Study on the Concept of Green City and Its Planning and Design Methods

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Abstract: With the rapid advancement of urbanization, the traditional people-oriented urban outlook has exposed more and more flaws which are difficult to be changed. The question of what kind of city is more in line with human standards is constantly being addressed. In view of the above situation, the concept of "green city" and its planning and design methods were proposed. On the basis of considering the dilemma of modern urban construction, the development of the concept of "green city" was analyzed and the development trend of green cities at home and abroad was explored. In order to solve the urban dilemma, the advanced concept of "green city" is used to propose the principle of planning and design methods to seek more appropriate solutions for the development planning of cities in China.

Keywords: traditional city; green city; urban development trend; planning and design methods

1. Introduction

Nowadays, the residential land of human beings is compact and densely clustered, and urbanization in this state is continuously progressing and developing. However, the developing cities have not only brought about rapid economic boom but also brought about a series of ecological damages in the process of rapid development, such as, the increasingly narrow scope of human activities, serious waste of resources, garbage everywhere, vegetation scarce, and so on. The rapidly developing cities may also cause other influences such as the urban landscape and human visual pollution during the construction process. Many developed countries first noticed the emergence of these problems and took effective measures in time. In this regard, Europe and America are the best, and they are worthy of our reference. During the planning and design process of the city, they always persisted in equipping with a set of supporting green landscape construction programs[1] in the construction. This not only meets the aesthetic standards for construction, but also achieves sustainable development. At present, in China, the urban areas, distribution forms and basic conditions have undergone tremendous changes in most above fifth-tier cities. What is different from today's modern cities is that human settlement cities should have natural attributes which is of vital importance in creating a place of residence suitable for human activities and meeting the standards of human life. In this context, the question of what kind of city to be built is popular throughout the country. The concept of "green city" arose.

2. Introduction of the "Green City" Concept

The concept of "green city" was first proposed in 1970, afterwards, as people understand different perspectives, it is constantly enriched and changed so as to achieve perfection. Relatively speaking, the traditional construction of habitat cities is difficult to sustain in the face of increasingly exposed ecological damage, and it has exposed more and more flaws[2] that cannot be changed. In the past, we believe that habitat cities are people-centered. Now, we give up this single understanding and build the habitat cities' construction on the standard of ecology. We believe that green habitat cities are caused by a combination of factors. Under the contrast of traditional cities, the green habitat environment has become the constant pursuit of humankind (as listed in Table 1). The design concept of building a green habitat city is to combine the urban design of the past in China with the advanced urban design of today's countries and propose a new urban standard.

The rapid development of the "green city" has brought about tremendous social changes. Ecological standards can effectively integrate sustainable development, distributed forms, basic equipment and resource utilization systems to form a friendly green habitat environment.

Table 1. The features of the concept of "green city" contrasting with traditional city concept

Category	Traditional City	Green City
targeting	people oriented	sustainable development
planning means	closed and self-contained	open and inclusive

subject characteristics	independent subjects	comprehensive subjects
benefit pursuit	speed priority	sustainability best
life pursuit	material priority	spiritual priority

As can be seen from the above table, the traditional cities are constantly exposed to the flaws that cannot be changed. These flaws are mainly as follows:

First, it ends in theory. it ends in theory. The people-oriented view does not conform to the trend of modern concepts. This theory is too formal, floating on the surface and does not meet the requirements of human life. As a result, a lot of doubts have been raised. The plan of "green city" urgently needs an advanced concept to guide it.

Second, its planning means are too closed. The world today is inclusive and open, all the countries are racing to learn, to compete and to make progress. If a country is too obsessed with past achievements and its own culture and does not pay attention to the trends and changes of the social advanced forms, then this country is bound to lag behind others and it is difficult to achieve beyond.

The most important thing is that the backwardness in the life pursuit makes traditional urban views have to leave the social stage. With the increase of social benefits and the increase in the material wealth of the people, human are no longer satisfied with simple material life. The lack of a spiritual world has led them to seek new ways of life which has also led to the emergence of new cities[3].

Therefore, we have to admit that the traditional urban concept is no longer applicable today. The design of "green city" concept is the best way that designers can find in understanding China's urban development difficulties. It allows us to build bridges between theory and dilemma on the basis of understanding the situation and find tools and ways to change the status quo.

3. Analysis of "Green City" Planning and Development

The application of the concept of "green city" in actual construction is not only the inheritance of useful experience from the traditional habitat city construction, but also the adoption of governance methods and planning experience of advanced countries in modern society. It is an advanced planning concept that is built on the principle of sustainable development[3].

The distributed form and the size, location, and organizational structure of the supporting infrastructure system have a great influence on the city's operation. These problems need to be determined in the initial stage of the "green city" planning and design. At present, some application software for urban planning and design has been developed abroad and we can use it. However, in practical applications, we must be alert to certain limitations of the urban planning analysis software: Although it can distribute distributions form and basic systems in a steady state allocation and simulation optimization configuration, because it does not enter the geology under actual situation, the target curve made under the simulation scenario may not match with the actual situation and manual input is required. Thus, it does not meet the design requirements well.

Although the city planning software has powerful simulation and layout functions, it does not have the optimization function and cannot fully meet the use requirements. Therefore, based on the application software, we also have to consider the current trend of the development of green cities.

First of all, China's green city construction module began to develop from a single type to a multiplex type. The traditional urban form of our country is mostly "concentrated", with a high degree of urbanization in the center, and the expansion of the urban economy to the surrounding areas is difficult[4]. The rents of suburban land are low, and there are no large-scale projects to guide and lead or large-scale enterprises settled in, and it is difficult to drive the construction of new urban areas only by low land prices. "Green city" is just a new demand in this era. A green city is not only an organic reconciliation of human and natural environments, but also a rational use of urban resources to maximize the rational use of resources and achieve the best bridge for the harmonious development of habitat environment. The transfer of green city construction to the periphery has experienced two times, one is at the beginning of 1990 and the other is at the beginning of 2000. And during this period, one city has expanded and it has multiple urban areas. In addition, over the past few years, the policy of merging counties and townships in some parts of China has increased the number of urban districts. How to plan and allocate urban morphology rationally ? In this case, the urban module has also been transformed from a single central city to a cultural town, a forest town, a small town like online games.

Secondly, the regional form of green city construction in China also develops from decentralization to centralization. At the beginning of the 20th century, although the distribution pattern of old urban areas in China tends to be centralized, there are still sporadic scattered forms. Since the 21st century, the characteristics of urban planning in our country have been mostly centralized and unified. The geographical area of many cities ranges from a few square meters to several tens of square kilometers, and many cities are built adjacent to each other. This form of urban distribution allows the cities to achieve the sharing of

multiple resources, friendly economic and cultural exchanges, and common progress in science and technology. Judging from the effect of this form of distribution, it has achieved certain economic and social benefits. However, this also causes the irrational distribution of urban forms, the lack of gaps and green vegetation between cities, the occupancy of human activity space and the disharmony of human living environment.

4. Planning and Design Methods of "Green City"

The "green city" must achieve the harmonious integration of economy, society, environment, and humanity, which determines that the design of the green urban planning structure must use the method based on the "eco-space-human" correlation, namely the point (human)-line (space)-surface (ecology) model.

The design of this particular urban planning structure model covers natural and man-made, human and ecological issues. Its design principles and planning process are shown in Figure 1 below:

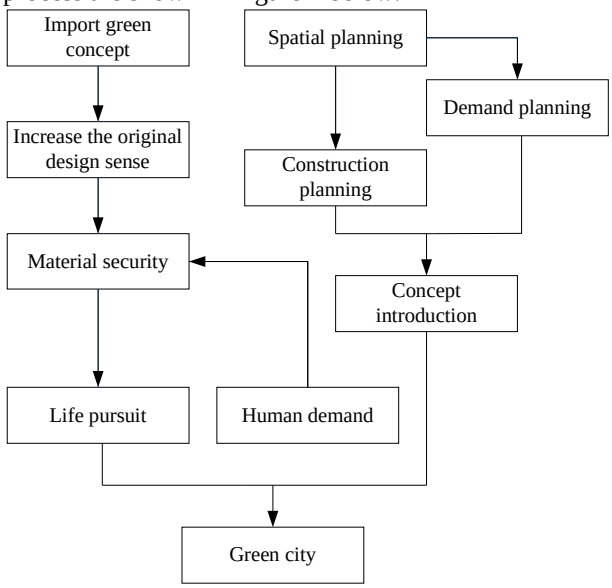

Figure 1. Green city planning principles and construction process

4.1. Planning of the harmonious environment of human settlements

The most basic requirement of the point pattern is the satisfaction of details. The human living environment is the most important system in the urban life system. It must include important elements such as living, sports, dining, shopping, and travel, which is a miniature microcosm of urban life. Planners can make a consistent design based on the actual number of people in the city and the needs of people.

4.2. Reasonable design of space form

The most important thing about the linear model is the reasonable allocation of space. The term "morphology" refers to the shape and condition.

Based on the above statement, designers can transform various elements of urban space into basic structural units. And designers analyze the characteristics of the form, quantity and use of the basic units, as well as their impact on the ecology, so that the planning is more suitable for the principle of scale suitability for the requirements of Green Cities.

4.3. Implementation of the sustainability of eco-logical development

The surface mode focuses on harmonious development. Harmonious development is the core of green city planning and design[5]. The satisfaction of the living environment is not only the establishment of the corresponding basic equipment, but also the implementation of relevant policies that promote the living environment. Similarly, the rational division of urban space is equally important. Nowadays, the development of Chinese cities is facing difficulties. The green construction should not only become a mere formality, but also should be put into action to achieve sustainable development.

5. Conclusion

The advanced concept of "green city" has been successfully cited in many countries. It provides guidance on theory and direction for how to solve the current plight of the transformation of traditional cities and how to achieve better transformation. Moreover, it is of great significance for China to find a suitable Chinese urban planning approach.

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