchical control method divides the height of buildings into the first level, the second level and the third level according to their distances to the heritage park, referring to the height of heritage in the National Heritage Park and the function, the land value of the surrounding blocks. The viewshed control method selects the important sight corridors in the surrounding area and limit the maximum height of the buildings with the principle that all the buildings in viewshed should not block the important sight line. The two methods are overlaid to control the maximum height for all the buildings in the area.

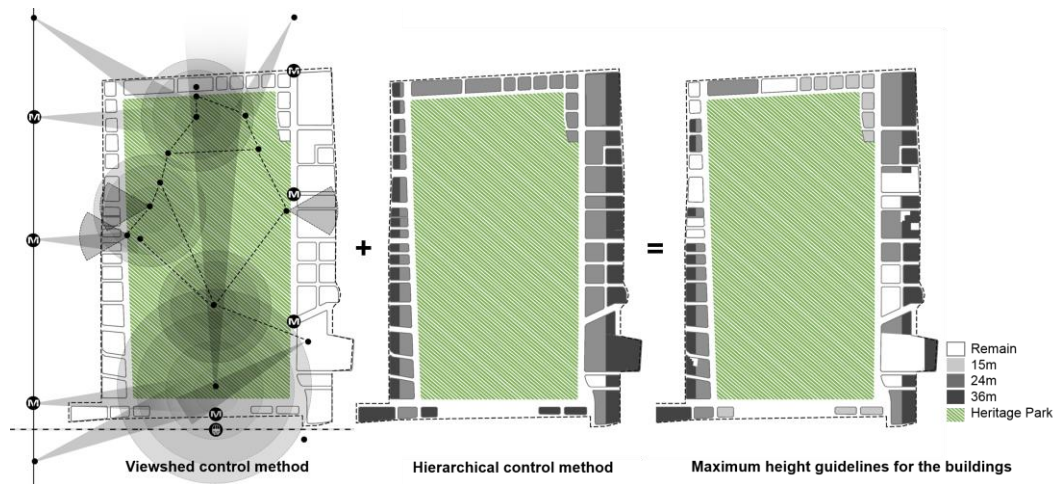


Figure 6 Maximum height guidelines for the buildings

3.9. Guideline for the colour of building

Researches in terms of urban colour planning have long-term practice all around the world. Michael Lancaster (1996) raised the concept of colorscape firstly, referring it as the important carrier of historic, cultural and aesthetic information of city. Turin's Colour Database, Paris's Colour Gene and Tokyo's Tokyo Urban Colour Planning all played an important role for the harmonious urban building environment. The main controlled object of building colour in the area is divided into basic colour, sub colour and embellishment colour. During the research, 500 sampling colour points were measured and the sampling data are converted into the Munsell colour system by software. Then the harmonious range of colours was analysed and digitized by three values of hue (H), value (V) and chroma (C). The basic colour range of the buildings in this area is concentrated in 5 ranges: non-chroma, low-chroma and low-value, low-chroma and high-value, mid-chroma and high-value, mid-chroma and low-value. A detailed colour atlas was made correspondingly as the standard of data control.

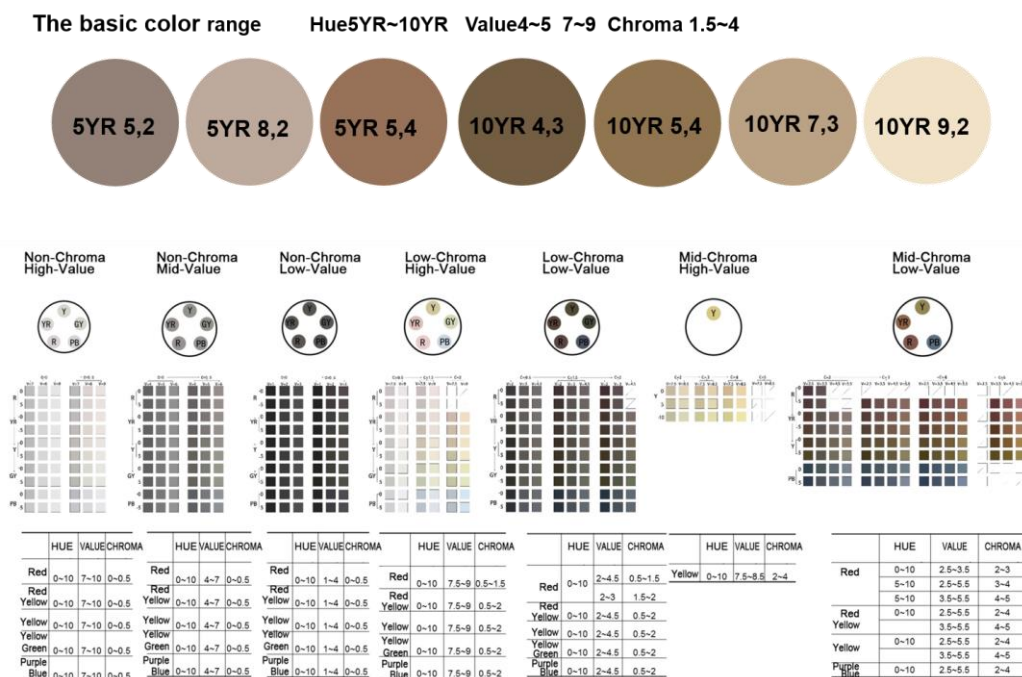


Figure 7 Basic colour ranges of the buildings

Since there is no architectural heritage in Daming Palace National Heritage Park, the research about the colour of traditional buildings in the area is based on historical document and fresco of Tang Dynasty. It can be seen that the architectures in Tang Dynasty is relatively bright-coloured (high chroma and high value), red and green are used massively, which is not harmonious with the forms of modern architectures. In order to inherit the elements of the traditional style in Tang Dynasty, meanwhile, meet the aesthetic and functional needs of modern architecture, the typical colours of architectures in Tang Dynasty were picked as the sub and embellishment colours and used in the design of architecture details, such as entrance space, roof, column, doors and windows, etc.

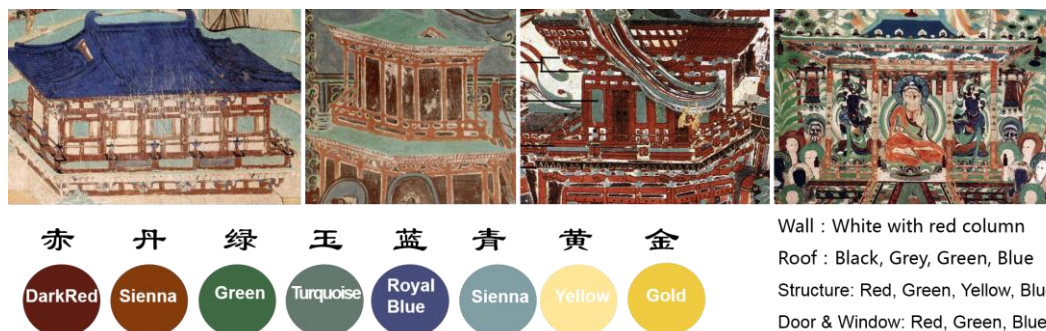


Figure 8 Sub and embellishment colours of the buildings

3.10. Guideline for the architectural style

Architectures are the leading elements of urban space, which determine the first impression of cityscape, and the appropriate architectural style could be the most obvious demonstration for the indigenous history and culture. Caniggia and Maffei (2001) emphasized that the architectural and urban texture types, which represented cultural and spiritual connotations of historical cities should be consecutive on time and space. A difficult problem was raised in research: what kind of architectural style should be encouraged and

commanded in the future in this area with profound history and culture but lacking in antique building remains. As wooden buildings are difficult to survive in war and historical changes in thousands of years, there is no architecture heritage in the whole historical area, and other contemporary architectural relics such as industrial factory buildings, construction materials markets and squatter settlements showed very fragmented architectural style. It is impossible to rebuild the area as it used to be in the history, as the reconstructed antique buildings are veracious and unworthily when they cannot match with the modern lives. While according to the questionnaires and interviews, it is difficult for modern architectures to satisfy the sense of belonging and identity of local residents. What's more, totally modern style of architecture is not benefit to the development of tourism, as tourists prefer to see a cityscape that can reflect the historical and cultural characteristics of Tang Dynasty around Daming Palace.

Therefore, the architectural style of this area was identified as contemporary -Tang style, which is to deconstruct the characteristic elements of architectures in Tang Dynasty as "style genes", and combine them with the practicability of modern architecture. Above all, the dominating feature of Architecture in Tang Dynasty was summarized, including the symmetrical spatial form, the three-section architectural façade (roof, wall and rammed earth stylobate), and the enormous and gentle roof form. Then the characteristic detail elements of Tang Dynasty building were extracted as the "gene bank" of architectural, which were strongly suggested into further architectural design in regional regeneration.

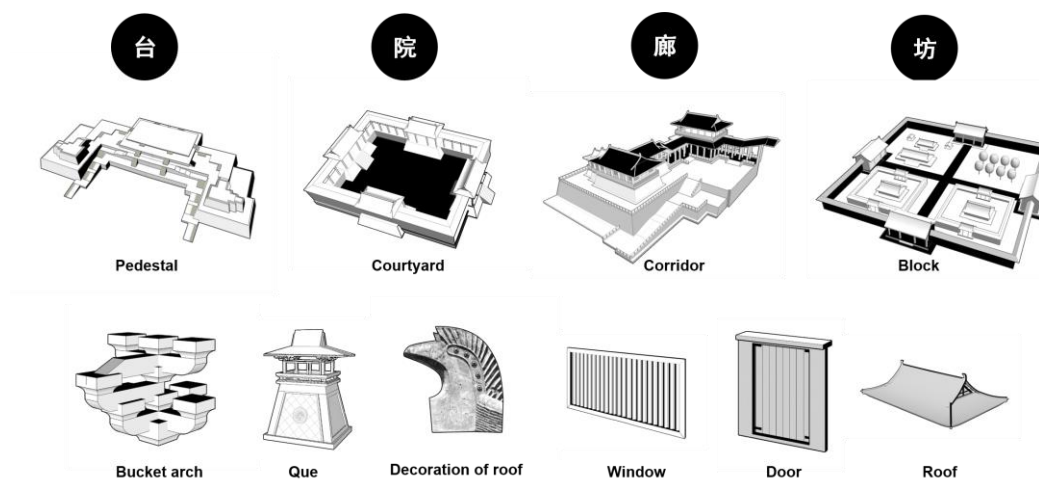


Figure 9 "Gene bank" of architectures in Tang Dynasty

Concerning how to combine these architectural genes of Tang Dynasty with modern architectures, a great deal of designing experiences in China and Japan are studied. In general, there are 4 types of contemporary -Tang style architectures: the Antique type, the Reform type, the Integration type and the Iconic type. The Antique type refers to imitate the traditional Tang-style wooden buildings entirety, all the volumes, materials and facades are built as the same way as the antique buildings. The Reform type means to inherit the basic shapes and overalls outline of the traditional architectures, keep the "three-section architectural facade " with the stylobate, the wall and the roof, while use the modern materials and structure. Instead of complete traditional facade, the Integration type is integrated of modern facade and the traditional facade innovatively, and the strict compositions and geometry ratio of traditional building are break and transformed into more freedom style. The Iconic type is the method of decorative art; it is based on modern

style and decorated with Tang-style architecture details, such as the doors, windows and columns etc. The first form are generally used in architecture groups of tourist attractions or museums, the other three forms are more suitable to the comprehensive modern functions, so they are recommended as the architecture styles in the regeneration procedure of the historic quarters around Daming Palace.

Antique Style	Reformed Style	Integrated Style	Iconic type
Zhilian Temple, Hongkong	Shaanxi History Museum, Xi'an	Furong Xintiandi Commercial block, Xi'an	Kanazawa Station, Japan

Figure 10 4 types of contemporary -Tang style architectures

3.11. Plan implementation

The practice of cityscape control plan includes two levels, the macro level and the medium-micro level. On the macro level, the plan works as the monographic study of master plan or a subject Plan independently. It decides the cityscape orientation of the city, forming the important cityscape systems, such as spatial structure, morphology, building style, etc., all the systems were regulated with specific guide documents, which would inherit into the relevant detailed plan of the area as important reference.

The medium-micro level transfers all the macro-level systems guideline to detailed, quantitative controlling index, and create legal block form codes for all the quarters without dead angles. In the form codes, the boundary and capacity of block, the location and node of open space, the morphology and style of architecture were controlled and regulated in detail. The form codes will be used to restrain the construction activities in the regeneration process after it is approved. When the land is transfer from municipality to developers, the guideline of cityscape can be attached as a subsidiary documents, and in this way the cityscape of the historic quarters were guided and preserved generally.

Block Forms Code

A01-04D

Block Number	A-01	A-02	A-03	A-04				
Function	B1	G1	G1	B1				
Area of Block (maximum)	40804	15637	2428	14040				
Area of Building(maximum)	81600	31300	-	28100				
Building Density	40	50	-	40				
Maximum Height	24	24	-	24				
Ratio of Plot	2.0	2.0	-	2.0				
Ratio of Green Space	25	25	-	25				
Build-to-Line Rate	80	80	-	80				
Amount of parking spot	800	310	-	280				

Function Compatibility	commerce	office	culture	hotel	apartment	restaurant
	●		●	●		●
Texture	<div> <div>15-25m</div> <div>60-120m</div> </div>					

LEGEND

Style	Reform type	Integration type	Symbolic type
	●		
Section	Roof	Wall	stylobate
	●	●	●
material	Metal tile, FRP tile	Glass, wood, stone-like coating, metal	Stone, rammed earth, stone-like coating
Color	Cyan-grey, grey	Light glass, warm glass, cream, wood	Rammed earth color, dark grey, brown
Form	hip roof, gable and hip roof	Modern style with traditional decoration	Modern style with traditional decoration
Window-wall ratio	----	80%-60%	30%-50%
Street facade	continuous	discontinuous	continuous

Figure 11 Block form code

In every stage of plan implementation, a coordinate a system of the relative groups are organized, including administrative officers, experts, estate developers, and public representatives, who participated through discussion and communication. The planning contents are altered in time with all the feedbacks and suggestions to make sure of the practicality of the plan.

4. Conclusion

The distinction and uniqueness of a city are the products of complex spatial evolution and the social process, representing the features of specific regional culture. In globalization ear, faced with the invasion of powerful alien culture and the spread of urbanization, the global cities are losing their traditional characteristics. The diversity of urban cultures and cityscape were increasingly declining. Historic mega city as Xi'an calls for a more farsighted GLOCAL solution, which can not only suits to the globalized demand of modern global cities, but also protect the traditional local culture.

During the regeneration process of the historic urban quarters around the Daming Palace National Heritage Park, cityscape plan is used as a tool to integrate mixing urban function and physical environment with indigenous characteristics. Inheritance and innovation are combined to revitalize a region with "glocal" (global-local) cityscape, and motivate sense of belonging for neighbourhood and attraction for the tourists.

Of course, the cityscape control plan of historic urban quarters around Daming Palace is just an experimental project towards specific historic urban quarters under the certain context, and the plan is in process. The study of revitalizing global mega city by Cityscape-control plan needs more research practice.

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