Research on Urban Landscape Planning and Design Based on Elastic City Model of Computer

Mingzhuo Jiang*
Shenyang Jianzhu University, Liaoniang, China

*E-mail: 23914675@qq.com

Abstract. Contemporary cities are facing natural disasters such as floods, earthquakes and climate change. The acute impact of poverty and economic fluctuation and the emergence of some chronic pressures lead to the fluctuation of urban economic level and development speed. Cities need to build resilient systems to deal with these crises. At present, the government has built the research framework of resilient city in the fields of urban system and disaster risk management. The establishment of elastic framework is conducive to the research and practice of elastic city. Moreover, it is found that the innovation and development of elastic cities play a very important role in promoting the scientific planning and construction of cities.

Keywords: Flexible City, Urban Landscape, Planning

1. Introduction

With the rapid development of urban economy and the acceleration of urbanization process, the city attracts more and more people with superior conditions and rich resources. This kind of population fluctuation has brought a positive impact on human development. However, the fluctuation of population makes the city expand gradually[1-2]. During this period, there are more and more urban problems. With the continuous emergence of mega cities, various natural and man-made disasters such as global warming and war armed conflict occur frequently.

These disasters have brought great impact and challenges to cities. Cities are becoming increasingly vulnerable. In this context, resilient city has been widely concerned and studied. Flexible city emphasizes the coordination and sustainable development of urban system[3]. In addition, it also emphasizes the city's impact resistance and post disaster self-recovery during the disaster. In a word, the research of elastic city can better maintain the sustainable development of the city.

2. Overview of resilient cities
2.1. Elastic

The concept of elasticity originated from ecology in 1970. Until the last decade, it was gradually applied to all fields of society. Ecologists and economists suggest that the concept of elasticity should be applied to the comprehensive development of cities and societies. Therefore, in recent years, the concept of resilience has been applied in the field of coping with climate change and natural disasters.

2.2. The combination of elastic city and computer

Recently, the concept of elasticity has been applied to the city, a complex system that constantly adapts to environmental changes. The establishment of flexible city can maximize the safety and health of the city and minimize the economic fluctuation. Elastic city can bear a series of changes and keep its structure unchanged. It must be capable of self-organization at the time of disaster. In general, resilient cities should have the ability of risk prevention, strong recovery ability and the ability of summing up experience. We can use computer simulation software to simulate these functional requirements\[4\].

2.3. Research framework of elastic city based on computer urban system

The overall framework of the landscape design of elastic city must focus on human health indicators and life indicators. The establishment of the framework must be able to minimize the potential vulnerability of cities. It must satisfy the needs of most of the residents in the city. In addition, social stability and social security are also indicators that elastic cities need to be guaranteed.

3. The implementation strategy of elastic city model based on network in urban landscape planning

3.1. Design principles of elastic City

The principle of flexible design includes the principle of adjusting measures to local conditions and scientific and reasonable principle. The design of urban landscape needs local natural environment, geographical appearance and human customs\[5\]. To respect and strengthen the characteristics of urban natural landscape is conducive to people's unique characteristics of urban landscape. The development of elastic city is conducive to the progress and renewal of science. In addition, adhering to scientific planning design and scientific construction methods can ensure the long-term and durability of urban landscape. Schematic diagram of flower bed design is shown as Figure 1.
Figure 1. Schematic diagram of flower bed design

3.2. Redundant buildings can be added appropriately

The key to a resilient city is redundancy. Redundant facilities are the foundation of flexible city construction. When the city is greatly impacted and damaged, redundant facilities can help the city quickly return to normal operation. Emergency water supply and emergency power supply place city's protection against disasters[6].

3.3. To guarantee the integration and unity of functions

In the process of the construction of elastic City, the function of urban landscape is not single. It is a multi-functional complex. This kind of architecture can not only satisfy people's visual effect, but also adjust the speed of city operation. Through the planning and design of different functions, we can improve the utilization rate of urban landscape.

4. The design concept of the residential landscape of elastic city based on computer

4.1. Design of natural ecological landscape

The natural ecosystem plays a very important role in maintaining the ecological balance of the city. It can not only provide air purification, reduce temperature, carbon absorption and other services for cities, but also a habitat for a variety of organisms. Natural ecosystem plays an important role in the protection of regional biodiversity and ecological environment. Schematic diagram of parking space design is shown as Figure 2.

Figure 2. Schematic diagram of parking space design

4.2. Landscape design of Park Square

The square of the city park is an important landscape in the city. It is also an important part of urban ecological environment. In the process of designing parks in elastic cities, the selection of plants should be suitable for the local climate, soil quality and temperature. In addition, the sinking design of the green area of the park can effectively absorb and save rainwater. Schematic diagram of river landscape design is shown as Figure 3.
4.3. Landscape design of residential area

Most of the urban residential areas are closed spaces. The elasticity of residential landscape becomes weaker with the time of construction. For the old residential area which has been built for a long time, we should appropriately increase the change form of its elastic landscape. This kind of change can make the residential area more scientific and harmonious.

5. The prospect of the research on elastic city in China

China is an area with frequent natural disasters in the world. For the cross region of continental climate and marine climate, climate is changeable, drought, typhoon, earthquake and other disasters occur frequently. In this case, how to actively adapt to the climate change law has become a major strategic issue of urban development in China.

China must accelerate the development of research on natural disasters. At present, resilient city is an effective response to climate change. It has become a hot direction of building future cities in the global scope. However, the research of resilient city in China is still in its infancy. Therefore, we should be good at learning from other countries’ theories on the construction of resilient cities. We should carry out comprehensive and targeted research.

6. Conclusion

The development of urban landscape is related to everyone's life, work, safety and health. It is also related to the sustainable development of mankind. Only when we live in harmony with the natural environment can we make the city flexible. In addition, the rational use of computer knowledge can also help the concept of flexible city construction in China to gradually update.

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