Paper Type: Original Article

Digital Inheritance of Maritime Silk Road Cultural Heritage— Research on Interactive Integrated Media Design of Zheng He's Voyages to the Western Ocean Theme Based on H5 Technology

Mengran Chen[1]*

1.College of Cruise and Arts Design, Jiangsu Maritime Institute,Nanjing,211170, China

Abstract

"H5" is a kind of digital media product such as interactive page or interactive animation which is produced by using HTML5 standard to support mobile display. Interactive integrated media design based on H5 technology can greatly stimulate user participation and interactivity, and provide multi-sensory experience that cannot be realized by traditional media, and because it is easy to disseminate, it is a high-quality carrier suitable for disseminating the excellent traditional Chinese culture heritage in current digital era. By studying the cultural connotation of the historical event of Zheng He's Voyages to the West Ocean and the limitations of current state of artistic dissemination forms, this paper puts forward the advantages and significance of H5 technology used in the creation of interactive integrated media design on the theme of Zheng He's Voyages to the West Ocean and explores the creation strategy of the work, so as to provide a reference for digital inheritance and innovation of cultural heritage of Maritime Silk Road.

Keywords: digitization; H5 technology;Zheng He's Voyages to the Western Ocean;interactive integrated media design, Maritime Silk Road

1.Overview of H5-based interactive integrated media

H5 is short for HTML5, the full name is Hyper Text Mark-up Language, which is a collection of standards for creating responsive web page interactions. In general, "H5" refers to digital media products such as interactive pages or interactive animations that support mobile display using

HTML5 standard [1].

Interactive integrated media refers to a brand-new media form that integrates text, imagery, audio, animation, video and other media forms with interactive functions, effectively realizes the integration and sharing of media information, provides users with richer and more participatory experience, and promotes interaction and communication between users and digital contents. Interactive integrated media based on H5 technology supports rich media forms, animations and interactive behaviors, which is more in line with the reading habits of users in the mobile era, especially for young users in current digital era [2].

2. Analysis of the background of the research

2.1 The cultural connotation of Zheng He's Voyages to the West Ocean event

The ocean is natural link of economic and cultural exchanges between countries, the ancient Maritime Silk Road is an important bridge between the east and the west economic and cultural exchanges, with China as the representative of Southeast Asia since ancient times is an essential component of the Maritime Silk Road. On July 11 of 1405, Emperor Zhu Di of the Ming Dynasty ordered Zheng He to navigate to the Western Ocean. A huge fleet of ships departed from Nanjing and sailed to the sea, thus opening the prelude to the great voyage of mankind. During the Yongle period of the Ming Dynasty, the country was strong and powerful,

Zheng He had made seven voyages to the West Ocean, spreading Chinese civilization to foreign lands, and had left his mark on many coastal countries in the world. Zheng He's fleet of ships was so large, numerous and well-organized that it built a bridge of cultural exchanges with other countries, and also opened up the road of commerce for economic and trade exchanges[3]. Zheng He devoted his whole life to the exploration of the ocean, writing the most magnificent poem in the history of human navigation and China's "Maritime Silk Road". This historical event is the precious cultural heritage of China, The spirit of the times, "Dare to be the first", of Zheng He's Voyages to the West Ocean is still leading people to revitalize the "Maritime Silk Road" in modern times and building a strong maritime country[4].

2.2 Analysis of current status of Research on the Artistic dissemination forms of Zheng He's Voyages to the West Ocean

The visual representation of the historical event of Zheng He's voyages to the West Ocean is mostly found in the form of popular science books and graphic arts paintings. In the "Great Expedition" series of books issued by Sol90 Publishing Company in Spain, there is a simple scientific explanation about the historical event of Zheng He's Voyages to the West Ocean. Other representative works of art include Chinese painter Ali Leigong's series of comic strips "Talking About My Drawings of Zheng

He's Seven Voyages to the West Ocean", which continues the traditional expression of fine paintings and comic strips in terms of narrative expression of images, and represents different scenes of Zheng He's seven voyages to the West Ocean in a complete manner[5]. We have also searched for the Chinese illustrator Wang Xiuzhu's "Treasure Ship to the New World", which depicts the series of stories of Zheng He's Voyages to the West Ocean in the form of watercolor illustrations.

Film and television works, documentaries and other dynamic video type of art form which are represented by China's large-scale television documentary——"1405-Zheng He's Voyages to the West Ocean", with the use of "situational reproduction" and three-dimensional animation of the movie presentation method to restore the Zheng He's fleet in the magnificent sea voyage scene[6].

Other forms of art dissemination channels include Zheng He raleted theme and culture park, China Maritime Museum, maritime education colleges and other specific venues such as Zheng He cultural plazas, guide systems, stone murals, portrait sculptures and other indoor or outdoor display types of carriers.

On the other hand, research materials on interactive integrated media artworks in the form of interactive art covering cross-platform integration of modern media such as mobile interface experience, AI artificial intelligence, AR augmented reality,VR virtual reality technology and so on, under the

theme of Zheng He's Voyages to the West Ocean are relatively rare and little known[7]. Generally speaking, the cultural dissemination of the theme of Zheng He's Voyages to the West Ocean is mainly based on traditional paper print media and offline visits to physical cultural sites, which is usually limited to specific venues or activities, focusing on the dissemination of the heavy cultural atmosphere of this historical event, but the design form is traditional and lacks of innovative form of modern digital technology.Moreover,the design performance seem to be serious and lacks of modernity, vitality and visual impact.

3. Innovative points of the project

3.1 Analysis of the advantages of interactive integrated media based on H5 technology

(1) From experiential perspective

"Convergence" is an important feature of H5 interactive integrated media. The application of H5 technology in interactive integrated media art can integrate text, imagery, animation, interactive behavior, game-like experience and other rich media forms to form a new digital media content which is rich in information level, strong interactivity, fun and immersion, and have the ability to communicate cultural and informational values in a more three-dimensional way [8].

For example, in the H5 interactive integrated media work "Build it up,

my great voyage" produced by the China Maritime Museum, the background of the interface is an unfolded parchment, and the ancient design highlights the theme of "history" and "museum".By guiding users to click on the title page of the contact to start building a ship, you can choose the type of ships, sails of ships, components of ships and appearance of ships.By clicking on the photo, the photo will be enlarged,and the user clicks on the "Confirm" button to use this modeling, after the selection is complete, automatically generate modeling diagrams and related historical knowledge of the ship type, and guide the user to generate the route posters, route diagrams and analysis. Users can click to share the poster to their friends or build the ship again, which greatly stimulates the participation and interaction of users, and provides a multi-sensory experience that cannot be realized by traditional static media.

(2) From communication perspective

In the era of digitalization, portable mobile devices make it possible for people to make full use of "fragmented"time and obtain information anytime and anywhere[9]. Relying on smart devices such as cell phones and Ipads, interactive integrated media based on H5 technology can be easily viewed by scanning the QR code, and can be easily shared and promoted on WeChat, QQ and other mainstream Chinese social media platforms, making it a high-quality carrier suitable for rapid dissemination of excellent traditional Chinese culture.

3.2 The significance of the creation of H5 interactive integrated media under the theme of Zheng He's Voyages to the West Ocean

In the context of the digital era, interactive integrated media works based on H5 technology are often used in the digital display of traditional culture, and have become a modern new channel for promoting traditional cultural heritage. For example, the work"Dragon Boat Rowing"produced by Tencent News takes the Dragon Boat Festival as its theme, and by scanning the QR code and doing a simple rowing race with friends in the form of an interactive H5 game, it allows users to experience the Dragon Boat race, Zongzi eating and other festival characteristics and customs. It is easy and interesting to spread traditional Chinese Dragon Boat Festival culture in a very modern way.

Similarly, the H5 interactive integrated media creation on the theme of Zheng He's Voyages to the West Ocean is to popularize the great navigation event in the world's maritime history, in a more energetic and interesting way from the perspective of modern people. On the basis of interactive interface design, it expresses the cultural connotation of Maritime Silk Road, inherits cultural spirit of inclusiveness and openness to the outside world, and serves the development strategy of China's "One Belt, One Road"[10].

4. Interactive integrated media creation strategy of Zheng

He's Voyages to the West Ocean based on H5 technology

4.1 Structural layer design

(1) Building information frameworks and organizing information hierarchies

A clear information framework is the skeleton of the work, allowing the content to be categorized and the knowledge of each of these areas to be linked together through the dispersion of the framework. The information hierarchy enables the subsequent sections to establish layer-by-layer analytical connections between them, creating preconditions and logical support for the next visualization of the visual graphic design[11]. The design takes Zheng He's great voyage chart as the framework, and develops the content modules such as the types of fleet, navigation routes and technology, countries and trade transactions during Zheng He's Voyages to the West Ocean. The fleet types include the introduction of the main types of ships, such as the Fujian vessel, watercraft, grain ships, warships, etc.; the navigational routes and technologies include the route illustration and the introduction of the navigation technology; the countries and trade transactions include the introduction of three major categories of maritime trade in goods——spices, porcelains, and exotic animals.

(2) Prototype design

Prototyping is not only a complete operation guide, but also a way to clarify the hierarchy of each functional page with the prototype drawing tool

"mockingbot" to draw low-fidelity wireframe diagrams to make specific layouts, including schematic diagrams of navigation methods, buttons and other controls, interface layouts and other boards. By designing the layout of elements or controls on each level of interface to form a systematic and holistic interface relationship.

4.2 Interactive layer design

According to previous prototype design, we further define the interactive operation flow and the design of interactive gestures[12]. After entering from the interface of Zheng He digital navigation long-drawing which serves as main navigation, we design the long axis screen entry animation and long axis dragging interactive effect, and at the same time, the interactive elements on the interface are designed as dynamic scaling flashing interactive effect, which prompts the user to click to the next level of detailed page to watch the introduction. For example, by clicking on Fujian vessel icon element on the digital nautical illustration in the main navigation interface , you can view the Fujian vessel introduction interface of the next level of information hierarchy.

4.3 Visual layer design

The visual layer belongs to the perception system which is the external form of the interactive   integrated media design interface is also an important factor in highlighting visual tone of nautical culture. According to

the basic principles and methods of digital visual design, the prototype program is expressed in the form of fine renderings. The digital painting illustration of Zheng He's voyages on the home page is the most important navigation interface in the project, and it is also the most directly perceived visual performance interface after the user enters the interface. It is proposed to use historical record of Zheng He's voyages as a blueprint, reshape the screen composition and visual style patterns, and digitally transform it with current popular flat illustration style on the Internet. The visual effect design of the interface must pay attention to the unity of overall visual tone, other interfaces should be based on visual style of main interface and fit the nautical theme, and the layout design of the pages under the same level should be unified and have a continuous visual style.

4.4 Interaction layer implementation

According to the prototype diagram and static visual effect diagram generated earlier, we create interface gestures, page flow, interactive effects, and generate scannable QR code on "Mugeda" and other professional H5 interactive integrated media production platforms, so as to realize interactive visualization of H5 interactive integrated media demo.

5.Conclusion

The historical event of Zheng He's Voyages to the Western Ocean is glorious piece in China even in the history of navigation around the world.

This paper analyzes the advantages of H5 interactive integrated media and the significance of applying it into the theme of Zheng He's Voyages to the West Ocean by analyzing existing art dissemination forms. It also explores the creation strategy of interactive integrated media works based on H5 technology for the theme of Zheng He's Voyage to the West Ocean from structural layer, interactive layer and visual layer, hoping to open up a new path for digital inheritance and innovation of cultural heritage of "Maritime Silk Road", and to provide certain reference value for future research on related theme direction.

Acknowledgement

References

[1] Chen Zao.The art of "Reversible Time and Space" and "Reachable Touch" ——the expression of feminist themes in interactive media art based on H5 technology [J]. Beauty and the Times (first half),2023,(11): 91-93
[2] Wei Xinyuan,.Research on the design of excellent traditional culture content H5 in the context of integrated media [D].Hebei University of Technology, China ,2023

[3] Guo Xiaojie.The far-reaching impact of Zheng He's Voyages to the West[J]. Encyclopedic Knowledge,2021(06):9-10

[4] Xu Juan. Zheng He's Voyages to the West Ocean and China's maritime affairs[J]. China Maritime Safety, 2020(10):77-78

[5] Gao Xiaoshu. Research on the information visualization design of "Zheng He's Voyages to the West Ocean and trade examination" [D]. Shanghai Normal University ,China ,2022

[6] Zhang Na. A brief exploration of situational reproduction in documentary films——taking two parts of Zheng He's Voyages to the West Ocean as an example[J]. Movie Literature,2007(08):21-22

[7] Hu Wenyu. Research on digital display design of cultural heritage based on AR technology [D]. Shandong University ,China ,2020

[8] Cao Songhan. Research on the interactive display design of museum collections based on the interactive platform of melting media[D]. Northeast Electric Power University,China ,2024

[9] Chen Mengran. Research on mobile advertising design expression based on H5 technology[J]. Arts and Technology,2018(08):180

[10] Qu Jinliang.International cooperation path for the protection and utilization of the cultural heritage of the Maritime Silk Road[N]. China Social Sciences Journal,2022-03-04(006)

[11] Luo Hui. Research on Chinese medicine APP interface interaction design based on context sensing[D]. China University of Mining and Technology ,China ,2017

[12] Li Xiang. H5 product design and development in the application of integrated media platforms[J]. Screen Printing,2022(22):64-67