

Sustainable Design: Individual Development with Nature

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ABSTRACT

As an integral part of the earth's environment, humankind is regarded as the decisive factor in the process of sustainable construction of the earth and have the ability to determine environmental renewal. The improvement of economic urbanisation has led to the geographical deviation between citizens and nature to a great extent, which in turn has brought harm to people. This paper further explores the possibilities of co-design with nature from the aspects of sustainability, natural and psychological research, urban environment, natural therapy and green infrastructure, so as to alleviate the problems brought by urbanisation. Through in-depth exploration of the causes and problems of natural isolation, determine the possible direction to solve the problems through interaction with urban green space, which is conducive to individual sustainable development.

Keywords: Sustainability, Urbanisation, Greenspace, Urban infrastructure, Individual development, Urban malady, Nature therapy.

1. INTRODUCTION

In the information age of the 21st century, sustainability is valued by countries all over the world to ensure the long-term development of human beings. Economy, environment, and people have become the pivotal factors determining the fate of society. As the basic element of the public, the individual needs comprehensive consideration and arrangement to determine the appearance of the future world. Initially, urbanisation refers to the rapid aggregation and collaboration process between different units. More and more severe resources and territories competition has accelerated the evolution of cities. While enjoying the fruits of urbanisation, citizens are also faced with the following problems, which seriously affect their physical and mental health. The lack of necessary exposure to nature results in low-level immunity function, which is also reflected in the low intensity of the resistance system. Meanwhile, the long-standing pressure from social competition and family loans makes people indulge in negative emotional conditions, which is a psychological burden on people's health. Positively speaking, it is worthy of research since the previous research results demonstrated the perspective impact of nature on people's health. Besides, the familiar medium of accessing nature is green space in

urban cities. Therefore, **in** many statements and assessments, it is necessary to further study the relationship between residents and urban green space.

In order to objectively understand the role of nature and its potential applications, this paper focuses on the horizontal comparison of the literature with the theoretical support of biodiversity and Attention Restoration Theory. The purpose of this study is to clarify the potential direction or solution of rebuilding the close relationship between citizens and urban green space.. Even if the development of technology makes cities more intelligent and artificial, no matter what stage of urbanisation, green infrastructure will not be different from modern cities. With continuous exposure to green infrastructures, people will be the beneficiaries of green space and be able to escape from daily issues through harmony with nature.

2. BACKGROUND

The rapid urbanisation wave, along with economic growth, has accelerated the speed of environmental destruction, making sustainability a desideratum all over the world. Fast-paced urban life can also lead to different kinds of urban maladies, which are basically caused by persistent stress and pressure, including Immune-

mediated Diseases, Major Depressed Disorder (MDD), and Post-traumatic stress disorder (PTSD). People with depression tendency will struggle with low mood and lose energy all the time because of the stress from society, work, and environment. In terms of these mental issues, the research shows that the lack of natural interaction will have a negative impact on physical and mental health, which also means that through effective urban planning, immersing in green space, urban diseases will be significantly alleviated.

Urban Green Infrastructure (UGI) is the aggregation of urban green space, which is committed to the establishment of urban decompression system [1]. In particular, according to the concept of perceived mental health, relaxing in forests not only can decrease the stress level of citizens, but also contribute to their well-being [2]. Through quantitative investigation, comparative experiment and other research methods, the research results of relevant literature show that people often relax in the green space when they feel uncomfortable. The Attention Restoration Theory explains the mechanism of the nature-oriented tendency, that is, human beings are instinctively attracted by the nondirectional qualities of the natural environment. Although it is hard to quantify the benefits of the natural environment in relieving mental fatigue, people's preference for connecting green space will be explained.

However, more research is needed to seek and maintain individual sustainable development in cities [3]. Furthermore, natural sustainable effect is still a vague concept, and its application and function need to be further discussed [4]. Finally, the current experimental data are not enough for further research in order to be widely used in the future.

3. SMALL-SCALE GREEN SPACE

Different from the consensus of green spaces such as parks or gardens, citizens have more chances to contact green areas, such as community gardens and domestic gardens, because the degree of contact with nature has increased [5] [6]. Through close-range access to plants in community gardens, the increase of physical contact will facilitate social activities and enable people to benefit from good air quality [5] [7]. As for the domestic garden, due to its convenient location (located at the back door of the house), it is easier for citizens to engage in it. People will have close contact with plants, such as touching leaves and flowers, or feeling strong smells. With the design of gardens, different kinds of plants will be introduced and cultivated, which will help to improve biodiversity [5] and provides a platform for relaxation with nature [8]. Taken together, the interactive activities of domestic gardens will bring great value to the sustainable development of personal life. However, how to measure value relies on the subjective thoughts of the garden owners according to their backgrounds,

knowledge, experiences, and personalities. Therefore, whether the personal garden can be regarded as a part of the decompression system and eco-environmental services is under-explored [9].

3.1. Physical Fitness

Urban green space not only can increase the biodiversity of the city environment but also boost the immune system of people by lowering the stress level of urban life to a great extent, which reflects the advantages of the natural environment in treating and preventing physical problems. The role of natural relaxation to prevent diseases by boosting the immune system is called Nature Therapy [10] [11] [12].

The increase of biodiversity is conducive to reduce the ecological imbalance by restoring the microbial changes caused by habitat destruction and urban pollutants, which benefits the treatment of immune-mediated diseases. While paying attention to the potential application of biodiversity improvement, contradictions still exist. First, although the relationship between immune restoration and biodiversity exists objectively, there is still a lack of conclusive evidence and explanation for the causal relationship between physical advantage and biodiversity enhancement [13]. Second, on the one hand, the accessibility of green facilities is crucial to people with physical difficulties. On the other hand, in order to avoid the injury risk of vulnerable groups, including the elderly and children, the natural environment needs to be further designed, and it is difficult for people who struggle with traumatic disorders to obtain perception from nature [14]. Therefore, giving full play to the role of green space is still a problem to be solved.

3.2. Educational Requirements

Under the common vision of sustainable development, how to position and elaborate the natural environment and urbanisation steps requires educational force to promote the practical action plan. From the beginning, the definition, challenges and relationship with people of sustainable development should be clarified, which facilitates the achievements of sustainability through design methods [15]. Only relying on personal imagination or a few simple sentences to illustrate the connotation of sustainability, no one can fully understand the significant impact of nature construction on urban society. The sustainable goal should be regarded as the standard of behaviour for building a harmonious relationship with society, not the ultimate goal or fantasy.

3.3. Achievement Considerations

The initial is to study different motives from different target groups according to the current research results

after clarifying the sustainable significance of urban natural environment to human beings. Previous studies found that, no matter how the experiment is designed, it is impossible to eliminate the role of personal preferences and behaviour habits [16], which increase the degree of difficulty of identifying natural interaction patterns. However, from another point of view, the uncertainty of people's demand for green space provides free space for urban designers. They have chances to create demand instead of simply obey user needs. For instance, by creating new opportunities and activities out of the box, the area of the frontage spaces between architectures will be expanded, so as to improve the use level. Once it is decided to improve and optimise the small-scale green space, the professional team emphasising in environmental construction and urban planning will play a vital role in all processes, and will bring more capital cost and energy consumption. It reflects not only the role of individuals, but also government regulations from economic, environmental and political aspects [17].

3.4. Future Perspectives

It is obvious that promoting access to nature depends on a shift from new facilities to the use of existing green space in novel ways. At present, the underlying surface of urban cities has been highly covered by natural and artificial ingredients, which means that it is no longer suitable for re-creation, because it brings a waste of money and efficiency. A large number of workers and specialists will be employed for demolition, transportation and construction. In addition, many managers are required to supervise and coordinate each process of construction activities, resulting in a huge waste of human and material resources. Hence, is it a better solution to focus on current green space and expand the scope of influence?

Nowadays, the research on how the current green infrastructure design makes citizens' physical and mental health is not deep enough. Not only the large-scale green space such as parks or forests is the effective place for people to participate, but also small-scale green spaces could be the first medium of nature exposure. Interaction with the surrounding green space, whether border trees, tree lawns, private yards or even ornamental plants, can promote people's positive feedback. Urban maladies may possibly be cured by people's instinct and let them occur naturally.

4. CONCLUSION

It can be seen that urban green infrastructure is the key factor for maintaining and developing sustainable development. Whether urban parks actively attract people to enter the natural environment related to residents' daily life, such as neighbourhood green space

and lawn, the ultimate goal of different natural interaction is to act on people and promote their physical and mental health.

For further consolidating nature interaction through the existing small-scale green space, "design in nature" needs to be clarified from two aspects. First, human beings or any human-related development activities should not be regarded as the dominant factor in the development of the earth. Second, the dominance of "human" of nature and this kind of thinking should be gradually removed from the design process. In terms of economic and social development, it should be clear that human beings are also part of the earth's resources and should maintain equal relations and status with nature. On this basis, the concept of user collaborative design is applied to transform it into the collaborative design of man and nature.

To further explain, it is necessary to have a deep understanding of the ecosystem and ecological cycle in the process of urbanisation to achieve the goal of collaborative design, and at the same time pay attention to the ecological niche and ecological value of various organisms in the urban ecosystem. By analysing the existing urban green space network structure and reasonably allocating green space, the per capita green space is maintained at the average level. Attention needs to be paid to avoid new construction or retrofitting of existing projects or all kinds of unnecessary construction activities under the pretext of sustainability. Moreover, any construction and conservation activities need government supervision, because sustainable environmental and human settlements development require government support, including public incentives and policy guarantees.

Nevertheless, in the pursuit of sustainability, uncertain factors still have key impacts and constraints on the development process, such as economic imbalance, environmental damage and human activities. But we never stop pursuing, because nothing can be accomplished overnight. In order to achieve the goal of sustainable development, people need to take it as a concept of life, not a noun, a slogan or even a restriction. Only in this way can the whole society practice sustainability, which contributes to the sustainable development of individuals.

AUTHORS' CONTRIBUTIONS

Qinyilin Wang contributed to the conception of the study.

ACKNOWLEDGMENTS

Thanks to S. Walker for the assistance with the inspiration from academic modules and valuable discussion.

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