

Digital Preservation And Innovation Of The Guqin

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Abstract. Guqin, as one of the most representative instruments of traditional instrument music, can be retrospectively traced back to the Shang and Zhou Dynasties, 3000 years ago. Although this art has long history and unique charm, few people know about it, and its preservation and inheritance have become a challenge. The development of digital technology provides new possibilities for the preservation and dissemination of the Guqin. Digital technology can not only effectively protect the material and intangible cultural elements of guqin art, but also broaden its dissemination channels and achieve the flow of cultural capital. This article discusses the necessity of digital preservation of the guqin and its application, analyzing the application of digital technologies such as audio collection, 3D modeling, motion capture, and virtual reality in the preservation of the guqin's timbre, the recording of the playing techniques, and cultural dissemination. For example, motion capture technology is used to capture the playing techniques of national intangible cultural heritage inheritors to generate a dynamic database; and the use of 3D modeling, high-definition video and other technologies to record the shape of Guqin to build a digital archive. This article also uses arts world theory to reconstruct the artistic definition and value network of the guqin.

Keywords: Intangible culture heritage; Traditional instrumental music; Guqin; Digital preservation; Arts world theory.

1. Introduction

In China, intangible heritage refers to traditional cultural expressions, as well as objects and places associated with traditional cultural expressions, which have been handed down from generation to generation and are regarded as part of the cultural heritage of all peoples. Traditional instruments music is a form of musical art that has been developed and passed down over a long period of time in the traditional cultural of a country or nation, with Musical Instruments as the main performance tool, and conveys emotions, thoughts and cultural connotations through the skills and performance of the performers. Its unique playing technique, musical style and cultural background are closely related to the local history, folk customs and religion. It includes a variety of Musical Instruments, such as the Chinese Guqin, Erhu and Pipa. Traditional instrumental music, as part of intangible cultural heritage, is an important symbol of a country's and nation's culture and an important medium of international cultural exchange. Inheriting traditional Musical Instruments can enhance cultural identity and is of great significance in many aspects such as society, education and education, art and culture.

The Guqin, one of the most representative traditional Musical Instruments, has a history spanning several thousand years and is one of the oldest plucked instruments in China. It carries the philosophy of Confucianism, Taoism and other schools, as well as the spirit of the literati. As early as the Pre-Qin period, there are records in the Book of Songs such as "a graceful and virtuous lady is a friend of the Guqin", indicating that the Guqin was already used in social and recreational activities. This art, though simple and elegant, has a long history and unique charm, and was inscribed on the Representative list of the Intangible Cultural Heritage of Humanity by UNESCO in 2003. But nowadays, few people know about it, and its conservation and inheritance have become a challenge. The Guqin has long relied on oral and mental instruction, but it faces the problem of an aging population of inheritors and a shortage of successors. This will lead to the loss of traditional pieces and playing techniques of various schools.



In recent years, with the development of society and the rise of scientific and technological means, the digital protection and dissemination of intangible cultural heritage has become an important topic, and it has also brought opportunities for the development of Guqin art. "Intangible cultural heritage and digitalization" has become an important model for the development of traditional Musical Instruments, providing a new dimension of inheritance for traditional Musical Instruments and a reliable support for the protection, inheritance and innovation of Guqin art. Digital technology can break through the limitations of time and space, expand the audience of Guqin, and attract the younger generation to access Guqin culture through modern media such as Douyin short videos, Xiaohongshu. This article provides theoretical support for the digital protection and innovation of Guqin art, and also explains how Arts World Theory can be used to reconstruct the value network of Guqin art.

2. Literature Review

By searching the literature, the author found that the majority of the existing research on intangible cultural heritage in the country is about the inheritance and dissemination of various types of intangible cultural heritage. These studies mainly describe and discuss the protection and dissemination of various types of intangible cultural heritage through digital technology. There are very few studies that truly involve the digital protection and innovative dissemination of intangible cultural heritage of Musical Instruments, especially the application of digital scientific means to the Guqin. In the existing studies related to the digital protection and dissemination of traditional Musical Instruments, researchers usually use scientific and technological means.

The use of emerging digital technologies such as virtual reality in the digital protection of the guqin to achieve innovative practices of guqin art. Representative research in this area is mainly reported by Genfang Chen in June 2019, which briefly described 24 aspects of the digital protection of Guqin art, including intelligent notation and algorithmic composition of the reduced character notation of Guqin; In 2021, the Chinese National Academy of Arts and Tencent carried out a series of digital protection and innovation practices of Guqin art based on the digital IP of Honor of Kings, experts and scholars conducted research on "practical exploration of digital cultural and creative Guqin" [1,2]. The main focus of this approach, which is also its greatest advantage, is that it can well stimulate the interest of the younger generation in the knowledge of Guqin culture and showcase the charm of Guqin art. However, this approach has certain technical limitations and low public participation.

The results of the literature review suggest that there is currently little research on the digital conservation and innovation of Guqin art. Therefore, it can be said that there are currently few research results on the real application of digital conservation and innovation of Guqin art to the Guqin, as well as how to use Arts World Theory to reconstruct the value network of Guqin art. Arts World Theory emphasizes that the definition and value of art are not determined solely by the work itself, but depend on an "art world" constructed by artists, critics, institutions, audiences [3]. Art is not merely the product of personal inspiration; it is the result of social culture and environmental shaping. This theory provides a systematic perspective on the digital preservation of the Guqin. Digitalization is not just an intervention of technology, but rather sustaining the vitality of the Guqin in the contemporary context by reconstructing artistic meaning and expanding the network of participants.

3. Research Method

In this study, a questionnaire was used as the research method, with a sample size of 100, distributed to people aged 18 to 60 who were interested in the Guqin. There were 20 questions in the questionnaire, which were distributed through Wenjuanxing, and 100 responses were collected online. The questionnaire included people's understanding of the art of the Guqin; Views on the digital protection of the Guqin and how to view the combination of Guqin art and popular music.

4. Research Results

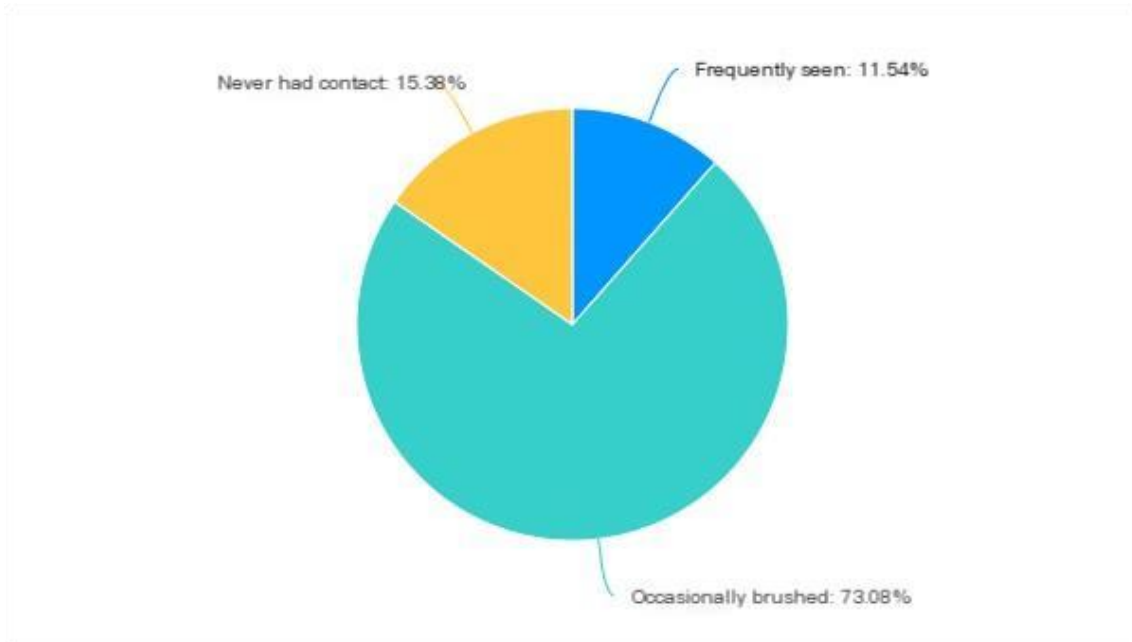


Figure 1. Data on access to the Guqin through short video platforms

As shown in Fig.1, most people have occasionally come across content related to the Guqin through media platforms. It can be seen that digital technology has played a positive role in the dissemination of the art of the Guqin, making most people have an impression of it.

A survey shows that for the digital protection of the art of the Guqin, most people suggest using image acquisition (high-definition videos, 3D modeling) to record details such as the shape, inscriptions, and broken lines of the Guqin, and build a digital archive; Develop the conversion from the reduced character notation to the five-line staff to make up for the unfamiliarity of modern people with the reduced character notation and assist modern people in studying ancient music; Through AR or VR technology, a virtual Guqin practice scene is constructed, achieving a modern transformation in the inheritance and display of skills [4]. Users can wear the device to simulate playing and listen to the demonstration of masters; Establish a cross-institutional digital resource library of the Guqin, integrating score collections, literature, and audio-visual materials [5].

In Arts World Theory, the boundaries of art are determined by the "consensus" of the art world. As the first of the four arts of the literati, the preservation of the Guqin requires a redefinition of its artistic value in the digital age. By using 3D modeling and VR technology to restore the shape and tone of the Tang Dynasty Guqin, the Guqin can be transformed from static display in museum Windows into an interactive immersive art. Digitizing and open-source sharing of the reduced character score and playing fingerings breaks the traditional master-apprentice system and turns the Guqin into a public cultural resource.

Technology as a "new actor" in reconstructing the network of the Guqin art world; Institutions as the "giver of meaning"; The audience, as "co-builders", work together to activate the cultural capital of the art of the Guqin. Motion capture technology is used to collect the fingering of national-level intangible cultural heritage inheritors and generate a dynamic database. Zhejiang University's Digital Gene Bank for Guqin, for example, uses AI to analyze the frequency differences of vibrato (Yin, Rou) among different Guqin schools, providing a scientific basis for the inheritance of the technique. In the "Digital Qin Melody" exhibition at the Shanghai Museum, visitors can scan the actual Guqin with their mobile phones using AR technology, which triggers holographic images of Guqin players (such as Ji Kang and Su Shi) to tell the history of the Guqin, transforming the cultural relics from "objects of aesthetic appreciation" to "witnesses of history". Bilibili UPS are encouraged to adapt popular music with the sound of the Guqin (such as the Guqin version of "Blue and White Porcelain"), and

the platform uses algorithms to push high-quality secondary creation content to intangible cultural heritage enthusiasts, completing the transformation of cultural capital. As shown in Fig.2, most people are willing to moderately blend traditional Guqin performances with modern music.

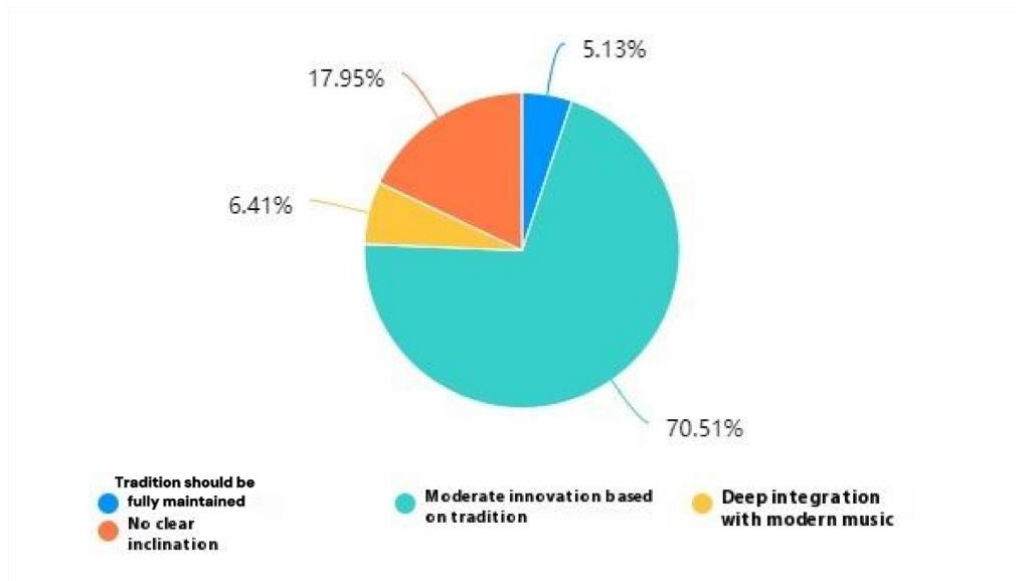


Figure 2. Views on the fusion of Guqin playing with modern music

5. Conclusion

Under the guidance of Arts World Theory, the Guqin will no longer be a "cultural specimen" in a museum, but a "living art world" that connects historical memory, technological experimentation and popular aesthetics in the digital age. The essence of protecting the art of the Guqin is not to solidify traditions, but to continuously reconstruct the artistic definition and value network of the Guqin through the collaborative participation of technology, institutions and the public.

Since the sample subjects who answered the questionnaire were not very familiar with the Guqin, the results could only represent a part of the people, which was limited. It may be necessary to expand the scope of research in the future, study the views of more professionals, and further explore the model of deep integration of digital technology and traditional art, improve relevant standards and norms, and build a sustainable protection system. The experience of digital protection of the Guqin can also serve as a reference for other intangible cultural heritage projects, jointly promoting the creative transformation and innovative development of China's fine traditional culture.

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