

The Copyright Challenges of Cultural Heritage Digitization and its Countermeasures

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ABSTRACT

There is a conflict between the public and private interest attributes of cultural heritage digitization achievements in practice. In order to balance this conflict, on the one hand, although cultural heritage digitization achievements are the achievements derived from cultural heritage of public nature, due to the fact that they have inevitably intervened in the process of digitization with wisdom and labour, and generated corresponding property value, they have the attribute of private interest, therefore, their private interest should be confirmed by way of copyright compensation, and differentiation should be made in respect of different types of cultural heritage digitization assets, reasonably lower the standard of originality for recognizing cultural heritage digitization achievements as works, stimulate the power of the market, and increase the enthusiasm of subjects engaged in digitization in creation and dissemination. On the other hand, even if there are private interests in the cultural heritage digitization achievements, the protection and inheritance of cultural heritage should still be based on public welfare due to the positioning of the public welfare attribute of cultural heritage. Therefore, for the practice of cultural heritage departments claiming copyright over digitization achievements and restricting the public's free use, it should be regulated through copyright restrictions.

KEYWORDS

Cultural Heritage; Digitization Achievements; Copyright.

1. INTRODUCTION

China boasts rich cultural heritage, which are not only the treasures of national history and culture, but also the important cornerstone for inheriting cultural bloodline and creating a new brilliance of socialist culture. Nowadays, the rapid development of digital technology has provided new opportunities for China to protect and inherit cultural heritage, realizing the creative transformation and innovative development of cultural heritage. Digitization serves as a magical key to unlock and reorganize the fragments of history, allowing ancient civilizations to glow with new life in the digital dimension. The glories of history are now meticulously encoded and stored, shining brightly in the sea of digits. The rise of digital technology and its wide range of applications have opened up new avenues for the protection, inheritance, and utilization of cultural heritage, breathing new life into the memories of the Chinese nation in modern society. However, the long-standing disputes and unresolved issues surrounding the digital copyright of cultural heritage have acted as an invisible barrier, hindering the vigorous development of the digital cultural heritage industry.

Cultural heritage possesses a public interest attribute. As a precious carrier of human history and culture, cultural heritage has profound cultural value, which is closely linked to social and public interests. Precisely because of this, cultural heritage is endowed with the important connotation of

public interest attributes. In China, laws and regulations such as the "Cultural Relics Protection Law of the People's Republic of China" and the "Intangible Cultural Heritage Law of the People's Republic of China" have been formulated to protect cultural heritage. These laws clarify the dominant position and specific responsibilities of the national and local governments in the protection and inheritance of cultural heritage. It is not difficult to see that the current protection of cultural heritage in China is mainly undertaken by the national and local governments, which is consistent with the provisions of the second paragraph of Article 22 and Article 119 of Constitution of the People's Republic of China regarding the protection of Chinese culture by government agencies, and it can also reflect the focus on the protection of cultural rights as one of the fundamental rights [1]. Cultural heritage originates from the social production and life of the people. It is the spiritual crystallization of group social life and also the expression of group cultural information interests [2]. Therefore, as the object of the cultural rights of a specific group, cultural heritage has distinct social attributes.

The process of generating and disseminating cultural heritage digitization achievements entails private interests, in addition to public interests. The digitization of cultural heritage is essentially a process of carrier transformation. Cultural heritage information in its original tangible or intangible form is transformed into digital carriers for storage and dissemination through digitization. This process only changes the carrier form of cultural information, without touching its intrinsic authenticity. Therefore, the holders of cultural rights have not suffered any intervention or change in this process, but only the specific use of cultural rights has been updated with the progress of the times, and the essential attributes of cultural heritage as a public good have not disappeared, and cultural heritage digitization achievements as derivatives of cultural heritage are bound to carry the attributes of public interests. However, when cultural heritage exists in digital form during the digitization process, it not only embodies the original cultural connotations, but also generates corresponding property value due to the labor processes and labor values condensed in the digitization process, thus possessing private interests attributes[3]. It can be seen that the legal attributes of the digital development and utilization of cultural heritage have both public and private interests attributes.

There is a conflict between the public and private interest attributes of cultural heritage digitization achievements in practice. Amidst the wave of digitization, cultural heritage departments have been actively exploring and transforming abundant cultural heritage resources, leveraging digital means such as photography, videography, electronic scanning, and 3D modeling to transform these movable or immovable cultural heritages into digital outcomes, thereby turning them into new cultural "gold mines" that generate continuous revenue streams. These revenues primarily stem from services fees for digital files, cooperation and licensing, and even emerging forms of intellectual property like the sales of non-fungible tokens (NFTs). Consequently, cultural heritage departments and major museums have increasingly recognized the significance of digitally exploiting and utilizing their collection resources. To protect these digital outcomes, most museums opt to employ copyright notices directly on all digital content hosted on their websites, thereby restricting public access and usage. However, given the public interests attributes of cultural heritage, there remains significant controversy surrounding whether the digital outcomes derived from it possess the private right of copyright. In the global intellectual property legal system, the emphasis on private right attributes of copyright protection has led to apparent disagreements and controversies in the protection of cultural heritage digitization outcomes in the public cultural domain. Regarding the issue of cultural heritage digitization and protection, while private law can offer certain legal safeguards for related activities, the core of protection and inheritance should still revolve around public interests. The digitization of cultural heritage needs to serve the fundamental goal of its protection, inheritance, and development[4]. From the current judicial practice, judicial authorities have not granted exclusive copyright protection to the digital outcomes of cultural heritage[5]. However, this approach is not accepted by the cultural inheritance industry. The creation of digital outcomes of cultural heritage often involves substantial efforts and significant financial investments by digital workers. If these digital outcomes are not protected by copyright, it would not only disrespect their professional labor but also

potentially hinder the process of cultural heritage digitization. As the wave of digital economy sweeps in, the vitality of market players is ignited like a raging flame, growing stronger and stronger. This transformation will reshape the entire industry landscape. As emphasized in the "the Guiding Opinions on Promoting the Deep Integration of Culture with Science and Technology", it is necessary to create a group of culturally distinctive and highly competitive cultural enterprises, making them powerful engines for the deep integration of culture and technology, and for high-quality development. Driven by innovation and leveraging technology, these enterprises will propel the cultural industry towards higher levels and broader domains, contributing to the cultural prosperity and technological progress of the entire society. Against this backdrop, it is particularly crucial to establish a comprehensive copyright protection system for cultural heritage digitization achievements. When discussing the copyright issues surrounding cultural heritage digitization achievements, we cannot overlook their potentially profound implications. From an institutional perspective, copyright law has always pursued the balance of interests as its core value[6]. If the copyright of digitization achievements is denied, cultural heritage will enter the public domain. While the public domain has its unique value, it is also necessary to recognize that the limited nature of public resources and the absence of incentive mechanisms may lead the digitization of cultural heritage to the so-called "tragedy of the commons".

In summary, if the public interest attribute of cultural heritage digitization achievements is over-emphasized, the loss of copyright protection will mean that digital workers may lose their enthusiasm for creation and dissemination due to insufficient incentives, thereby hindering the digitization process of cultural heritage. While over-emphasis on the private interest attribute will undermine the exercise of basic rights, such as the public's right to culture. In order to promote the inheritance and development of cultural heritage, this conflict urgently needs to be resolved.

2. MATERIALS AND METHODS

A field visit is to conduct research at a designated place. It refers to conducting an intuitive and detailed investigation on the spot to understand the truth and development process of a thing. During the inspection process, it is necessary to analyze the phenomena observed at any time and strive to grasp the characteristics of the inspection object. During the research process, we visited various scenic spots such as Yuanmingyuan and Beihai Park to investigate the issues that arose during the cultural relic protection process.

Interviews are activities aimed at collecting information that may receive widespread attention and little known through methods such as observation and interviews for the purpose of mass communication. It is a prerequisite for writing and a special type of investigation and research. Interview is the process in which the interviewer understands the object and uses their own news perspectives, knowledge accumulation, and thinking methods to make analytical judgments through personal observation, listening, and reflection. During the research process, we conducted interviews with the leaders of various scenic spots through symposiums and summarized the actual problems that arose.

Other forms mainly refer to the questionnaire method, which is a widely used method in social surveys both domestically and internationally. A questionnaire refers to a table used for statistics and surveys that expresses questions in a structured manner. The questionnaire method is a method in which researchers use this controlled measurement to measure the research question and collect reliable data. The questionnaire method mostly uses various methods such as mailing, individual distribution, or collective distribution to send questionnaires. The investigator fills in the answers according to the questions in the table. Generally speaking, questionnaires are more detailed, complete, and easy to control than interview forms. The main advantages of the questionnaire method are standardization and low cost. Because the questionnaire method uses designed questionnaire tools for conducting surveys, the design of the questionnaire requires standardization and measurability.

During the research process, we distributed survey questionnaires to the staff in order to better collect questions.

3. DERIVATION OF CULTURAL HERITAGE DIGITIZATION ACHIEVEMENTS UNDER THE THRESHOLD OF COPYRIGHT LAWS

3.1. Conceptualization: Normative Implications of Cultural Heritage Digitization Achievements

Cultural heritage is an umbrella term for both tangible and intangible cultural heritage, which are objects of historical, artistic and scientific value created by human beings, as well as traditional forms of culture, such as knowledge, practices and so on, that have been handed down from generation to generation by a particular ethnic group, reflecting their unique lifestyles[7]. In the early stages of cultural relics protection work in China, the term "cultural heritage" had not yet been adopted, and instead, the term "cultural relics" was used. Based on the concept of "cultural relics," a series of management regulations and guiding documents were formulated, and remarkable achievements in protection were made[8]. In 1972, the Convention Concerning the Protection of the World Cultural and Natural Heritage clearly defined the scope of cultural heritage, namely, "monuments, ensembles and sites", which is roughly equivalent to the concept of immovable cultural relics in our country, and in 2003, UNESCO formally issued the Convention for the Safeguarding of Intangible Cultural Heritage, which clearly defined the definition of intangible cultural heritage. In 2005, the State Council, in accordance with the definition of "cultural relics" in the Cultural Relics Protection Law of the People's Republic of China, and with reference to the two major international conventions and the actual situation of cultural relics protection in China, defined the concept of cultural heritage in China in a clearer and more precise manner, in order to conform to the Chinese language. This decision is reflected in the Notice of the State Council on Strengthening Protection of Cultural Heritages, which establishes the concept of "cultural heritage" with Chinese characteristics at the governmental level. Compared with the international concept of cultural heritage, the concept of cultural heritage in China not only combines the traditional "cultural relics" with the modern concept of "cultural heritage", transforming it from a relatively closed concept to a more open one, but also integrates the concepts of tangible and intangible cultural heritage. At the same time, the concepts of tangible and intangible cultural heritage are integrated together, making its scope broader and more rigorous, and more meaningful for practical guidance. The definition of this concept undoubtedly provides a clearer direction and guidance for the protection of cultural heritage in China.

The digitization of cultural heritage refers to the use of digital technologies such as digital acquisition, digital storage, digital processing, digital display, and digital dissemination to convert, reproduce, and restore cultural heritage into a shareable and renewable digital form. It involves interpreting the cultural heritage from a new perspective, preserving it in new ways, and utilizing it to meet new demands[9]. Accordingly, digitization is the process of using digital technology to produce and disseminate information. Specifically, the digital use of cultural heritage employs a series of advanced digital tools such as digital photography, 2D and 3D scanning, digital recording and videography, virtual reality, web databases, remote sensing technology, streaming media technology, and so on, to classify, produce, and store cultural heritage in detail [10]. This process not only involves an in-depth exploration of cultural heritage, but also transforms it into multiple forms such as text, images, audio, video, animation, etc., providing users with a rich means of retrieval and allowing cultural heritage to be digitally reproduced. The digitized information, in the form of binary codes, is expressed, stored and processed by digital devices such as computers, and then transmitted to others through computers, optical fiber cable, communication satellites and other devices.

The cultural heritage digitization achievements refer to the results made by recording, preserving and disseminating cultural heritage through digital technology[11]. In the process of cultural heritage

digitization, workers in this field, based on their profound understanding of cultural heritage information resources and the objectives of digitization, extract cultural and knowledge factors from the cultural values embodied in the cultural heritage. Through specific technological means, these cultural heritages undergo digital processing, resulting in digital replicas. The significance of these digital replicas as the carriers of the achievements of cultural heritage digitization is self-evident. Furthermore, the cultural information presented in the form of digital expression constitutes the digital achievements of cultural heritage.

3.2. Dynamic Evolution: The Rationale for the Creation of Digital Copyright of Cultural Heritage

Cultural heritage is digitized to achieve two transformation processes: first, tangible cultural heritage is transformed from the tangible to the intangible through digitization techniques. This transformation highlights the spiritual wealth embedded in tangible cultural heritage and has the potential to transcend the material itself in terms of speed and scope of dissemination; the second is the transformation of intangible cultural heritage from relatively intangible and immobile to relatively tangible and fixed. Intangible cultural heritage has a unique living nature, a characteristic that keeps it in a dynamic state of change and development. Although this transformation process has, to a certain extent, solidified the form of intangible cultural heritage, it has not impeded the essence of its living nature. On the contrary, through digital means, it has reduced the omissions that may have occurred in the traditional oral and mental transmission, and provided a new safeguard for the inheritance and safeguarding of intangible cultural heritage. These two conversion mechanisms essentially involve the use of two major technologies: reproduction and deduction. Examined from the level of digital technology, cultural heritage digitization workers make use of a variety of digital technologies (such as written records, audio recordings, photography, video, 3D modelling, motion capture, etc.) to comprehensively and meticulously collect, record and archive cultural heritage. Subsequently, the digitized cultural heritage information is presented, regenerated and shared in two-dimensional, three-dimensional and even multi-dimensional forms with the help of computer systems as well as database visualization, traditional audio-visual, interactive touch-screen, augmented reality, virtual reality and other technical means. According to the depth of cultural heritage digitization, the results of cultural heritage digitization can be compared with the original cultural heritage and found to be classified into three tiers from low to high according to the differences in their contents: collection, processing and presentation.

First of all, during the process of digital acquisition of cultural heritage, the essence of "acquisition" technology is the accurate reproduction of cultural heritage. In this process, focusing on the rational pursuit of "authentic restoration" [12], it is necessary to ensure that the authenticity, wholeness and inheritance of cultural heritage are not compromised, as they are indispensable core principles in the protection and inheritance of cultural heritage. The digital acquisition and storage of cultural heritage, as the primary step in the digital preservation and transmission of cultural heritage, is crucial to ensuring the authentic reproduction of cultural heritage. This requires cultural heritage digitization workers to accurately and completely extract, comprehensively record, and store the cultural information contained in the cultural heritage, thus there is no originality attribute at this stage.

Secondly, in the process of digitizing cultural heritage, workers play a crucial role. "The essence of culture is the behavior of humans expressing and conveying meaning with the help of various symbols." [13] They use their own creative thinking and expertise to "process" the cultural heritage digital information stored in the system. This process involves a series of complex steps such as digital coding, format conversion, code compression, image processing, feature extraction, digital modelling and digital creation. Through these steps, the original cultural heritage information is transformed into a format that can be recognized and presented by digital devices. In this process, cultural heritage digitization workers not only need to master specialized digital technologies, but also need to possess deep cultural literacy and social insights. They need to have a deep understanding of the knowledge

and cultural connotations of cultural heritage, and then through digital image processing, virtual scene modelling and other technical means, transform this profound cultural information into new digital forms. This kind of work is not just a simple technical conversion, but actually reconstructs the expression system of cultural and knowledge factors of cultural heritage. This reconstruction is based on their profound understanding of cultural heritage and proficient use of digital technology. The result not only presents new use values and creativity of cultural heritage, but also enables the workers to enjoy corresponding copyright interests. At this level, the work of cultural heritage digitization workers is a highly creative and professional combination of art and science.

Finally, in the stage of digital display of cultural heritage, cultural heritage digitization worker make use of their insights and technical means to digitally reproduce cultural heritage, so as to achieve its inheritance and development. Digital reproduction produces, preserves and displays cultural heritage through a variety of digital means, so that more people can understand these precious cultural treasures through viewing, especially those cultural heritage on the verge of extinction, whose specific manifestations include digital ancient cities, digital historic districts, digital relics, digital cultural relics, digital caves and so on. For example, the digital Forbidden City, the restoration of the Mausoleum of the First Qin Emperor, the restoration of the White Pagoda Temple in Yuan Dynasty, the restoration of the Chang'an City in Tang Dynasty, the restoration of the Yuan Dayidu, the transformation of Tian'anmen Square in the Ming and Qing Dynasties, and the craftsmanship of Qing Dynasty blue and white porcelain, etc., all belong to the category of digital reproduction. Further, through digital reconstruction, it is possible to construct diverse forms of displaying cultural heritage digital achievements such as visual display of database, traditional audio-visual display, digital museum, virtual reality and augmented reality, etc., so as to improve the interactivity and sense of participation between cultural heritage and the audience. This process of digital reproduction is a journey full of creativity, which integrates the imagination and creativity of cultural heritage digitization worker, with each creator showing unique individual differences and artistic styles according to their own understanding and inspiration. This is not only a demonstration of technology, but also an inheritance and promotion of culture and art.

Both stages of cultural heritage processing and display present, to varying degrees, the original contribution of cultural heritage digitization worker to the results of cultural heritage digitization achievements. Especially in the stage of digitization, the core content of the digitization achievements is directly constructed through the enhancement and augmentation of the intellectual and cultural factors in cultural heritage. In the legal context, copyright is a general term for the economic and moral rights and interests that creators enjoy in the literary, artistic and scientific works they create. Through legal means, it is possible to confirm the originality of cultural heritage digitization achievements, to include them in the scope of copyright objects, to clarify the attribution of their rights and to provide legal protection to workers. This is not only a recognition of the efforts of cultural heritage digitization workers, but also provides a solid legal support for the development of cultural heritage digital achievements, thereby contributing to the construction of a stable and orderly digital copyright system for cultural heritage.

3.3. Static Characteristics: The Distinction of the Legal Protection of the Digital Achievements of Cultural Heritage from that of Cultural Heritage

As can be seen from the above, the cultural heritage digitization is the recording, preservation and dissemination of cultural heritage through digital and network technologies, and the resulting outputs are not the same as the cultural heritage itself. There is a "parent-child relationship" between cultural heritage and cultural heritage digitization achievements, as cultural heritage digitization achievements are produced by cultural heritage and retains the "genes" of cultural heritage. In other words, cultural heritage is the cornerstone of digitization achievement. Without cultural heritage, there can be no digitization achievement. Digitization achievements provide new means and ways of

preserving, disseminating and inheriting cultural heritage, and they are records, collations and even innovations of cultural heritage. The legal issues involved in the two are therefore different.

3.3.1. Differences in Protection Modalities

For a long time, the legal protection of cultural heritage in China has focused mainly on the public law level, while private law protection has been relatively weak [14]. In the current legal system of cultural heritage protection, public law means such as administrative law occupy a dominant position. The protection mode of cultural heritage, especially intangible cultural heritage, is divided into the public power mode [15], the private right mode [16] and the dual mode of combining public power with private right in academia [17]. There are very few legal provisions on the copyright of cultural heritage digitization achievements.

At present, the basic framework for the legal protection of China's cultural heritage has been established. In January 2017, the General Office of the Central Committee of the Communist Party of China and the General Office of the State Council jointly issued the Opinions on the Implementation of the Project for the Inheritance and Development of Excellent Traditional Chinese Culture (hereinafter referred to as the Opinions). The Opinions clearly state the key tasks for the protection and dissemination of cultural heritage and emphasize the basic principles of "creative transformation and innovative development" proposed by General Secretary Xi Jinping. This means that in the process of protecting and inheriting cultural heritage, it is necessary to correctly handle the relationship between the protection and inheritance of cultural heritage and its creative development, and endow it with new connotations of modern expressions. The "creative transformation and innovative development" guideline puts forward new requirements for the protection and inheritance of cultural heritage in the new era. Although both tangible and intangible cultural heritage are required to be "protected", "rescued" and "utilized", the former is more focused on "management", while the latter is more focused on "inheritance" [18]. This guideline not only reflects a high degree of respect for and appreciation of cultural heritage, but also provides a guiding direction on how to better protect and inherit cultural heritage under the new historical conditions.

In recent years, in order to solve the copyright issues of the cultural heritage digitization achievements, the State Administration of Cultural Heritage issued the "Operational Guidelines for the Authorization of Copyright, Trademark and Branding of Museum Collections (Trial)" in May 2019. The main purpose of this guideline is to stimulate the creative vitality of museums and to solve the bottleneck problem of authorized access to collection resources when developing cultural and creative products. In this guideline, museums are given the right to re-create the collection resources by means of photography, video and other means, so as to obtain the corresponding copyrights. This initiative not only expresses the attitude of creators of cultural and recreational units towards the attribution of digital copyright, but also provides a meaningful attempt to solve this problem, which will help promote the development of cultural and creative industries in museums, and provide the public with more high-quality and distinctive cultural products. Although this guideline is not legally enforceable, it fully demonstrates that the issue of digital copyright of cultural heritage has begun to attract extensive attention from the industry.

3.3.2. Differences in Objects

In December 2005, the State Council issued the Notice on Strengthening Protection of Cultural Heritages, which states that tangible cultural heritage is cultural relics of historical, artistic and scientific value, including immovable cultural relics such as ancient ruins, ancient tombs, ancient buildings, grottoes and temples, stone carvings, frescoes, important modern and contemporary historical monuments and representative buildings, and movable cultural relics such as important physical objects, artefacts, documents, manuscripts and library materials of various epochs of history, as well as famous historical and cultural cities (blocks, towns and villages) with outstanding universal value in terms of architectural style, even distribution, or integration with the surrounding environment.

However, in contrast to tangible cultural heritage and digital achievements, much of the intangible cultural heritage has no fixed form or vehicle. According to the Convention for the Safeguarding of Intangible Cultural Heritage issued by the United Nations Educational, Scientific and Cultural Organization, the Intangible Cultural Heritage comprises the following five areas: oral traditions and expressions, including language as a medium of the intangible cultural heritage; performing arts; social customs, rituals and festivals; knowledge and practices concerning nature and the universe; and traditional craft skills. Intangible Cultural Heritage Law of the People's Republic of China also provides for six categories of intangible cultural heritage, including oral traditions, traditional performing arts, folklore activities and rituals and festivals, traditional knowledge and practices of folklore relating to nature and the universe, and traditional handicraft skills, as well as cultural spaces associated with the aforementioned traditional cultural expressions.

The digitization achievements of cultural heritage include, but are not limited to, forms such as databases, digital film and television, digital games, digital animation and virtual reality. As an emerging way of protection and inheritance, although it presents diversified characteristics in form, its core lies in the deep integration of culture, science and technology. Compared with the traditional way of cultural heritage protection, digital technology has significant advantages. Although traditional methods such as taking photos and recording can save certain information, these materials are often difficult to be preserved for a long time, and are easily damaged or lost due to the influence of time, disasters and other factors. Cultural heritage digitization achievements, on the other hand, can record cultural heritage in a comprehensive, systematic and fidelity way through coded records, so as to achieve permanent preservation. In addition, the digitization can also effectively support the inheritance of cultural heritage. Due to changes in the living environment of cultural heritage, inheritance has become increasingly difficult. However, digital technology can build scenes and reproduce scenarios through three-dimensional animation and other forms, making the inheritance and learning of cultural heritage more intuitive and vivid. At the same time, the application of technologies such as human-computer interaction and knowledge visualization also makes the inheritance of cultural heritage more efficient and convenient[19]. Therefore, unlike intangible cultural heritage, its digitization achievements are bound to have vehicles, which means that the digitization achievements are replicable and more in line with the conditions for the protection of intellectual property objects. Unlike tangible cultural heritage, its digitization achievements are not tangible material vehicles, but different forms presented by digital codes.

3.3.3. Differences in the Subjects of Rights

With regard to the ownership of cultural heritage, the current legal system in China has not yet made clear provisions, which has triggered discussions among academics on a number of potential subjects of rights, such as the State, the local government, the aboriginal people, the inheritors and so on. Clarifying the ownership of cultural heritage rights at the legal level is a rather complex topic. This is not only because it is often difficult to identify the originator of cultural heritage, but also because, in addition to the originator, there may be many other legal rights holders involved. In the case of cultural heritage rights, the subjects are those entities that have interests in cultural heritage under the legal framework and are responsible for its protection. These rights and interests cover a wide range of ownership, personal and property rights, and may have political, social and cultural dimensions. Under the current legal framework, the subjects of cultural heritage rights are usually individuals, groups and the State[20]. Clarifying and respecting the legitimate rights and interests of these subjects is not only conducive to the effective protection and inheritance of cultural heritage, but also a vivid manifestation of the principle of social justice.

The existing laws and local regulations in China focus mainly on the creative subject of the original digitalization achievements of cultural heritage, but rarely involve the secondarily collated and compiled digitization achievements, the collector of original cultural heritage data and the creators of digital pictures, videos and audios. For the digitization achievements of cultural heritage, the stakeholders mainly include copyright owners, disseminators and performers. It is worth noting that

there are obvious differences between the production subject of cultural heritage digitization and the subject of intellectual property rights. Not all digitization achievements of cultural heritage can be protected by intellectual property law. Only those digitization achievements that show unique creativity and novelty can be included in the scope of intellectual property protection. According to the Digital safeguarding of the intangible cultural heritage—Digital resources collection and description (Draft for Opinion), there are exploratory provisions on the subject of rights for the digitization achievements of intangible cultural heritage, such as folklore, traditional medicines, traditional music, traditional dances, Chinese folk art forms and traditional skills. Taking this as a reference, those who digitize cultural heritage are the right holders of these digitization achievements. According to different roles and interests, they can be categorized as creators of digitized results of cultural heritage, disseminators, etc. These roles can be matched by corresponding types of rights in the rights system of copyright law, but appropriate adjustments need to be made to suit the actual situation.

3.3.4. Differences in the Content of Rights

There are significant differences in the forms of expression and inherent characteristics between tangible and intangible cultural heritage of cultural heritage. Therefore, some scholars argue that the rights arising from cultural heritage should be distinguished into material rights and spiritual rights according to the different nature of cultural heritage. The former is embodied in the actual rights and interests of possession, use and disposal of tangible cultural heritage, while the latter is embodied in the protection of spiritual cultural heritage such as thoughts, ideas, theories, customs and habits. These spiritual heritages not only contain individual rights to freedom of thought and expression, but also extend to the protection of intellectual property rights[21]. The right to cultural heritage refers to the right of a specific subject to enjoy, inherit and develop its cultural heritage. Enjoyment refers to the subject's right to access, appreciate, possess, use, and dispose of cultural heritage to a limited extent; inheritance refers to the subject's right to learn, research, and disseminate cultural heritage; and development refers to the subject's right to interpret, innovate, and transform cultural heritage. For tangible cultural heritage, such as buildings and artefacts, it is possible to specify the ownership of the ownership, with the rights and interests of possession, use and disposal. At the same time, the vehicles of these material also carry the creators' freedom of thought and expression. For intangible cultural heritage, such as oral traditions, performing arts and social practices, although they do not have a clear material form, they are equally protected by law. The subjects of rights enjoy full freedom of thought and expression and may possess, use and dispose of the products of their thought or spirit.

Regarding the rights enjoyed by the digitalization achievements of cultural heritage, some scholars believe that individuals or groups who devote efforts to creating digitalization achievements of cultural heritage should enjoy the ownership[22]. This means that they will acquire a kind of property right for digitalization achievements of cultural heritage with exclusivity as its core characteristic. This property right is different from ownership in property law, with limited exclusive effect. The obligee only enjoys the exclusive right to the digitalized achievements of cultural heritage within a specific physical space. At the same time, this property right has an exclusive effect, which can prevent others from illegally using, copying, and disseminating these achievements. Such property right mainly includes the right of control, utilization, and disposal. However, since the digitization achievements incorporate cultural factors and knowledge factors of cultural heritage, which are closely connected with the public interests of the society, the creators' property rights to these achievements are also subject to certain restrictions. Therefore, it is necessary to establish a corresponding system, so that the legally qualified subjects can legally obtain, store and utilize the digitization achievements of cultural heritage according to the needs of cultural protection and inheritance, without infringing the creators' property rights. This system aims to balance the interests of creators and public, and promote the digital protection and inheritance of cultural heritage.

4. COPYRIGHT CONSTRAINTS ON THE CULTURAL HERITAGE DIGITIZATION ACHIEVEMENTS

Intellectual property refers to the rights that people enjoy according to law based on the achievements created by their own intellectual activities, including copyright, neighboring rights, trademark rights, trade name rights, anti improper competition rights, and other rights arising from the achievements of intellectual labor in industrial, scientific, literary, and artistic fields. Among them, the literal meaning of "copyright" is "the right of reproduction", and its origin can be traced back to the monopoly publishing license system once implemented by the British royal family. However, with the popularization of the idea of "jus nafural" after the French bourgeois revolution, copyright not only represents the property rights of works, but also encompasses the moral rights of authors.

In the field of copyright, with its growing importance, the challenges to its recognition and protection have also become more complex. Especially under the rapid development of culture and technology, the concept of "creativity", which is the core of the copyright theoretical system, is suffering unprecedented impact. Looking back on history, photographic technology had a significant impact on the theoretical structure of copyright in the early 19th century, and the traditional understanding of "creativity" was shaken by the emergence of this disruptive technology. With the advancement of culture and technology, the question of whether works produced through new and emerging applied technologies such as photographs, 3D printing or digital scanning, which are not inherently creative, have copyright attributes and what kind of copyright protection they deserve, is controversial. Despite the fact that the international copyright law system has finally accepted photographic works after lengthy discussions, this copyright issue remains ambiguous in the light of the continuous evolution of new technologies. In addition, the mainstream legal system generally believes that the core of copyright protection lies in the rights that authors enjoy over their creative works, which includes both personal and property rights. The Copyright Law of the People's Republic of China promulgated in 1990 also clearly stipulates that copyright covers both personal and property rights, and thus copyright is essentially regarded as a private right. However, this raises a new question: whether the digitization achievements of cultural heritage, as a public cultural resource, may be recognized and protected by copyright with the attribute of private right? This is a topic that deserves in-depth exploration.

4.1. The Constraint I of Copyright: Is there Originality in the Digitization Achievements of Cultural Heritage?

Originality is a core concept in the copyright law system, and it is regarded as the primary condition for a work to become the object of copyright protection. As for the understanding and definition of originality, the global legal profession generally adopts a standard: works containing "a certain degree of originality" are prerequisites for obtaining copyright protection. When exploring the specific meaning of originality, the Feist case heard by the United States Supreme Court in 1991 can be a reference. In this case, the court clearly stated that only works that are independently created by the author and contain "at least a little creativity" can be recognized as original. This standard not only requires the creation process of the work to be independent, but also emphasizes that the work needs to reflect a certain degree of creativity. It is worth noting that originality does not require the ideological content of the work to be unprecedented or absolutely unique. In other words, even if the theme or content of the work is similar to or the same as that of existing works, as long as the author invests his own thoughts and creativity in the creation process, making the work unique in its form of expression, then the work can still be recognized as original. This view is consistent with the relevant provisions of Copyright Law of the People's Republic of China. However, in practice, what "a certain degree" or "at least a little" actually means is often a confusing issue.

The vagueness and abstraction of the criteria for judging originality and creativity have always been a concern in academia. Therefore, in early international legal practice, in addition to emphasizing the

originality of the work, the labor and the time invested in the creative process were also taken into account. This method of judgment is known as the "sweat of the brow" principle. Supporters of this principle often cite John Locke's theory of natural rights and the theory of labor value as its theoretical basis and extension. Specifically, on the one hand, according to the theory of labor value, "labor gives value to everything". In the process of cultural heritage digitization, digitization workers invest technology, intelligence, and capital to deeply explore and integrate the information resources in cultural heritage, completing digital expressions. This process not only highlights the value of the labor invested by digitization workers but also imparts unique property characteristics to the digitization achievements of cultural heritage. On the other hand, the cultural heritage digitization achievements not only expand the existence forms of cultural heritage but also extend its existence space. Digital means make cultural heritage easier to disseminate and preserve, thereby promoting the transformation of the resource value of cultural heritage into economic benefits[23]. In view of this, the digitization achievements of cultural heritage demonstrate the creativity of digitization workers in utilizing cultural heritage as a resource, thereby carrying the private interests and laying a logical premise and legal basis for the allocation of private rights to digitization achievements. Although courts in countries and regions such as the United States, the United Kingdom, Canada, and India have widely accepted and applied the "sweat of the brow" principle as a basis for judgment, many countries and jurisdictions have gradually abandoned this principle over time. Currently, the international legal community generally follows a dual standard that combines subjective and objective criteria when determining the originality of a work. On the one hand, from an objective perspective, the court will delve into whether the work itself contains substantial elements of originality, which encompasses both the visual appearance and the underlying content expression of the work. On the other hand, from a subjective perspective, the court will also thoroughly examine the author's creative intent. If a product is designed based on the author's faithful replication of an original work, it will generally not be considered an subject with independent copyright. This dual standard that combines subjective and objective criteria ensures that the copyright system can both encourage innovation and avoid excessive copying of existing works.

The investment of human, material, and financial resources involved in the digitization of cultural heritage is undoubtedly immense. However, the question of whether it possesses "originality" remains controversial when judged from both objective manifestations and subjective intentions. Some argue that the determination of originality varies with the process, leading to different outcomes. Whether digitalization constitutes an adaptation or a replication cannot be generalized. Based on the authenticity principle of cultural relics and the demands of professional research, the ideal goal of digitization is to obtain the closest "digital clone" through digital means. This implies that neither the visibility of digital achievements nor the subjective intentions of the digitization process pursue so-called "originality". From this perspective, the digital copyright of cultural heritage may seem unrecognizable legally. Nevertheless, when viewing the issue from a different angle, it becomes apparent that digitization achievements, as a new form of existence, are fundamentally distinct from physical reality. Every step of the process, including information collection, modeling, presentation, and communication effects, necessitates professional human involvement and inevitable human creativity. Specifically, if digital reproduction is achieved solely through methods such as scanning and text entry, without originality or creative labor, it falls under replication. However, if creative labor is integrated into the digitization process, resulting in works such as databases that integrate multiple elements, it transcends mere replication and becomes an adaptation, a phenomenon particularly evident in the digitization of cultural heritage. Therefore, both the objective form and the human creative factors involved fully justify the attribution of copyright to digitization achievements of cultural heritage.

4.2. The Constraint II of Copyright: Who is the Copyright Subject of Cultural Heritage Digitization Achievements?

The nature of replication and adaptation determines the attribution of copyright ownership. The aforementioned content has delved into whether digitization should be categorized as "replication" or "adaptation" under copyright law. In the author's opinion, this issue cannot be generalized, as both tangible and intangible cultural heritage digitization may involve either "replication" or "adaptation," or a combination of both. In fact, in many cases, the digitization process is an "adaptation" built upon "replication". Taking "Digital Dunhuang" as an example, Dunhuang murals, statues, and manuscripts are presented to the public in new forms through digitization technology. In this process, the "Digital Dunhuang" works, as the culmination of "adaptation," are built upon extensive "replication" and constitute works in the sense of copyright law. However, questions arise regarding how to determine the copyright owners of these new-type works and how to coordinate their relationship with the original rights holders. Especially in the online environment, the exercise of copyright holders' rights such as reproduction, issue, and the right of communication through information network has undergone profound changes. For issued works, merely providing services to the public through the internet requires obtaining the right of communication through information network from the rights holder. However, if the works are issued and distributed on physical media such as CDs, audio recordings, or video recordings, the rights to reproduce and issue must also be authorized by the rights holder. Although the identities of creators of many cultural heritages are unclear, or some have even entered the public domain. This does not mean that there are no rights holders when cultural heritage is digitized. It cannot be simply assumed that anyone can become the copyright owner of the digitalization achievements. Further research and discussion are needed to determine how to respect and protect the rights of original rights holders during the digitization process while promoting and inheriting the cultural heritage.

Copyright Law of the People's Republic of China explicitly stipulates that any replication, adaptation or other acts must obtain explicit authorization or permission from the original author and relevant rights holders; otherwise, legal liability for infringement will be borne. However, when it comes to the digitization, the situation becomes complicated. Especially when the identity of the original creator is unknown, deceased, or their works are ancient and not protected by copyright law. In such circumstances, the Copyright Law in China does not provide clear guidance on whether the owner of cultural heritage, as the established rights holder, has the right to protect the digitalization achievements of cultural heritage from abuse. Regarding tangible cultural heritage, Article 51 of the Property Law of the People's Republic of China states: "Cultural relics stipulated by law to belong to the state shall be owned by the state."^[24] China boasts a long history and abundant cultural relics resources. According to the Cultural Relics Protection Law of the People's Republic of China, all cultural relics discovered within China's territory, inland waters, and territorial seas belong to the state. Likewise, immovable cultural relics are also state-owned and protected by the designated cultural relics protection units as stipulated by the state. As for other cultural relics, they can be legally owned by units or individuals. Consequently, the rights of most tangible cultural heritage fall within the category of real rights. This implies that it is both reasonable and feasible for the owners or their authorized rights holders, as the rights subjects, to protect and regulate the use and dissemination of cultural heritage digitization achievements. However, China's laws currently have gaps in defining the production entities for the original digitalized outcomes of cultural heritage and those responsible for secondary compilation and digitization. It is crucial to clarify that the rights subjects of cultural heritage itself are not identical to those of its digitalization achievements. The existing national and local laws and regulations in China mainly focus on the identification of production entities for the original digitalized cultural heritage outcomes, while neglecting the production entities for secondarily compiled and digitization achievements, as well as the collectors of raw cultural heritage data and the creators of digital images, videos, and audios. Similarly, the provisions of the Intangible Cultural Heritage Law of the People's Republic of China are limited to the production entities of

intangible cultural heritage databases, with no clear regulations on the production entities of digital libraries, digital museums, and other forms of presentation. Therefore, China still needs to further improve relevant laws and regulations in the area of protection of cultural heritage digitization, particularly in defining rights subjects and protection measures, to meet the new requirements of cultural heritage protection in the digital age. China's intangible cultural heritage databases encompass a diverse range of 11 categories of production entities. Nonetheless, the current Intangible Cultural Heritage Law solely emphasizes the role of governments and cultural administrative departments in this process, overlooking the contributions and status of other participating entities, leading to one-sidedness and ambiguity in the legal provisions regarding production entities.

5. INTERESTS BALANCING: ADAPTATION OF THE COMPENSATION SYSTEM FOR COPYRIGHT RESTRICTIONS IN THE LEGISLATION OF CULTURAL HERITAGE DIGITIZATION

5.1. Copyright Compensation: Adaptation of the Object Protection System

Although the digitization achievements of cultural heritage are derived from cultural heritage with a public nature, since intelligence and labor are inevitably involved in the digitization process, they produce corresponding property values and have private attributes. Therefore, their private rights and interests should be confirmed through copyright compensation. "Confirming rights is a necessary legal means to guarantee freedom". Right, as a legal technology, is the premise for people to use law to safeguard their own rights and interests. Confirming rights through private law can effectively prevent others from using or disseminating digitization achievements of cultural heritage without permission, and is a respect for the efforts, wisdom, and financial resources invested by cultural heritage digitization workers. This means that others should not unreasonably or even maliciously use or disseminate digitization achievements of cultural heritage, which not only damages the spiritual and economic interests invested by digitization workers, but also has a substantial impact on the humanistic value of cultural heritage. Therefore, confirming rights is an important means to protect the digitization of cultural heritage and a necessary measure to respect and protect cultural heritage. In order to achieve this goal, differentiated confirmation of rights should be applied to different types of digitization achievements of cultural heritage. When judging whether these achievements constitute works, the standard of originality should be reasonably lowered to stimulate market vitality and increase the enthusiasm of digital subjects for creation and dissemination. This strategy will help promote the prosperous development of the cultural heritage digitization industry.

5.1.1. Lowering the Standard for Determining Originality.

Digitization technology itself does not have the ability to create new works. In view of the uniqueness of cultural heritage, the judgment of its originality in the process of digitization needs to be adjusted adaptively within the framework of the Copyright Law. This adjustment is mainly reflected in lowering the standard of originality judgment of digitization to encourage the overall innovation of society. The traditional copyright system sets a high threshold for the originality of digitization achievements of cultural heritage, which contradicts the needs of society. In the era of digital technology, the digitization presentation of cultural heritage is not only a kind of technical information, but also shows a far-reaching guidance and inspiration to related industries and even the whole society. However, the current legal system has not fully adapted to the characteristics and application modes of this new technological product, and there is a certain conflict between the legal system and digitization achievements. In order to maximize the public interest, the society's demand for the creative commons has become more urgent. Therefore, the relevant right holders need to make some concessions[25]. For traditional work forms, the existing copyright system, including fair use and statutory license, is sufficient to balance the conflicts of interest between right holders and users. However, the digitization achievements of cultural heritage are highly open and shared, requiring a

re-examination and adjustment of the existing copyright system to ensure that it protects the rights and interests of creators, and promotes continuous innovation and development of cultural heritage digitization. The "Outline for Building an Intellectual Property Powerhouse" clearly states the need to establish an intellectual property system oriented towards socialist modernization. For emerging fields, this is both a challenge and an opportunity. Article 1 of the "Copyright Law of the People's Republic of China" clarifies the legislative purpose: "This Law is formulated in accordance with the Constitution to protect the copyright of authors of literary, artistic, and scientific works, as well as the rights and interests related to copyright, to encourage the creation and dissemination of works that are beneficial to the construction of socialist spiritual and material civilization, and to promote the development and prosperity of socialist culture and science." The primary purpose of copyright law lies in encouraging mental creation and intellectual labor in the fields of literature, art, and science, thereby promoting the prosperity and development of culture and science. As for copyright legislation, this goal of "promoting creation" is known as the encouragement theory in academic circles. To achieve this goal, it is necessary to ensure that the rights and interests of copyright owners are fully protected, allowing them to enjoy as many rights as possible. At the same time, it is also necessary to continuously expand the scope of protection for works to cover more original intellectual achievements. This implies that for emerging creative forms such as 3D scanned digital models and virtual digital products, the criteria for judging their originality should be re-examined and adjusted within the framework of copyright law. Such adjustments will not only help better protect and incentivize creators but also enhance the level of innovation across society, promoting the integrated development of technology and culture. In summary, copyright law is not only a legal tool for protecting the rights and interests of creators but also a vital driving force for the prosperity and development of culture and science[26].

5.1.2. Differentiated Strategies for Confirming Rights over Cultural Heritage Digitization Achievements of Different Types.

In the digitization of cultural heritage, a clear understanding is essential: not all digitization achievements merit protection under intellectual property law. Only when these achievements exhibit unique innovation can they be considered as digitization achievements. When digitization technology is merely employed for straightforward documentation of cultural heritage, the resulting works often constitute mere audio-visual recordings. However, if the process incorporates the ideas and innovative content of digitization workers, these achievements may transform into works eligible for intellectual property protection. For instance, at the "collection" level, digitization efforts are relatively straightforward, focusing primarily on preserving the original appearance and authenticity of cultural heritage. At the "processing" level and above, the digitization of cultural heritage involves more complex technological and intellectual activities. In this process, digitization workers engage in creative transformation and manipulation based on the cultural connotations and knowledge elements of the cultural heritage. These digitization achievements not only reflect the characteristics of the original cultural heritage but also incorporate the creative thinking and technical expertise of the digitization workers[27]. In brief, as the level of cultural heritage digitization advances, so does the degree of digitization. This implies a greater investment of labor, capital, and technological resources by digitization workers. Consequently, these higher-level digitization achievements more prominently exhibit their characteristics as intellectual achievements. With reference to Article 3 of the Copyright Law, there is a need to clarify the types and forms of digitization achievements at the legislative level. The core of copyright recognition lies in incentivizing innovation and maximizing its benefits. This necessitates continuous adjustments and improvements to the copyright system in line with technological and environmental changes, ensuring a new balance between private copyright interests and public interests when applying new technologies.

5.2. Copyright Restriction: Adaptation of the Subject Protection System-Creative Commons License

Digitization has emerged as a crucial tool for cultural heritage protection. However, in practice, restrictions on copyright notices and free public access to digitization achievements in the cultural heritage departments have raised widespread concern. In order to ensure the protection and inheritance of cultural heritage while respecting the public's right to fair use, it is necessary to impose appropriate restrictions and regulations on the copyright of digitization achievements. While private law provides a certain degree of protection for the digitization of cultural heritage, such protection should be limited by the attributes of public interest. Cultural heritage is the common wealth of all mankind, and its protection and inheritance should be orientated towards the public interest. In the era of big data, the entity of cultural dissemination has expanded from traditional museums and libraries to every individual involved in society. The public generally recognizes its right to access information (ideas) within the constraints of intellectual property rights[28]. Therefore, even if the copyright of a digitization achievement belongs to a private person or institution, the public's reasonable access to it should not be unduly restricted.

5.2.1. Establishment of a System of Creative Commons Licenses.

In 2016, the Neues Museum Berlin was embroiled in a dispute over the copyright of a digital model of a bust from its iconic collection. Two artists published 3D scans of the collection, and the museum argued that the two artists had infringed on the copyright. The controversy not only involved copyright issues, but also raised social concerns about the issue of control over the digitization of cultural heritage in the hands of museums and other collecting institutions. In August 2016, the digital multimedia artist and designer Cosmo Wenman, relying on the German Freedom of Information Act (Das Informationsfreiheitsgesetz), filed a request with the museum to disclose the digital model files of the cultural relics, arguing that many museums, universities or private collectors have 3D data of very high-quality collections in their hands, but refuse to share it with the public. After a three-year-long fight, the agency finally granted his request in late 2019. The museum then provided Wenman with a USB drive containing the digital model files, a move that marked another important victory for information disclosure and public engagement. Following this, the Neues Museum Berlin has decided to make its official digital archive of collections, including the much-anticipated bust of Nefertiti, fully accessible to the public. The museum's commitment to creative commons and the public good is demonstrated by the fact that these valuable digital archives can be downloaded and used by everyone free of charge. It also marks the institution's response to the growing international trend of sharing the digitization achievements of cultural heritage. The Neues Museum Berlin adopts the widely recognized Creative Commons License, which encourages sharing for the public interest but restricts commercial use. On the international front, the widely accepted and practiced norm for public cultural copyrights is the Creative Commons license, version 4.0. This licensing agreement offers a copyright assertion model for creative works in the public domain, encompassing various forms of digital content such as website content, images, videos, blog posts, electronic documents, books, and datasets. This specific copyright framework allows any individual or organization to freely share and adapt the licensed content, enabling unrestricted reproduction, republication across any medium and format, as well as the right to remix, transform, and even partially commercialize these works. However, this liberty is contingent upon strict adherence to the Creative Commons license terms, which mandate attribution to the original copyright holder, sharing of derivative works under the same license, and refraining from imposing additional restrictions. Once these conditions are met, the copyright holder forfeits the right to revoke the granted permissions. Theoretically, the Creative Commons license provides the public with extensive usage rights, yet it currently lacks actual legally binding force. In practice, while numerous museums embrace this license from a public interest perspective, their copyright notices often still stress that digital images cannot be used for commercial purposes. This implies that, despite public access and usage rights, museums retain exclusive control over the commercial exploitation of their cultural heritage digitization achievements. Access to

cultural heritage resources should not be a privilege reserved for select groups but rather a fundamental human right. Consequently, digitization achievements should be freely accessible to the public within reasonable limits. Currently, cultural heritage databases worldwide generally adopt an open-access strategy, allowing anyone to obtain relevant information free of charge. In this light, governments at all levels in China should also upload cultural heritage digitization achievements to public online platforms or libraries, archives, and other venues for free public access. Additionally, other online platforms, television, and radio media should be encouraged to disseminate these digitization achievements on a nonprofit basis. It's crucial to note that disseminators who deliberately misrepresent, unlicensedly abridge, or add content to digitization achievements should face legal consequences. Meanwhile, cultural heritage digitization workers, including performers involved in recording these digitization achievements, are entitled to corresponding rights under the Copyright Law. If digitization workers infringe upon performers' identities, images, or other interests during production and dissemination, performers have the legal right to seek redress.

5.2.2. Establish a Mechanism for Balancing and Sharing Interests.

Digital protection is the process of reconstructing cultural heritage through digitization, guided by the "knowledge-right" relationship, involving the participation of multiple subjects and the reproduction of cultural heritage. To determine the specific scope of rights holders, firstly, it is necessary to clarify the criteria, procedures, and objection procedures for identifying the main creators of digitization achievements, comprehensively reviewing and categorizing current creative entities to clearly define their scope. In this step, based on whether the work is commissioned, the rights holders should be further classified as individuals or collectives. Secondly, a detailed classification and confirmation of rights should be conducted for different types of digitization achievements to ensure clarity in identifying the rights holders for each. This approach facilitates a more precise grasp of the rights and obligations of different entities in specific contexts. Lastly, it is crucial to further specify the ownership of each type of digitization achievements. For instance, the rights to a digitized image should belong to its creator, while the rights to a digitized video should belong to its producer. Such detailed regulations not only clarify responsibilities among parties but also provide clearer legal protection for rights holders. It is noteworthy that the protection of rights and interests in cultural heritage digitization involves both production and dissemination stages, each with unique requirements for balancing interests. At the initial stage of digitization, an interest-sharing model between "inheritors" and "original rights holders of cultural heritage digitization achievements" should be established. This model aims to ensure reasonable compensation for traditional cultural inheritors based on their knowledge, skills, and experience, while safeguarding the rights of creators over their intellectual achievements. As digitalization progresses and secondary compilation achievements emerge, a more intricate interest distribution mechanism involving "inheritors, original rights holders of digitization achievements, and secondary creators" must be established. This mechanism necessitates not only respect for the rights of original creators but also fair distribution of the added value generated during secondary creation. Law plays a pivotal role in this process, clarifying the relationships among various rights holders and providing clear remedies for resolving rights conflicts. By doing so, the law aims to balance the interests of all parties, prevent overlap and conflict of rights, and ensure the smooth progress of cultural heritage digitization. During the dissemination phase of digitization, a framework for interest sharing among "investment enterprises, government departments, and rights holders" should be established for works involving commercial exploitation. Under this framework, the law must strictly limit the abuse of government power, prescribe transparency in investment procedures, and provide a comprehensive relief system for rights holders. Through these measures, the copyrights of rights holders of cultural heritage digitization achievements can be fully respected and protected.

6. CONCLUSION

From the above analysis, it can be seen that, in practice, there are significant disputes regarding the copyright claims of cultural heritage digitization achievements, especially in terms of originality and copyright ownership. In the digital era, compared with photography and video recording under traditional technology, the digitization achievement of cultural heritage is not only larger in quantity and better in quality, but also higher in comprehensive value. China's "14th Five-Year Plan" Period clearly puts forward the goal of building national cultural big data, the realization of which requires not only the active participation of the government, but also the extensive participation of social forces and the influence of the market mechanism. With reference to the latest international practice of claiming the rights and interests of cultural heritage digitization, and in the light of China's national conditions, it is necessary to reasonably identify the digital copyright of cultural heritage through the construction of an interest-balancing mechanism under the premise of giving priority to social benefits. The benefit-sharing principle originates from the stakeholder theory, that is, "benefits should be shared by the creator and those who contributed to the creation of the benefits". The benefit-sharing principle can balance the interests of all right holders, so as to promote the development of digital protection of cultural heritage. Cultural heritage is a source of innovation, but in the context of industrialization, marketisation, and national strategies, the digitization achievements of cultural heritage are also a source of innovation, and when these digital achievements are used, the right holders have the right to share the benefits arising therefrom.

The interest-balancing mechanism provides a systematic guarantee for right holders to exercise their rights, which balances the interests of all parties and realizes the conversion of digitization achievements into digital dividends. This is not only conducive to the protection of the legitimate rights and interests of right holders, but also to promoting the sustainable development of the digital protection of cultural heritage.

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CONFLICTS OF INTEREST

The authors declare no conflicts of interest regarding the publication of this paper.

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