

Research Article

Research on Digital Project of Huanglongfu Cultural Heritage

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Abstract: The research aims to discuss the digital project of Huanglongfu cultural heritage, providing the basis for the protection and development of Huanglongfu cultural heritage. Through analyzing the importance of Huanglongfu cultural heritage and the function of digitizing Huanglongfu cultural heritage, the basic content of digital project of Huanglongfu cultural heritage is put forward. Using advanced digital technology to protect the cultural heritage of Huanglongfu is a necessary and effective method, is a historical mission given by the times and is necessary for culture protection, cultural transmission and cultural renaissance. Only digitizing the cultural heritage of Huanglongfu can be more conducive to the further inheritance and only reasonable exploitation and utilization can bring better economic benefits, achieving a double harvest of protection and inheritance and economic development.

Keywords: Cultural heritage, digitization, huanglongfu, inheritance, protection

INTRODUCTION

Huanglongfu today is the county of Nong'an, Changchun, jilin, China, located in the Yitong riverside in the west of the Changchun city, located in east longitude 124° 32' ~ 125° 45' and north latitude 43° 54' ~ 44° 56' (Du, 2008). Huanglongfu has a wealth of material cultural heritage. According to the introduction of the comrade in charge of cultural relics office in Nong'an county, there are 24 ancient city sites, 246 ancient sites, 2 ancient buildings and 17 ancient tombs. Among them, there are 5 neolithic sites and the pottery specimens unearthed from Zuojiashan site, 4 km from the county seat, have the longest history, dating back to 7000 years ago. The Liao and Jin dynasty has the largest number of ruins, with 203 sites. The ancient building Liao tower has now become the symbol of Nong'an county and has entered the list of the seventh batch of key cultural relics protection units in China. At present, the number of cultural heritage in Nong'an county ranks the forefront in the whole province (Changchun Institute of Cultural Relic Protection, 2014). In addition, the Nong'an county still has a lot of immaterial cultural heritage, such as the local opera Huanglong opera created by Nong'an county, the Taiping drum and many folk legends, as the legend of dragon, the story of Huanglong tower and little golden horse, the story of yellow fish stall, the story of stone

man and doctor, the story of the light of magic wax and the story of gushing precious spring and so on and the spring nabo, pledging inscription and Yue Fei pledging to war in Huanglongfu. Among them, the Huanglong opera has been included in the second batch list of national immaterial cultural heritage.

This rich cultural heritage of Huanglongfu is an indispensable part of Chinese cultural heritage. It has profound connotation and unique value and is the unique culture of northeast China. However, in recent years, due to inadequate protection, it is disappearing gradually. How to effectively inherit and protect this precious cultural heritage of Huanglongfu, so that the Huanglongfu civilization can be well inherited, has become a common concern of the whole society (Jiang and Liu, 2018).

At present, all countries in the world are carrying out digital protection and development and utilization of cultural heritage. The digitization of cultural heritage has shown another unprecedented "media transfer" in the history of human culture, just like the leap development of human civilization caused by paper media and electromagnetic media (Zhao, 2015). Digital technology has the characteristics of large capacity storage, high speed calculation, multimedia presentation and long-distance transmission. Using advanced digital technology to protect cultural heritage is a necessary and effective method (Zhou *et al.*, 2011),

a historical mission given by the times and a need of cultural protection, cultural communication and cultural renaissance. It need to seize the opportunity of the fusion development of the culture media and digital technology, updating the concept of thinking, especially to give play to the role of the science and technology as the first productivity. Specifically speaking, it is to introduce the digital technology into the protection of Huanglongfu cultural heritage, giving play to the role of the digital technology to protect and inherit Huanglongfu cultural heritage. Otherwise it could not really protect and make good use of Huanglongfu cultural heritage. The digitalization of Huanglongfu cultural heritage will be an important combination of Huanglongfu culture and digital technology and it will be a breakthrough and innovation of realizing the organic combination of technological means and management means. The digitalization of Huanglongfu cultural heritage will eventually form a new situation integrating the excavation, protection, inheritance and utilization, which could effectively promote the innovation and development of Huanglongfu cultural industry and make new contributions to the sustainable development of economy and society.

PURPOSE OF DIGITIZING HUANGLONGFU CULTURAL HERITAGE

Providing theoretical basis for the protection work of Huanglongfu cultural heritage: Due to human and natural reasons, the historical and cultural remains of Huanglongfu have been seriously damaged. Although the state has repeatedly appropriated protection funds for special rehabilitation, the practice in recent years has proved that not only the technical effect is not good, but also the cultural heritage itself has been seriously damaged. The main reason is the lack of reliable data demonstration and testing methods, leading to poor construction practices.

Adopting digital means to map and monitor Huanglongfu cultural heritage could provide accurate and reliable data and put forward targeted protection and restoration plans, so as to make restored works achieve absolutely real visual effects (Zhou, 2006).

Providing scientific and systematic sharing material for academic research: Huanglongfu cultural heritage has great research value in history, art and religion. Establishing the digital information database of Huanglongfu cultural heritage could provide highly accurate research material for academic research.

Promote tourism development and cultural communication: Establishing the virtual tour environment of Huanglongfu by digital technology could show the profound connotation and unique value of Huanglongfu culture from various aspects and

promote the development of tourism and the spread of culture.

MATERIALS AND METHODS

According to the above purposes, the digitization work of Huanglongfu cultural heritage mainly includes four aspects (Zhou *et al.*, 2011).

Digitally collecting, recording and preserving Huanglongfu cultural heritage: Through digital photography and 3d stereoscopic scanning, the original appearance of Huanglongfu material cultural heritage could be timely recorded in the fastest and most comprehensive way and the defects caused by the irresistible decay and disappearance of cultural relics could be made up to the greatest extent.

By using digital technology, the immaterial cultural heritage of Huanglongfu is stored in informatization and the relevant information database afforded by various recording media is established.

Digitally restoring and reproducing Huanglongfu cultural heritage: With the help of virtual technology, some damaged or disappeared Huanglongfu material cultural heritage could be restored, such as virtually rebuilding the buildings of Liao and Jin Dynasty style, one thousand year old temple Huanglong temple, the palace of the first founder of Liao Dynasty, the palace in which Emperor Huizong and Qinzong of Song Dynasty were locked up, the palace of station troops of the first founder of Jin Dynasty and the martial hall in which the aristocracy of Liao Dynasty held "first fish feast" and "first goose feast", as well as the legendary palace of Dayu stopping dragon, drying clothes door of Rengui Xu, the palace of King dongming of Fuyu, etc (Gu, 2005) and used for simulating the evolution in the virtual world.

Many cultural heritages themselves are a whole and the traditional way to protect and inherit them is to display them in museums. However, once the cultural relic is separated from its original environment, it will cause the separation of the whole concept, which is a kind of damage to the characteristics of the cultural relic itself. In this regard, it should build a "Huanglongfu experiential museum" with digital technology and equipment such as multimedia and virtual reality, so that audiences could roam in the virtual cultural heritage space through remote sensing device and understand the overall results of cultural heritage, so as to restore and reproduce a comprehensive and complete cultural space.

By using virtual reality technologies such as multimedia virtual scene modeling and multimedia virtual scene coordinated display, the immaterial cultural heritage of Huanglongfu, especially those immaterial cultural relics that exist only in historical



Fig. 1: Appearance of the "spring nabo" of Emperor of Liao Dynasty (created by Haonan Li based on the picture-story book "Fierce Fighting in Huanglongfu" painted by Youwu Xu)



Fig. 2: Shooting swan with arrow of the "spring nabo" of Emperor of Liao Dynasty (Mingzhen Gao)

legends and have no definite written records, could be truly reproduced and the multimedia digital museum including text, voice, image, video and virtual reality could also be set up, for example, according to the legend of magic lamp in Boluo lake to virtually reconstruct Boluo lake and the "seven-color magic lamp" in the lake, as well as creating the "spring nabo" of Emperor of Liao Dynasty to simulate and reproduce the historical scene in those days (Gu, 2005), as shown in Fig. 1 and 2 (Zheng and Xu, 1983).

Digitally displaying and spreading Huanglongfu cultural heritage: It should establish Huanglongfu digital museum, integrating various media forms of cultural heritage information together. With the help of multimedia integration, digital photography, virtual reality and other technologies and networks, the exhibition, spread and utilization of Huanglongfu cultural heritage will be more convenient and sufficient, so as to get rid of the constraints of the necessary architecture, display and visiting time of museums in the traditional sense. Anyone could from the internet at any time, any place easily visit Huanglongfu.

Digitally inheriting and innovatively applying Huanglongfu cultural heritage: On the basis of protecting Huanglongfu material cultural heritage, it

could derive and develop many digital products of loading Huanglongfu elements, which makes cultural heritage become fresh and alive, thus not only expanding the influence of material cultural heritage, but also vividly presenting immaterial cultural heritage. Integrating contemporary understanding and creating makes Huanglongfu culture grow along with the development of the times.

RESULTS AND DISCUSSION

Contributing to publicizing and popularizing Huanglongfu culture: Digitizing Huanglongfu cultural heritage could further explore the unique value of Huanglongfu culture, so that the world has a deeper understanding of northeast regional culture in China. In addition, digital protection and utilization of the cultural heritage of Huanglongfu plays a positive role in enhancing the image of Nong'an county and increasing its popularity and reputation. The development and promotion of digital products of Huanglongfu cultural heritage is of great significance to the publicity and popularization of Huanglongfu culture.

Digitizing Huanglongfu cultural heritage is also conducive to the development of cultural and creative brand. The construction of cultural and creative product brand is another kind of protection for cultural heritage in the long run, as shown in Fig. 3 and 4. With a good brand, cultural heritage could also find a place to land and form a stable industrial chain (He *et al.*, 2018).

Contributing to the development of digital culture industry: Digitizing Huanglongfu cultural heritage is conducive to the development and innovation of digital culture industry, which will certainly drive the common development of culture and museum tourism industry, media industry, animation and game industry, advertising industry and other related cultural industries.

Culture and museum tourism industry: Government departments should give full play to the advantages of rich cultural heritage and carry out the digital construction of Huanglongfu cultural heritage as soon as possible, which will certainly promote the great development of the culture and museum tourism industry and at the same time be more beneficial to the digital protection and inheritance of Huanglongfu cultural heritage.

Media industry:

Traditional media industry: The digitization of cultural heritage is the important foundation of the great development of traditional media industry in the digital age and the technical basis of traditional media communication. Carrying out the digital construction of



Fig. 3: Brand image design of cultural and creative product of Huanglongfu (Jingfang Li)

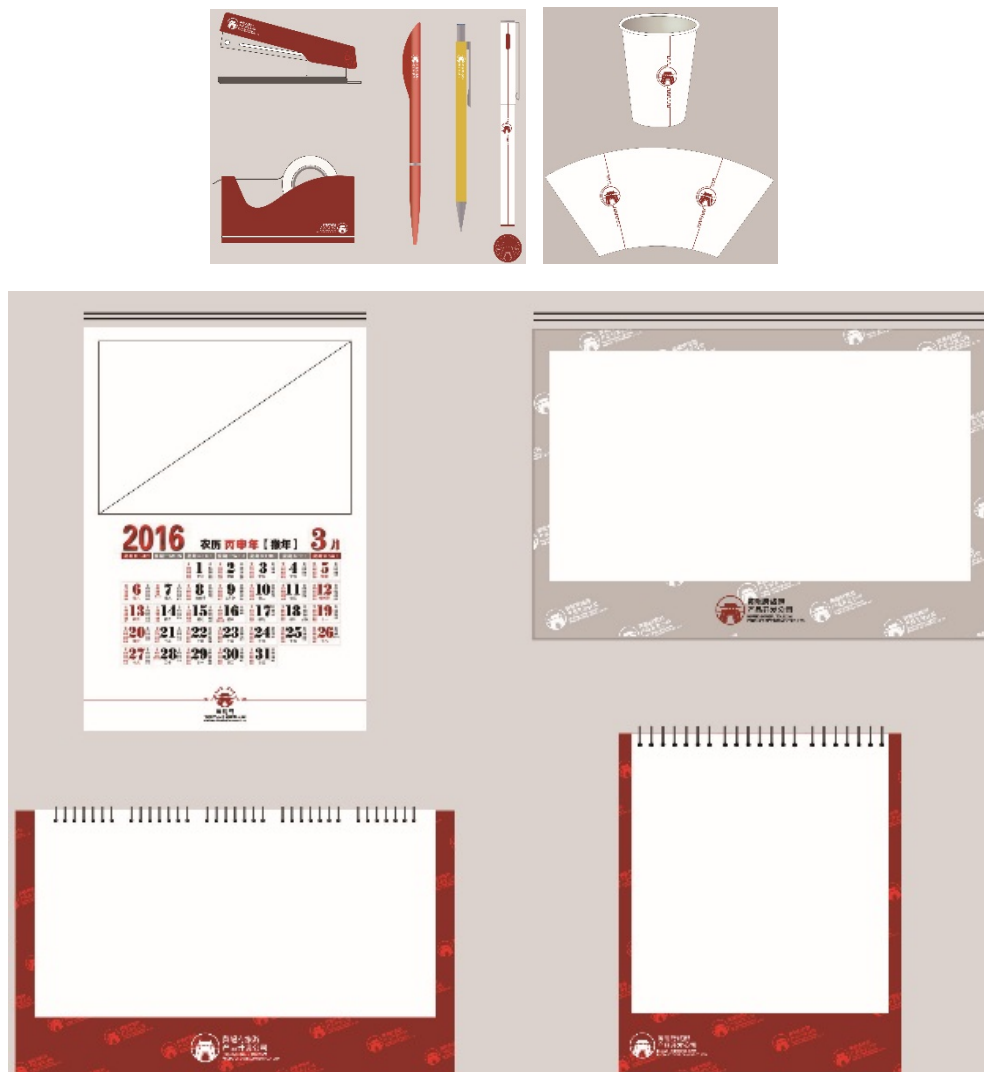


Fig. 4: Cultural and creative product design of Huanglongfu (Jingfang Li)

Huanglongfu cultural heritage as soon as possible could provide the content of "special and powerful" for the traditional media industry of Nong'an, could greatly promote the development of the traditional media industry (Zhao, 2014) and could effectively protect and inherit the cultural heritage of Huanglongfu.

Network media industry: The unique Huanglongfu cultural heritage could promote the breakthrough development of network media industry, while the digitalization of Huanglongfu cultural heritage could more promote the great development of network media industry (Zhong and Zhou, 2015). Because, compared with the traditional media industry, the network media industry is a kind of "attention" and "influence" economy. It more needs unique contents that could attract people's attention.

The website of "People's Government of Nong'an County" has set "Huanglong culture" as one of its columns. Relying on the cultural heritage that has unique value and rich connotation, it agglomerates "attention" constantly. The column "Huanglong culture" includes more than ten sub-columns, such as folk legends, Nong'an historical narrative, folk customs, Huanglong calligraphy, folk art forms, Huanglong painting, folk craft and historical relics.

Animation and game industry: At present, it should energetically carry out digital protection and development of Huanglongfu cultural heritage, constructing the database of cultural heritage and ancient books and the "Huanglongfu digital museum", making the Huanglongfu culture heritage in the form of digitization display in front of people, which will greatly facilitate the animation game creators to collect materials, enrich and stimulate creativity and quickly turn Huanglongfu cultural heritage into animation game products. Making use of the digital achievements of cultural heritage to create animation game products is a kind of "productive protection" with the nature of protection and inheritance.

Making use of digital historic sites to create animation game: It should carry out the digital construction of Huanglongfu cultural heritage as soon as possible, so as to provide a good basis for the creation of "virtual reality" of animation games on Huanglongfu historic sites, so that the creators of animation games could easily create them into animation game scene. To create this kind of animation game, on the one hand, it requires digitized achievements at the physical level of ancient cities, ancient battlefields, historical and cultural celebrities and major historical events; on the other hand, it requires digitized achievements of ancient books and literature (Zhao, 2014). These two aspects of digital achievements are the important foundation for creating

this kind of animation games, such as "authenticity" ancient cities, ancient battlefields, historical and cultural celebrities and important historical events. The digitization of materialized level is conducive to the creation of "real" scenes of animation games, while the digitization of ancient books is conducive for creators to conveniently collect the "real" elements of animation game plots, characters and other relevant contents. It is believed that such animation game works of "virtual and real" historic sites of Huanglongfu will be of great value, because it will enable viewers and players to obtain many accurate historical and cultural knowledge in the process of watching or experiencing, which will be the best inheritance of Huanglongfu cultural heritage.

Making use of digital immaterial cultural heritage to create animation game: Huanglongfu immaterial cultural heritage resources are very rich and unique. The digital construction of immaterial cultural heritage should be promoted as soon as possible so as to form the digital achievements and provide rich materials for the creation and production of such animation games. At the same time, the digital construction of Huanglongfu ancient books also should be promoted as soon as possible, so that animation game creators could develop products with these materials in a very convenient way, enhancing the originality of animation games. The best protection for the immaterial cultural heritage of Huanglongfu will be to create animation game products based on the digital achievements (Xing and Yang, 2017).

Advertising industry: The digitalization of Huanglongfu cultural heritage could promote advertising creativity and promote the development of advertising industry.

It should push forward the digital construction of Huanglongfu cultural heritage as soon as possible, after that, on the basis of its digitization, to construct the network media platform such as Huanglongfu digital museum and immaterial cultural heritage database (Jiang and Sun, 2015) and to make use of these digital achievements to research and develop advertising, which will play a great role in promoting the development of advertising industry and make Huanglongfu cultural heritage get effective protection and inheritance.

CONCLUSION

Digitizing Huanglongfu cultural heritage has extremely profound social and political significance and the time is pressing, so it must start the related research engineering of digitizing Huanglongfu cultural heritage as early as possible and must protect and develop the rich resources as soon as possible. Using digital and

network technology, it could transmit the rich and splendid Huanglongfu culture to the front of the national and global consumers in the form of bits. At the same time, developing related industries, it could transform the resource advantage of Huanglongfu culture into economic advantage, which not only digitally protects and inherits Huanglongfu cultural heritage, but also creates a huge economic and social benefit.

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CONFLICT OF INTEREST

We declare that we do not have any commercial or associative interest that represents a conflict of interest in connection with the work submitted.

REFERENCES

- Changchun Institute of Cultural Relic Protection, 2014. *Chun Hua Qiu Shi: Changchun Cultural Relics Collection*. Jilin Literature and History Press, Changchun.
- Du, Y., 2008. Rise and fall evolution of Huanglongfu. *Northeast Normal Univ.*, Changchun, 6(9): 2-20.
- Gu, C., 2005. The three words of Huanglongfu being worth ten thousand yuan. *Changchun Daily*, 11(24): 6.
- He, J., C. Wang and L. Zhou, 2018. Construction of Nanjing paper-cut intangible cultural heritage. *Packag. Eng.*, 39(6): 46-51.
- Jiang, X. and W. Liu, 2018. Research on construction of characteristic teaching material of project-based integration of theory and practice of packaging design in higher vocational college. *Curr. Res. J. Soc. Sci.*, 9(2): 15-20.
- Jiang, X. and Y. Sun, 2015. Study on constructing an education platform for innovation and entrepreneurship of university student. *Res. J. Appl. Sci., Eng. Technol.*, 9(10): 824-829.
- Xing, H. and X. Yang, 2017. Interaction of Liaoning Xibe intangible cultural heritage protection and tourism development. *Packaging Eng.*, 38(4): 51-55.
- Zhao, D., 2014. Research on the being digital protection and development of historical cultural resources-with Shanxi as the center. *Shandong Univ.*, Jinan, 4(10): 191-217.
- Zhao, H., 2015. *Practical Examples of Computational Thinking*. Tsinghua University Press, Beijing.
- Zheng, R. and Y. Xu, 1983. *Fierce Fighting in Huanglongfu*. Tianjin People's Art Press, Tianjin.
- Zhong, L. and P. Zhou, 2015. New media diversified form of non-left digital protection analysis. *Packag. Eng.*, 36(10): 1-4.
- Zhou, M., 2006. Research on digital protection of cultural heritage. *Proceeding of the 3rd International Symposium on Digitization and Protection of Chinese Cultural Heritage*, Beijing Normal University Press, Beijing.
- Zhou, M., G. Geng and Z. Wu, 2011. *Digital Protection Technology and Application of Cultural Heritage*. Advanced Education Press, Beijing.