

LETTER TO THE EDITOR

Fusion Algorithm for Image Area of Ecological Environment Landscape Based on Multi-dimensional Mapping

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In the process of continuously improving the environmental quality, more and more public art is introduced into the landscape, which plays a certain role in promoting the effect of landscape. The landscape effect of different public art expression carrier is different, which affects the garden landscape effect. The research was conducted through a closed questionnaire survey, combined with the correlation analysis of landscape evaluation and influencing factors, and the results showed that: (1) there is a close correlation between the evaluation of landscape architecture and public art; (2) the popular expression vectors of public art are mainly horticultural plants, sculptures, waterscape, murals and landscape architecture. People hold positive and supportive attitudes towards various expression vectors; (3) the main influencing factors of public art landscape effect evaluation are as follows: beautiful shape, coordination with environment, intimacy and novel theme; (4) For the landscape effects of different public art expression carriers, people with different attributes show consistent commonality.

Landscape architecture; public art; expression vector; landscape effect; influencing factor

1 Introduction

Public art was first introduced into China in the form of urban sculpture and murals. With the increase of international exchanges, a variety of public art forms have emerged, which is of great significance for the construction of urban environment. As an important part of environmental construction, garden landscape plays an important role in shaping urban environment. With the progress of urbanization in China, the quality of urban environment has received more and more attention, and public art works existing in landscapes have become an important part of it. Traditional garden landscape elements become the main expression carrier of public art works in the garden landscape. This kind of public art has the promotion significance for the garden landscape and even the urban environment. Its reasonable design and planning are an important part of urban design.

The concept of public art nowadays mainly starts from two aspects: general public art and narrow public art. The public art involved in this paper invokes the narrow public art scope, and mainly focuses on the public art form with fixed form and existing in public space. The elements that can fully express public art in the garden are taken as the expression carrier, which can be mainly summarized as sculpture, fresco, horticultural plants, pavement, waterscape, landscape architecture and service facilities. Other forms of public art included in the broad sense, such as singing and dancing, performance art, etc.

The landscape effect refers to the mutual induction and mutual transformation of the aesthetic object and the aesthetic subject. The level of effect depends on the realm and the realm, the artistic conception and the unintentional state. As the subject of landscape appreciation, people should recognize, understand, accept,

appreciate and enjoy all landscapes to realize their value. At present, in the field of landscape architecture in China, most studies on public art use cases to illustrate subjective theoretical views, but lack in-depth and detailed quantitative research. Based on the field survey and the analysis and summary of the survey data, this study explores the relationship between public art expression carriers and user population attributes and public art landscape effects, and finds the main influencing factors of public art landscape effects in contemporary gardens. Ling-Chuan Huang, Ming Gao, Ping-Fu Hsu published an article in the journal Ekoloji's 2019 Issue 107 entitled "Effects of Organizational Justice on Organizational Climate and Organizational Performance in Ecology Industry". With the rapid development of the economy, global competition was becoming increasingly fierce. Leaders used management practices to improve their skills and enthusiasm, which would help organizations continue to maintain competitive advantage. When employees felt the fairness of the company, they showed a positive attitude towards the work and the supervisor. 360 questionnaires were distributed to employees of the ecological industry in hsinchu science and technology park, and 237 questionnaires were effectively recovered, with a recovery rate of 66%. The results showed that: 1. Organizational justice and climate; 2. Organizational climate and performance; 3. There was a positive relationship between organizational justice and organizational performance. According to the research results, suggestions are put forward to help the ecological industry enterprises make full use of human resources in the organization and guide the enterprises to achieve sustainable development.

Wild herbs had been proven to have multi-dimensional ecological benefits, but their use in parks and other environments could not ignore the aesthetic feelings of people. In order to explore how to rationally utilize wild herbs, a questionnaire survey was conducted based on landscape preference research. The study found that the use of wild herbs was generally welcomed by the general public, but there were a few concerns; The landscape preferences of wild herbs were greatly influenced by different sites and planting design methods. It was suggested to strengthen wild herb planting in dynamic activity sites, introduce flowering species and dense planting, and adopt multi-species combination to maximize ecological benefits. The height of wild herbs after flowering should be controlled below 30cm, and the nature education of teenagers should be strengthened. The method had higher extraction precision, but the result was better; Gou (2017) restored the natural vegetation buffer zone of the riverbank, constructed the ecological river bank, restored the natural shape of the river channel and the natural riverbed material composition, which could improve the vitality and ecological service function of the river ecosystem. Through field questionnaire survey, this paper analyzed the residents' cognition of the ecological service function provided by riparian belt, as well as their preference for the vegetation type, the type of river embankment, the shape of river channel and the substrate type of riverbed. The results showed that the average cognition degree of each ecological service function of riverside vegetation buffer zone was: erosion control (71.94%), pollutant purification (58.27%), flood control (51.80%), landscape aesthetics (46.76%), recreation (43.17%) and biodiversity maintenance (28.77%). Residents around the river and their occupational groups also had greater differences in riverside vegetation types, riverbank types, river channel shapes, and riverbed material composition preferences; In view of the above problems, this paper put forward a public garden ecological environment landscape design and landscape aesthetic analysis.

2 Idea description

2.1 Research object

All elements in the garden landscape can be used as the expression carrier of public art. According to the characteristics of garden landscape elements, the expression carrier of public art in the garden landscape can be classified into 7 types: sculpture, fresco, horticultural plants, pavement, waterscape, landscape architecture and

service facilities. Horticultural plants refer to plants designed and processed for people to watch, mainly including garden plants, fruit trees, vegetables, flowers, and medicinal plants, aromatic plants and fungi, etc, which are different from the traditional garden landscape elements -- garden plants (Gu 2017, Martin-Anton et al. 2016; Petrovic et al. 2017; Celik and Aciksoz 2017).

Combined with the types of public art expression carriers, comprehensive consideration of the public art status, the number and composition of tourists, the type of green space and the construction status of different garden landscapes in Beijing determine the sampling points. The sampling points are located in the central area of Beijing Olympic Park, Zhongguancun Square, Yuandadu City Ruins Park and Red Scarf Park, covering the main types of public art expression carriers in contemporary gardens. Due to the development level of public art in China, murals are rarely used in the landscape. There are no murals in the central area of the Olympic park and zhongguancun square (table 1).

Table 1 list of types of public art expression vectors at sampling points

place	The type of public art expression carrier
The central area of the Olympic park	Sculpture, gardening plants, paving, waterscape, landscape architecture, service facilities
Zhongguancun square	Sculpture, gardening plants, paving, waterscape, landscape architecture, service facilities
Yuan dadu ruins park	Sculpture, mural, horticultural plants, paving, waterscape, landscape architecture, service facilities
Red scarf park	Sculpture, mural, horticultural plants, paving, waterscape, landscape architecture, service facilities

2.2 The research content

By investigating the differences in the perceptions of visitors to public art, the landscape effects of public art in contemporary gardens are studied. Combined with the form of field questionnaire and interview, it starts from two aspects: the perception effect of the subject on the objective public art and the influencing factors of the objective public art on the subjective active subject. This paper analyzes and studies the landscape effect of public art, summarizes the relationship between visitors, public art expression carrier and public art landscape effect, and then puts forward some suggestions on landscape architecture and public art design.

2.3 The research methods

On the basis of consulting literature on public art and landscape perception, questionnaire design, data statistical analysis and other relevant materials, a scientific and reasonable questionnaire that can reflect the effect of public art landscape was compiled. A random closed questionnaire survey was conducted among visitors to the above sampling sites. With the help of correlation analysis and statistical methods, the obtained data were statistically analyzed using Excel and SPSS software. A total of 800 questionnaires were distributed during the survey. Taking into account the differences in the number and composition of visitors at the sampling sites, 250 questionnaires were sent to the central area of the Olympic park and zhongguancun square, and 150 questionnaires were sent to the honglingjin park and the yuandadu chengyuan ruins park. A total of 767 questionnaires were returned (Li et al. 2016).

3 Results

3.1 The correlation between garden landscape and public art evaluation

Using SPSS17.0 software to analyze and calculate the correlation coefficient of garden landscape and public art

evaluation, according to different correlation coefficients, the closeness of the correlation can be judged. It can be seen from the correlation coefficient analysis that there is a strong correlation and close correlation between the garden landscape and public art evaluation of the four sampling points. It shows that the landscape effect of garden landscape and public art in public space is mutually influential. The good landscape effect of both can promote each other's landscape effect and improve the landscape effect of the overall environment.

3.2 The difference of landscape effect of public art expression carrier

Based on the analysis of the survey data, it can be found that, in general, the popular public art expression carriers in gardens are: Horticultural plants, sculptures, water features, murals and landscape architecture. Among them, the central area of the Olympic park is a popular public art.

The expression vectors are: horticultural plants, sculpture and landscape architecture; The most popular public art expression vectors in Zhongguancun square are: horticultural plants, waterscape and sculpture; The most popular public art expression vectors in the park are: horticultural plants, sculpture and fresco; The popular public art expression vehicles of the Red Scarf Park are horticultural plants, sculpture and water features in order. Among the four sampling points, horticultural plants are the most popular public art expression vectors, among which the horticultural plants in the Yuandadu Chengyuan Ruins Park are selected with the highest frequency of 36.13%. There are many kinds of horticultural plants here, with rich layers and delicate configurations. Some scenic spots use plants to clearly interpret the design theme, for example, the thistledown scenic spots of Fenfi use the wild thistledown and the primitive primitive earth city to create a wild and boundless countryside landscape. The horticultural plants in the sampling site are well evaluated as the expression carrier of public art, which indicates that when horticultural plants are used as the expression carrier of public art, combining planting design and art can enrich the content of landscape and increase people's recognition.

As the expression carrier of public art in the traditional sense, sculpture is generally accepted by visitors. Red Scarf Park forms a variety of rich types of sculpture by the majority of visitors, forming the characteristics of the landscape here; At the same time, tourists' preference for water landscape is also obvious. In the survey of the topic "The public art form you most want to increase", the selection frequency of pool fountains is the highest, indicating that people hope to better combine public art with waterscape.

In the Yuan Dynasty City Wall Ruins Park, the expression carrier mural is generally welcomed by visitors, the respondents hope to increase the form and types of mural. Due to the limitation of the development level of public art in China, the distribution of murals is less. Among the selected sampling sites, only the Yuandadu Chengyuan Ruins Park and Honglingjin Park have this form. In some countries with highly developed art in Europe and America, murals are widely distributed in public space, playing an irreplaceable role in the formation of urban space atmosphere, and are accepted and recognized by the general public.

In the extraction of ecological landscape big data by the two algorithms, with the increase of data volume, the accuracy of data extraction shows a fast rising trend. The accuracy of ecological landscape data extraction in this paper is rising rapidly, and the accuracy of data extraction in this paper is finally stable at about 90%, higher than the algorithm proposed in literature by Wang (2017) and Gou (2017). It can be seen that the algorithm in this paper has good performance and can accurately complete the extraction of ecological landscape big data.

4 DISCUSSION

According to the investigation on the influencing factors of public art landscape effect, the main influencing factors of public art evaluation are as follows: beautiful appearance, harmony with environment, intimacy and novel theme. Among the four sampling points, the main influencing factors in the central area of the Olympic Park and Zhongguancun Square are: beautiful shape, coordination with the environment and novel theme; The main

influencing factors in the park are: harmony with environment, beautiful shape and intimacy.

It can be seen from the analysis data of the sampling site that the main influencing factors of public art landscape effect are: beautiful shape and harmony with the environment. The order of the two factors is different in the central area of the Olympic park, zhongguancun square, yuandadu chengyuan ruins park and honglingjin park. The central area of the Olympic park and zhongguancun square are dominated by large public art as the dominant landscape in the whole environment. For such public art, people pay more attention to whether their own shape is beautiful, and the coordination with the environment becomes a minor factor. The theme of public art is one of the three main influencing factors affecting the public art landscape effect here. This may be related to the composition of tourists at the sampling point. The two are mainly tourists with low frequency of visit and short stay time. The public art expression carrier enables visitors to quickly and profoundly form memories in their minds, and thus has a higher evaluation. For example, in the central area of the Olympic Park, the rituals of the rituals and the ancient wood flower pavilions use novel and unique expressions to interpret the ancient Chinese culture, so that visitors can feel the uniqueness of the designer's ingenuity, which effectively enhances the evaluation of the entire landscape environment; The Chenghuang Ruins Park and the Red Scarf Park are mainly public art of normal scale, which together with other landscape elements form the spatial atmosphere of the whole environment. In this case, people pay more attention to the coordination of public art and the environment, and secondly, whether their own shape is beautiful. The third factor that affects the public art landscape effect is the intimacy of the two sampling points. The two tourists mainly come to this leisurely and relaxed group. They are more concerned about the comfort of the environment and have higher requirements for the intimacy of public art. The aesthetic problem of ecological landscape has been widely concerned. In today's information age, it is necessary to use Internet technology to analyze the ecological environment. In the cloud computing environment, this paper studies the incremental big data extraction of ecological landscape, and verifies the superior performance of the proposed algorithm through experiments. Experimental results show that:

- (1) The data extraction accuracy of this algorithm is higher than that of the algorithm proposed by Wang (2017). It is based on the research of landscape preference, which needs to simulate the type of place through photos and conduct a questionnaire survey. However, different places and planting design methods will affect the landscape preference of wild herbs, so a large amount of data needs to be used, which increases the difficulty of the workload, resulting in a far lower numerical accuracy than the algorithm in this paper.
- (2) Compared with the algorithm proposed by Gou (2017), the data extraction stability of this algorithm is higher. This is because in the process of data extraction, with the idea of full table comparison, the aesthetic source of ecological landscape the operations in the database is classified and summarized to realize the incremental extraction of data, which improves the efficiency of algorithm extraction.

5 CONCLUSION

Based on the data survey and statistics, this study analyzes different public art expression carriers and users of different attributes in the garden landscape from two aspects: the user's perception of public art and the influence factors of public art on users. The impact of public art landscape effects. The results show that: (1) there is a close correlation between the evaluation of landscape architecture and public art; (2) the popular expression carriers of public art are mainly horticultural plants, sculptures, waterscape, murals and landscape architecture. People hold positive and supportive attitudes towards the expression carriers of public art in various forms. (3) the main influencing factors of public art landscape effect evaluation are as follows: beautiful shape, coordination with environment, intimacy and novel theme; (4) for the landscape effect of different public art expression carriers, people with different attributes show consistent commonality. Through the investigation, it is found that people

support and welcome the public art in the landscape, and pay high attention to it. In the process of environmental design, attention should be paid to public art to promote the common development of landscape and public art. The vast majority of respondents want to add public art in the landscape, support through the fountain pool, garden plants, landmark sculpture, the public facilities, mural and public art activities such as public art form rich variety of expression vector, western countries have adopted a variety of public art form and the policies to improve the construction of public art, worthy of China's urban development in the process of learning and using for reference. More than half of the respondents believe that the support of government policies should play a leading role in the construction of public art, followed by the active participation of the public and the efforts of artists. It is suggested that the government, the public and artists should cooperate to promote the development of public art.

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