

Analysis of the ecological protection and inheritance path of intangible cultural heritage enabled by digital technology—Take the national intangible cultural heritage "Cuo Taiji" as an example

Shuangfei Chen*

*School of History and Ethnic Culture, Guizhou University, Guiyang, China
deepmemory2022@163.com*

**Corresponding author*

Keywords: Digital technology; intangible cultural heritage; protection and inheritance; "Cuo Taiji"

Abstract: Intangible cultural heritage is a treasure of human beings, carrying rich historical, cultural, social and philosophical information, and is an important embodiment of cultural diversity. With the development of society and the process of modernization, now the intangible protection and heritage is no longer limited to the traditional way and means, digital technology for intangible protection and inheritance provides a new possibility, we can through virtual reality, augmented reality, big data, artificial intelligence, more effectively protect and heritage. This study takes the national intangible cultural heritage "Cuo Taiji" as the object to explore the ecological protection and inheritance path of digital enabling intangible cultural heritage, so as to help the development of intangible cultural heritage.

1. Literature review

In the 1970s, people began to use photography and other technologies to record information about cultural relics, but these materials are difficult to preserve ^[1] for a long time. With the rise of virtual reality technology and the rapid development of the network at the end of the 20th century, the high-precision and highly realistic digital heritage protection technology has emerged rapidly at the beginning of the 21st century, bringing revolutionary changes to the cause of cultural heritage protection. On June 27, 2023, the author retrieved 864 documents in CNKI, Wanfang, VIP and other databases with "digital enabling intangible cultural Heritage" (see Figure 1). Through the analysis, from 2006 to 2007, some scholars gradually did the research on the digital protection of intangible cultural heritage. From 2008 to 2010, the main areas of research were the digitization construction of libraries and archives, the protection and development of tourism resources, the digitization of calligraphy, photography and drama. With the development of science and technology and the implementation of the Intangible Cultural Heritage Law of the People's Republic of China, the digital protection of intangible cultural heritage has attracted more extensive attention from the academic community, and the research field and research results have gradually increased. In

November 2014, the summary meeting of the pilot work of the digital protection of intangible cultural Heritage (the first batch) held in Beijing brought the digital protection of intangible cultural heritage in China to a new level, and the master and doctoral papers on the digital protection of intangible cultural heritage appeared successively. After 2015, the annual number of published articles is more than 60, and the research on the digital protection of intangible cultural heritage is still one of the hot topics of academic research.

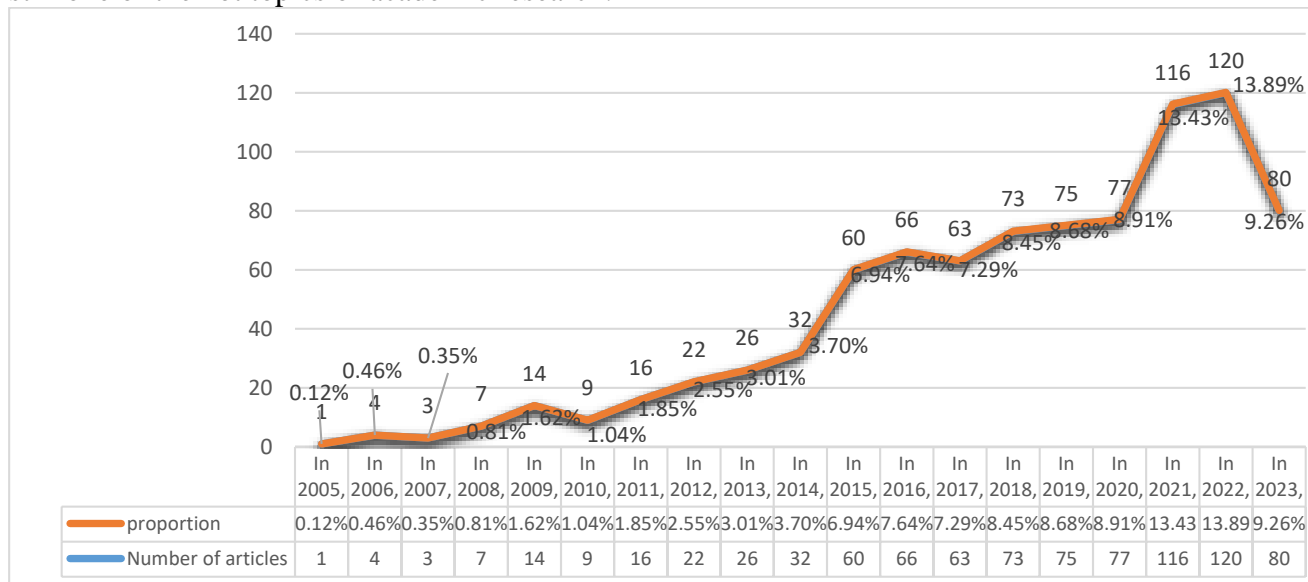


Figure 1: Statistics on the annual number of digital research on intangible cultural heritage

Lan Xiuhua (2023)^[2] believes that in the protection and inheritance of intangible cultural heritage, the digital information resource database of intangible cultural heritage should be supported by digital technology. Wang Chengdong and Han Dongchen (2023) believe that the development of digital information technology provides effective ideas and methods for the protection and inheritance of intangible cultural heritage. Digital information technology should be adopted to make digital transformation, repair and reproduction of national cultural resources, so as to realize the shared and renewable digital cultural forms, so as to achieve the purpose of protection and inheritance^[3]. Han Meiqun and Zhou Xiaoqin (2022) sorted out the research achievements of domestic and foreign scholars in the digital inheritance of intangible cultural heritage since the new century. They believed that the knowledge system and value system of the digital inheritance of intangible cultural heritage should be established from four levels: basic theory, technology, management and application^[4]. In the three databases with "Cuo Taiji" as the title and keywords, there were 101 documents, including 9 dissertations and 4 conference papers. The earliest documents that can be retrieved online were published in 1978, and there were relatively many documents from 2016 to 2018. Using CiteSpace software for keyword co-occurrence analysis, "Nuo Drama" and "Bandi Township" appeared the most frequently, followed by "Cuo Taiji" (see Figure 2). Based on this, this research combines information technology and intangible cultural heritage protection to explore the path of protection and inheritance of cultural heritage.

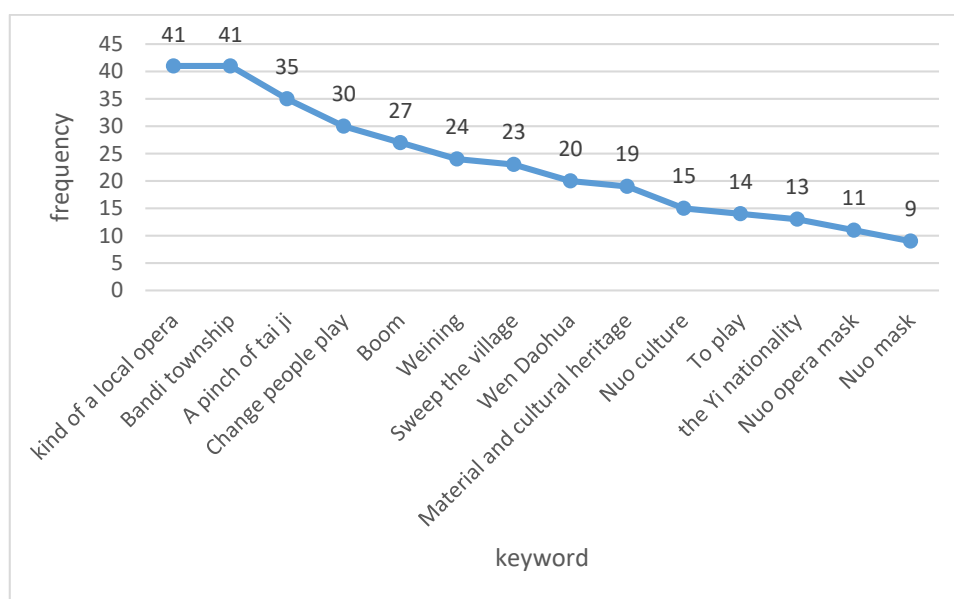


Figure 2: Key word co-occurrence analysis of "Cuo Taiji"

2. Overview of the intangible cultural heritage, "Cuo Taiji"

2.1. The geographical environment of the birthplace of "Cuo Taiji"

Shuguang Village is located in the north of Bandi Township, Weining County. It is the birthplace of "Cuo Taiji", 38 kilometers away from the county seat and located in the Yuhong Mountain area with an altitude of more than 2,800 meters above sea level. The climate here is cold, and the mountains are dense. Shuguang village has jurisdiction over 9 villagers groups, a total area of 10.25 square kilometers, woodland area of 6918 mu, farmland area of 7571 mu, the village registered population of 572 households 2676 people, is a Yi, Miao, Han and other different ethnic groups live together. In this cultural environment, various ethnic groups communicate and integrate with each other, and jointly maintain and inherit an important cultural heritage. Bandi Township has won many honorary titles, such as "Provincial Ethnic Unity and Progress Creation Activity Demonstration Township", "National Health Township", "One of the first 7 Bilingual harmonious villages in China", "Ethnic Minority Villages in Guizhou Province" and "30 most charming Ethnic villages" in Guizhou Province ". In 2014, it was awarded the title of "Hometown of Folk Culture and Art in Guizhou Province" by the Provincial Department of Culture, and it is called the hometown of "Cuo Taiji", the hometown of Ashilisi and the characteristic ethnic village. "Cuo Taiji" is the only intangible cultural heritage of Bandi Township.

2.2. Basic content of "Cuo Taiji"

As the intangible cultural heritage of the Yi people, "Cuo Taiji" carries rich historical, cultural and spiritual connotations, and has important value in folklore and cultural research. "Cuo Taiji" is a transliteration of Yi language. According to different interpretations, it can be understood as "the era that human beings have just become", "the game of human change" and so on. "Cuo Taiji" performs from the third day to the 15th day of the first lunar month during the Spring Festival. The performance covers offering sacrifices to ancestors, ethnic migration, pioneer farming, livestock trading, breeding offspring, etc., and finally sweeps away Mars from house to house before the performance. The characters, called "ghosts", play the embodiment of their ancestors, creating a

sense of mystery through elements such as masks and costumes. The purpose of "Cuo Taiji" includes exorcising evil spirits, welcoming good luck and praying for a good harvest. The performances are mostly held at night, usually on flat ground in the mountains beside the village. The "Cuo Taiji" mask has a protruding forehead, a straight nose and the characteristics of an ape, highlighting the primitive image of the ancestors. The mask has no eyes and teeth, and is expressed through the holes, creating a vague feeling between man and god, between life and death. The mask conveys the character gender, age and characteristics by wearing a beard and using chalk lines. Performance usually takes 12 people, each playing a different role. Among the Yi, Han and Miao elderly people, among them, Abmore is a legendary 1700-year-old wise elder, playing the leader and organizer of ethnic migration and production in the play. In addition to the main roles, there are actors playing the monkey and the cow, and the accompaniment. "Cuo Taiji" is known as "the living fossil of drama", and it has research value in anthropology, ethnology, drama science, dance science, local cultural history and other fields. It reflects local culture, history and religious beliefs, as well as human discussions on ancestors, life and death, and disaster.

3. The application and necessity of digital protection and inheritance

3.1. Application

Big data and Internet technology make it easier for people to communicate. This is of great importance for the protection and inheritance of intangible cultural heritage. Information technology innovates the channels for the protection of intangible cultural heritage and helps to spread the knowledge, skills and culture of intangible cultural heritage in a wider range. With the help of different carriers such as mobile applications and online platforms, more people can participate in the protection of intangible cultural heritage and promote non-genetic inheritance.

Using new media methods, such as social media and online platforms, we can bring the effect of non-genetic inheritance to a new level. These platforms help to spread the intangible cultural heritage to a wider audience, especially among the younger generation. Intangible cultural heritage archives can be stored through digital methods, including video, audio, pictures, etc., to ensure the complete preservation of these precious cultural heritage. Such digital archives can not only protect the intangible cultural heritage, but also facilitate research and sharing. The intangible cultural heritage resources can be digitized and virtually reproduced through 3D animation and other technologies to solve the damage and distortion problems that may occur in the process of non-genetic inheritance, and more vividly display the unique features of the intangible cultural heritage.

3.2. Necessity

With the rapid development of information technology and the popularization of network technology, digital inheritance has become the main trend of the protection and inheritance of intangible cultural heritage. This trend helps to help expand the transmission route, enhance the effect of inheritance, and enable more people to participate in and understand these cultural heritages. Digital technology can spread the intangible cultural heritage in a variety of media forms, such as sound, text, images, video, etc. This diversity of communication methods can attract different types of audiences, including those who cannot attend the scene, making the intangible cultural heritage more easily to be understood and appreciated. Digital inheritance can effectively record, store and preserve the intangible cultural heritage, and avoid its loss due to the passage of time, man-made destruction or disasters. Digitized content can be copied, backed up and migrated, providing the possibility for long-term storage. Digital technology enables people to interact with

the intangible cultural heritage in more diversified ways, such as virtual reality and interactive applications, so as to deeply understand the cultural connotation behind it. Digital media can inject new creativity and forms of expression into the traditional intangible cultural heritage, create a more modern way of presentation, and attract the interest of the younger generation.

4. The status of protection and inheritance of intangible cultural heritage "Cuo Taiji"

4.1. Lack of ecological protection and living inheritance in the inheritance process

Bandi Township Shuguang village mountain high and dangerous, cold climate, abundant rainfall, resulting in long-term rain and fog and humid climate. Vegetation is mainly pine trees, suitable for planting buckwheat and other crops. This ecological environment also affects the lifestyle and cultural characteristics of the local residents, including the traditional art form of "Cuo Taiji", and the residents in the area are relatively isolated and have limited communication with the outside world. This relative isolation and closure makes the local culture and art forms survive and inherit relatively independently, and "Cuo Taiji" art is not easy to be disturbed by external cultural and social changes, so it has been well protected and inherited. Although the natural environment and relative closure maintain the integrity of the art form of "Pintaji", with the development of modern society, globalization and modernization, the change of the performance environment will inevitably affect "Cuo Taiji". At present, the inheritance of "Cuo Taiji" is a family inheritance, which is usually passed down from the older generation to the younger generation. However, most of the younger generation choose to work outside China and are more interested in modern entertainment. Therefore, the modern lifestyle and culture currently have competitive pressure on the inheritance of "Cuo Taiji".

4.2. Imperfect overall protection and organizational form

According to the southwest Yi Annals and some scholars, the "Cuo Taiji" activities in Bandi Township of Weining County can be traced back to around the Western Han Dynasty. These ancient documents, although providing some clues, may not be enough to have a detailed understanding of the origin and development of activity. According to a survey by Luo Dexian, a Yi Translation team in Bijie, the Yi people may have migrated to the area during the reign of Emperor Kangxi in the early Qing Dynasty^[5]. And the legend said that after the "Cuo Taiji" performances began to be held in the region every year. According to the author's field investigation and review of the documents related to "Cuo Taiji", I found that due to the lack of written records, the specific inheritance situation was not clear before the 1940s. According to the existing information, the performance of "Cuo Taiji" was inherited from Wen Zhenghong in Shuguang Village from the 1940s to the early 1960s. But under the influence of that era, the campaign was once stopped. However, in the early 1970s, the activity of "Cuo Taiji" resumed and was inherited by Wen Daohua, two generations of inheritors of Wen Bin (son of Wen Daohua) and Wen Chao (grandson of Wen Daohua) were trained. Due to the long history and the particularity of the inheritance mode, there may be some ambiguity and uncertainty about the exact details of its origin. And the current "Cuo Taiji" performance without fixed performance team for a long time, according to the author, now most young people only meet the holidays, have temporary performance, generally by at home and have time to participate in performances, this situation makes "Cuo Taiji" cultural heritage lost a certain basis, is not conducive to the intangible heritage and protection.

4.3. Lack of talent and funds

The inheritance and protection of intangible cultural heritage requires the cultivation of inheritors and policy support. With the acceleration of China's urbanization process and the rapid development of modernization, most of the rural working population flows into the cities and towns, and the phenomenon of rural hollowing out in the central and western regions is prominent. The villagers do not pay much attention to the cultural heritage and lack certain appreciation ability. In addition, influenced by foreign culture, the number of people engaged in cultural protection and inheritance in rural areas has gradually decreased, and "Cuo Taiji" is a typical case. According to incomplete statistics in 2022, there are only more than 300 junior high school students in the middle school of Bandi Township, and the number of central primary schools is not more than 600. The performance of "Cuo Taiji" is mainly studied in the central primary school, and the channels of inheritance and learning are relatively single. In addition, rural women, children and children have limited ability to inherit culture and cognitive art, and most of them have no cognitive motivation. It is difficult for them to understand the cultural charm and inheritance and protection value of "Cuo Taiji". There is no complete written record of the intangible cultural heritage, however. The fifth generation inheritor is now 79 years old, and the performance of "Cuo Taiji" is insufficient. The sixth generation inherits humanistic Bin works outside all the year round, and can only learn from him when he is at home. The seventh generation is 23 years old, but studying abroad, I cannot participate in relevant inheritance activities in time. It can be seen that if we do not actively digital inherit and protect "Cuo Taiji", there is a risk of extinction.

5. The ecological protection and inheritance path of the digital-enabled "Cuo Taiji" intangible cultural heritage

5.1 Promotion and inheritance of intangible cultural heritage knowledge on campus

Promoting and inheriting intangible cultural heritage projects such as "Cuo Taiji" on campus can stimulate students' interest in traditional culture, increase their understanding of cultural heritage, and promote the inheritance of this intangible cultural heritage. Taking the campus as the position, the first is to open the "Cuo Taiji" intangible cultural heritage course, allowing students to learn their history, culture, skills and performances. Courses can be elective courses or extracurricular activities to stimulate students' interest. The second is to organize a workshop of "Cuo Taiji", inviting experienced artists and Cuo Taiji inheritors to share knowledge and skills with students on campus, so that students can experience themselves and help students to understand and experience the intangible cultural heritage projects deeper. Third, schools should hold cultural festival activities, including various traditional performances including "Cuo Taiji". The performance and exhibition activities of "Cuo Taiji" will be carried out to let students and villagers watch and participate, cultivate the audience's interest in the exhibition, increase students' cognition and participation in intangible cultural heritage, and help the inheritance of traditional art. Fourth, we need to encourage students to set up student associations and practice and perform "Cuo Taiji" regularly. Students can also participate in cultural research projects that collect relevant historical materials and oral history. Appropriate research bases related to intangible cultural heritage should be established for students and the masses outside the countryside to study. In addition, scholarships or award programs are established to encourage students to perform well in "Cuo Taiji" and other intangible cultural heritage programs, so as to better inherit and protect intangible cultural heritage.

5.2 Build a digital platform for intangible cultural heritage

One is to develop an accessible website and mobile app for watching the show online, understanding its historical and cultural context, and interacting with inheritors. The second is to create a virtual reality environment, so that viewers can experience the "Cuo Taiji" performance personally, providing the audience with a more immersive experience. The third is to create interactive opportunities between inheritors and audiences on the digital platform, allowing users to share their viewing experiences. The fourth is to create a digital library, including video, audio, photo and text materials, to record the history and technology of the performance, in addition, to ensure that the digital database of the "Cuo Taiji" performance can be updated and supplemented at any time to reflect the evolution of the heritage. Educational materials on the protection of intangible cultural heritage are provided on a digital platform to guide the audience to understand the relationship between the performance and the local ecosystem and how to protect it. In addition, a donation option is set up on the digital platform to support projects and initiatives related to the survival and the ecological protection of intangible cultural heritage. The government should use social media for marketing, do corresponding promotion and publicity, and attract more audiences and supporters. Relevant companies should work with schools, cultural institutions and tourism departments to introduce "Cuo Taiji" into education and tourism. At the same time, work with television, radio and online media to strengthen special coverage and publicity to enhance the popularity of "Cuo Taiji" performance in the hearts of the younger generation. The establishment of a digital platform requires a comprehensive consideration of multiple factors, including technology, education, cultural heritage and environmental protection. Active promotion and publicity is the key to ensuring the successful operation of the digital platform, and cooperation with governments, cultural institutions, NGOs and technical experts will help realize this vision.

5.3 Cultural and culture integration, digital training of inheritors

Relevant departments should combine cultural tourism with digitalization to cultivate inheritors of the intangible cultural heritage "Cuo Taiji" performance, establish training courses to train acting skills, drum playing and mask making. The government formulates incentive policies to encourage young people to actively participate in the inheritance work. The inheritance and protection of "Cuo Taiji" with the construction of characteristic rural areas and rural revitalization, a government-led village history hall or "Cuo Taiji" exhibition hall will be established to display and protect the cultural heritage, historical materials, physical objects and performance props of "Cuo Taiji". The museum can become an important base for the protection, research and publicity of "Cuo Taiji", and the inheritors can work here, explain the Yi culture to the tourists and perform traditional performances according to the needs. On the one hand, it can solve the economic problems of the inheritors, and on the other hand, it can enable the tourists to watch the original performance. In addition, virtual reality (VR) and augmented reality (AR) technology are used to provide immersive cultural experience activities, so that they can learn the "Cuo Taiji" skills and participate in performances, so that they can feel as if they are in the actual performance and have a deeper understanding of this intangible cultural heritage.

6. Conclusion and outlook

In recent years, many scholars have carried out research on the digitalization of intangible cultural heritage, and have made many achievements in the digital field of intangible cultural heritage. The success of the digital education communication of intangible cultural heritage also requires cooperation with local museums, education departments and cultural bases to focus on the

use of AI, VR, AR and blockchain technologies. The digital protection of intangible cultural heritage involves multiple disciplines, and it needs to cultivate talents with interdisciplinary knowledge and skills to meet the needs of future talents. Intangible digital protection is a complex field, the government, academia, cultural institutions and the social from all walks of life should cooperate, sustainable development plan, thinking about how to combine digital protection and cultural creative industry, to promote the sustainable development of the traditional heritage, in order to better cope with the complexity and diversity of intangible digital protection, and contribute to the social economy.

References

- [1] Peng Dongmei, Pan Lusheng, and Sun Shouqian. *Digital protection— a new means of intangible cultural heritage protection [J]. Chinese painting and calligraphy*, 2006,0 (4): 193-195
- [2] Lan Xiuhua. *Research on the protection and inheritance of intangible Cultural Heritage under the digital perspective [J]. New Legend*, 2023 (6): 0079-0081
- [3] Wang Chengdong, Han Dongchen. *Research on the protection and inheritance of intangible Cultural Heritage under the digital perspective [J]. Journal of Harbin University*, 2023,44 (3): 115-118
- [4] Han Meiqun, Zhou Xiaoqin. *Review and prospect of research on digital inheritance of intangible Cultural Heritage in the past two decades [J]. Journal of South-Central ethnic University: Humanities and Social Sciences Edition*, 2022,42 (1): 65-74184
- [5] Liu Guohua. *Research on the cultural ecology and modern inheritance of the "Cuo Taiji" of the Yi people [J]. Social Science in Guizhou Province*, 2014 (8): 162-165