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TWO-DIMENSIONAL DYNAMIC TECHNOLOGY FOR RESHAPING THE HISTORICAL EVOLUTION OF THE SUMMER RESORT

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Abstract:
The Summer Resort is a royal garden of the Qing Dynasty located in Chengde City, Hebei Province, China. It has far-reaching influence in history, art, and politics. This paper proposes to reshape the historical evolution of the Summer Resort from Kangxi to Jiaqing through two-dimensional dynamic display technology. This technology can clearly show the spatial layout and architectural details of the summer resort, intuitively present the changing process of the summer resort in different historical stages, and present complex historical information to the public in an intuitive and easy-to-understand form.
Keywords: Summer Resort, Qing Dynasty, two-dimensional dynamic display technology, historical evolution, architectural details

1. Introduction

The summer resort, located in Chengde City, Hebei Province, China, is one of the outstanding representatives of the royal gardens of the Qing Dynasty. It has far-reaching influence in history, art, and politics. It was first built in 1702 during the Kangxi period. It witnessed the historical process of the Qing Dynasty from prosperity to decline. It is a treasure of ancient Chinese garden art and an important part of the world's cultural heritage[1].

The importance of the Summer Resort lies not only in its artistic and historical value but also in the fact that it is an important place for the Qing Dynasty to govern the empire. Every summer, the emperor of the Qing Dynasty would deal with the affairs of the government here, meet the subjects and foreign envoys, and even hold grand sacrificial activities. Therefore, exploring the historical evolution of the Summer Resort is actually an important way to understand the operation of the Qing imperial power and Chinese traditional culture[2].

However, how to show the historical evolution of this huge and complex royal garden concretely and vividly has always been a challenge. Therefore, the theme of this paper is to reshape the historical evolution of the Summer Resort from Kangxi to Jiaqing through two-dimensional dynamic display technology.

There are three reasons for choosing two-dimensional dynamic display technology to reshape the historical evolution of the summer resort. First of all, it can clearly show the spatial layout and architectural details of the summer resort. Secondly, through dynamic display, we can intuitively present the changing process of the summer resort in different historical stages. Finally, this technology can present complex historical information to the public in an intuitive and easy-to-understand form, improving their understanding and interest in history.

This article will be divided into four parts. First of all, we will review the construction and development process of the summer resort in the three periods of Kangxi, Qianlong, and Jiaqing. Then, we will introduce how to use two-dimensional dynamic display technology to display this historical information. Next, we will explore the role of this technology in reshaping history and its possible limitations. Finally, we will put forward conclusions and prospects for future research.

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2. Construction, transformation, and pepair of summer resort from Kangxi to Jiaqing

2.1 The design and construction of the summer resort in the Kangxi period

The design and construction of the Summer Resort began in the 41st year of Kangxi (1702) of the Qing Dynasty. Emperor Kangxi was deeply fond of beautiful natural scenery and peaceful climatic conditions during his cruise, so he chose to build a palace on the Jehol River (now Chengde City, Hebei Province), which was not only a summer resort but also a place to deal with government affairs [3].

The summer resort during the Kangxi period was the initial stage of construction. Emperor Kangxi visited Chengde a total of 55 times, including 28 times in the summer resort. Emperor Kangxi had an in-depth participation in the design and construction of the villa. He attached importance to natural aesthetics and paid attention to the harmonious coexistence of architecture and the natural environment. He emphasizes the use and shaping of natural landscapes so that the design of the villa retains the original natural landscape. The architectural style adopts the traditional Chinese wooden structure, combines the elements of rocks, pools, and corridors, and draws on the design style of Jiangnan Gardens. Lakes, streams, and hills are naturally integrated into the building [4].

During the Kangxi period, the south side of the palace was the palace area, and the north of the palace area was dug up to form three islands, Ruyizhou, Huanbi, and Yuesejiangsheng Island, which symbolized the immortal island of Xianshan. In the forty-seventh year of Kangxi (1708), the Rehe Palace began to take shape, and the main landscapes were completed. Later, Emperor Kangxi successively expanded and built the villa. The construction projects mainly included palaces, courtyards, and gardens. Among them, the East Lake (Jinghu Lake), Qingshushan Pavilion, and Shuixin Pavilion were completed during the Kangxi period. Emperor Kangxi also selected 36 scenic spots that he liked and titled them with four words. Each place wrote poems and ordered painters to paint, which was called the 'Kangxi 36 Scenes ' of the Mountain Resort.

The design and construction of the summer resort during the Kangxi period emphasized the harmonious coexistence of royal authority and nature and created a new style of northern royal gardens. With its unique artistic charm and profound cultural connotation, this style has influenced the royal garden design of later generations and has also become an important chapter of ancient Chinese garden art.

2.2 The transformation and expansion of the summer resort in the Qianlong period

The Qianlong period was the prosperous period of the summer resort. Emperor Qianlong reigned for 60 years and then became the emperor for 3 years. Among them, a total of 51 years were spent in the summer resort, which was the longest emperor in Chengde. This period has experienced large-scale transformation and expansion and is also regarded as the golden age of the construction of the summer resort. Emperor Qianlong inherited Emperor Kangxi's love for the summer resort, and carried out large-scale expansion and transformation on the basis of the original, further improving the design and layout of the summer resort.

On the basis of the lake landscape built by Emperor Kangxi, Emperor Qianlong added many new attractions and buildings. Since the 6th year of Emperor Qianlong (1741), Emperor Qianlong has built and demolished dozens of buildings, such as Ruyizhou, Songhezhai, Qushuihexiang, Qianchixue, Yongyou Temple, Shelita, Qingyinge, Lizhengmen, Zhantanlin, Chuangdezhai, etc., until the 47th year of Emperor Qianlong (1782). Emperor Qianlong's hobby of building a garden in the summer resort ended. During the reign of Emperor Qianlong, Emperor Qianlong also imitated his grandfather Emperor Kangxi to choosing 36 landscapes in the Summer Resort, which were named after the three-character title, namely 'Thirty-six Views of Qianlong Summer Resort '. However, most of the landscapes were built and named during the reign of Emperor Kangxi, thus forming the famous ' Seventy-two Views of Kangxi and Qianlong Summer Resort '. Emperor Qianlong paid special attention to the artistic decoration of the Summer Resort. He ordered a large number of sculptures, murals, and stone

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carvings to be added to the garden, making the artistic atmosphere of the Summer Resort more intense. Among them, stone carvings are the most famous, such as Qianlong Youyingji ' and other sixteen inscriptions and sixteen pavilions, which are the representatives of stone carving art in the Qing Dynasty [5].

In addition, Emperor Qianlong also built the Outer Eight Temples in the northern part of the Mountain Resort to highlight the multi-ethnic rule of the Qing Dynasty. The architectural styles of these temples are different, which integrates the architectural art of Tibetan, Mongolian, Han, and other ethnic groups, and further enriches the cultural connotation of the summer resort.

The expansion and transformation of the summer resort during the Qianlong period not only enhanced its artistic and historical value but also further strengthened its status as a symbol of royal power.

2.3 Renovation and maintenance of summer resort in Jiaqing period

The Jiaqing period was the post-construction period of the Summer Resort. During the 25 years of Emperor Jiaqing's reign, he spent a total of 19 times in summer resorts, second only to Emperor Kangxi. Emperor Jiaqing's love for the summer resort was no less than that of his father Emperor Qianlong, but due to the pressure of treasury finance, he paid more attention to practicality and economy in the transformation and expansion. Therefore, the transformation and expansion of the summer resort during the Jiaqing period is mainly the restoration and protection of the buildings during the Qianlong period, as well as some small-scale transformations and additions.

During the Jiaqing period, the main buildings of the Mountain Resort, such as Suyun Eaves and Chengquan Raoshi, were partially demolished and modified. At the same time, a series of repairs were carried out on buildings such as Xianyuan Zhaoling and Yanyu Buildings. In addition, Emperor Jiaqing also added some new attractions to the summer resort, such as the Yiran Pavilion, Fanghe Pavilion, Liyun Pavilion, etc., which further enriched the landscape of the summer resort.

Although the scale of renovation and expansion in the Jiaqing period was small, its protection and restoration of the summer resort have enabled the summer resort to be preserved to this day, and it still retains the original appearance of the royal gardens of the Qing Dynasty, which is of great value for us to understand the history of the Qing Dynasty and garden art [6].

3. Two-dimensional dynamic display of the form and steps of the historical evolution of the summer resort

3.1 Two-dimensional dynamic display of the form of the historical evolution of the summer resort

Through the dynamic map, we can examine the spatial layout and terrain changes of the summer resort from a new perspective through the scaling, translation, and rotation of the map. At the same time, through the way of dynamic display, the change and development of the summer resort from the Kangxi period to the Jiaqing period can be displayed on the timeline.

In addition to spatial changes, two-dimensional dynamic display technology can also show the changes in the architectural style and decorative art of the summer resort. We can create a series of dynamic illustrations to show the architectural styles and decorative features of the Kangxi, Qianlong, and Jiaqing periods. Through these dynamic illustrations, the audience can see how the artistic style of the summer resort develops and changes with the passage of time [7].

In addition, two-dimensional dynamic display technology can also be used to show the changes in historical figures and events. By creating a dynamic timeline to show the participation and influence of the three emperors of Kangxi, Qianlong, and Jiaqing on the summer resort, the audience can better understand their personal influence and historical contribution to the summer resort.

Through the creation of dynamic tutorials and interactive games and activities, we can also use two-dimensional dynamic display technology to better disseminate the history and culture of the summer resort in the field of

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education and science. Through these activities, the audience can vividly learn and experience the history of the Mountain Resort, and contribute to the protection and inheritance of the cultural heritage of the Mountain Resort [8].

In general, the two-dimensional dynamic display technology provides a new perspective and method, so that we can more vividly and intuitively understand and display the historical evolution of the summer resort.

3.2 The steps to realize the two-dimensional dynamic display

1) Collect historical data. We need to collect historical data about the summer resort, including architectural design drawings, historical documents, photos, videos and so on. These materials will provide the basis for the display.

2) Set a timeline. The history of Mountain Resort is divided into different periods, and a timeline is established to mark the important events and changes in each period.

3) Design the two-dimensional plan. According to the architectural layout of different periods, the two-dimensional plane of the summer resort in different periods is designed. Each building, garden, lake, and other elements are marked on the plan.

4) Add an animation effect. Using the animation effect, the elements in the plan are gradually displayed, showing the architectural layout and landscape changes in each period. It can be expressed by animation effects such as the gradual construction of buildings and the gradual maturity of garden vegetation.

5) Combined with cultural relics display. By using the method of cultural relics display, historical photos, literature and video materials are integrated into it. By inserting these materials, we can more vividly show the changes and important events of the summer resort in different historical periods.

6) Optimize the user experience. By optimizing the user experience to ensure that the display interface is simple and intuitive, while ensuring that navigation, zoom in, zoom out and other functions are easy to use. A variety of language versions are available for more users to learn about the history of the resort [7].

7) Testing and Improvement. After the initial production is completed, a display test is carried out and improv ements are made based on feedback. Ensure the fluency and accuracy of the display.

Through the above steps, we can use the two-dimensional dynamic display technology to show the historical evolution of the summer resort, provide the audience with an intuitive and vivid experience, and help them better understand and appreciate the historical changes of the summer resort [9].

4. The role of two-dimensional dynamic display in reshaping history

4.1 The two-dimensional dynamic display shows the advantages of historical evolution

The two-dimensional dynamic display technology has strong visualization and dynamic characteristics, which make it a powerful tool for understanding and displaying historical evolution. In terms of the historical evolution of the summer resort, this technology can bring the following advantages:

1) Two-dimensional dynamic display system can dynamically display historical changes. The two-dimensional dynamic display technology can clearly show the architectural changes and development of the three main historical stages of the summer resort from Kangxi, Qianlong to Jiaqing based on the time axis. It can not only show the increase and modification of buildings and landscapes but also show the main activities of the three emperors of Kangxi, Qianlong, and Jiaqing and their influence on the summer resort [10].

2) Two-dimensional dynamic display system can display spatial layout in all directions. The two-dimensional dynamic display technology can present the spatial layout of the summer resort, including the relative position of the building and the landscape design. The audience can observe and understand the spatial organization and design principles of the summer resort from different angles and scales by zooming and rotating the map.

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3) Two-dimensional dynamic display system can visually reflect the architectural style and decorative arts. Two-dimensional dynamic display technology can be used to show the changes in architectural style and decorative art. Dynamic illustrations can clearly show the architectural styles and decorative features of the Kangxi, Qianlong, and Jiaqing periods, and how they integrate with the surrounding environment.

4) Two-dimensional dynamic display system can promote history education and science popularization. The interactivity of two-dimensional dynamic display technology makes it an effective tool for education and science popularization. For example, interactive games and activities can be created to allow the audience to learn the history and culture of the summer resort in the game and improve their participation and learning effects [11].

In general, the two-dimensional dynamic display technology has become a powerful tool to help us better understand and show the historical evolution of the summer resort with its dynamic, intuitive, and interactive.

4.2 Limitations and possible improvements of two-dimensional dynamic display

Two-dimensional dynamic display technology provides a novel way to show and understand history, but there are also some limitations:

1) There is a limit to how much information you can express. Although a two-dimensional dynamic display can clearly show the changes in space and time, it may be limited in terms of expression depth and fineness. For example, the background, influence, and complex relationships with other events of a historical event may be difficult to fully present in a two-dimensional dynamic display [11].

The improvement method is to provide more abundant and in-depth information by linking more detailed multimedia resources such as text, pictures, or videos. In addition, interactive elements can be introduced so that users can choose the part of interest for in-depth understanding.

2) User experience is vulnerable to challenges. If the design of the dynamic display is not reasonable enough, it may make users feel confused or difficult to understand. Too complex an interaction design may also make it difficult for users to operate.

You can focus on designing the user experience to ensure that the interface is clear and interactive. Through user testing, the design can be continuously optimized and adjusted to meet the needs of different users.

3) High technical and resource requirements. Creating and maintaining a two-dimensional dynamic display requires certain technical capabilities and resources, which may pose challenges to production and users.

Improvement method: By developing easier and more powerful software tools, the difficulty of creating a two-dimensional dynamic display can be reduced. In addition, online tutorials and community support can be provided to help users solve technical problems [12].

In general, although a two-dimensional dynamic display has limitations in displaying historical information, through appropriate improvement methods, we can still maximize its advantages and effectively use this tool to display and understand history.

5. Conclusion

Two-dimensional dynamic display technology provides a new way to show the historical evolution of the summer resort. Through the dynamic and intuitive form, it can present the changes in the spatial layout, architectural style, and historical events of the summer resort. Although this technology has some limitations, such as the limitation of information expression, the challenge of user experience, and the requirements of technical resources, we can maximize its advantages through improvement and optimization. For example, linking more detailed multimedia resources, optimizing user experience design, and developing easy-to-use software tools can improve the effectiveness of two-dimensional dynamic display technology, so as to better serve historical research and education.

In short, the two-dimensional dynamic display technology provides us with new possibilities, enriches the historical perspective, and provides an effective tool for history education and science popularization. We look forward to seeing more applications of technology and innovative methods in the future to better understand and protect our cultural heritage.

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