

Parallel analyses of “Qingdao Liyuan Courtyard” and “Harbin Daowai District Courtyard”

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Abstract. All Formed in the late 19th century, “Qingdao Liyuan Courtyard” and “Harbin Daowai District Courtyard” were built on a large scale in the following decades and became a paramount residential form in the two cities at the time. Even in nowadays highly urbanized Qingdao and Harbin, they still outline the texture of the cities in the most pristine way, maintaining their original characters and providing shelter for the most traditional and rustic cultures in the two places. It was found in the investigation that there are many similarities in historical background, urban texture, and architectural image of the modern buildings in the two sites. Parallel analyses of the two modern dwellings were carried out based on this clue to list similar features, reveal subtle differences, and explore the causes of them, in order to combine the two studies to provide a theoretical support for resurrection and regeneration of the two kinds of modern houses.

1. City

In March 1898, Germany rent Qingdao forcibly and opened the planning and construction of modern Qingdao. The construction of labor residential areas had begun by 1901, when the pattern of a modern Qingdao city has basically taken its shape. In August 1898, the Tsarist Russia built the Middle East Railway in order to grab the interests of Northeast China. During the time, the industrial and commercial businesses as well as large population began to aggregate in Harbin area, the central area of the railway. By 1903, when the Middle East Railway was completed, Harbin had formed the prototype of modern cities. The similar historical background has created an approximate planning patterns and architectural styles of the two cities.

1.1. The urban pattern of modern Qingdao (Figure 1)

After the rent by the Germans, they immediately set about building the future city in the southern coastal areas, dividing the city into two parts basing on a natural watershed of the end of the Guanhai Mountain: the European area and the Chinese area. The European area is located on the southern slope, while the Chinese area is on the north slope. The two areas are blocked by oblique neighborhoods and are connected by appropriate road networks. The Germans adopted this planning method for two reasons. First it was because of hygiene considerations and to prevent the sewage from the Chinese area from affecting the European area. On the other hand, it was to ensure that the trade relations with Chinese businessmen were not hindered by the separation of residence. Shortly afterwards, the Germans again planned two labour settlements in Taitung and Taixi to accommodate a rapidly expanding number of workers.



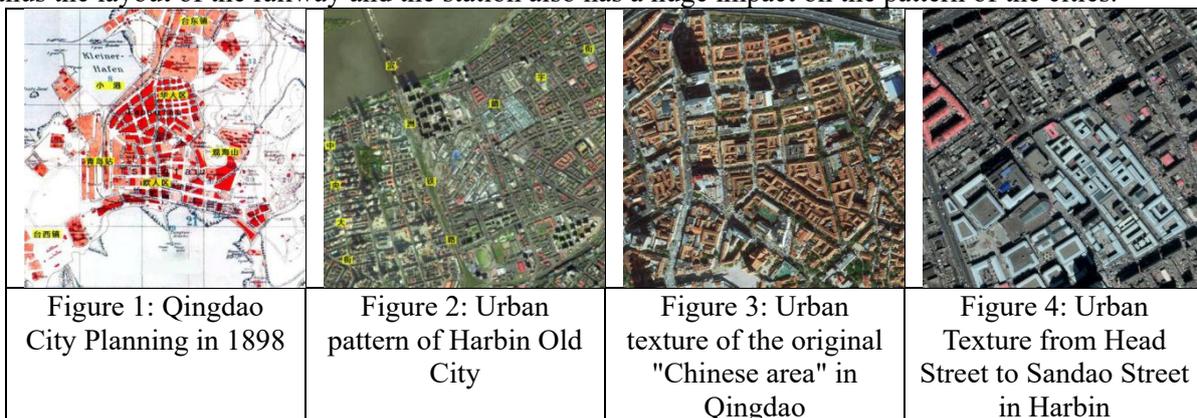
The Chinese community has long been mainly used to accommodate Chinese businessmen. In the early days, due to the lack of housing in the European area, many Europeans came to live here also. In addition, many workers choose to rent here because they have walked too far from Taitung town if they wanted to work in the city. Thus, the Qingdao Courtyard came into being under this background.

The west side of the residential area is the Ports and Harbors District, which is based on the Dagang Port, the Xiaogang Port, and the Jiaoji Railway which runs through Shandong Province. This urban pattern has continued to today. Nowadays, although the titles of the European and Chinese areas no longer exist, there are still a large number of European-style buildings in the southern coastal areas of Qingdao's old town, such as the Government House, trestle bridges, churches, and villas which represent "Modern Colonial Culture of Qingdao". In the immediate northern region, there are a large number of courtyards, which display "Modern Citizen Culture of Qingdao" .

1.2 The urban pattern of modern Harbin (Figure 2)

Bounded by the South-Northbound Binzhou Railway (Harbin to Manzhouli is part of the Middle East Railway) , Harbin is divided into East and West. The west is called "Daoli District" and the east called "Daowai District". As a subsidiary of Tsarist Russia, Daoli is located inside and acted as a world of foreigners, while the "Daowai District" lies out-of-town, serve as a gathering place for Chinese people. Today's Daoli locates Saint Sophia Church, as well as Central Street and Gogol Street, where European architecture is more concentrated. Outside the road is the district called "Daowai" where lots of old Chinese and Western houses exist. Shaping like a fish skeleton, Daowai District take the "Jingyu Street" which pass through the east-west direction as an axis, the shops along the south and north sides are headed for Tou Tau Street, Erdao Street, Sandao Street, and so on, which extends eastward for as many as 20 streets.

The above shows that in their early days of urban construction, Qingdao and Harbin both emphasized the separation of the European area and the Chinese area, which directly led to the formation of their specific stable cultural systems and architectural styles in the future. The only difference is that Harbin's European and Chinese districts are slightly stiffer, while these districts in Qingdao reflects the art of planning. Both of the development of the two cities depend on the railway, thus the layout of the railway and the station also has a huge impact on the pattern of the cities.



2. Block size

In German colonialists' Qingdao city planning in 1898, the European district had a neighborhood scale of 100 to 150 meters with a road width of 20 to 30 meters, which fully complied with the planning principles of contemporary European neighborhoods. Perhaps under the concern of sanitation reasons, the neighborhood scale in the Chinese district (Figure 3) is reduced by half compared to the European area, which is 50 to 75 meters and the road width is 12 to 15 meters.

However, even the reduced scale of the neighborhood and the width of the road are huge enough compared to the traditional houses at that time.

Harbin Daowai District Courtyard (Figure 4) is located along Jingyu Street in a fish-bone shape. The segregated neighborhoods are displayed in long strips with a neighborhood scale of 50-70 meters and a road width 10-20 meters. The shape of the courtyards are not affected by the length of the neighborhood.

It can be seen that Qingdao Liyuan Courtyard and Harbin Daowai District Courtyard have similar neighborhood scales, which differ from traditional dwelling houses, and they are also not the same as those of contemporary Europe.

3. Architecture and space

There are many common features at the architectural and spatial styles between Qingdao Liyuan Courtyard and Harbin Daowai District Courtyard, for example:

- 1) It is surrounded by four sides and there are many households
- 2) Most layers are 2~3 layers
- 3) The interior consisting of wooden components (stairs, verandas, guardrails, doors and windows)
- 4) The form of the component

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The following will be analyzed from three aspects: functional layout, morphological characteristics, spatial order.

3.1. Functional Layout

From the perspective of “functional layout”, Qingdao courtyard buildings can be divided into two types: one is a courtyard where business and housing are combined (Figure 5), and the other is a courtyard with purely residential functions (Figure 6).

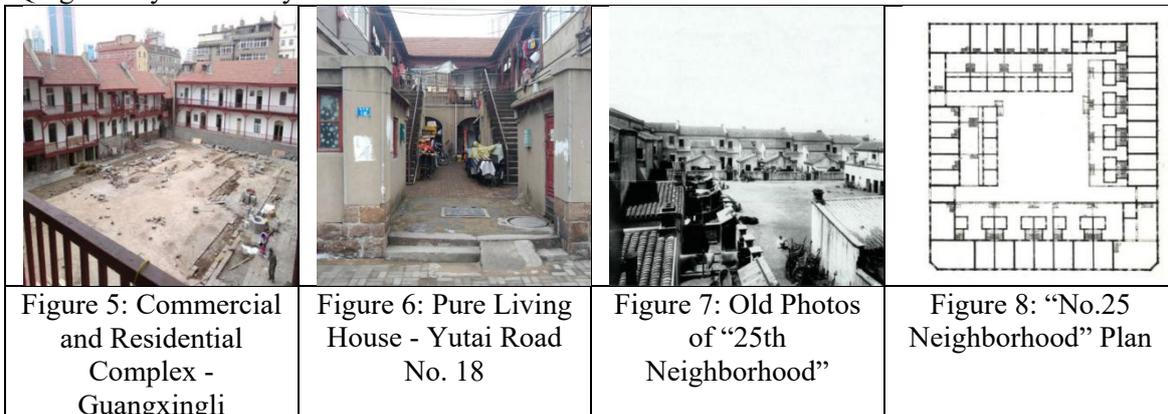
The courtyard floor which business and housing are combined is a commercial shop facing the street directly, while the second floor and up are residential. The streamlines that lead into residential areas can be followed as: Streets - Doors - Inner Courtyard - "Y" shaped staircases - Outside Corridors - Indoors. Therefore, the residential and commercial areas are two completely independent systems from inside and outside.

There exists no external commercial store on the first floor in the courtyard with a pure function of living, and its facade is dominated by open windows, with all rooms have entrances towards the courtyard.

The courtyard with a business district combining a residential area is generally arranged along the street, which is larger in scale and occupies the entire or the majority of the neighborhood; the courtyard of pure residential function is generally located inside the neighborhood, take a shape of square or horizontal rectangle, smaller in scale and with a strong flavour of life.

These two kinds of courtyards can be judged roughly by observing satellite maps (Figure 3), although specific situation is still based on on-site inspections.

It is shown that the overall functional layout of Harbin Daowai District Courtyard is similar to that of Qingdao Liyuan Courtyard.



Qingdao Liyuan Courtyard can also be divided into two categories from the “plan form”: one is the unit-integrated courtyard (Figures 7 and 8); the other is the outer corridor-style courtyard (Figures 9, 10). The unit-integrated courtyard has appeared in the exploration stage of the courtyard, and there are few existing nowadays. The outer corridor-style courtyard is the most distinctive and widely distributed, which is a mature form.

Alfred Siemssen, known as the father of the courtyard, once operated Xiangfu Matheson in Qingdao from 1898 to 1914, and the “No. 25 Neighbourhood” built by Xiangfu Matheson around 1900 (Figure 7 and 8) belongs to the unit compound courtyard.

It is characterized by a set of houses which are arranged around the square neighborhoods, with each house containing street-facing commercial shops and upstairs living rooms. A large inner courtyard is left in the middle of the neighborhood for traffic purposes and is also used as a children's play area. Each house has a private courtyard surrounded by a wall as high as one-storey on one side of the courtyard. The courtyard has a toilet and a kitchen.

The layout of the building and the kitchen and toilet facilities were very advanced in the Qingdao Chinese district at that time. The separated layout of kitchens, toilets from households, as well as the arrangement of large and small courtyards, reflected the designer's idea of fully understanding and respecting of the Chinese living habits. This plane pattern is imitated to some extent by other contemporary construction programs. However, there are conspicuous shortcomings of this pattern.

First is the lack of flexibility in the division of room functions, and what's more, it is difficult to solve problems concerning space necessary for inventory, staff accommodation and management. In the process of use, these requirements have to be solved by adding auxiliary rooms in the courtyards.

This kind of building unit combined into blocks by residential patterns resembles Shanghai's alley. It is presumed that the emergence of unit-integrated courtyards should be related to Siemssen's business experience in Shanghai, though this type of living system has not been well developed in Qingdao from then on.

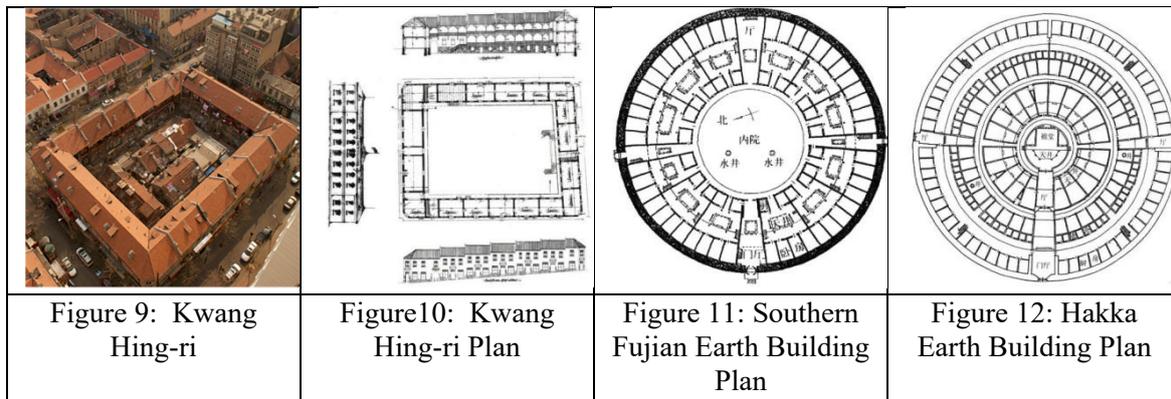
In 1914, Zhou Baoshan built a house on the open space at the junction of Haibo Road and Yizhou Road and named it “Kwang Hing-ri”(Figures 9 and 10). Each household was connected by outer corridor inside the yard and vertical traffic was organized by “Y” shaped staircases.

This form was adapted to Qingdao's social and demographic structure at the time and was used in a large number of new projects to make the courtyard's spatial structure mature.

The most distinctive aspect of Kwang Hing-ri is the central courtyard, with its luxuriously spacious yard.

At the beginning of its construction, the courtyard was used to stack building materials. According to the residents' memories, this rare open area in a crowded city became an important venue for social and folk cultural activities in the 1930s. But with the appearance of bungalows in the yard, these activities have gradually become old memories of the elders.

However, this large-scale courtyard acted as a “vital point” in the old city at the time, which was dotted in urban areas and broke the homogeneous and monotonous “high density”.



In fact, these two plane forms have their similarities in Chinese traditional houses. The unit-integrated courtyard is similar to the Earth Building in southern Fujian (Figure 11), while the outer corridor-style courtyard resembles Hakka Earth Building (Figure 12).

For example, the Yiyi Building in Hua'an, Fujian Province (Figure 13) is a southern Fujian Earth Building.

Its flat form is analogous to a set of courtyards concentrating together around a common center, with four-storey main houses which are linked by internal staircases of each suite; however, the Xianyou Square Earth Building in Fujian (Figure 14) is a Hakka Earth Building whose rooms are connected via an outside walkway, which take great resemblance to Kwang Hing-ri.



3.2. Morphological features

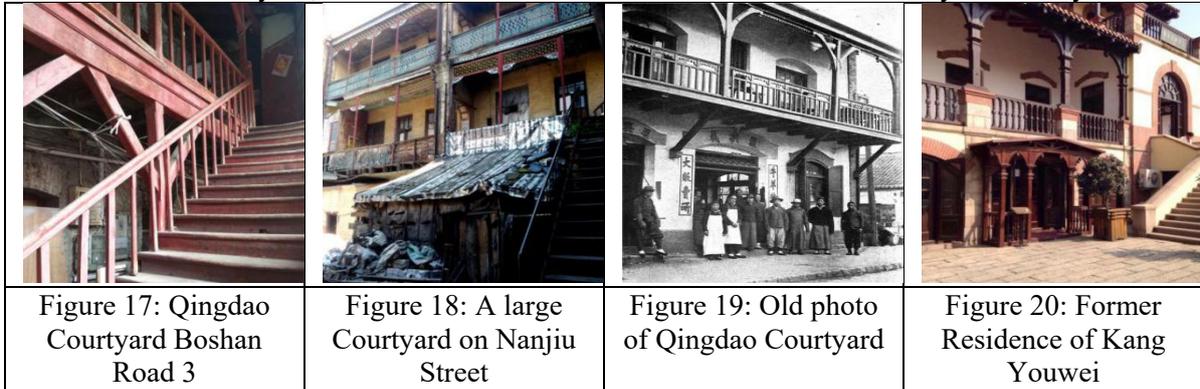
There are two or three-story buildings surrounding the courtyard of Harbin Daowai District Courtyard (Figure 15), and the "Y"-shaped staircases are all laid outside the building, with verandas, fences, stairs, doors and windows all made of wood, and some of the central yards laid a well.

The "early courtyard" (Figure 16) has similar characteristics which can be confirmed by comparison. (Note: In Figure 16, the outdoor staircase in Kwang Hing-ri was rebuilt after the original was damaged in the 1980s. The well in Kwang Hing-ri is located on the left side of the map).

As a matter of fact, the Qingdao Liyuan Courtyard mentioned above is only the courtyard of an early period. The development of the Qingdao Liyuan Courtyard can be summarized as early, transitional, and later stages. Before the 1920s was the early courtyard and the late courtyard was defined after the 1930s. The middle 10 years belonged to the transitional period. The differences were mainly reflected in the courtyard's structure, layers, and stairs.

The early courtyards were mostly Chinese traditional brick and wood structures, with 2 to 3 floors. The most common practice was to use bricks as supporting materials on the first floor and wooden structures on the second floor or top floor. This pattern could ensure the stability of the entire bottom structure of the yard, and could also reduce the weight of the upper structure to lessen pressure from the upper to lower layers. In addition, the use of wood structure also decreases the project costs. Among the existing courtyards in Qingdao, the early courtyards accounted for 78%, making up the most valuable part of the courtyard building.

In the early courtyard, the wooden structure of the veranda take the "Y" shape (Fig. 17), which was often painted red. Some of the courtyard's wooden structures retained decorative patterns such as carved flowers, and some of them even showed traditional styles such as sparrow brace and wood brace. There are also similar "Y" shapes (Fig. 15) and sparrow brace and carved patterns (Fig. 18) in Daowai District Courtyard, whose wooden decoration is much abundant than Liyuan Courtyard.



For the reason why the "Y"-shaped wooden braces were used in Daowai District Courtyard and Liyuan Courtyard, there had some investigations and conjectures. It can be seen that in the earliest courtyard photographs (Figure 19), this form has already appeared. It even came prior to the significant change of "the transference of corridor facing the street to the inner court".

In the era advocating craftsmanship, the "Y"-shaped components were meticulously elaborated, which imitated the earliest batch of German-style brick-wood structures built in Qingdao. The official residence of the officials of German Governor's House building in 1899(now Kang Youwei's former residence) , which was located in the European area of Qingdao, was in this style (Fig. 20).

While in the contemporary Russia, there was a traditional dwelling house called the Anbar wooden house (Figure 21), which had a similar column-end wood support. This form may have a subtle influence on the Russian designers of the Daowai District Courtyard.

The reason for the large numbers of appearances of this form of columnar-end in Russia and Germany may be due to its homogeneous culture and the expression of the form of stone arches through the concept of wood materials by European architects. It is attested fully by the wooden support in the first layer of Anbar wooden house, which presenting a form closer to the arch.



In the early courtyard, the plane of the wooden staircase also showed a "Y" shape, which is located within the courtyard, not within the building. This arrangement of stairs has relations with the traditional Chinese living habits. There is a possibility that traditional Chinese people are not used to tall buildings, and this type of building with a corridor in each layer can act like traditional Chinese residences, meeting people's requirements of entering each room through outdoor corridors just like taking the entrance of a traditional mountain residence.

With the development of social economy and the application of cement materials, the late courtyards were mostly brick-concrete or reinforced concrete structures. The use of brick-concrete structures allowed Liyuan Courtyard to break through the limitations of structure from a two-story building to achieve a higher layers. It is true that with the integration of Chinese and Western cultures, the Chinese have increasingly adapted to Western lifestyles and have begun to imitate Western architectural styles, thus staircases have also emerged at the time.

During the transition period, the Liyuan Courtyard (Figure 22) combined the features of the two in terms of structure, number of layers, and stairs, presenting a mixed architectural style. For example, Pingkang Wuli, with its steel columns, brick load-bearing walls, concrete floors, heights, staircases, etc., are characterized by the feature of late courtyard, while the outdoor “Y”-shaped staircase is taken on the feature of the early courtyard. In fact, Harbin Daowai District Courtyard has experienced similar evolution, even though it is not appeared as clear as Liyuan courtyard.

3.3. Spatial order

From outside the street to every house in Daowai District Courtyard or Liyuan courtyard, four types of space are to be experienced: 1) public space - external street; 2) semi-public space - inner courtyard and stairs; 3) semi-private space - veranda; 4) Private space - indoors. Among them, there are three majority communication spaces: 1)the corridor in the courtyard ; 2) in the vicinity of stairs in the courtyard; 3) the entrance to the courtyard.

The corridors (Figures 23 and 24) are often occupied by piles and stacks, left the remaining part only enough for one person to pass through. It reflect the fact that people try their best to maximize their own territories on the basis of allowing for the minimum public demands. But it should be admitted that this space is also a daily social place in the neighborhood and there is no different from the space outside the traditional houses.

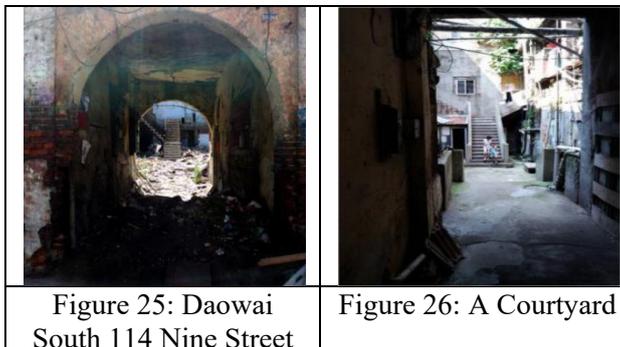


Figure 25: Daowai
South 114 Nine Street

Figure 26: A Courtyard

The stairs in the courtyard (Figures 25 and 26) and their nearby spaces are children's favorite playgrounds, while the entrances of the gates are often served as interaction spaces for adults. The elders enjoying the cool and playing chess at the entrance of the courtyard as well as adults coming and going looked after and took care of the children playing around. This is the so-called "acquaintance society" which allows people without blood relations to live in a family-like atmosphere. Also, it is a kind of living mode that we cannot covet in our modern lifes which represents the most abstract but precious wealth in the courtyard.

4. Similarity

There are many similarities between the two modern houses, the reason of which could be analyzed as follows:

4.1 Promotion of Mature Designers by Foreign Designers

In his memoirs, Alfred Siemssen, the father of the Qingdao Liyuan Courtyard, wrote: “The greatest accomplishment in my life was to run a construction company in Qingdao from 1898 to 1914.” After 1898, based on his experiences in Southeast Asia, Xiamen, Shanghai, ect, he improved and innovated the subtropical architectural forms into a new commercial and residential styles and introduced it into

Qingdao. He also worked in the German concession in Tianjin and left his own works there.

After the era of the Great Navigation, the interactions between different world regions have become increasingly complicated. It is no longer possible to view geographical features with isolation and seclusion, because universal connections have already been established. Architects such as Luis Congo and Corbusier have traveled around the world and left their works, which have become increasingly mature and widely promoted in the process of being imitated by other designers.

4.2 The traditional foundation of homegrown housing

Prof. Pan Guxi of Southeast University wrote in “The History of Chinese Architecture” suggesting that modern Chinese residential buildings be roughly divided into three categories:

First, the continuation and development of traditional residences. In the vast rural areas, market towns, county seat in remote areas, urban and rural areas inhabited by ethnic minorities, and parts of large and medium-sized cities in the old urban areas, the old traditional residential buildings are still persisted.

The second is the type of new houses that are introduced from Western countries which are mainly distributed in large and medium-sized cities, including single-family houses, condominiums, multi-storey apartments, and high-rise apartments.

The third is the transformation of traditional houses to meet the needs of modern city lifestyles. This types of new houses have been incorporated and evolved under the influence of foreign buildings, such as residential houses in alleys, courtyards residential, bamboo houses, shop houses, and other overseas Chinese residential forms.

The third category of home-grown housing is mainly concentrated in cities with higher openness and overseas Chinese hometowns. It can be generally divided into two categories:

The first is the well-known residential houses in alleys, which first appeared in Shanghai concession, and later expanded to major cities such as Tianjin, Hankou and Nanjing.

The second is the residential courtyards located in Qingdao, Shenyang, Changchun, and Harbin.

The residence courtyards is an extension of traditional courtyard houses which are not accommodate a single family, but settlements where a dozen or even dozens of families live together. Generally, yards of different sizes are surrounded by two or three layers of corridor-style buildings, most of which are surrounded by four sides or enclosed on three sides. According to site conditions, the courtyards take different forms such as single-court type, wear-type and multi-entry courtyards.

The side facing the street is usually used as a shop with taps, sewage pits, toilets, and sheds, etc. inside the courtyard. The building is a brick and wood structure, and the western facade of the street is patterned with western-style architecture. The detailed decorations are mixed with Western-style patterns and Chinese folk patterns. The wooden veranda in the courtyard uses Chinese-style pillars, wooden railings and rakes. It is a Chinese-western blended, high-density, low-standard residential form adapted by Chinese constructors to meet the needs of the middle and lower classes in modern northern cities.

It is shown in Professor Pan's commentary that the “residential courtyards” is based on the traditional cultural context. The roots of similarities in the residential courtyards around the different part of the country lie in the common architectural culture and ideas of northerners.

5. Conclusions

In summary, because the two modern dwellings have universal similarities at all levels from macroscopic to microscopic levels, the two can be combined to study and be classified in the broad categories of dwellings. In essence, the significance of parallel reading lies in the fact that under the same system, through comparison and analysis, the similarities and differences between the two modern dwellings could be simultaneously highlighted and focused. Thus whether it is from the perspective of perfect theory or from the point of restoration and regeneration of residential buildings, this analysis is very meaningful.

References

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