Exploration of the digital display design method of ancient coconut shell hill archaeological site

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Abstract. With the development of science and computer technology, digital display design breaks through geographical and time and space constraints, not only can realize the restoration and protection of ancient coconut shell mound ruins, at the same time, the rapid spread of ancient coconut shell mound site culture was realized. This paper analyze the current situation of the ancient coconut shell mound site display and discover the core content of the ancient coconut shell mound site display to explore a solution to the digital display design of the ancient coconut shell mound site. The digital display design is conducive to the cultural information dissemination of the ancient coconut shell mound site, and improves the interactive experience and satisfaction of visitors; it aims to play a certain guiding role for the ancient coconut shell mound site to truly and completely explain the value of the site and spread the connotation of the site.

1. Introduction
The ancient coconut shell mound site is the most complete, typical, and most scientifically excavated important site among the many shell mound sites discovered in Lingnan, representing a new type of archaeological culture. A large number of prehistoric animal and plant remains have been discovered at the site, which has important value in filling the gaps in scientific research in the study of the ancient environment of prehistoric humans in the Pearl River Delta. It is understood that at present, there is only an archeological introduction to the ancient coconut shell mound site, such as the origin, development, definition, introduction and value of the excavated cultural relics, while the research on the specific digital display design and communication method of the coconut shell ancient tomb site is rarely combined with practice

Digital display is an application technology that uses digital technologies such as virtual reality experience, multimedia integration, and human-computer interaction to provide audiences with interpretation, display and services. The State Council’s “Guiding Opinions on Further Strengthening of Cultural Relics Work” and “Guiding Opinions on Actively Promoting the “Internet +” Action” pointed out that “make full use of modern information technologies such as cloud computing, big data, and “Internet +” to promote cultural relics protection and modernization. Technology integration and innovation”. The 13th Five-Year Plan for the Development of China's Cultural Relics, issued by the State Administration of Cultural Heritage, also further emphasizes the necessity of implementing the "Internet + Chinese civilization" initiative. The application of digital technology to the exhibition design of the ancient Kuibeiqiu heritage site is not only a practical need for the protection, utilization and value interpretation of the ancient Kuibeiqiu heritage site, but also an inevitable choice to follow the
development trend of The Times, deeply integrate the innovative achievements of the Internet with the excellent traditional Chinese culture, and promote the open sharing of cultural relics resources.

2. Analysis on the current situation of digital display of ancient coconut shell mound site

2.1. Protection status of ancient coconut shell mound site
The current protection and management work can only meet the daily maintenance and supervision of the site. The archaeological work and site research have not yet formed systematic results; the daily management and security protection measures of the site are not yet complete; the protection and use of cultural relics have not been started yet, and modern media technology is lacking. The display means, tourism-related infrastructure and service facilities are still blank, which prevents this site from exerting its due social value. In the March 2019 document "The Protection Plan for the Ancient Coconut Shell Hill Site (2018-2035)" compiled by the People's Government of Gaoming District, Foshan and the Guangdong Provincial Institute of Cultural Relics and Archaeology, it is clearly stated that the area where the ancient coconut shell mound site is located is to be built as Jibei Hill Site display base, wetland park tour area, national archaeological site park with functions of site display and utilization, cultural dissemination, scientific research, education and learning, and leisure [1].

2.2. The problem of perception and experience of ancient coconut shell mound site
The archaeological age of the ancient Yebeqiu site is about 4700 years ago from the late Neolithic period to before the Shang. It is an important historical testimony to the ecological natural environment and social life in the area during the late Neolithic period. Due to the long history and the rapid development of the city in the suburbs, there are many unstable factors. The viewability and visibility of the Yebeiqiu site is not strong, and its uniqueness is not easy to be felt, understood and recognized by the public; The densely-covered geographical environment and rainy and humid climatic conditions set higher requirements for the on-site display of the ancient coconut shell mound site.

2.3. Explanation of the value connotation of the ancient coconut shell mound site
The ancient coconut shell mound site not only has high historical value, but also has multi-level values such as society, nature, science, and art. At the same time, it is also a unique tourism resource with high social, economic and cultural benefits [2]. In the process of citing digital technology, how to combine the ontology of the ancient coconut shell mound site with digital technology; how to convert the research results of the ancient coconut shell mound site into easy-to-understand visual language to increase the story and interest; at the same time improve its value description Authenticity, completeness and accuracy are issues that we need to explore and effectively solve in our design.

2.4. Breakthrough in digital technology
The application of digital display technology to archaeological sites has only been in the initial stage of development for just a dozen years. With the development of intrusive virtual technology based on human vision, hearing, smell and other perceptions, digital display technology is becoming more and more rapid; and traditional display design Compared with digital display, the method is more susceptible to the constraints of the site environment, technical level, cost, and equipment performance [3]. The ancient coconut shell mound site is located in the marginal area of urban development. It carries the memory of development. It record s the Neolithic era. The human population in the living area knew how to use pottery bottles and pots, sand stone axes, raise animals in captivity, and even began to cultivate rice artificially; Everything created is a unique witness of the historical process. The display technique also needs to be multi-dimensional, multi-level and diversified, focusing on the ancient and modern inheritance display of the production and life of the site, the customs and the customs. In order to realize the digital display of the ancient coconut shell mound site, it is necessary to analyze the characteristics and application of the digital display technology and the characteristics of the ancient coconut shell mound site, and seek technological breakthroughs and innovations.
3. Digital display design method of ancient coconut shell hill site

3.1. Formulate digital design goals and principles
The display of Beiqiu cultural relics should pay more attention to the interpretation of the value of the relics. The digital display of the ancient coconut shell hill site should be based on the analysis of the current situation of the ancient coconut shell hill site, sort out the digital display method suitable for displaying the overall style and local details of the ancient coconut shell hill site, analyze its advantages, disadvantages and applicable conditions, and analyze its advantages and disadvantages and applicable conditions. The goal is to fully and accurately explain the value of the site. Follow the principle of protection; the display process should be reasonable and appropriate, combined with the protection measures of the ancient coconut shell mound site, and adopt effective and reasonable display methods to highlight social welfare and sustainability. Follow the principle of readability; let ordinary people understand and master the historical information carried by the site as much as possible during the display of the ancient coconut shell mound site, adhere to the audience’s feelings as the starting point, pay attention to the fun and experience of the design, and focus on the display content Perfect combination with digital creativity. Follow the principle of reversibility; the technology, materials and facilities used in the digital display technology process can be removed and replaced when there is a more suitable display method in the future. Reversible technology, materials and facilities are used to facilitate the later protection, maintenance and replacement of the site In-depth presentation. Follow the principle of quality; the information displayed on the network digital platform must have a certain degree of authority, readability, collection and promotion. my country currently has digital platforms for relics. If the quality of the information fails to meet user expectations, users may no longer visit them and affect the effect of publicity.

3.2. Value core statement extraction
The "Nara Authenticity Document" pointed out: "The protection of cultural heritage of various types and historical periods is rooted in the value of the heritage itself." The core values and characteristics of the ancient coconut shell mound site are refined as the basis for the display design. In order to ensure the comprehensive and true value description of the ancient coconut shell mound site, in the digital display design work of the ancient coconut shell hill site, a unique value elaboration system of the ancient coconut shell hill site should be constructed based on the investigation and evaluation of the current situation and data interpretation of the ancient coconut shell mound site. For those parts with insufficient archaeological data and documentation, they should be over-interpreted and over-exposed without subjective assumptions or eagerness to achieve results. The display method can be left blank to give consumers enough space for imagination and thinking. There is room for future display of the mound site. This system will determine the theme and content of the design display. Through a comprehensive and true interpretation of the connotation value of the ancient coconut shell mound site, we will spread the ancient coconut shell mound site culture to the masses, promote ancient civilization, and tell the story of the ancient coconut shell mound site, so as to correctly understand the traditional culture and enhance national confidence [4].
Table 1 The value system of ancient Coconut Shell Mound ruins explains the content of the system construction

| The Value Explanation System of Ancient Coconut Shell Hill Site |
|---------------------------------------------------------------|
| Geographic location: geographic location, protected area, surrounding remains |
| Time evolution: chronological background, related history, characters, stories, etc. |
| Unearthed cultural relics: pottery, stone, wood, and animal and plant remains |
| Functional layout: spatial layout, functional design, wetland landscape environment, service facility architectural form, etc. |
| Contemporary value: historical value, artistic value, scientific value, social value, cultural value, etc. |
| Factors affecting site protection: natural factors, rat dens, ant dens, plants and weeds, human factors, etc. |

3.3. Digital display technology selection

The ancient coconut shell mound site is a typical prehistoric site without written records. It relies more on materials obtained from archaeological excavations and modern display techniques. It is necessary to seek a vivid and easy-to-understand digital display method based on on-site scenes, real scene restoration, and empirical history in a multi-dimensional, multi-level, and diversified way to pass the connotation value of the ancient coconut shell mound site to consumers, without deliberately pursuing vision. The shock and the content are heavy, and efforts should be made to enhance the public scene experience and actively participate in the perfect integration of technical means and artistic performance. According to research and analysis, the ancient coconut shell mound site can choose the following digital display technologies:

First, immersive digital reproduction display. Through digital reversible display facilities, such as holographic projection, VR display, projection multimedia, etc., the historical style and atmosphere are vividly rendered in the ancient coconut shell hill protection facilities. At the same time, digital three-dimensional methods can be used to research and restore natural features, historical events, prehistoric culture and other content.

Second, link network display. A "macro, meso and micro" tour route network of different levels is formed. For each transportation route, according to the distribution, connotation, and use of the site, a tour route with distinct themes for different groups of people is formed. Design cultural and educational digital products with display, publicity, and education as the main functions, and interactive experience in the easiest way for young people.

Third, interactive digital experience display. Digital simulation of archaeological experience, stripping the rich culture of the ancient coconut shell mound site into digital modeling, and displaying it through touch screen or related terminal equipment. Combining the online social platform to achieve an interactive digital experience, while maintaining real-time online and offline interactive cultural experience for information such as real-time scenery and activity photos of the scenic spot, and thoughts and experiences.

Fourth, the multi-sensory display. The ancient coconut shell hill site contains many types of cultural relics. According to the different emphasis of information dissemination, appropriate new media technologies and methods can be selected to show the characteristics of the ancient coconut shell hill site. It also enables viewers to get the best viewing experience, which can be divided into traditional information display types, sensor display types, outdoor phantom imaging display types, interactive touch screen display types, VR virtual reality and AR augmented reality display types, etc.
In the application of the digital display method of the ancient coconut shell mound site, the visual effect diagram should be divided into exhibition items, and the evaluation feedback correction should be carried out. After the final confirmation of the plan, the acceptance, curing and dynamic adjustment should also be carried out at a fixed time to ensure freshness and continue to attract consumers.

3.4. Key points of space digital display design
Digital display is generally realized by using modern technology, through multi-sensory interaction of sight, hearing, and touch, to arouse people's interest and enhance the sense of participation. The digital display of the ancient coconut shell mound site space is based on the experience of visitors, and the main points of the digital display of the ancient coconut shell mound site space are explored from information design, visual design, and new forms:

First, the overall display concept is coordinated. Under the premise of effective protection and reasonable display of the ancient coconut shell mound site, a comprehensive concept of the overall display of the body, environment, value, and inheritance will be formed. Create a harmonious coexistence between the ancient coconut shell mound site and the surrounding humanistic environment, and at the same time realize the cultural value-added efficiency of the ancient coconut shell mound site and the mutual benefit of economic and social transformation and development through cultural and creative research and development, re-use of the remains, publication and distribution and other cultural heritage displays.

Second, break through the display content. The display of the ancient coconut shell mound site is mainly the original appearance of the original site and the display of the natural environment. However, with the continuous progress of the times, the single display cannot meet the spiritual and cultural needs of modern consumers and the demand for a comprehensive understanding of the site culture. Therefore, the display content needs continuous breakthroughs.

Third, strengthen the sense of integration between the digital information of the ruins and the environment of the ruins. Enhance the connection between digital information and the space of the site, strengthen the connection of the time dimension of the site information in the design, form a comparison of the site and its spatial changes under the time evolution, and deeply feel the evolution of the life cycle of the site.[5]

4. Conclusion
Based on field investigation, problem analysis and solution method summary, this paper obtains the status quo of the ancient coconut shell mound site in the digital display design, and then puts forward the aspects of "exploring the value of the site, highlighting the natural landscape pattern, activating the digital display method, and sharing the value of the site" The corresponding display design strategy. This paper make specific ideas and research for the digital experience of the ancient coconut shell mound site color display, and then form a complete digital media and virtual visualization display system plan composed of the site and the surrounding environment, so as to achieve the purpose of enhancing the visitor experience.

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