A study on the interaction of Environmental Information in the Protection of Shanghai Guangfulin Cultural Heritage

Chuanhong Xu
School of Art And Design
Shanghai University of Engineering Science
Shanghai, China
chuanghongxu@sina.com

Mengying Kong
School of Art And Design
Shanghai University of Engineering Science
Shanghai, China
chuanghongxu@sina.com

Abstract—This paper explores the interaction design of Environmental Information cultural heritage in China from the perspective of Shanghai Guangfulin’s “marketplace”. It argues that "Guangfulin's marketplace culture' is rarely discussed on social media based on the analysis of the Guangfulin's official website and other social media. From the information, data and technology propagation and communication activities presented by the existing Guangfulin cultural heritage, it is suggested that some disadvantages in the protection of cultural heritage has been found, such as absence of interpersonal interaction and single interaction mechanism. This paper proposes that the academia should facilitate the study on Guangfulin marketplace culture, enhance communication and rebuild the mechanism of environmental information interaction of Guangfulin Culture.

Keywords- Environmental Information, Cultural Heritage, Marketplace Culture

I. INTRODUCTION

Based on archaeological research, ancestors have drilled wood for fire, living and working in Songjiang Guangfulin area in Shanghai, China since 5000 years ago. It was officially coined as “Guangfulin Culture". The Guangfulin Culture has not only the trace of Liangzhu culture from the south, but also includes the track of Longshan culture from the northern Yellow River. Thus, the archaeologists suggest that Guangfulin reflects the earliest stage of the "immigrant culture" in Shanghai.

About 4000 years ago, the ancestors from the Yellow River in the Central Plains(Shandong province, Southeastern Henan province and Northern Anhui province) came to settle in the Guangfulin area at the southern foot of Jiufeng, the remaining vein of Tianmu Mountain. They collided and merged with the native southern civilization, constructing trees as nests, building homes, picking fruits, fishing, hunting and farming. With the increasing population, the ancestors need to constantly exploit new residences and dig wells for survival.

In the site of the excavation of Guangfulin, there are hundreds of wells have been unearthed according to statistics. In the site, J14 well is one of the symbolic relics, which were excavated from 2001 to 2002 and the wellhead is nearly circular; the diameter is approximately 2.43-2.50 meters and the depth of the well is 3.10 meters; the inclined straight wall is recessed; the bottom is flat and the diameter of the bottom hole is 0.3-0.5 meters. Meanwhile, a basket-shaped bamboo piece was also excavated in the well. Based on the discussion above, experts identified J14 well as a cultural relic in the last stage of Liangzhu culture.

A large number of wells found in Guangfulin site demonstrate that Guangfulin area already had the characteristics of large settlements and cities as early as the Eastern Zhou Dynasty (Figure 1). Some researchers even consider Guangfulin as the center of politics, economy, transportation and culture in the eastern part of Wu country. Some examples can be demonstrated as following:

Figure 1. Excavation Site of Guangfulin Site

Firstly, the wells of the Eastern Zhou Dynasty found in the Guangfulin site have a special shape. And the well cribs were created in coil method by residences. For materials, the well cribs were made of unprocessed stone, which were taken from the Chen Mountain. Secondly, the bottom of the well was paved with wooden boards. The distribution of numerous wells, combined with the surrounding unearthed remnants of bronze ware, bronze knife, original pottery, large bronze vases and a large number of relics of Han Dynasty, Song Dynasty and Yuan Dynasty. These discoveries have revealed Guangfulin formed the larger cities in the Zhou dynasty and Han dynasty. By the Yuan, Ming and Qing Dynasty, Guangfulin was a populous area with merchants, and further developed into a renowned Guangfulin bazaar. Guangfulin was the distributed center of commodity trade and the North-South transitional station in Qing dynasty. Thus, these samples concludes that
Guangfulin’s "wells" and "cities" were the origin of Shanghai’s ancient civilization and the initial stage of Shanghai’s city.

Since then, Guangfulin gradually developed from a market village with the multicultural culture into a prosperous ancient city.

II. THEORETICAL APPROACHES: ENVIRONMENTAL INFORMATION AND INTERACTIVE DESIGN OF CULTURAL RELICS

In recent years, some achievements have been presented by many scholars in the design of environmental information and interaction of cultural sites.

In 2007, Professor Lu Xiaobo at Tsinghua University in Beijing, China suggests that the design of environmental information and interaction is refined in the process of "program development and actual evaluation" (Lu, 2007). According to scholar Zhang Lie and Guan Yan, digital entertainment technology helps to enhance the narrative of cultural heritage exhibition content and space. After that, Wu Yajie, Han Xiaohan, He Yujin and other scholars discussed the exhibit design in cultural sites, including interactive experience design, human-computer interaction and interactive media art; Hu Guanglong emphasized that the marvelous space displays are the combination of vivid high-tech application and touching artistic expression; Sun Wei studied the interactive media narrative of "non-thread" information. Meanwhile, Wu Weiguang proposed digital technology and diversified methods of information dissemination to lead exhibition design to comprehensive experience. Liu Shuo suggests that the interaction of environmental information should be centered on the For the future research, Zhang Lie proposed that virtual experience design is "content-foremost and user-centered theory" (Zhang, 2008); while Hao Jianying, He Xiaoyou and Sun Minglu suggest that virtual exhibition is the main direction of exhibition development of cultural heritage museums in the 21st century and interaction is the "user-centered design". Zhuge Yang and Lei Yue suggest the development perspective of "experience and interactive design" by using digital technology in the future.

In 2017, Fu Xinyi, Xu Yingqing and other scholars put forward the trend of "big data visualization", while Professor Lou Yongqi at Tongji University, Shanghai, China argues that "the display of environmental interaction design deals with interaction from the point of view of human feelings NHCAS perspective of human-computer interaction, and sustainability and design are the keys" (Lou, 2017).


Martin Schr (1994) argues that museum exhibits are essentially "the relationship between human and substance". At the International Conference on Museum Themes of Interactive Narrative held in Darmstadt, German researchers reached a consensus on the establishment of museum models on users’ emotions and experiences. British Scholar Jenny Kidd discusses information communication in cross-media museum, digital interaction, and the evaluation of 3D technology, wearable technology, immersive experience etc (Kidd, 2014). Furthermore, he suggests that the design trend of "user-centered" in the interaction of exhibition and display Information in the digital museum. In 2015, Norwegian scholar Ana Luisa Sánchez Laws has studied the feedback and supply mechanism of museum digital space and proposed the development trend of mobile technology, Interactive Museum website and Social Media Integration based on public participation. The well-known Japanese Museum director Takeshi Hetian suggests the idea that museums are the combination of human and objects.

III. TRANSMISSION ANALYSIS: GUANGFULIN CULTURAL HERITAGE WEBSITE AND SOCIAL MEDIA

http://www.gflpark.com/gateway/homepage/showPage (the website of Guangfulin Cultural Heritage) shows:

The propagation of exhibition environmental information of Guangfulin cultural heritage includes the part of "Entering Fulin". "Fulin impression" has only 1062 Chinese characters which primarily introduces the excavation and archaeology, inscription and monument-building of Guangfulin Ancient Cultural Site from two aspects of "archaeological discovery, excavation and research" and "protection and Archaeology".

"Fulin Characteristics" presents eight images including "architectural culture", "religious culture", "farming culture", "museum culture", "scientific education", "inheritance and creative culture", "food culture" and "Leisure Tourisms Culture". "Panorama Park" adopts virtual reality digital sand table, 360 ° panoramic mode, (screen size: 7.0 inch; pupil distance: 63.5 mm; set head display: Cardboard B.)

There are 15 scenarios including Fulin impression, Chen Zilong Memorial Hall, Guangfulin Cultural Exhibition, Ancient Pottery Art Museum, Sanyuan Palace, Flynn Tower, Zhiyi Zen Temple, Wood Art inheritance Exhibition Hall, Fulin Zhaobi, Guangfulin site Core, Tianniu Bridge, Guandi Temple, Guangfulin City God Temple, Bone Needle Square, Cloud College.

The Guangfulin Culture site (Phase I) was officially commissioned on June 26, 2018. For the convenience of tourists, the administration has set up an "online customer service" on the website, where the tourists can "speak" to a robot and have interactive consultation on 20 popular questions, such as "how can I buy a ticket? ", "does the elders get a free ticket? ", and the robot can respond the questions immediately.

By February 18, 2019, an online search of "Guangfulin culture site" on Baidu has about 482,000 results, including 12,194 images and more than 10,000 videos.

The most of video files are from Youku video, Tencent video, Sina video, Sohu Video, Goodview video, Leshi video, DOI reference number: 10.18293/DMSVIVA2019-004.
Chinanews.com, Tudou, Iqiyi, Miaobaike, Miaopai, 56, website, Weibo, and Toutiao.

As far as the number of broadcasts is concerned, the top three are from Youku. The video files are: Guangfulin Cultural Relics: Ancient Pottery Collection Hall Shanghai Morning, 1.08 million broadcasts; Guangfulin Cultural Relics Phase I has entered the stress test Shanghai Morning, 1.10 million broadcasts; Guangfulin Cultural Relics: Mudiao Ming Qing Collection Hall, 1 million broadcasts.

More than 10,000 broadcasts also included "Guangfulin Cultural Relics" (87,000 broadcasts, Tencent videos), "Guangfulin Cultural Relics: Wood Carving Ming and Qing Collection Museum" (56,000 broadcasts, Tencent videos) and so on.

The video file was uploaded earlier as "the Guangfulin Culture Park in Songjiang District, Shanghai: Light Lake scenery and Dream Wonderland" (2014-01-24, Broadcast Network). In 2018, the largest number of uploaded videos was over 95%. The latest videos are "aerial photos of China: sensational archaeological sites of human culture, Songjiang Guangfulin, Shanghai" (2019-01-28 tencent video) and "Guangfulin Culture site. Thames Town" (6 days ago, Youku).

IV. PROBLEMS AND SOLUTION

By Feb.18.2019, Retrieval "Guangfulin marketplace Culture" in http://nvsm.cnki.net/, there was no items. However, search Guangfulin Culture in the website, the results were 43, but 19 papers such as "New proof of Ancient History", "prehistoric Culture", "wise man guides my academic path" have nothing to do with "Guangfulin Culture". Of the 24 related documents, 4 are general tourism reports, such as "looking for Guangfulin", "the Development and Exploration of Guangfulin Cultural elements in the Design of Tourism Derivatives", and 11 archaeological excavations. For example, "significant achievements in archaeology at Guangfulin site in Shanghai in 2012" and "Review on the Development of Archaeology in Shanghai in 2014"; there are only six academic studies. For instance, "Environmental Analysis of Guangfulin site in Songjiang District, Shanghai"; "Archaeological Exhibition Hall and Landscape Design of Shanghai Songjiang Guangfulin Cultural Site Protection area", and the other three articles. As it can be seen that the study of Guangfulin culture, this topic has not yet attracted the attention of the academic community.

According to the documents, "jing" and "shi" are closely related in Chinese culture.

The word "shi" first appeared in the bronze inscriptions of the Yi wares in the Shang and Zhou Dynasty. According to the ancient classic book "Yijing", "shi" is refer to an activity which means people from all over the country were gathered an area for trade at noon. and it is also have interpretation in the book called "Lv Shi Chun Qiu".

As a place for people to exchange products, "shi" developed into a market controlled by the government in the Western Zhou Dynasty. In the following hundreds of years, the establishment or revocation of the "shi" was decided by the government. The institution of "shi" was once popular among residence. The "shi" was a commercial district where prohibit build dwelling, the "fang" was a residential district where forbid set up shops.

Taking the top three video files of "Play Number" as an example, broadcasted 1080,000 times "Guangfulin Cultural Relics: Ancient Pottery Collection Museum". From Neolithic to Sui and Tang Dynasties, there were altogether 16 dynasties and 280 treasures, including "the largest pot in the world". It can be said that part of it is related to the Guangfulin Cultural Relics, but "the first phase of Guangfulin Cultural Relics has entered the stress test" is only a news report about the coming visitors. However, the "Guangfulin Cultural Relics: Wood Carving Ming and Qing Collection Museum" exhibits more than 300 pieces of wood carving collected from Huizhou area in southern Anhui Province, but there is no intersection with the "Guangfulin Culture".

As for the project "Guang Fulin's marketplace culture", it has not been disseminated in any form in the social media. According to the historic references which called "Zhou Dynasty Politeness and Craftsman" records; in the design of "shi", the left side is ancestor, the right side is temple, the front is the area where the emperor direction, and the back is the market. the reason why "shi" plan is feasible can be interpreted by two points: on the one hand, the front area is referred to the administrator where emperor worked, and the back area is service distinct especially for folks, in addition, due to the "origin of Chinese Characters", "shi" is means the place where people engage the business events, In ancient Chinese culture, "shi" is a pictograph which is express the composition of space.

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