International Journal of Social Science and Education Research Volume 5 Issue 1, 2022
ISSN: 2637-6067 DOI: 10.6918/IJOSSER.202201_5(1).0090

Analysis and Future Exploration on Urban Vertical Landscape

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Abstract

China has made every effort to promote economic development as well as the urbanization process has been intensified over the past 40 years so that a large number of people pour into cities, which the building density of the city keeps rising like a cement forest while the tight land resources lead to the shrinking of the green area. After the per capita greening rate dropped to a new low, people began to realize the crisis caused by the contradiction between environment and architecture, so vertical landscape and green architecture emerged at the historic moment. Although it was fundamentally improved between architecture and environment, it also provides help for people to explore new directions of urban landscape. This paper discusses the concept and function of urban vertical landscape, analyzes the present situation of vertical landscape at home and abroad, and probes into the future development trend of that.

Keywords

Vertical greening; Urban landscape; Design principles.

1. Instruction

Since the urbanization process in China as the world's most populous nation, large Numbers of people poured into the city, the area of the city is constantly expanding, but on the allocation of urban land resources, the government will be more willing to build can bring great benefits of commercial land and housing land, lead to serious lack of public green space, and is limited by rules, the urban land resource is becoming saturated, How to balance architecture and green space has become an urgent problem to be solved. On the other hand, with the economic development and the continuous improvement of people's living standards, the environment has become one of the elements of people's demand for a better life, and the restricted small urban green space has been far from meeting people's requirements. Therefore, the horizontal expansion of green landscape is restricted by many objective factors, and in the case of the urgent need for improvement subjectively, it has naturally become a trend to seek upward development. The concept of vertical landscape is a decorative form of landscape greening design based on different environmental conditions, which carries out landscape design through the carrier of slope, building skin, roof and so on. At the same time, vertical landscape can effectively improve urban ecology, can effectively absorb atmospheric particles, purify the air, reduce indoor pollution caused by noise, see figure 1.

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Figure 1. The legend of Urban vertical landscape

2. The Summary and Function of Vertical Landscape

Vertical landscape refers to the landscape greening plan made in the vertical space. It can also be said that all the greening in addition to the plane greening is called vertical greening. At present, vertical landscape is widely used in the building facade, roof garden, indoor space partition. Through the vertical greening of the building, space can be obtained from the facade of the building, which can increase the effective amount of greening, maximize the scope of urban greening, increase the green coverage, improve the micro view of the building, and optimize the greening of the building, improve the heating of the building, while not increasing the land use. Vertical greening can effectively reduce the solar radiation on the outer wall and achieve the goal of energy saving. After the plant leaves its leaves in winter, it does not affect the sunlight or radiation on the wall. The branches and stems on the walls form a layer of insulation, which regulates the temperature of the room and reduces the reflection and noise of the inner wall. In addition, vertical landscapes can improve air quality, reduce the heat island effect, beautify the environment, and greatly reduce the investment cost of urban greening. In today's big cities where land is expensive, vertical greening effectively alleviates the problem of low per capita greening rate.

3. The Present Situation of Vertical Landscape research status at Home and Abroad

Vertical landscape can be traced back to the hanging garden in ancient Babylon period, but there was no concept of vertical landscape at that time, and there was no need for vertical greening to relieve the pressure of horizontal greening. The early vertical landscape was mostly artificial and naturally formed hanging type, such as the unconscious climbing and crossing of vines and trunks, without systematic theory. It was not until after World War II that some western developed countries completed post-war reconstruction and faced the problem of shortage of urban land resources, so vertical landscape began to become their research direction. At the same time, with the strong support of the government and the general acceptance of the masses, vertical landscape has developed very rapidly in foreign countries, and the high urbanization process is also one of the reasons for its rapid development. It can be seen from foreign development experience for so many years that vertical landscape not only

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alleviates the "urban heat island effect" to a certain extent, promotes ecological construction, but also brings benefits to the economy, ecology and health of urban residents. Vertical landscape development in Japan started late, after the bubble economy began to develop in earnest, but it developed quickly. Especially in the roof garden greening design, the reason is that Japan's land area is small, mostly in the form of higher central hills, its main only distributed in the coastal city, but its developed degree, urbanization rate did not lose Europe and the United States and other developed countries, so Japan's choice of vertical landscape is given priority to with roof garden, roof greening design can not only noise insulation, At the same time, it can also beautify the roof space and improve the urban green area. Japan can be said to be in the forefront of this research. Domestic vertical landscape has gradually begun to be studied, and the application scope is more and more extensive, and the application method is more and more diversified. From the roof garden project of Beijing Great Wall Restaurant built in 1983 to the Beijing Olympic Games held in 2008, the growth of urban vertical landscape has made a breakthrough. Shenzhen and Shanghai are among the earliest cities in China to develop vertical landscape, especially with the strong support of the government. At present, China's vertical landscape projects are no longer limited to the four first-tier cities of Beijing, Shanghai, Guangzhou and Shenzhen, such as Nanjing, Hangzhou, Wuhan, Chongqing and other big cities have also started to study vertical landscape.But these practices can only be called vertical greening to a certain extent, and there is a certain distance between the vertical landscape. It can be said that the vertical landscape design of high-rise buildings in China is still in its infancy, and a lot of experience is needed.

4. The Future Exploration of Vertical Landscape

First of all, we must make clear that vertical landscape and vertical greening are different. Vertical landscape is the product of making full use of vertical space to realize the overall plan of landscape and building. Vertical greening is the effect of decorating plants on the vertical surface of a building. Plane greening can only be regarded as a form of vertical landscape, but its commonality is also obvious, that is, using vertical space for greening design. Italian designer Stefano Boeri came up with the idea in 2007: people design houses not only to house people, but also to live with birds, trees and bushes. This is an effective solution to the harmony between the building and the ecosystem. It absorbs fine dust and carbon dioxide to compensate for the city's negative environmental impact, while releasing oxygen and improving the surrounding microclimate. Through years of research and attempts, two apartments with more than 800 trees and 40,000 shrubs were built in Italy in 2014. Chinese architect Xu Yibo also participated in the project, making a significant contribution to the introduction of vertical forests into China in the future. The 'vertical forest' is highly adaptable and has considerable flexibility in terms of cross-regional aspects and building types. Since the first "vertical forest" was built in Milan, "vertical Forest" projects are being nurtured and planned around the world, including trade complexes, offices, apartments, hotels and other paradigms. In terms of vegetation selection, the planting of shrubs and trees suitable for local climates is increasing the diversity of vegetation in "vertical forests". In 2016, the concept of vertical forest was introduced in Nanjing. The green vegetation and balconies of the whole residential building are interwoven, and the green plant area of the whole building accounts for 20% of the total building area, which is equivalent to moving 6,000 square meters of trees into the building. These plants can absorb 25 tons of carbon dioxide annually and release 60 kilograms of oxygen every day. When it comes to urban forest, we have to mention Singapore, with its Internet celebrity Airport and Changi Airport. As we all know, this building perfectly integrates space and environment, creating a new architectural model guided by community. After the concept of "vertical forest" was introduced into China, the concept of the fifth generation of housing was put forward. The first generation of housing is mud house, the second generation of housing is

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wood house, the third generation of housing is brick house, and the fourth generation of housing is elevator house. The first and second generation of housing to solve the production problems, three to four generation of housing to solve the problem that the comfort, the fifth generation of housing introduced the concept of community, we can use vertical landscape on the community environment in good shape, make construction is not only a building, by changing the community construction unit in the form of a compatible with the vertical landscape, to architecture and landscape. A true fusion of the two Spaces, indoor and outdoor. Communities are made up of different units, and the elements that make up these units are often elements constructed by buildings. If we integrate landscape elements into these units, some characteristics of the landscape will naturally be integrated into the community building. When the space used by residents in the community is changed into a semi-open space, we can integrate the landscape into the building to the greatest extent under the premise of ensuring safety, so that people can experience the integrated landscape in an optimal way.

5. Conclusion

Vertical landscape adheres to the viewpoint of ecological diversity and creates different three-dimensional green landscapes by connecting the structural surfaces of buildings in a wonderful way. The balance between building landscape and green plants is pursued, which can alleviate the problem of lack of green space in China's big cities to a certain extent. However, vertical views of tall buildings inevitably lead to some mistakes. The first is the capital investment problem, vertical pattern needs more capital and technical support, investment return is slow; Secondly, the later maintenance of greening is a lasting project. Of course, there are inevitable concerns about leaks and overload. Therefore, early quality assurance as well as capital investment and maintenance are key. This also requires more policy support from the government and social recognition. Under the current situation, vertical landscape is an effective method to improve the appearance of urban center green space. Imagine if a large number of tall buildings in our cities were wrapped in green and the urban landscape presented a sea of green, which would greatly improve the quality of living and working environments in fast-paced cities.

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