



# Research and Application of Digital Technology in Intangible Heritage Cultural and Creative Design Under New Media Environment

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**Abstract.** Intangible cultural heritage is one of the best representatives of Chinese civilization, containing the wisdom and sweat of ancient people, and should be better carried forward and inherited. The article adopts the literature method to obtain relevant information and summarize and sort it out. This paper uses digital design as a carrier and uses popular modeling software to create a virtualized digital design to create a different language for intangible cultural heritage products. At a time when cultural communication is vigorously promoted, this paper combines the current trend of 3D digital technology communication forms of new media and innovative design means to integrate the unique cultural attributes of intangible cultural heritage and design special cultural and creative products that fit the new era, so that the products can realize the 3D display effect, improve the design and production efficiency, and make consumers have immersive purchase enjoyment while generating interest in intangible cultural heritage.

**Keywords:** Intangible Cultural Heritage · Cultural Creation · 3D Digital Design · Virtual Scene

## 1 Introduction

China's intangible cultural heritage has a long and profound history and has great conservation value and heritage significance. As far as the popularization of intangible culture is concerned, the dissemination effect is not good. The reason for this is that the current dissemination methods are old and designed in a single form, and the traditional paper media is far from being able to meet the current needs. According to the 13th Five-Year Plan of the Ministry of Culture, the measures for the protection of intangible cultural heritage are emphasized as follows: "Adhere to the working policy" of "protection first, rescue first, reasonable utilization, inheritance and development", further improve the protection system of intangible cultural heritage, focus on the cultivation of human beings, and integrate into modern life as the guide. We will further improve the system of intangible cultural heritage protection, focus on human training and integration into modern life, effectively strengthen capacity building, improve the level of protection and transmission, and promote the in-depth development of intangible cultural heritage protection".

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This paper will study virtual digital means to disseminate and promote intangible cultural heritage. 3D modeling will be combined with products to develop innovative cultural and creative products. Virtual digital means will be combined with dissemination and promotion to bring traditional non-traditional heritage to life by means of digital words. At the same time, virtual digital technology also can create a multi-dimensional perspective of intangible cultural heritage online exhibition hall, allowing consumers to learn about intangible cultural heritage in any way and in any scene. This is the best way to promote and develop intangible cultural heritage [1].

## **2 Digital Communication Characteristics in the New Media Environment**

The new media environment refers to a new media form that emerges on the basis of computer information processing technology. New media are broadly defined by digital, information, communication, and other technologies as the basis of the examination, through different ways and means to visualize the information, make it touchable, and present the two-dimensional content in three-dimensional form [2]. Nowadays, new media has become the most important mainstream communication medium, which has broken through the traditional media boundaries both formally and technologically, making a huge change in the form of communication and creating endless possibilities for the development and dissemination of information. The new media environment is more interactive than the traditional media environment, and the role of the information center is diluted so that the public can also become the communicator, using modern media tools such as online media and mobile media. Its characteristics also determine the characteristics of the new media environment: fast dissemination, wide range, interactive, and greatly improve the timeliness of information. In recent years, artificial intelligence has flourished. Through the deep application of AR, VR and 3D technologies, it is presented as virtual reality in various dimensions. People can interactively experience different forms, images, productions, and other scenarios on the Internet and purchase products, realizing the digital “cloud communication” of products and services [3].

## **3 Limitations of Non-heritage Culture Dissemination**

In today’s active cultural atmosphere, the protection and promotion of intangible cultural heritage are still facing severe tests [4]. First of all, inheritances of many intangible cultural heritage skills are facing the dilemma of a lack of successors and successors. As a national project, many intangible cultural heritage inheritors are mainly middle-aged and elderly, and almost no young people are willing to learn the skills of intangible cultural heritage. Secondly, the promotion methods of cultural and creative products related to intangible cultural heritage are too old, adherence to rules, poor branding and insufficient awareness of the protection and packaging of cultural and creative products [5]. It is human nature to be attracted to things of beauty, but at present, many designers of intangible cultural heritage creations rely on the gimmick of intangible cultural heritage to make articles, rather than designing to promote its real content [6]. Finally, in today’s

market, brand effect gradually becomes an indispensable reference factor when consumers purchase items, and the masses also have cognitive bias toward cultural content, leading to poor communication and weakening the brand effect of cultural and creative products.

#### **4 The Use of Digital Means in the Creative Design of Intangible Cultural Heritage**

Virtual digital technology has always been a popular product of our time, and scholars in various fields are constantly working on the development and expansion of the technology. It is appearing on more and more international stages, such as global exhibitions like the World Expo. First of all, digital technology better interprets products with unique and dazzling effects, attracts audiences, and completes the display of works in the form of new technical language. Secondly, 3D digital technology gets rid of the sense of time and space, and can not only reproduce the real existing environment, but also conceive the virtual environment that objectively does not exist, bridging the dialogue with the future. Finally, creating a relevant scene atmosphere or VR digital exhibition hall through digital means is not only a reflection of comprehensive strength but also improves the sense of spatial atmosphere of various displays and makes people immersive. This study assists the design of non-heritage cultural and creative products with a new perspective, combining 3D digital virtual technology to restore the scenario-based experience and present non-heritage cultural and creative products to consumers in a three-dimensional form. It enables them to immerse themselves in the experience of freely manipulating the simulated objects and broadens the consumers' imagination. For intangible cultural heritage, their inheriting population is the real holder of cultural genes, and what they really need is a strong sense of innovation and research ability, a high degree of adhesion with society, and the promotion of the inheritance and development of skills [7].

The support of computer and tablet modeling technology is no longer limited to digital product design venues. Designers can use modeling and scene rendering technologies such as Zbrush, c4d, 3Dmax, clo3D, and Nomad for digital design [8]. For different textures and types of non-heritage cultural and creative designs, the powerful functionality of Zbrush software can build high-precision models followed by texture drawing and mapping creation of different materials, and subsequently assist c4d and 3dmax to achieve low-mode high quality, and good model scalability to get rid of the limitations of traditional design models. After the modeling of cultural and creative products is completed, the product dynamic posters can be exported in real time through Nomad software, increasing another possibility of product promotion, from the visual, auditory and tactile tripartite feeling to the interactive dynamic world [9]. The use of 3dmax and software such as Cooler has successfully helped us to realize the virtual effect of 3D cloud-based digital showroom. The virtual scene has a powerful imitation of the sensory world, and it is designed to allow consumers to select products immersively even without leaving home. It makes the products have a strong cultural atmosphere, and the 360-degree appearance model of the products can be accurately perceived by clicking on the products in the showroom. Through the construction of individual models, the creation of ambient showroom models and their integration to form a showroom on the

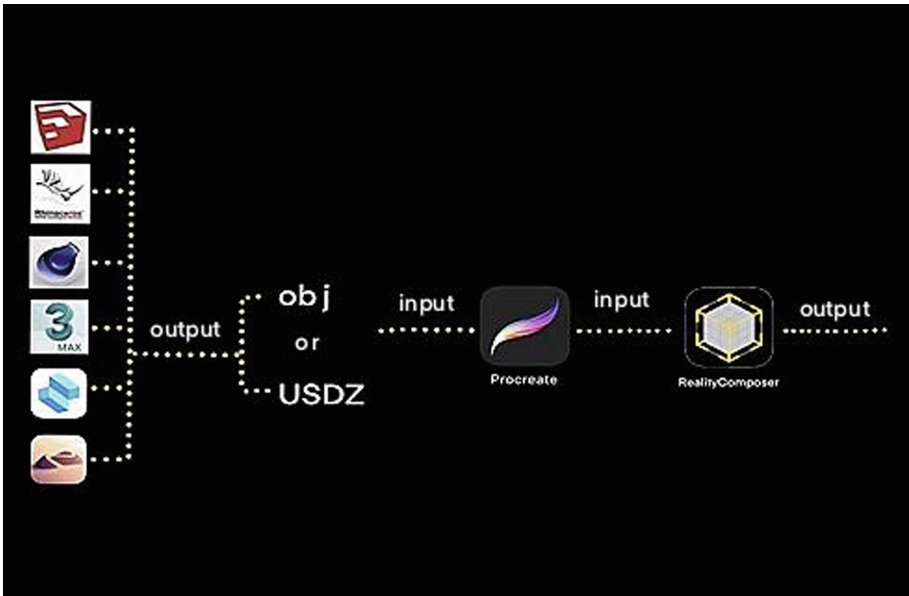


Fig. 1. 3D digital production flow chart

cloud, the subsequent import of procreate and PS for colouring and finally the input of reality composer AR software, users can scan images to view the AR virtual reality effect of products, allowing the real scene on the screen to augment virtual objects, while seeing the real world and This allows users to see the real world and the virtual at the same time. This provides the user with a multi-sensory simulation of the visual, auditory and tactile senses (As shown in Fig. 1) [10].

## 5 Conclusion

The development of art is undoubtedly a collision of tradition and innovation. For example, from the development of painting, the use of new materials and techniques has led to the infinite possibilities of painting works. The development of digital media has also brought new forms of expression to traditional art and provided a new perspective of cultural communication. In the new media environment, the digital design barrier lies in the ability to guide participants to take the initiative to establish a connection with the product and to form a closed loop between the designer’s design ideas and the participants’ experience process. By allowing designers to break the traditional medium and introduce new forms of communication into the design of non-traditional cultural products, it can shorten the time for experiencers to think about observing, feeling, analyzing, and cognizing the objects, greatly improving the efficiency of communication. Digital technology also enables the diversity of visual languages and the formation of new visual aesthetics. The use of digital means in the design of non-traditional cultural and creative products brings not only technology but also a new mode of thinking and

survival marked by a three-dimensional model. In terms of the development prospects of the current society, virtual technology is bound to be one of the presentation methods of future display design, using cultural and creative products as a carrier to bring ICH to life by using digital means and truly realize the living heritage of ICH.

But it is also true that there are some drawbacks. The digital communication of traditional brands requires designers with high design strength and the ability to master digital software to a certain extent. However, there are few people who are proficient in digital software. However, few people are proficient in digital software. Moreover, the main responsibility of traditional culture brand communication is related to government agencies, and experts in the field of traditional culture are not able to use digital software well, so this has become the biggest obstacle to digital communication. Digital technology has become one of the indispensable design and display methods in contemporary times. In the future, relevant government departments and schools should actively cultivate technically complex talents, continuously improve their scientific and cultural literacy, strengthen the cross-fertilization between various disciplines, continuously disseminate and innovate digital technology, and contribute to the promotion and dissemination of intangible cultural heritage of high quality.

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