



RESEARCH ON THE DESIGN AND DEVELOPMENT OF CULTURAL AND CREATIVE  
PRODUCTS IN HENAN MUSEUM



MENGJIN XU

Graduate School Srinakharinwirot University

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RESEARCH ON THE DESIGN AND DEVELOPMENT OF CULTURAL AND CREATIVE  
PRODUCTS IN HENAN MUSEUM



A Dissertation Submitted in Partial Fulfillment of the Requirements  
for the Degree of DOCTOR OF ARTS  
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THE DISSERTATION TITLED  
RESEARCH ON THE DESIGN AND DEVELOPMENT OF CULTURAL AND CREATIVE  
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BY  
MENGJIN XU

HAS BEEN APPROVED BY THE GRADUATE SCHOOL IN PARTIAL FULFILLMENT  
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-----  
(Assoc. Prof. Dr. Chatchai Ekpanyaskul, MD.)  
Dean of Graduate School  
-----

ORAL DEFENSE COMMITTEE

..... Major-advisor	..... Chair
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(Asst. Prof. Dr.Saowaluck Phanthabutr)	(Asst. Prof. Dr.Kittikorn Nopudomphan)
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	(Asst. Prof. Dr.Noppadol Inchan)

Title	RESEARCH ON THE DESIGN AND DEVELOPMENT OF CULTURAL AND CREATIVE PRODUCTS IN HENAN MUSEUM
Author	MENGJIN XU
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Thesis Advisor	Associate Professor Dr. Prit Supasetsiri
Co Advisor	Assistant Professor Dr. Saowaluck Phanhabutr

This study aimed to (1) conduct an in-depth extraction of cultural elements from cultural relics, (2) investigate how history and contemporary life integrate within cultural and creative products, and (3) design a new cultural and creative product for the Henan Museum informed by these findings. Guided by the theory of cultural objects on three layers and levels, cultural relics were analyzed in terms of "cultural content," "historical significance," "emotional value," "function," "usability," "patterns," "materials," "color," and "shape."

Based on the results of a questionnaire, it was found that future cultural and creative products should focus on cultural connotation, high creativity, and practicality, with daily necessities as a potential direction for development. Interviews further indicated that products could enhance functionality and interactivity, establishing an emotional connection between cultural relics and consumers.

As a culmination of these insights,, a lamp inspired by the Jiahu bone flute was designed.

Keyword : cultural and creative products, culture relics, Henan Museum

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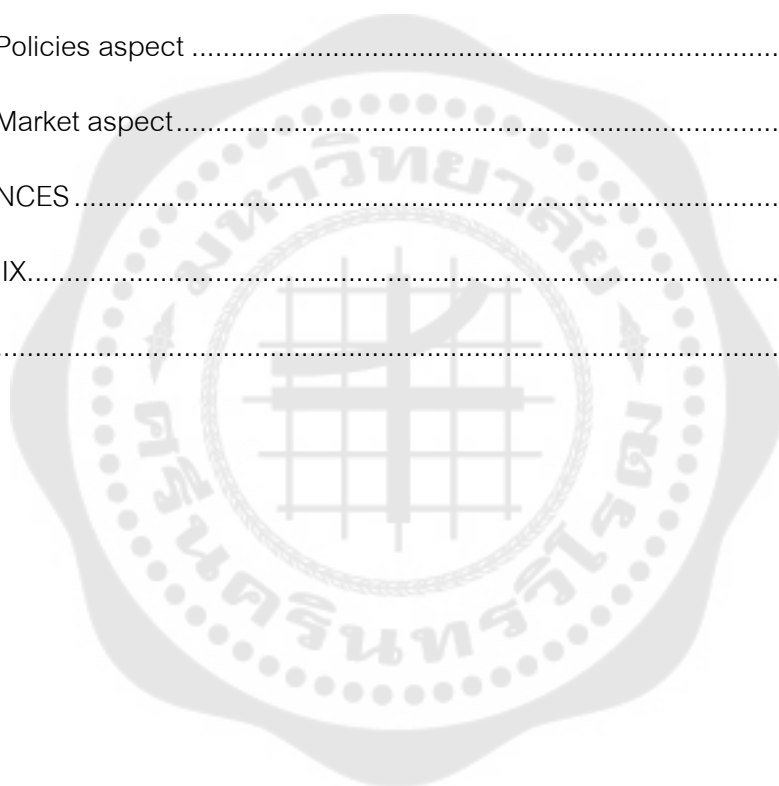
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# CHAPTER 1

## INTRODUCTION

### 1.1 Research background

Since its birth in the 17th century, the orientation, nature, function and social value of modern museums have been in the process of dynamic development. From the traditional cultural relics collection and exhibition place to the once authoritative educational tools such as the state, nationality and religion, it has evolved into a public cultural institution with the fundamental purpose of educational service and an important cultural landmark of the city.

In recent years, with the emphasis of national policies on the protection of cultural resources and the promotion of traditional culture, President Xi Jinping put forward the slogan of "cultural confidence", and the government's requirements have increased, as cultural and educational landmarks, local museums have taken the launch of cultural and creative products as an important link in the future development of museums. Taking cultural and creative products as the carrier, they carry forward tradition and spread culture, and actively cooperate with the social goal of "building a cultural power in the new era".

In 2011, the China cultural relics administration triggered the 12th Five Year Plan for the development of cultural relics museums, which clearly put forward the task of "developing cultural industry in museums", and gave more policy guidance and support

to the development of cultural and creative industries in museums. In 2015, the regulations on museums, several opinions on promoting the development of cultural and creative products of cultural and cultural relics units and other policies and opinions were issued, which comprehensively guided and standardized the market subjects, research and development approaches, brand construction, marketing promotion, support policies, talent training, incentive mechanism and income distribution of cultural and creative products developed by museums.

European and American scholars focus on the development of cultural and creative products within the framework of the overall marketing strategy of the museum. (Mudzanani, 2017)proposed museums to craft product lines that align with the evolving demands of various segments within their target audience.

Marketing communication tools should integrate customer value, cost, convenience and communication. (Chiou & Wang, 2018)studied how the design concept of museum cultural and creative brands influences the process of consumers' purchasing intention of cultural and creative products.

Chinese scholars' research is mostly based on the design methods and principles. (Tu, Liu, & Cui, 2019)took the cultural and creative products of the Palace Museum as an example to sort out its development concept and development status, and put forward the optimization path for the development of cultural and creative products of the Palace Museum. (Z. Li, Shu, Shao, Booth, & Morrison, 2021)pointed out

that Museum Cultural and creative products belong to perceptual goods, and their effectiveness is not entirely determined by the use value, but also the psychological feelings of buyers.

However, there are few special studies on how to improve the carrying capacity and dissemination of culture, how to break the barriers of long-standing traditional culture and modern life through cultural and creative products, and on Henan Museum.

### **1.1.1 The importance of cultural and creative products in museums**

Nowadays, the museum cultural and creative industry, which meets people's spiritual needs, has a good social environment in China. The importance and necessity of relying on museums to develop cultural and creative products are mainly reflected in the following aspects.

First, the transformation of the role of museums. For a long time, museums were primarily concerned with the preservation of precious objects and provided research, display and education services for nobility, experts and scholars. Modern thinking has led to a gradual change in the social function of museums, focusing more on the relationship between museums and the public.

At present, museums in China are largely undergoing a shift in the centre of their development, from the passive reception of cultural content by visitors to a more active 'dialogue and education' function. The 2007 ICOM( International Council of Museums) Statutes and China's 2015 Museum Regulations both prioritize 'education' in their

definitions of museums, underscoring the significance of educational roles in museums, implying a shift in the centre of museum development from 'artefact-centred' to 'education'. This means that the centre of museum development has shifted from being 'artefact-centred' to being 'people-centred', this is an emphasis on the social responsibility of museums, Beijing Municipal Administration of Cultural Heritage 2018.

Secondly, the Government supports museums in developing cultural and creative products. In the national heritage development plan, the development and operation of museum cultural products has been raised to a high level to comprehensively improve the quality of museum development, clearly requiring multiple measures to make cultural relics "come alive", and clearly proposing to promote the development and operation of museum cultural and creative products. Therefore, is in line with the national development plan for the industry, and is one of the important tasks required and supported by the state.

From 2014 to 2019, China has issued a number of regulations, policies and plans to promote the development of cultural and creative products in museums and other cultural heritage units from the top level, reflecting the strong support of the national team for museum cultural and creative products. In 2015, the State promulgated the *Regulations on Museums*, which provided guidance on the development of cultural and creative industries in museums. In 2016, the State cultural department adopting and announcing 92 pilot departments for cultural and creative products and providing strong

support for them, Henan Museum is among them. In 2017, the State Administration of Cultural Heritage of China officially released and implemented *the 13th Five-Year Plan for the Development of National Cultural Relics*, which states in the section on "comprehensively improving the quality of museum development".

In 2022, the State Administration of Cultural Heritage announced the implementation of a new version of *the Museum Top Assessment Measures*, *the Museum Classification Assessment Criteria*, and *the Scoring Rules and Points Table*, incorporating the development of museum cultural and creative products into the museum classification and assessment index system, which is not only a requirement for strengthening museum quality management, but also a requirement for promoting museums to perform their duties, which is a function and "part of the job" of museums. State Administration of Cultural Heritage in 2022.

It is evident from a series of intensive policy initiatives on the development of museum culture and creativity in China in recent years: the policy environment for the museum culture industry has been constantly optimised, various measures have pointed the way for the development of the museum culture industry, and the allocation of resources for the dissemination of museum culture has been continuously promoted at the national level through policy interventions, paving the way for the development of the museum culture industry.

Thirdly, the transfer of mass consumption structure. With the improvement of the

general public's living standard and the increase of people's disposable income, the main body of mass consumption is slowly changing from the material consumption in the past to spiritual and cultural consumption. Taking Alibaba, China's largest online platform, as an example, data from Alibaba's retail platform reality, the scale of museum cultural and creative products transactions has grown at a high rate in recent years, with the overall scale in 2019 increasing three times compared to 2017. According to the "2021 China Brand Licensing Industry Development White Paper", the art and culture (including museum) category is second only to the entertainment category in 2020, accounting for 18.7% of IPs. (Source: China Toys and Juvenile Products Association) It is thus clear that the public's consumption behaviour is not only to secure the basic functions of life, but also to begin to focus on the cultural connotation, aesthetic taste and cultural identity of products.

## 1.2 Problem statement

Henan Museum is the first batch of national first-class museums announced by the State Administration of Cultural Relics of China. Henan Museum, focused on historical artifacts, houses over 170,000 cultural relics as of January 2022. Its collections encompass prehistoric items, Shang and Zhou bronzes, ceramics spanning various dynasties, as well as jade and stone carvings. The museum is a treasure trove of cultural and artistic treasures that bear witness to the development of Chinese civilisation and showcase the development of China's history, with a large number, variety and value of

fine cultural relics.

In recent years, the rise in cultural tourism and mainstream media's endorsement of museum culture have increasingly drawn public interest to Henan Museum. In 2021, Maigoo, a ranking website in China, released a vote for "China's Top Ten Famous Museums", this ranking is based on the classification and honorary titles of each museum, selected by comparing the background, scale, architectural features, exhibitions and collections, and precious relics of Chinese museums, and combined with the word-of-mouth ratings, ticket sales, public awareness, and online attention index of each museum on major Chinese travel platform websites (Ctrip, Where to go, Tuniu, Flying Pig, Tongcheng, Baidu). Henan Museum ranked fourth only after the Palace Museum, China National Museum and Nanjing Museum. In 2022, China Tiktok Platform released the "2022 Museum Data Report". The report shows that the number of videos related to Tiktok Platform museums has increased by 70% year on year in the past year, and the number of likes has exceeded 1.2 billion. According to the ranking of the number of likes of related videos, the Henan Museum was selected as the "Top 10 Most Popular Museums of the Year", ranking eighth. At the same time, the "post-00s generation" group is the most favorite group to watch museum videos.

Although Henan Museum is gradually gaining recognition and popularity from the public, there are practical problems in the development of culture and creative products.

First, late start and slow development. In 2010, the research report of the State

Administration of Cultural Heritage's "Cultural Product Development in Museums" research group elaborated on the imbalance in the regional development of cultural products in China, showing an imbalance between the eastern and central and western parts of the country. At that time, only two museums in the eastern region, the National Palace Museum and the Shanghai Museum, had a cultural product development output of more than RMB 25 million, and nearly half of the total cultural product development output of museums nationwide came from museums in the east, while the overall level of cultural product development of museums in the central and western regions was weak. National Cultural Heritage Administration Department of Museums in 2010.

At the same level as Henan Museum, such as Nanjing Museum, Suzhou Museum, and Dunhuang Research Institute, they all opened online stores on Alibaba platform before 2019, and gained more than 100000 followers with a large number of excellent cultural goods. The official Alibaba store of Henan Museum was just launched in April 2020, nearly two years behind other museums at the same level, and only gained 41055 followers for now, data source Taobao APP, 2022.

Not only did online stores start late, but offline stores also failed to achieve good results. According to the data released by the Art Market in 2016, there are more than 2000 museums with cultural and creative product development capabilities recognized by official institutions in China, accounting for nearly half of the total number of museums. Henan Museum is also among them, but only 18 of them are truly profitable through the

sale of cultural and creative products, excluding Henan Museum. In terms of the current development situation, the starting time and development speed of cultural and creative product development of Henan Museum do not match the development prospect of the museum.

Secondly, products are separated from life. Because of its own culture, sense of history and sense of time, most of its cultural contents are far away from people's daily life, which naturally forms a sense of distance and boredom with consumers. Although the government and museums highly advocate museum culture, many interesting and relaxing forms of leisure and entertainment occupy people's lives in the current society, by contrast, museum cultural knowledge, like dusty history, seems old and boring, the public's knowledge of museum culture is weak, and the publicity effect of culture in the whole society is insufficient.

As a bridge connecting history and real life, Museum Cultural and creative products developed based on historical relics and museum culture. Its creative inspiration comes from one or a series of cultural relics or specific historical stories. On this basis, it interprets its artistic value, spirit of the times and humanistic feelings, and highlights its historical status and value through "redesign" from different levels.

Thirdly, low cultural carrying capacity. At present, most of the cultural and creative products in museums express the museum culture in a superficial way, most of them simply extract cultural relics patterns and other elements and copy them directly,

only pay attention to the content transmission of shallow and appearance, and lack in-depth thinking and connotation mining for the transmission and expression of culture.



Figure 1 The character dolls on sale at the Henan Museum

Source: Xu Mengjin (2022)



Figure 2 Other brands of character dolls in the market at the same price

Source: Xu Mengjin (2022)

As shown in Figure 2 for the character dolls on sale at the Henan Museum, although based on Chinese historical figures, the overall design is too monotonous and dull, lacking cultural features and museum characteristics. Picture 3 shows the design of

other brands of character dolls in the market at the same price point, both in terms of stylistic design and details of the characters' faces and costumes are much more exquisite, and compared to the two, the Henan Museum's product is greatly lacking in competitiveness.

### 1.3 Research objectives

The research subject of this paper is "Museum Cultural and creative products", defining them as unique goods marketed through physical or online museum stores, created by incorporating and innovating on the cultural and artistic aspects of artifacts in the museum's collection, and integrate ornamental, commemorative and practical.

The research objectives of this article are as follows:

1. Research on the in-depth extraction of cultural elements of cultural relics.
2. To study the integration of history and contemporary life in cultural and creative products.
3. To design a new cultural and creative product for the Henan Museum based on the first two steps.

### 1.4 Study population and sample

#### 1.4.1 Cultural relics

Cultural relics are considered as the source of inspiration for creative product design, and it is necessary to have an in-depth understanding of their characteristics and cultural values in order to create cultural and creative products with unique and

cultural values for the museum. In this study, the "Nine Precious Cultural Relics" of Henan Museum will be the sample of analysis. These "Nine Precious Cultural Relics" are officially recognized and prominently promoted by the Henan Museum, with important historical significance and high cultural value, widely known to the public. The study of these nine cultural relics will be more unique, regional, and representative.

#### **1.4.2 Visitors**

Museum visitors are a key audience for cultural and creative products as they are interested in the museum's exhibits, Chinese history, culture, and art. The research on visitors will adopt a questionnaire to survey the attitudes, preferences, and interests of the public towards Henan Museum and its cultural relics. It will also investigate the cultural awareness of the "Nine Precious Cultural Relics" among the public to obtain their intuitive perceptions and psychological expectations of museum relics, culture, and cultural creative products.

#### **1.4.3 Consumers**

Nowadays, cultural and creative products are an excellent way to keep heritage "active" among the new generation of consumers.

As of June 2019, more than 20 official museum shops on Ali's platform have accumulated over 10 million consumers as "shop followers", with the post-90s generation accounting for almost all of them over 50%. Not only that, on Alibaba's retail platform, the count of shoppers who bought museum cultural and creative products

nearly quadrupled from 2017 to 2019, reaching close to 9 million.

Among them, the number of consumers who have spent at least three times a year on museum cultural and creative products has exceeded 1.2 million in 2019, an increase of 3.4 times compared to 2017. Among consumers who spend at least three times a year, the post-90s account for more than 50% (Figure 3). (Source: National Bureau of Statistics & Ali Retail Platform) . These data show that the age distribution of the buyers of cultural and creative products is relatively even, and each age group has a high interest. Therefore, this study will conduct extensive research on museum visitors and consumers of cultural and creative products.

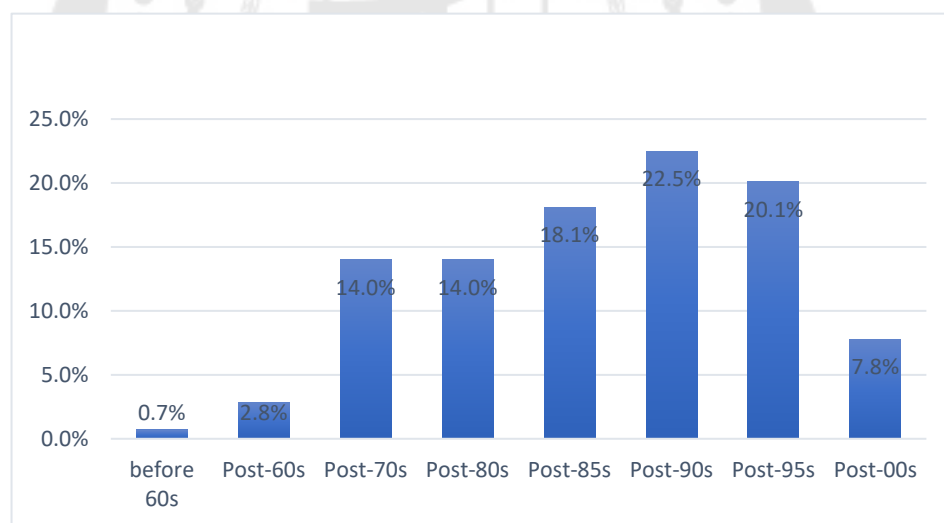


Figure 3 Age group distribution of consumers of museum cultural and creative products on Alibaba platform in 2019

Source: Xu Mengjin (2022)

## 1.5 Related Concepts

### 1.5.1 Museum

Museums originated from the Greek word "Mouseion", and the establishment of the Ashmolean Museum in England in the 17th century made "Museum" the common name for museums, which were seen as places to collect treasures and works of art. In November 1946, the International Council of Museums (ICOM) was founded in Paris, France, and the ICOM Statutes provided the first standardized definition of a museum as "an institution open to the public for collections of fine arts, crafts, sciences, history, and archaeology." In 1974, at the 10th Plenary Session of the IMA in Copenhagen, Denmark, the definition of a museum was revised to give it a new meaning for society and for the future, i.e., "a museum is a permanent, non-profit institution for the benefit of society and its development, open to the public for the purposes of research, education, and appreciation. In August 2007, the 21st Plenary Session of the International Council of Museums (ICOM) in Vienna adopted the latest ICOM Statutes, which again revised the definition of a museum as "a non-profit, permanent institution open to the public, at the service of society and its development, which collects, conserves, studies, disseminates and exhibits for the purposes of education, research and appreciation. A museum is a permanent, non-profit institution open to the public, dedicated to acquiring, preserving, interpreting, and presenting cultural and environmental heritage for educational, research, and recreational purposes. The changes in the ICOM 2007 Museum Definition

reflect the expansion of museums in terms of functions and functions, and clarify that museums should not only continue to protect and manage tangible heritage, but also adjust their work direction, business processes and work norms to become an active force in the protection, transmission and management of intangible cultural heritage. At the same time, in the 2007 museum definition, only the principle expressions of the purpose, nature, function and working objects of the museum organization are retained, and people no longer focus on the name and constituent elements of the organization, but pay more attention to the organizational characteristics, social responsibility and social benefits of the museum (Shan, 2011a).

In the theoretical research of Henan Museum, (Zhen, 2021) starts from the educational branding of Henan Museum, and believes that the current educational construction of Henan Museum is strongly supported and has a large potential for future development, but the depth of brand development is lacking, the means and mode of brand communication needs to be improved, and users are in the wait-and-see stage of brand purchase. (Meng, 2019) conducted a combined study with the cultural relics of the Henan Museum from the perspective of Chinese chess redesign, and conducted a survey on the degree and focus of attention paid by visitors to the Henan Museum. It was concluded that most visitors had an attitude of not understanding or occasionally paying attention to the cultural and creative products of the Henan Museum. Most people believed that the existing products of the Henan Museum did not meet the

aesthetic needs of consumers, with too bright colors and too old-fashioned shapes. Ma Xiaolin, the president of Henan Museum, proposed three appeals for the development of cultural and creative products. First, dig deeper into the connotation, let cultural relics "trendy", and find a combination of traditional culture and modern life. The second is to innovate expression, make cultural relics "live", restore and activate historical scenes, and awaken people's historical memory. Third, technology empowers cultural relics to "move", and through new technologies and immersive experiences, profound historical culture can travel through time and space. His three appeals will also provide intuitive and clear direction guidance for this study.

#### **1.5.2 Cultural and creative products**

The creative industries mapping document, which was first publicly released by the relevant departments of the British government in the early 20th century, provides a detailed interpretation of "creative industries", which mentions that creative industries originate from individual creativity, skills and talents creative industries are industries that create a new category of social value and market prospect by utilizing some secondary water springs of knowledge, and at the same time drive employment. The cultural and creative products are one of the tangible categories of cultural and economic attributes, that is, they integrate the humanistic connotation, regional characteristics, contextual storytelling, education, special characteristics, value and some beauty experiences, which are different from the functional attributes contained in

general commodities, into common products in life, and establish a bridge of communication between people and things. Through the means of design, we can build communication bridges between people and things, and greatly enrich our lives and add color to them, so that the added value of the products can be greatly enhanced.

(Y. Zhang, 2015) proposes practical guidance for cultural and creative products in terms of macro design principles, summarizing them into the principles of brand recognition, serialization, moderate packaging, and the combination of culture and innovation. It is suggested that, to some extent, the packaging of museum cultural and creative products is more important than advertising, and the packaging should match the product demands and the humanized design and sustainability of the product packaging, etc. It is also pointed out that the cultural and innovative are difficult to be copied because of their inherent cultural meaning, which can distinguish the products from competitors' products, and the life cycle of a product depends on its innovation strategy.

In this study, cultural and creative products are valuable products that can convey cultural connotations, symbolic meanings, and express creative lifestyles. This study defines "cultural and creative products" as above, this term may be defined differently in other research publications.

### **1.6 Significance of study**

Museum construction and its development style are the core elements to

enhance the attraction, competitiveness and influence of countries and cities. The protection and inheritance of museum culture is by no means the careful care, exhibition and appreciation of cultural relics. On the contrary, popularizing cultural knowledge and deepening into people's life is the long-term way for the development of museum culture. In this context, study how to develop the museum cultural and creative industry, first, promote the creative transformation of Excellent Traditional Chinese culture, echo the overall cultural relics work strategy of making historical relics "alive", and improve the cultural influence of museums.

Second, through the design and development of cultural and creative products, it aims to promote cultural consumption, create a positive cultural atmosphere in the social level, improve the innovative design ability of Chinese local art, the overall aesthetic quality and cultural quality of Chinese people, and realize the transformation of museums from "object-centered" to "human-centered".

The third is to provide thinking for the artistic creative design application ability of Chinese local museums, provide high-quality cultural products, explore the excellent traditional crafts and technologies contained in cultural relics, optimize the cultural and art market, not only to meet the diverse spiritual consumption needs of people, but also highlight the educational value of museums.

## 1.7 Conceptual framework

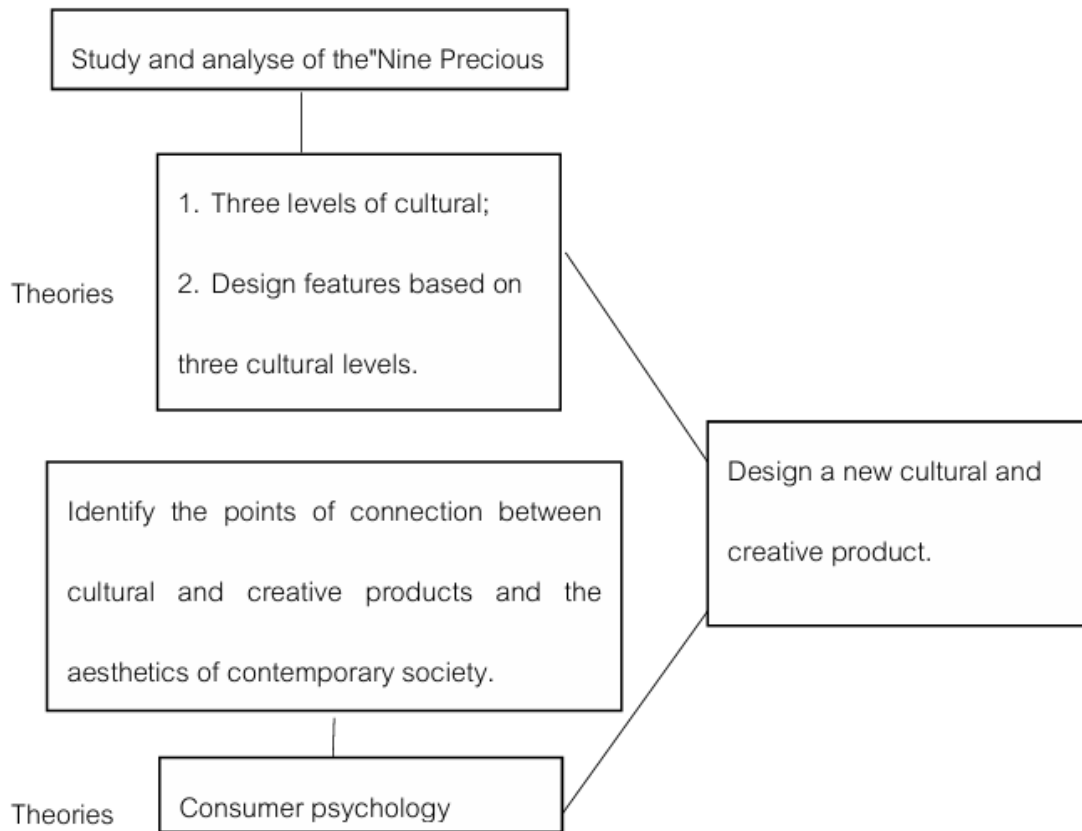


Figure 4 Conceptual framework

Source: Xu Mengjin (2023)

## CHAPTER 2

### LITERATURE REVIEW

The chapter 2 of the study is as follows.

#### 2.1 Museology

At the end of the 19th century, the study of museology in the modern sense really began, and most of the previous studies discussed the attributes of museums. (Osborne, 1985) pointed out that museums should serve as educational venues for the general public. E.H. Able, the chief executive officer of the association, believed that "the first important thing of the museum is education, and education has become the cornerstone of museum services". In China, since the founding of the first museum, Nantong Museum, in 1905, the Chinese Museum has taken education as the purpose and the responsibility of disseminating knowledge and educating the public.

After world War II, with the establishment of the International Council of Museums (ICOM), the principles of museology, including the formulation and interpretation of museum boundaries, concepts and definitions, became a common topic in the museum world. At present, many scholars focus on the expansion of the social functions of museums in the new era. (Castells, 1996) gave a new definition of the function of museums in the information age. "Museums redefined in the information age are becoming an important source of urban rejuvenation, urban design and communication art, electronic networks and urban bridges". His theory has been constantly confirmed

that the more the city moves forward, the more it is necessary to retain the cultural memory of the city, clarify the development context of urban culture and retain the root of urban traditional culture. Museums should be responsible for the establishment and dissemination of urban culture, so that museum culture can serve social development and further enhance the vitality, strength and charm of the city. Teresa Scheiner, chairman of the professional committee of Museology, put forward the concept of "Integrated Museum" during her tenure. She advocated expanding the concept of Museum and cultural relics, surpassing tangible cultural heritage and including intangible cultural content. In the 21st century, it is necessary to study the symbiosis and sustainable pluralistic model of museum development.(Galla, 2016; Scheiner, Presidente, & Diretora, 2000), vice president of the International Association of Museums, advocated the concept of "Inclusive Museum" and pointed out that museums will be more inclusive. The inclusiveness of visitors should transcend the separation of high culture and mass culture, and create a new ordinary form, that is, ordinary inclusiveness. Both Scheiner and Galla's views show that the international museum industry continues to track the forefront of the times, and with the experience of the world and the thinking of the new century, the museum industry is constantly in a good situation of positive progress and innovation and breakthrough from the theoretical level.

In China, the 11th Five-Year-Plan for the development of national cultural relics in 2006 and the 12th Five-Year-Plan for the development of national cultural relics museum

in 2011 continue to take the utilization of museum collections as an important content. In 2014, President Xi Jinping delivered a speech at the UNESCO headquarters in Paris, re-emphasizing the need to make cultural relics, heritage and written characters "come alive". His speech greatly influenced the research direction of Chinese scholars.(Shan, 2010), director of the Palace Museum, China's most important museum, pointed out that the Palace Museum should be "alive".

Some scholars focus their research on the utilization and dissemination of Museum Cultural Relics. (L. Li, 2011)put forward in her doctoral thesis that the low utilization efficiency of cultural relics in Chinese museums is reflected in the lack of in-depth excavation of cultural relics value. Some museums simply display their collections and fail to transform professional cultural relics knowledge into popular language that is easy to be understood and accepted by the public. Moreover, the abstruse, abstract and boring content cannot be expressed in a lively form. The development of cultural and creative products is far from making the value contained in cultural relics "alive", and the public can hardly feel the subtlety of cultural relics. Her research sharply pointed out the common problems in the current development of most Chinese museums, but there is a lack of exploration of corresponding solutions. This project can be supplemented from this aspect. (Yan, 2021; H. Yang, 2017) from the perspective of IP image construction and dissemination, and proposed that museums seek and create their own image IP and produce various IP derivatives, which can not only improve the

popularity of museums, improve economic benefits, but also enhance the output of local historical and cultural values in a wider range. Through IP image, the core group is positioned to highlight the "professionalism" and "interest" of museum culture, and the "activation" of cultural relics is promoted through multi-platform communication online and offline. Its research provides theoretical and practical guidance for the creative utilization of museum cultural relics. (Shan, 2019) put forward the slogan of "Taking the Museum Home" to promote the museum to launch all kinds of cultural products based on cultural relics collection. This slogan has greatly promoted the upsurge of research and development of cultural and creative products in major museums across the country.

The study of museology provides a clear understanding of the current social positioning of museums. By examining various policies formulated by China for museum development and its social impact, one can gain insights into the main directions for future museum development. The slogans put forward by some scholars, such as "bringing cultural relics back home" and "bringing cultural relics to life," indicate the major trend of museums products. These also define the objective of this research, which is to integrate cultural and creative products with history and contemporary life.

## 2.2 Henan Museum

The Henan Museum has a collection of more than 170,000 cultural relics (sets), especially prehistoric relics, Shang and Zhou bronzes, ceramics, jade and stone

carvings. The museum is a treasure trove of cultural and artistic treasures that showcase the development of China's history, with a large number and variety of fine cultural relics of high quality and value.

As the main exhibition of the Henan Museum, the basic exhibition takes the history of the development of civilisation in the central region of China as the main line, and the background of world civilisation as the reference, integrating the advantages of cultural relics in the Henan region to show the development trajectory of the civilisation of the Chinese nation. The basic exhibition is divided into 10 galleries, consisting of seven parts: Neolithic, Xia and Shang, Western Zhou, Eastern Zhou, Qin and Han, Wei, Jin and North and South Dynasties, Sui and Tang, and Song, Jin and Yuan. The galleries are set up in sequence according to the course of history and are based around the culture of the capital cities of the Central Plains in each historical period and the human life in the capital cities.

In December 2007, on the 80th anniversary of the founding of the Henan Museum, the selection process for the Henan Museum's treasures was settled. Many experts and scholars, after repeated arguments, selected nine pieces from the Henan Museum's collection that best represent the history and culture, as the "Nine Precious Culture Relics" of the Museum. The so-called "Nine Precious Culture Relics" are the best of the Henan Museum's collection. The first is typical, representing the highest level of cultural and technological development at the stage of history in which the relics are found; the

second is important, with significant historical and cultural value, filling a gap in historical research; the third is shocking, with a strong sense of the times and a striking artistic quality; the fourth is unique, with no identical relics currently available, or the best of its kind. After repeated discussions and screening, taking into account the universality of the era, the Jiahu Bone Flute, the Du Ling Square Ding, Fuhao's Owl-shaped Bronze Zun , the Jade Handle Iron Sword, the Lotus Crane Square Pot, the Cloud Pattern Bronze Jin, Four Divine Creatures Cloud Diagram Mural, the Golden Jian of Empress Wu Zetian and Ru Kiln Sky Blue Glazed Carved Goose-neck Vase were selected as the "Nine Precious Cultural Relics" of the museum<sup>1</sup>.

The Jiahu bone flute is of Neolithic date, 23.6 cm long, made from the wing bone of a crane, with seven holes, and a small hole drilled between the sixth and seventh holes for tuning the articulation of the seventh hole. The Jiahu bone flute is not only the earliest dated instrument in China, but has also been recognised by experts as the earliest playable instrument in the world. The Jiahu bone flute was capable of playing not only traditional five- or seven-tone tunes, but also minority or foreign music with a rich variety of tones. Its unearthing has rewritten the history of Chinese music and is of unparalleled importance and value.

The Duling Square Ding, dating from the early Shang dynasty, is 87 cm in height and weighs approximately 64.25 kg, and was excavated in Zhengzhou, Henan province,

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<sup>1</sup> Source: Preface of "Nine precious cultural relics of Henan Museum"

in 1974. The Duling Square Ding is one of the earliest, largest, most perfectly cast and best preserved bronze vessels known to man. The Duling square Ding is decorated with Taotie pattern and nipple pattern, and is the earliest Chinese ritual vessel found to be decorated with Taotie pattern and nipple pattern.

Fuhao's Owl-shaped Bronze Zun lived in Shang Dynasty, with a height of 46.3cm and a weight of 16kg. It was unearthed in 1976 from the Fuhao Tomb in Anyang, Henan Province and is also the only tomb of a member of the Shang royal family that has not been stolen. Fuhao Owl Zun is the earliest bird shaped wine Zun discovered to date. Zun, a tall and large ancient wine container, was extremely popular in Shang Dynasty with a bronze wine statue modeled after the image of an owl. The owl, was filled with mystery in the eyes of the Shang Dynasty due to its unique appearance and lifestyle. Over time, it transformed this mystery into a sacred religious emotion and became one of the objects of their worship. The Fuhao's Owl-shaped Bronze Zun has a vivid design, a magnificent and magnificent design, and is a masterpiece of Chinese Shang Dynasty bronze ware.

The Jade Handle Iron Sword dates back to the late Western Zhou Dynasty, with a total length of 34.2 centimeters, a handle length of 12.2 centimeters, and a sword body length of 22 centimeters. It was unearthed from the Guoji Tomb in Sanmenxia in 1990. The Guo Ji Tomb is one of the "Top Ten Archaeological Discoveries in China in 1990". It unearthed a jade handled copper core iron sword, which combines iron, copper, and

jade materials and is exquisitely crafted. It is the earliest artificial iron smelting product unearthed in Chinese archaeological excavations, bringing the age of artificial iron smelting in China forward by nearly two centuries and is known as the "First Sword of China".

The Lotus Crane Square Pot dates back to the Spring and Autumn Period, with a total height of 117 centimeters. It can hold both wine and water. The lotus crane square pot has delicate and novel patterns, complex structure, and exquisite casting, making it a model of bronze craftsmanship during the Spring and Autumn period. On top of it stands a winged crane, symbolizing a new spirit and an era of freedom and liberation. In Chinese culture, cranes are one of the most representative objects and images, perfectly combining the noble and holy meanings of lotus and crane, endowed with poetry, dreams, and pursuit. On January 18, 2002, it was listed by the National Cultural Heritage Administration of China as "the first batch of cultural relics prohibited from going abroad for exhibition".

The Cloud Pattern Bronze Jin dates back to the Spring and Autumn period, with a length of 131 centimeters, a horizontal length of 67.6 centimeters, a height of 28.8 centimeters, a body width of 46 centimeters, and a weight of 94.2 kilograms. Jin was a tool for holding wine vessels, which originated in the early Western Zhou Dynasty and disappeared during the Warring States period. The overall shape of this Jin is rectangular, with a unique concept. It is adorned with multiple layers of carved cloud

patterns all around. The upper part of the body is surrounded by 12 dragon shaped monsters, and the lower part is supported by 12 tiger shaped monsters. This Jin was cast entirely using the wax loss method. The earliest use of lost wax process in China as seen in the literature was in the early Tang Dynasty. Due to the late discovery of lost wax process literature, the academic community generally believes that Chinese lost wax process originated from India. The excavation of the Cloud Pattern Bronze Jin pushed forward the history of China's lost wax casting process by 1100 years. Therefore, the academic community believes that the lost wax casting process was quite mature in China at least 2500 years ago. On January 18, 2002, it was listed by the National Cultural Heritage Administration of China as "the first batch of cultural relics prohibited from going abroad for exhibition".

Four Divine Creatures Cloud Diagram Mural dates back to the Western Han Dynasty, with a length of 5.14 meters, a width of 3.27 meters, and an area of 16.8 square meters. It was painted in the main chamber of the tomb of King Liu Mai of the Western Han Dynasty over 2000 years ago and is currently the earliest, largest, highest level, and most complete preserved mural seen in China. The mural theme pattern is based on vermilion, with four divine birds and beasts painted in white, green, and black, as well as auspicious patterns such as ganoderma lucidum, flowers, and cloud patterns. Qinglong, Baihu, Zhuque, and Xuanwu are four mythical beasts in ancient Chinese mythology, symbolizing guarding the four directions to ward off evil. In the eyes of

ancient Chinese people, people can ascend to heaven after death, implying that death is the continuation of life. Therefore, in the "Four Divine Creatures Cloud Diagram Mural", the ideal and desire of the tomb owner to ascend to heaven on a dragon and enjoy happiness after death are portrayed, which is the epitome of Chinese immortal thought.

The Golden Jian of Empress Wu Zetian dates from the Tang dynasty and is 36.2 cm long, 8 cm wide, approximately 0.1 cm thick, and weighs 223.5 g. It is rectangular in shape and engraved on the front with a double-hook regular script inscription of three lines and 63 characters, to the effect that Wu Zetian, the lord of the Great Zhou Dynasty, believed in Taoism and longed for immortality, begging the Taoist gods to rid her of illness and bless her. As the only orthodox female emperor in Chinese history, Wu Zetian's tomb has still not been opened, and this is the only surviving artefact belonging to her. The discovery of this relic is not only direct physical evidence for the study of the empress Wu Zetian's ideology of revering immortality and worshipping Taoism, but is also a valuable source for the study of social ideology during the Wu Zhou period.

Henan Museum (2013)

Ru Kiln Sky Blue Glazed Carved Goose-neck Vase dates back to the Northern Song Dynasty, with a height of 19.5 centimeters. The neck and abdomen of the bottle are carved with lotus flower patterns . In the history of firing ceramics in China, the Ru kiln ranked first among the five famous kilns of the Song Dynasty. The Ru kiln is a royal kiln with a very short firing time, only lasting about 20 years. Afterwards, the Ru kiln

disappeared and the technology was lost. According to literature, the formation of the sky blue glaze in Ru kiln is mainly due to the perfect kiln position and temperature during the firing process, resulting in extremely low yield and very little passed down. So far, a total of 4 ancient blue glazed artifacts from the Ru kiln have been discovered, and this Ru kiln blue glazed carved goose neck vase in the Henan Museum collection is the only carved work. Henan Museum (2013)

The research on the Henan Museum primarily involves an overview of the museum and its main exhibition halls, with a focus on the "Nine Precious Cultural Relics." The literature research on the "Nine Precious Cultural Relics" at the Henan Museum covers the basic characteristics of the cultural relics, their artistic achievements, and historical value. This research will provide a theoretical foundation for the subsequent cultural analysis of the relics and the creation of an analysis table for the "Nine Precious Cultural Relics." It will also serve as a clear and effective source for extracting elements in the design of cultural and creative products.

### **2.3 Cultural and creative products**

In the early 20th century, the "creative industries mapping document" first published by the relevant departments of the British government gave a detailed interpretation of the "creative industries". The creative industries mentioned in it originated from the industries of individual creativity, skills and talents. Through the secondary authorization of some knowledge, they created a new kind of industries that

created social value and opened up market prospects and promoted employment at the same time. Therefore, cultural and creative industries rely on cultural appreciation to create new product values, so as to cater to the current global trend of economic and cultural integration. Cultural creative products belong to a category of cultural economy, which is to integrate humanistic connotation, regional, situational story, educational, value and some aesthetic experience with the functional attributes of the general commodity itself into common products in daily life.

From a macro perspective, some scholars regard cultural and creative products as a link in the industrial chain, pay attention to the relationship between various links, and consider the ecological benefits of cultural and creative industries as a whole. Cunningham (2011) systematically analyzed Paul Stoneman's "soft innovation" theory, and pointed out that the development of creative industry needs the synergy of innovation, knowledge and policy. For creative industry, organizational innovation and market innovation are considered to be the beginning of broadening the development scope of creative industry. (Bao & Shen, 2013) conducted research on China's cultural and creative industries and proposed that the development of cultural and creative industries should achieve the following four points: first, the government needs to strongly back the cultural and creative sectors and foster a conducive environment for their growth. Second, there should be a push to support innovative businesses and actively encourage the formation of leading companies. Third, it's essential to enhance

the protection of intellectual property rights and broaden the scope of what is protected.

Fourth, prioritizing the development of creative professionals will offer the intellectual backing and momentum needed for the industry's ongoing health and sustainability.

From the perspective of cultural and creative industry chain construction,(Chen, 2018) used the "value chain" and "smile curve" theories to discuss the four strategies of market positioning, classified pricing, open channels and brand promotion that cultural and creative products need to use under the theoretical framework of art marketing, and proposed that market evaluation is an important means to test the development effect of cultural and creative products. His research provides a theoretical basis for building a complete, efficient and sound cultural and creative industry chain from a long-term perspective.

From the perspective of the combination of intangible cultural heritage and cultural creative products, (H. Yang, 2017)pointed out that there are practical problems in current cultural creative products, such as lack of cultural aesthetics, poor workmanship, machine instead of manual work, and pointed out that cultural creative products should have cultural connotation, manual skills, traditional patterns, high-quality raw materials, based on national and regional characteristics and other design principles. Xu (2015) took aboriginal culture and related product design in Taiwan as the research object, and proposed that indigenous people and non-indigenous people in specific areas have different recognition of cultural attributes of cultural creative

products. Indigenous people value whether products convey regional spirit and inspire cultural identity. Non-indigenous people value humanization and safety. Her research summarizes the attitudes and identities of different consumers towards regional spirit through comparison, which provides theoretical reference for the study of consumer positioning of cultural and creative products.(Gou & Hu, 2016) analyzed the current situation and reasons for the success of cultural and creative industries in Thailand, and proposed that the most basic thing for Thailand to promote the development of cultural and creative industries is to respect the essential attributes of its own culture, follow the four principles of "flexibility, friendship, interest and cooperation", inherit the national cultural stability, protect local cultural diversity, shape Thai values, awareness and cultivation, and manage religion strategies such as art and cultural organizations to build Thai cultural brands.

Some scholars also put the design into different contexts and backgrounds to carry out targeted research.(Jun Zhou, 2016) proposed to introduce situational thinking into the design process of cultural and creative products, decompose cultural and creative products into cultural product situations and modern life product situations, and obtain the design problems and design conditions that meet the needs of different environments under different situational analysis, so as to provide new ideas for the emotional design of cultural and creative products in the future. (X. Li, 2018)studied cultural and creative products from the perspective of narrative design, proposed that

narrative design makes products easier to understand, The author provides new ideas for the development of cultural and creative products from the point of "story", and provides theoretical guidance for the later targeted research on the design method of cultural and creative products. (Yue Liu) believes that the specific embodiment of "creative demand" in cultural and creative products is interestingness, and cultural and creative products with interestingness can be called "creative". With the new requirements of the new era, modern people's pursuit of "novelty" and "uniqueness" has prompted us to design products belonging to this era.

Research on cultural and creative products involves exploring various perspectives and entry points for their development. This includes aspects such as cultural identity, contextual thinking, narrative design, and the appeal of the products. Cultural identity encompasses the communication of cultural content within the products, while contextual thinking involves considering the usage scenarios of the products. Narrative design and the appeal of the products focus on the emotional expression of the products. These research directions reflect the trends in the development of cultural and creative products and provide a reference for the subsequent questionnaire and interview surveys in this study.

#### **2.4 Museum cultural creative products**

At present, it has become an important proposition for the museum to let people enter the museum, understand the museum and become a loyal audience of the

museum. Today, the understanding of the functions and functions of the museum pays more attention to people-oriented, and emphasizes that the museum should take the growing cultural needs of the general public as the starting point, and become a public service organization closely related to the people's livelihood and benefiting the general public. Entering the public is the mission of returning to the museum. S. Weil (2006) pointed out that museums deserve public support only when they serve people's public welfare. This view is very important for the current realistic development of museums. Today, whether museum culture can enter the people and their lives has long been an important standard to test the achievements of museum development. (Chen, 2018) analyzed the problems in the design of cultural and creative products of Chinese museums, drew lessons from excellent design cases, and proposed that the design of museums' cultural and creative products should follow the nine principles of "boutique, depth, aesthetics, populist, emotion, interest, characteristics, series and focus", and put forward strategies to promote product sales from the perspective of museum marketing, His views can provide guidance for the research and development of Museum Cultural and creative products and the promotion of Museum brands. (Shan, 2011b) pointed out the problems existing in the development of Chinese museum cultural and creative products, such as unclear ideas for product research and development, too superficial extraction of cultural elements, insufficient innovation in the use of cultural elements, lack of follow-up market feedback in the research and development of cultural and creative

products, and unable to effectively update and iterate the products. His view fundamentally summarizes the universal problems, and provides practical guidance for the follow-up targeted research on the feasible strategy of Museum Cultural and creative product development.

Some scholars choose different perspectives and put forward corresponding development strategies for most museums' cultural creative product development. From the perspective of creative communication strategy and based on the theory of creative communication, (Wang, 2018) proposed that finding an appropriate communication element (meme) is equal to grasping the focus of the creative communication. We should shape the concerns into a communication element (meme) suitable for communication, and put forward corresponding creative communication strategies in combination with the form of new media resources. Her research expounds the process and model of creative communication of museum cultural and creative products, and introduces the new concept of "meme", which opens up ideas for the discussion of communication channels of this subject. She innovatively proposed the transfer of meaning of cultural elements in the development process of cultural and creative products, that is, the original meaning of relevant cultural elements has changed. It contains two modes, positive transfer and negative transfer, pointing out that negative transfer will lead to the wrong interpretation of historical relics or cultural knowledge, which is harmful to the establishment of aesthetic concepts. However, her research only

carried out the semiotic interpretation, and did not put forward appropriate design steps for specific symbolic forms, which resulted in the absence of design principles and methods. (Cui, 2019) analyzed the museum's cultural relics from the visual element level, and pointed out that the source of the museum's design elements can be divided into three aspects: the museum's own elements, cultural relics in the collection and regional cultural elements. And according to the graphic elements, text elements and color elements of visual elements, summarize their respective expression methods, which has strong practical guiding significance. (S. Yang & Chen, 2021) introduces the concept of cultural consumption into the development of museum cultural creative products. By analyzing the characteristics and rules of cultural consumption, she extracts the transformation elements of museum cultural and creative products from the perspective of cultural consumption, and transformed from three aspects of cultural content, user experience and cultural influence to the two goals of deepening the user experience of user connection and creating a cultural atmosphere to stimulate cultural consumption. These scholars all carried out systematic and undifferentiated researches. Although they raised questions from different angles and conducted research in different directions, they are highly applicable to most museums in China and can be used as theoretical guidance for subsequent targeted research.

More scholars choose a museum in different provinces and cities as the research subject, and discuss the development of cultural and creative products in combination

with the regional characteristics and the unique cultural relics of museum. (X. Li, 2018) analyzed the development status of cultural and creative products of Shaanxi Museum from the perspective of narrative. She divides the narrative perspective into the internal perspective with the form and culture of cultural relics as the narrative content and the external perspective with the external environment and social background of cultural relics as the narrative content. (Z. Li et al., 2021) absorbed the advantages of gamification in creating fun and immersive experience, and introduced gamification theory into the design of Chinese Character Museum. Based on the commonality between gamification and museum, he extracts three gamification elements of museum: Knowledge attraction factor, scene immersion factor and interactive relationship factor are used as design guidelines for the development of gamified cultural and creative products in museums. (W. Wu, 2021) carried out research on the design of cultural and creative products of Jiangxi Museum from the perspective of multi-sensory experience, and creatively integrated sensory experience such as hearing and smell into the product design strategy. He proposed that in the experience design of auditory senses, the main factors affecting the sound production of products are the structure and materials of products. In the olfactory sensory experience, the shape, color and materials of products can be used to create sensory channels to improve the olfactory experience.

In this process, some scholars compared museums in two different regions, summarized the differences, and found the common characteristics of development

strategies from the differences. (Weng, 2020) used the method of comparative research, taking the Beijing Palace Museum and the Taipei Palace Museum as examples, combined with the development history, architectural environment and collection characteristics of the two museums, summarized the development forms, marketing strategies and existing problems of cultural and creative products of the two museums. As the objects selected are those who developed cultural creative products earlier and more successfully in many museums in China, her conclusion is typical and of strong practical significance in the study of Museums in China.

After reviewing the literature, museum cultural and creative product research can be categorized into four areas: assessment of current status, development and design, management and marketing strategies, and intellectual property concerns. The research framework is mostly to conduct an overall overview evaluation first, and then analyze cases. The analysis of specific cases is mostly based on the successful museums in the development of cultural and creative industries such as the Palace Museum. The research scope is relatively narrow, and the case description is also slightly limited.

In recent three years, with more and more attention paid to the development of museums in various regions, many scholars began to take museums in various provinces and cities as the research object and put forward targeted cultural and creative product development strategies. However, due to the poor market effect of cultural and creative product development and sales before 2020, Henan Museum was

rarely taken as an example to carry out systematic strategy research. Since the establishment of the R & D center of cultural and creative products in 2017, Henan Museum has continuously promoted products to the market, but it has always had poor benefits and less influence, and can not carry the function of cultural communication. Until 2020, some novel products were introduced to the market, and the cultural and creative products of Henan Museum were gradually recognized by the public. This project will take 2020 as the dividing line, compare the development differences between the two periods, and summarize the path of cultural innovation research and development of Henan Museum.

(Jun Zhou, 2016)launched a market survey of consumers for Nanjing Museum, taking the categories, materials, purchasing factors, packaging preferences and shortcomings and shortcomings of cultural and creative products as research contents, and concluded that the target consumers of Nanjing Museum are young and middle-aged people aged 16-39, and pay attention to the characteristics, practicality and cultural attributes of cultural and creative products, and put forward new requirements such as sustainability and interactivity of products. (S. Yang & Chen, 2021) investigated consumers' preferences and reasons for purchasing museum creations, and concluded that consumers are more attracted by the design and culture of the creations. When (Jiang, 2016)researched consumers' attitudes toward museum cultural and creative products, she also looked at the attributes of cultural and creative products, such as

shape, quality, practicality, price, and cultural connotation, to obtain the factors that influence consumers' purchasing behavior, and concluded that the cultural connotation and price of cultural and creative products are the main factors that influence consumers' purchasing behavior. In the research on the development of cultural and creative products in Xi'an Museum, (X. Li, 2018) also researched the purpose of purchasing cultural and creative products, the types of products and materials preferred by consumers, and took the attributes of creativity, practicality, uniqueness, collectability, price, materials and packaging as the basis for consumers' purchase, and concluded that creativity, collectability, uniqueness and practicality are the four elements that consumers are most concerned about. On the basis of investigating consumers' preferences and purchasing factors for cultural and creative products, (W. Wu, 2021) also investigated the sensory experience of visitors to Jiangxi Museum from the perspectives of vision, touch, smell, taste, and hearing. The survey results show that when consumers purchase cultural and creative products, they are most concerned about product creativity, and the degree of emphasis on products is in order of creativity, culture, and practicality, The visual experience of a product is the sensory experience that consumers are most concerned about, followed by auditory and tactile experiences that consumers expect to be included in the sensory experience. All of the above scholars conducted questionnaire research on museum visitors in terms of consumers' purchasing purposes and product attributes that influence visitors' purchasing

behaviors, and these questions will be used as the basis for the subsequent research in this study.

After reading a large number of academic articles on the cultural and creative R & D strategies of various museums, it is found that although the research objects and research angles of various scholars are different, and they also produce a large number of theoretical and practical achievements, many research conclusions have strong commonalities, and there is a lack of individual research for regional characteristics and differences research for specific consumer groups. This project will combine the historical and cultural background of the region where Henan Museum is located to explore the cultural and creative design path integrating regional humanities and modern lifestyle.

Literature research in museums involves various scholars conducting consumer surveys at different museums. Questionnaire surveys targeting consumers often include their attitudes towards cultural and creative products, factors influencing their purchasing behavior, and the attributes of cultural and creative products that consumers value. These studies collect detailed information on current consumer demands for cultural and creative products from various perspectives. The research angles explored in these studies will also be applicable to the questionnaire survey in this research, guiding the formulation of questions and options.

## 2.5 Culture and Cultural Design Features

The British scholar (Tylor, 1871) was the pioneer in comprehensively defining culture, which he described as a complex entity encompassing knowledge, beliefs, arts, ethics, legal systems, social norms, and all other skills and behaviors that individuals possess as part of a societal structure. Culture can be dissected into two main aspects: tangible and intangible elements. Alternatively, it can be viewed across three dimensions: the physical, the institutional, and the spiritual. Furthermore, a more detailed perspective breaks it down into four layers: the material, the institutional, the customary, and the ideological, including values and beliefs.

(Ho, 1996) suggests that culture, often described as the lifestyle of a society, encompasses the behaviors and symbolic frameworks that imbue these actions with meaning. Various interpretations of "culture" stem from diverse theoretical perspectives and evaluative criteria for human endeavors. Drawing from linguistics, anthropology, and sociology, culture is characterized as the outcome of human evolution, encompassing language, traditions, faith, creative expressions, intellectual processes, and conduct within the context of civilization.

(Leong & Clark, 2003) developed a "spatial perspective" of culture framework for studying cultural objects distinguished by three special levels: the outer 'tangible' level, the mid 'behavioral' level, and the inner 'intangible' level.

Research on cultural attributes involves three levels of cultural analysis: the

“tangible” level, the “behavioral” level, and the “intangible” level. This cultural analysis theory will be applied in this study to analyze the "Nine Precious Cultural Relics" at the Henan Museum. Based on these three levels, a cultural attribute table for the "Nine Precious Cultural Relics" will be created, providing a sound theoretical basis for the extraction of materials during the subsequent design phase of cultural and creative products at the Henan Museum.

## 2.6 Design Principles

Regarding the design principles of cultural creative products, some scholars take specific design elements as the main research target. (Cui, 2019) analyzes museum cultural creative products at the level of visual elements and proposes that graphic elements of cultural creative products should follow the principles of symmetry, balance and contrast, and text, as the most basic design element, should be used as a design expression tool under appropriate circumstances. In terms of color, the cold and warm color and hue should be decided according to the actual function of the product, the material of the product should be decided according to the purchasing population of the product, and the anthropomorphic and anthropomorphic design of the product should be decided according to the modeling characteristics of the museum cultural relics. (Zhao, 2021) from the semiotic research framework, the museum color semantic structure, color semantics, color semantic analysis, proposed that product color should follow the hue, position relationship, proportion and other logical relationships, based on

the color can be identified explicit nature and give potential association of color connotation to the color of the appropriate use, while the use of products based on the environment, social and cultural environment and the user group attributes to determine the product's color structure.

(Leong & Clark, 2003) developed a model that integrates cultural aspects into product design, known as the cultural hierarchy theory. This theory presents a three-tiered approach to cultural dimensions: the outer level, the mid level, and the inner level. The outer level focuses on the concrete and material elements, the mid level addresses the patterns of use, and the inner level deals with the realm of consciousness and the non-material spirit. This structured framework provides a fresh outlook on product design that considers cultural integration and has been widely adopted in subsequent research.

(Norman, 2004) informed by cognitive psychology, introduced a three level model of design: visceral, behavioral, and reflective. Visceral design addresses the immediate sensory and emotional reactions triggered by a product's appearance and physicality. Behavioral design is centered on the user's enjoyment and the product's functionality. Reflective design, on the other hand, looks at the deeper emotional connection and self-identity that a product can evoke through the information it communicates. In the design process, it's crucial for designers to balance aesthetic appeal with usability and to understand the emotional impact on the user's inner world. The reflective level, in

particular, can significantly enhance a product's success by fostering a positive emotional bond with its users.

(Lin, 2005) considering consumer expectations and cognition, categorized culture into three layers: (1) the physical or material layer, which encompasses items like food, clothing, and transportation; (2) the social or behavioral layer, involving interpersonal dynamics and societal structures; and (3) the spiritual or ideal layer, comprising art and religious aspects. These cultural strata align with Leong's previously mentioned three-tiered cultural model. Lin correlated these cultural levels with Norman's design characteristics, creating a comprehensive framework for designers to consider when developing culturally resonant products. The outer "tangible" layer includes visual and tactile attributes such as appearance, color, texture, form, and decorative elements. These contribute to the product's aesthetic appeal and can enhance its perceived value to consumers. The mid "behavioral" layer is concerned with functionality, operation, usability, and safety, focusing on practical problem-solving in daily life and production with a rational, object-centered approach. The inner "intangible" layer of product design encompasses deeper content like narratives, emotions, and cultural significance, which are essential for creating a meaningful connection with users. By integrating Leong and Clark's and Norman's models, Lin highlighted the critical cultural aspects that designers must incorporate into their product development process. Siu, Kin Wai Michael (2005) proposed that integrating cultural aspects into product design can significantly impact

and alter consumer decision-making and actions. The intangible cultural dimensions can motivate consumers to delve into the cultural significance of products. Embedding cultural elements not only endows products with a unique cultural identity but also deepens consumers' emotional bonds and sense of cultural belonging.

The objective of this study is to create new cultural and creative products for the Henan Museum by integrating culture and consumer intentions. In order to achieve this objective, this research utilizes the cultural hierarchy theory proposed by (Leong & Clark, 2003) and (Lin, 2005) to extract and categorize cultural characteristics. These cultural characteristics are then integrated into the product design process to provide a comprehensive representation of cultural elements. This theoretical foundation forms the basis for the design practices in this study.

## **2.7 Consumer psychology and consumer behavior**

Psychological research defines the psychological activities of individual consumers in the process of forming consumption intentions as the brain's response to observable reality. This response process can be specifically divided into three stages: cognitive processes, emotional processes, and volitional processes. Consumers develop consumption motivations under the stimulation of external environmental and internal psychological factors. Subsequently, this motivation further drives the formation of consumer intentions and decision-making towards the consumer object. (Hoyer, MacInnis, & Pieters, 2012). The purchasing behavior of consumers represents the

culmination of their preferences, attitudes, goals, and decisions in response to market offerings.

(GEORGE B. SPOTLES & ELIZABETH L. KENDALL, 1986) developed a comprehensive instrument called Consumer Style Inventory (CSI) to measure consumer decision making styles. Characteristics of eight consumer decision making styles:

1. Perfectionist: Consumers who diligently pursue top-quality products, holding high standards for goods and focusing on their functionality and quality;

2. Brand-Oriented: Individuals who prioritize expensive, renowned brands, believing that higher prices reflect better quality.

3. Novelty Seekers: Those drawn to innovative and new products, deriving pleasure from the pursuit of the latest trends and fads.

4. Recreational and shopping conscious: Consumers who enjoy the act of shopping itself, treating it as a leisure activity.

5. Price conscious: Shoppers focused on finding the best deals, often engaging in comparative shopping to secure lower prices.

6. Impulsive Buyers: Individuals who shop without a plan and make purchases on a whim, with little regard for spending limits.

7. Overwhelmed Shoppers: Consumers who struggle with the abundance of choices, often feeling information overload and seeking advice from others due to the complexity of the market.

8. Habitual/Brand Loyalists: Shoppers who have preferred brands and stores, habitually returning to the same places and products for their purchases.

(Roy & Datta, 2022) suggest four factors that influence consumer behaviour:

Personal factors, Social factors, Cultural factor, Emotional constituents. Each consumer's choices and buying patterns are shaped by their personal attributes. Factors like age, income, and personality play a role in consumer behavior, which is also heavily influenced by their social surroundings. This includes various social groups, such as recommendation networks and family. The cultural backdrop within the social environment significantly affects how consumers perceive, act, and anticipate products. Emotional factors—including perception, impulse, beliefs, and trust—also have a substantial influence on consumer actions.

One of the objectives of this study is to obtain consumer intentions through questionnaires. A more comprehensive theoretical research on consumer psychology and behavior will summarize the factors influencing consumer purchasing behavior. This will be used in the design of the survey questionnaire and options specifically for consumers of the Henan Museum, aiming to accurately identify the factors that influence consumer purchasing behavior towards cultural and creative products at the Henan Museum.

## CHAPTER 3

### RESEARCH METHODS

#### Research Process

This research is combined methods research. Research area is cultural and creative product of Henan Museum, and the research process will be divided into 6 steps as follows:

Step 1: Study and analysis “Nine Precious Cultural Relics” of Henan Museum.

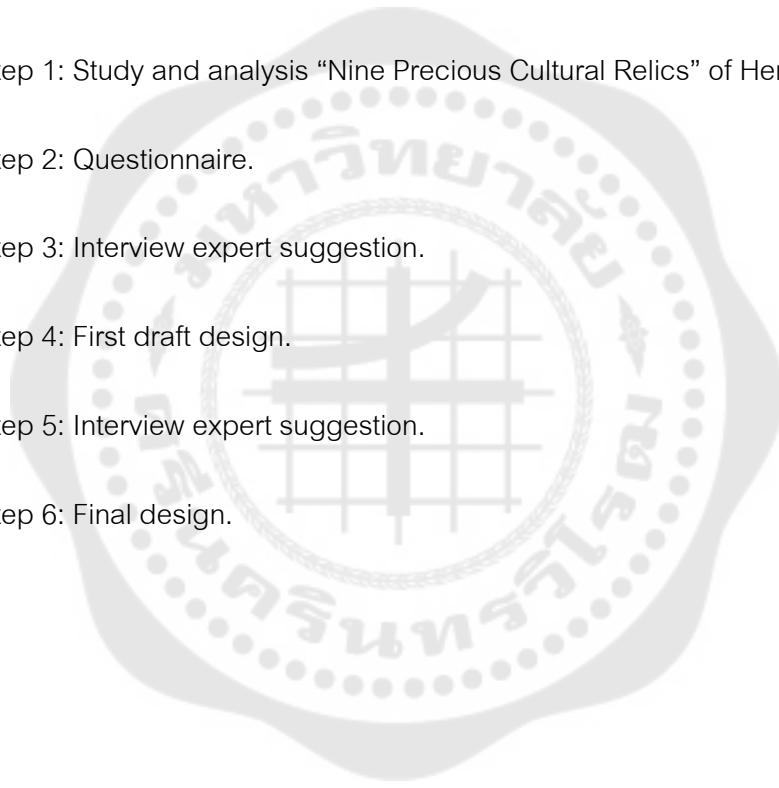
Step 2: Questionnaire.

Step 3: Interview expert suggestion.

Step 4: First draft design.

Step 5: Interview expert suggestion.

Step 6: Final design.



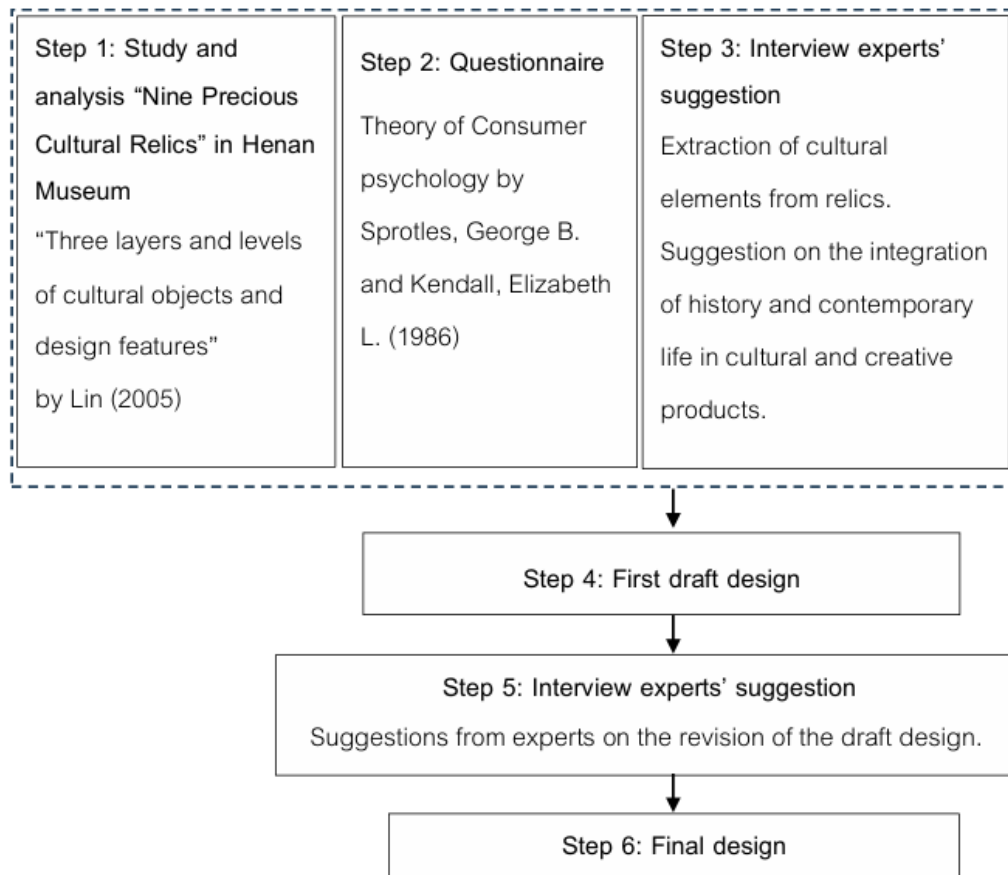


Figure 5 Research process

Source: Xu Mengjin (2023)

### Step 1: Study and analysis "Nine Precious Cultural Relics"

#### 1) Scope of study

In this study, the "Nine Precious Cultural Relics" of Henan museum will be the sample of analysis to provide clear material for the extraction of elements in the product design process.

The "Nine Precious Cultural Relics" witness to the regional development history, possess distinctiveness, and hold significant historical and societal value. Firstly, they

are representative, representing the highest level of cultural and technological development during the respective historical periods. Secondly, they hold importance with significant historical and cultural value, filling gaps in historical research. Thirdly, they are impactful, evoking a strong sense of the era, and their artistic qualities leave a profound impression. Lastly, they are unique, as there are currently no identical artifacts, or they represent the finest specimens among their counterparts<sup>2</sup>.

Moreover, the "Nine Precious Cultural Relics" enjoy high recognition among the general public and have a solid audience base, making it easier to collect visitors' perceptions of the relics and culture. The analysis of them will involve obtaining both tangible and intangible information from multiple dimensions, which will provide clear material for extracting elements in the product design process.

The analysis of the "Nine Precious Cultural Relics" will be guided by theory of "Three layers and levels of cultural objects and design features" by(Lin, 2005), The analysis will be carried out on three levels: "Tangible" level, "Behavioral" level, "Intangible" level, and listing design features of each relic. The design features are categorized into three distinct levels to be selected: the inner level, which encompasses emotional and cultural elements; the mid level, focused on functionality and usability; and the outer level, concerned with aesthetics such as appearance, color, and form.

Cultural relics will be analyzed from outer to the inner to achieve in-depth

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<sup>2</sup> Source: Preface of "Nine precious cultural relics of Henan Museum"

extraction, thus accomplishing research objective 1.

## 2) Population and sample

In this study, the "Nine Precious Cultural Relics" of Henan museum will be the sample of analysis. They are:

- (1) Neolithic Jiahu Bone Flute (Figure 6);
- (2) The Duling Square Ding of Shang Dynasty (Figure 7);
- (3) Fuhao's Owl-shaped Bronze Zun of Shang Dynasty (Figure 8);
- (4) The Jade Handle Iron Sword of Zhou Dynasty (Figure 9);
- (5) The Lotus Crane Square Pot of Spring and Autumn period (Figure 10);
- (6) The Cloud Pattern Bronze Jin in spring and Autumn Period (Figure 11);
- (7) Four Divine Creatures Cloud Diagram Mural of Han Dynasty (Figure 12);
- (8) The Golden Jian of Empress Wu Zetian in Tang Dynasty (Figure 13);
- (9) Ru Kiln Sky Blue Glazed Carved Goose-neck Vase of Song Dynasty (Figure 14).

They are officially identified as the nine finest artefacts in the Henan Museum's collection, and are the key cultural relics promoted by the museum and relatively familiar to the general public, so they are more representative as objects of study.

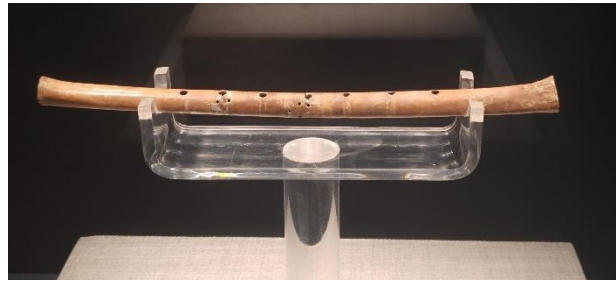


Figure 6 The Jiahu Bone Flute

Source: Xu Mengjin (2023)



Figure 7 The Duling Square Ding

Source: Xu Mengjin (2023)



Figure 8 Fuhao's Owl-shaped Bronze Zun

Source: Xu Mengjin (2023)



Figure 9 The Jade Handle Iron Sword

Source: Xu Mengjin (2023)



Figure 10 The Lotus Crane Square Pot

Source: Xu Mengjin (2023)

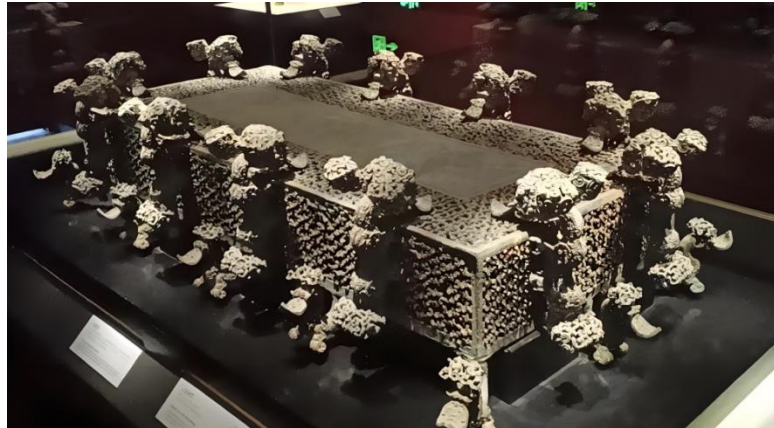


Figure 11 The Cloud Pattern Bronze Jin

Source: Xu Mengjin (2023)



Figure 12 Four Divine Creatures Cloud Diagram Mural,

Source: Xu Mengjin (2023)



Figure 13 The Golden Jian of Empress Wu Zetian

Source: Xu Mengjin (2023)



Figure 14 Ru Kiln Sky Blue Glazed Carved Goose-neck Vase

Source: Xu Mengjin (2023)

### 3) Objective

The "nine precious cultural relics of Henan Museum" will be selected as the research subjects to be analyzed in detail, to find out clear material for the extraction of

elements in the product design process.

#### 4) Conclusion

The analysis of the "Nine Precious Cultural Relics" will be carried out on three levels, listing information such as the appearance, pattern, function, usability, affection, cultural features and historical significance of each relic. The combination of cultural elements and cultural creative products will also provide material and inspiration for the final design of new cultural and creative products.

#### Step 2: Questionnaire

##### 1) Scope of study

In order to identify the points of connection between cultural and creative products and the aesthetics of contemporary society, the research process will involve conducting a questionnaire survey among visitors of the museum. The questionnaire will cover topics such as visitors' perceptions of the "Nine Precious Cultural Relics" and their associated culture, attitudes, preferences, and consumers' aesthetic preferences, functional orientations, and cultural orientations towards cultural and creative products. Additionally, targeted research will be conducted to explore consumers' intuitive experiences, consumption needs, and psychological expectations regarding cultural and creative products. Understanding how consumers perceive the relationship between cultural heritage and contemporary life and their expectations regarding the incorporation of cultural elements into contemporary products.

The questionnaire will guide by the theories of consumer psychology and consumer behavior. (Nelson, 1970) posted there are three categories of factors that influence consumer behavior includes psychological, personal, and social factors. (Gajjar, 2013) concluded the detailed factors that influence consumer behaviour based on previous theories, such as social factors, cultural factors, personal factors and psychological factors.

Based on consumer psychology and consumer behavior theories, set questionnaire questions and options to gain a more direct understanding of consumer demands in the current social environment and aesthetic preferences. This will provide practical evidence for designing cultural and creative products that align with the contemporary lifestyle and aesthetic preferences.

## 2) Population and sample

In this step, visitors of Henan museum are the sample of this questionnaire. The questionnaire will using an undifferentiated random distribution format.

According to official data released by the Henan Museum in 2021, from the reopening of the museum after the COVID-19 pandemic closure in September 2020 to September 2021, the total number of visitors to the main exhibition hall of the Henan Museum was 1,805,067, the age distribution of visitors who made appointments for the entire year was as follows: 13.56% (approximately 244,767 people) were under 18 years old, 26.49% (approximately 478,162 people) were aged between 18 and 25, 25.73%

(approximately 464,444 people) were aged between 26 and 35, 19.10% (approximately 344,768 people) were aged between 36 and 45, 10.61% (approximately 191,517 people) were aged between 46 and 60, and 4.51% (approximately 81,409 people) were over 60 years old (Picture 22)<sup>3</sup>. During the same period, the total number of visitors who made appointments for Henan Museum lectures was 6460, the age distribution of visitors who made appointments for Henan Museum lectures was as follows: 5.36% (approximately 346 people) were under 18 years old, 17.26% (approximately 1,115 people) were aged between 18 and 25, 27.24% (approximately 1,760 people) were aged between 26 and 35, 22.04% (approximately 1,424 people) were aged between 36 and 45, 24.57% (approximately 1,587 people) were aged between 46 and 60, and 3.53% (approximately 228 people) were over 60 years old (Picture 23)<sup>4</sup>. According to the table, the age span of visitors who made appointments to visit Henan Museum and attend lectures is relatively large, and the age distribution of visitors aged 18 to 60 is relatively even. Therefore, this survey will not have an age limit and will be conducted through random sampling.

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<sup>3</sup> Data source Henan Museum official WeChat public account

<sup>4</sup> Data source Henan Museum official WeChat public account

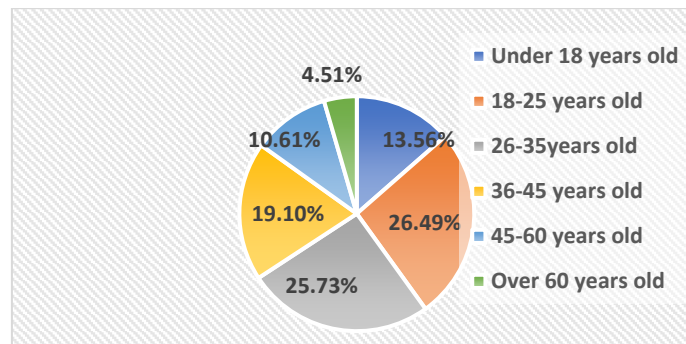


Figure 15 Age distribution of visitors to the Henan Museum (2020.9-2021.9) from official statistics of Henan Museum

Source: Xu Mengjin (2023)

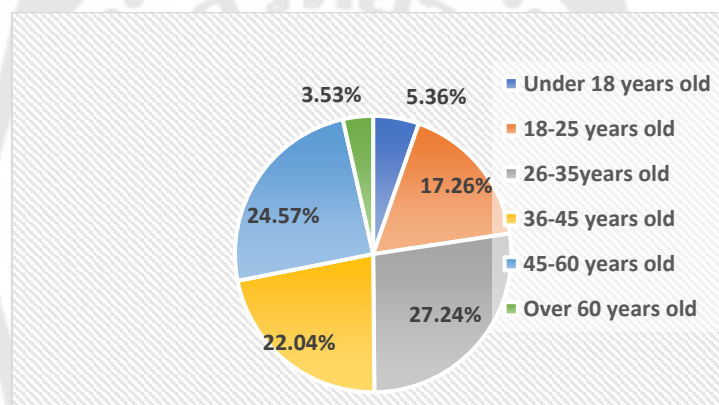


Figure 16 Age group distribution of visitors booking lectures at Henan Museum (2020.9-2021.9) from official statistics of Henan Museum

Source: Xu Mengjin (2023)

The sample size for this survey is determined based on statistical calculations.

According to the statistical research by (Jia, 2006) the sample size can be calculated using the following formula:

$$n = (Z^2 * p * (1-p)) / E^2$$

n is the sample size,

Z is the Z-value corresponding to the confidence level,

p is the expected sample proportion,

E is the expected error.

The commonly chosen confidence levels are 95% or 99%. A 95% confidence level means that in repeated sampling and estimation, there is a 95% chance that the true parameter falls within the estimated confidence interval.

The margin of error represents the allowable range of error in the sample estimate. The specific choice depends on the research objectives and requirements of the field. Generally, smaller margin of error requires a larger sample size. The commonly chosen range for margin of error is 1% to 5%.

The expected sample proportion is an estimation or set value of the proportion of different attributes, characteristics, or opinions in the target population of interest, based on subjective judgment of the researchers, previous research, market surveys, expert opinions, or experiential knowledge.

For this survey, the confidence level is set to 95%, the expected error is 5%, and the expected sample proportion 26.49% is taken from the age group with the highest percentage in the "2020.9-2021.9 Reservation for Visiting Henan Museum" (based on Picture14). To determine the sample size, the values can be substituted into the following formula:

$$n = (Z^2 * p * (1-p)) / E^2$$

Based on a 95% confidence level, the corresponding Z-value is approximately 1.96 (obtained from the standard normal distribution).

Plugging the values provided into the formula, the sample size was calculated as follows:

$$n = (1.96^2 * 0.2649 * (1-0.2649)) / 0.05^2$$

$$\approx (3.8416 * 0.2649 * 0.7351) / 0.0025$$

$$\approx 0.7544 / 0.0025$$

$$\approx 301.76$$

The calculated sample size is 301.76. Since the sample size is usually an integer, in which case it can be taken to be 302.

To ensure an adequate sample size, it is anticipated that 350 questionnaires will be distributed. This sample size can provide reasonably reliable results with a certain level of confidence.

### 3) Objective

The questionnaire will be divided into three parts: the first part involves collecting basic information from visitors.

The second part consists of general multiple-choice questions to gather visitor's intention, including visitors' perceptions of the cultural relics and culture at Henan Museum, their attitudes towards the "Nine Precious Cultural Relics," their memories related to cultural relics and their culture, as well as their preferences and demand. The

questionnaire will collect information about consumer purchasing behavior, such as in questions 9, 11, and 14.

The design of the questions and options will be based on Sprotles, G. B., & Kendall, E. L.'s consumer psychology theory. Factors influencing consumer purchase decisions, such as price, quality, novelty-seeking, as well as cultural, social, personal, and psychological factors influencing consumer buying behavior, will be included as options in the questionnaire. This analysis aims to identify differences among visitor groups and gain initial insights into consumers' aesthetic preferences, functional orientations, and cultural orientations towards museum cultural and creative products, providing a basis for future design practices.

The third part comprises targeted questions specifically designed to gather responses from consumers who have previous experience purchasing museum cultural and creative products, aiming to capture their personalized demands for such products.

The questionnaire is to accomplish the second research objective, which is To investigate the integration of history and contemporary life in cultural and creative products.

This questionnaire is obtained by literature combing the following sources of literature involving this questionnaire in relevant museum cultural and creative product development studies:

Table 1 Questionnaire settings and sources

Title Number	Title item	Source
Q6	The purpose of your visit to the Henan Museum	(Gou & Hu, 2016);(X. Li, 2018); (Zhu, 2019)
Q7	Please choose your favourite the “Nine Precious Cultural Relics” of the Henan Museum: (Choose up to three)	(Meng, 2019); (Qi, 2020)
Q8	Which features of the cultural relics impressed you? (Multiple choice questions)	Based on (Braun & Clarke, 2006; Lin, 2005) 's “Three layers and levels of cultural objects and design features”.
Q9	If you buy cultural and creative products, what is your purpose?	(X. Li, 2018; Jun Zhou, 2016; Zhu, 2019)
Q10	Which type of cultural and creative products in Henan Museum will you buy?	(Yuemeng Liu, 2019; F. Wu, 2018; Jun Zhou, 2016)Zhou (2016); Based on(Gajjar, 2013)'s consumer behavior theory.
Q11	What are the factors that inspire your desire to buy cultural and creative products? (Multiple choice questions)	(Jiang, 2016; Yuemeng Liu, 2019; W. Wu, 2021);Wu Wengang (2021);(Qi, 2020); Based on (George B Sprotles & Elizabeth L Kendall, 1986)s consumer psychology theory.

Table 1 (Continued)

Title Number	Title item	Source
Q12	Regarding museum cultural products, the price you are willing to accept is	Zhou (2016);(Jialing Zhou, 2019); Liu Yuemeng (2019)
Q13	Have you ever purchased any creative products from Henan Museum?	Set up this question based on the structure of the questionnaire.
Q14	What are the factors that do not meet your expectations of buying cultural and creative products? (Multiple choice)	Wu Fang (2018); Liu Yuemeng (2019); Based on Gajjar, Nilesh B (2013)'s consumer behavior theory.
Q15	Apart from the Henan Museum, name one impressive cultural and creative product from other museums and one factor that influenced you to buy it.	Yang Shiyi (2021)
Q16	What kind of products do you think the creative products shop of the Henan Museum lacks?	Zhou (2016); Wu Fang (2018); (Jialing Zhou, 2019)
Q17	What do you think is the difference between cultural and creative products purchased by museums and ordinary products in daily use?	Yang Shiyi (2021)
Q18	What are the key words that come to mind when you think of cultural and creative products for museums?	Set the question according to the objective of the study.

## Questionnaire

## PART 1: Basic information

1. Your age:

Under 18 years old  18-25  26-35  36-45

46-60  60 and above

2. Your gender:

Male  Female

3. Your education level:

Middle School and below  High School

University  Postgraduate and above

4. What is your occupation?

Student  Government and public institutions  Corporate employee

Self-employed  Freelancer  Retiree  Other

5. What is your monthly income?

less than RMB 2,000  RMB 2,000-5,000

RMB 5,000-8,000  more than RMB 8,000

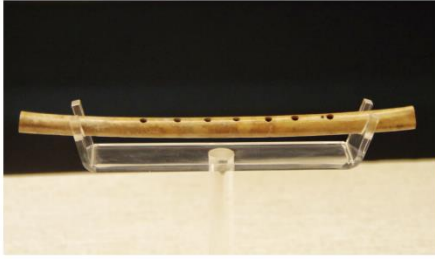
#### **PART 2: Visitor's intention collection**

6. The purpose of your visit to the Henan Museum:

Study Research  Family Education  Personal Interest  Work Needs  To  
visit special exhibitions  Travel and tourism  Other \_\_\_\_\_

7. Please choose your favourite the "Nine Precious Cultural Relics" of the Henan  
Museum: (Choose up to three)

**The Jiahu Bone Flute**



**The Duling Square Ding**



**The Jade Handle Iron Sword**



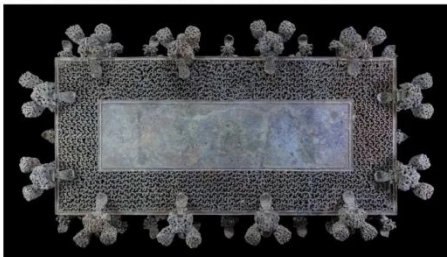
**Fuhao's Owl-shaped Bronze Zun**



**The Lotus Crane Square Pot**



**The Cloud Pattern Bronze Jin**



**Four Divine Creatures Cloud Diagram Mural**



**The Golden Jian of Empress Wu Zetian**



**Ru Kiln Sky Blue Glazed Carved Goose-neck Vase**



8. Which features of the cultural relics impressed you? (Multiple choice questions)

- Material    Shape    Color    Pattern    Function  
 Using Scenario    Cultural Significance    Emotional Value

9. If you buy cultural and creative products, what is your purpose?

- Collection and commemoration    Practical and functional  
 Gift to friends and relatives    Decorate life and enhance the cultural atmosphere in daily life    Other \_\_\_\_\_

10. Which type of cultural and creative products in Henan Museum will you buy?

- Fine collection category (reproduction version of cultural relics)  
 Lifestyle products category    Office stationery category  
 Food category    Jewelry category    Other \_\_\_\_\_

11. What are the factors that inspire your desire to buy cultural and creative products?

(Multiple choice questions)

- Cheap price    High functionality and practical value  
 Product aesthetics    Creativity of the product    Novelty-seeking

Interactivity and fun of the product  Exquisite packaging

Good quality and material  Commemorative value

Other \_\_\_\_\_

12. Regarding museum cultural products, the price you are willing to accept is :

RMB 6-10  RMB 11-20  RMB 20-50  RMB 50-100

RMB 101-200  RMB 201-500  RMB 501-1,000  RMB 1,000 or more

13. Have you ever purchased any creative products from Henan Museum?

Yes (please go to question 15)

No (please go to question 14)

14. What are the factors that do not meet your expectations of buying cultural and creative products? (Multiple choice)

Similar to other museum product types, lack of character

Low quality of products  Weak practicality  Lack of cultural expression

High price  Lack of aesthetics  Lack of creativity Inability to meet individual

needs  Other \_\_\_\_\_

### PART 3: Consumer's personalized demands collection

15. Apart from the Henan Museum, name one impressive cultural and creative product from other museums and one factor that influenced you to buy it.

\_\_\_\_\_

16. What kind of products do you think the creative products shop of the Henan

Museum lacks? \_\_\_\_\_

17. What do you think is the difference between cultural and creative products purchased by museums and ordinary products in daily use?

\_\_\_\_\_

18. What are the key words that come to mind when you think of cultural and creative products for museums?

\_\_\_\_\_

### **Step 3: Interview expert suggestion**

The interviewees will be two experts in cultural studies and two experts in design studies, who will be interviewed in a semi-structured manner. The interview is to obtain professional analysis of the current situation of cultural and creative products in the Henan Museum and suggestions for the design of museum cultural and creative products. Through this step of the interviews, suggestions on the extraction of cultural elements from relics and the design of cultural and creative products will be summarised, and the combination of cultural elements into product elements, as well as obtaining suggestions for the design practice of integrating cultural and creative products into modern life.

1) Four experts

Table 2 Two cultural studies experts

Name	Position	Organization
Jia Zhengxian	Founder of Maya Gongjiang Brand; Descendant of the Imperial Household Department's Chief Craftsman; Representative Inheritor of Jade Craftsmanship Intangible Cultural Heritage; Representative Inheritor of Gold Inlay Jade Craftsmanship Intangible Cultural Heritage; International Registered Senior Jewelry Designer; Henan Province Master of Jewelry Craftsmanship; Legal Representative of Henan Jinmao Cultural Development Co., Ltd.	Henan Jinmao Cultural Development Co., Ltd.
Gao Chen	Associate Professor; Craft Artist of Henan Province; International Commercial Art Designer	Zhoukou Normal University

Table 3 Two designer experts

Name	Position	Organization
He Zijiang	Senior Design Specialist; Former Alibaba Visual Design Specialist	De Wu APP
Cui Jie	Senior Design Expert; Former Senior Designer at SAIC Maxus.	Geely Automobile Company

## 2) Objective

The objective of the interview is to obtain the suggestions on the design of museum cultural and creative products, such as the effective extraction of cultural elements from heritage and the connection to modern life through cultural and creative products.

## 3) Interview Questions

The interview questions were as follows:

1. Based on the results obtained from questions 6, 9, and 12 of the questionnaire, how do you think museum cultural and creative products should be positioned?
2. How can the tangible and material aspects of cultural relics be effectively incorporated into product design?

3. How can the behavioral and social aspects of cultural relics be integrated into product design?

4. How can the intangible, spiritual, and emotional elements of cultural relics be infused into product design?

5. How should museum cultural and creative products harmonize the extraction and expression of elements across the three layers of cultural relics?

6. Based on the results obtained from questions 10, 11, and 14 of the questionnaire, how can museum cultural and creative products meet the practical needs of consumers in their daily lives?

7. How can museum cultural and creative products fulfill the spiritual needs of consumers?

8. In your opinion, what are the future trends of museum cultural and creative products?

#### **Step 4: First draft design**

##### 1) Scope of design

The design phase will integrate the content of the first three steps, collate cultural relics elements, visitor preferences and the views and suggestions of cultural and design experts, and use design software such as Illustrator and Photoshop to create design sketches for the Henan Museum. The design sketches will then be evaluated and revised again using interview methods to finalise the product design and renderings.

## 2) Objective

Based on the cultural relics analysis, and the attitudes, preferences, and interest of visitors and consumers that gathered from questionnaire. The insights obtained from the questionnaire will be combined with the design suggestions provided by cultural and design experts during the interview process. Design software such as Illustrator and Photoshop can then be used to create design drafts.

### **Step 5: Interview expert suggestion**

The interviewees in this step were the same as the experts in Step 3, the interviewees will be two experts in cultural studies and two experts in design studies, who will be interviewed in a semi-structured manner. The interview is to obtain suggestions on the revision of the draft design.

## 1) Objective

This step for the interview will be taken place after the completion of the sketch for the cultural and creative product. The interview content focuses on providing feedback and suggestions for modifications based on the draft design. The interview questions in this step will be based on the objectives of the research, aiming to validate and refine the feasibility and rationality of the design practice.

## 2) Interview questions

1. Does the design sketch effectively convey cultural content, and what modifications should be made?

2. Does the design sketch integrate well with contemporary life, and what modifications should be made?

3. Does the design sketch achieve a balance between functionality and aesthetics, and what modifications should be made?

### **Step 6: Final Design**

#### 1) Scope of design

This step will integrate the content of the previous five steps, based on the incorporating modification suggestions from experts obtained from interviews, using design software such as Illustrator and Photoshop to complete the final sketch of the product design.

#### 2) Objective

From the research objective the final design should encapsulate the essence of the cultural relics, incorporate the preferences and interests of the consumer, adhere to design principles, and reflect the expert suggestions. It should be a compelling and innovative design that seamlessly merges cultural heritage with contemporary aesthetics.

### **Ethical considerations**

In dealing with private information about the job, money and education, including income and consumption level, I will ensure the safety and confidentiality of both participants and myself. Before starting the research, I will inform my partner about the interview schedule and expected duration for safety reasons. I will present my

identification at the outset of data collection to verify my affiliation. Consent will be obtained before any data is gathered. Post-collection, the data will be anonymized and stored on a secure, password-protected online server. My dissertation will intentionally lack specific details to prevent the identification of individuals. Data will be anonymized before being shared, except for my own records to identify participants.



## CHAPTER 4

### RESEARCH RESULTS

#### Step 1: Study and analysis "Nine Precious Cultural Relics"

According to(Lin, 2005), consumer expectations and cognition can link the three levels of cultural objects to design features. By integrating Leong and Clark's model, Lin pinpoints key cultural product characteristics for designers in product development. The outer level includes visual elements like appearance, color, and form, enhancing product value. The middle level focuses on functionality, usability, and safety, adopting a rational, object-centered design approach to solve practical daily and production issues. The inner level encompasses intangible cultural aspects in product design.

Based on the intuitive characteristics of the "Nine Precious Cultural Relics" in Henan Museum, the analysis of the "Nine Precious Cultural Relics" will also be carried out on these three levels: the cultural content, historical significance and emotional value of the objects will be selected as elements of analysis at the inner level; the function and usability will be selected as elements of analysis at the mid level; and the patterns, materials, colour and shape will be selected as elements of analysis at the outer level.


#### (1) The Jiahu bone flute

The Jiahu bone flute is of Neolithic date, 7800-9000 years ago, 23.6 cm long, made from the ulna of a crane with seven holes, and a small hole drilled between the sixth and seventh holes for tuning the articulation of the seventh hole. The Jiahu bone

flute is not only the earliest dated instrument in China, but has also been recognised by experts as the earliest playable instrument in the world. The Jiahu bone flute in the collection of the Henan Museum is a complete piece of art and is so crystalline and shiny from petrification that it is almost worthy of being compared to jade. Among the 30 or so Jiahu bone flutes found to date, this is one of the most rare surviving pieces, and is a representative example of the “first Chinese flute”. Its unearthing has rewritten the history of Chinese music and is of unparalleled importance and value.



Table 4 Analysis of Jiahu bone flute

<b>Name of the Cultural Relic</b>	<b>The Jiahu Bone Flute</b>
<b>Historical Period</b>	Neolithic, 7800-9000 years ago
<b>Type</b>	Musical instrument
<b>Image</b>	 <p>Source: Xu Mengjin (2021)</p>
<b>Appearance</b>	The ulna of a crane
<b>Pattern</b>	No pattern decoration, seven sounding holes on the surface
<b>Colour</b>	Bone colour , close to beige
<b>Form</b>	A slender cylindrical tube with elliptical openings at both ends.
<b>Function</b>	The function of meeting the spiritual needs of the ancestors and expression of good wishes for life.
<b>Usability</b>	Music and dance at large events such as religious ceremonies
<b>Cultural Features</b>	Two bone flutes of similar shape were excavated from this tomb. According to phonometric studies, they are a female and a male, confirming the tradition of male and female flutes in China since ancient times. People at that time used this flute to play rhythmic notes as an expression of their feelings about life and respect for the gods.
<b>Historical Significance</b>	The earliest physical instrument in China. The earliest wind instrument in the world. Its unearthing has rewritten the history of Chinese music.
<b>Affection</b>	The cranes are regarded as the spiritual aspirations of Chinese Taoism and Chinese civilization, and are used by modern people to signify longevity, beauty and wealth.
<b>Source</b>	Cao Hangang and Zhu Rong (2010), Henan Museum (2011)

## (2) The Duling Square Ding

Ding, an ancient Chinese vessel used for cooking and storing meat, was one of the most important bronze vessels in ancient China. It was considered by later generations to be the most powerful of all bronze vessels, and a symbol of state power.

The Duling Square Ding is one of the earliest, largest, most perfectly cast and best preserved bronze vessels known to man, dating from the early Shang Dynasty (from approximately 1600 BCE to 1046 BCE), about 3423 years ago, is 87cm in height and weighs approximately 64.25kg, and was excavated in Zhengzhou, Henan province, in two pieces, one in the National Museum of China and one in the Henan Museum. In ancient China Ding were often used for royal rituals, and the presence of the Duling Square Ding in pairs establishes Zhengzhou's status as the capital of the Shang dynasty.

The Duling Square Ding is the earliest Chinese ritual vessel found to be decorated with the Taotie pattern (Figure 17) and nipple pattern (Figure 18). The Taotie, represents a ravenous beast in traditional Chinese culture, it has no fixed form, but is always presented in a hideous and horrific form, and the Taotie pattern is also a symbol of 'greed' and 'gluttony', symbolising 'eating'; while the nipple pattern, representing breastfeeding, also connotes 'eating'. The decorative nature of the design of Ding itself, as a cooking vessel for meat during rituals, also reflects the functionality of the object itself. On a spiritual level, the Taotie pattern is a fusion of the characteristics of various beasts of nature and the artistic imagination of the ancient Chinese. Due to the low level

of productivity in primitive societies, people attributed many unexplained phenomena to the power of the gods, and were filled with awe of the gods, begging them, pleasing them, and using their power to dominate things (Z. Zhang, 2017). This generalised and exaggerated animal decoration and modelling on Shang bronzes presents a mysterious atmosphere and power beyond the world. The 'hideous terror' of bronze decoration was used to express the 'mysterious majesty' of kingship, to express their possession of political power, status and wealth, and to intimidate people, thus exercising spiritual domination over the people, and reflecting the people's worship of the gods of nature at the time. It also reflects the worship of nature gods,



Figure 17 The Taotie pattern on Duling Square Ding

Source: Xu Mengjin (2023)



Figure 18 The nipple pattern on Duling Square Ding,

Source: Xu Mengjin (2023)

Table 5 Analysis of the Duling Square Ding

Name of the Cultural Relic	The Duling Square Ding
Historical Period	Early Shang Dynasty, about 3423 years ago
Type	Cooking vessel
Image	
Appearance	Bronze
Pattern	The Taotie pattern and Nipple pattern
Colour	Greenish-grey

Source: Xu Mengjin (2023)

Table 3 (Continued)

Name of the Cultural Relic	The Duling Square Ding
Form	Cuboid-shaped, deep belly, with two handles and four legs.
Function	Vessel used for cooking and storing meat
Usability	Two large bronze Ding in pairs juxtaposed east and west , upright placed together, for the king of the Shang ritual use.
Cultural Features	In the Shang Dynasty, Ding was a symbol of royal power and an important object in ancient ritual and other activities.In ancient Chinese ritual activities, the role of Ding was to cook meat.
Historical Significance	The Duling Square Ding is the earliest Chinese ritual vessel decorated with the Taotie pattern and nipple pattern. It established Zhengzhou as one of the capitals of the Shang Dynasty, which is not only a witness of the bronze culture of China, but also a symbol of the origin of the Central Plains civilization.
Affection	The Taotie pattern decorated with the Duling Square Ding is a symbol of the Shang Dynasty rulers to display the "mysterious majesty" of royal power, political power, status and wealth.
Source	Dong Qi (1999), Henan Museum (2012), Times Report Magazine (2021)

### (3) Fuhao's Owl-shaped Bronze Zun

Fuhao's Owl-shaped Bronze Zun lived in the late Shang Dynasty (from approximately 1600 BCE to 1046 BCE), with a height of 46.3cm and a weight of 16kg. It was unearthed in 1976 from the Fuhao Tomb in Anyang, Henan Province and is also the only tomb of a member of the Shang royal family that has not been stolen. In China, the tomb of Fuhao is regarded as a treasure of human civilisation.

Fuhao, was the wife of Wu Ding, the late Shang dynasty's great king. With his martial prowess, Wu Ding reversed the once declining fortunes of the Shang dynasty. As the wife of Wu Ding, Fuhao was very active at the time, not only presiding over various royal ceremonies, but also often being ordered by the king to command the army and conquer for the country; she won many victories in wars and was honoured by Wu Ding, and Fuhao has been called the "first female general of China" by current scholars.

Zun is a large and medium-sized wine vessel and ritual vessel used in Shang Dynasty. In ancient China, the owl was regarded as the god of war, and its nocturnal nature and ability to attack the inevitable made it a symbol of the "God of war". The owl, was filled with mystery in the eyes of the Shang Dynasty due to its unique appearance and lifestyle. Over time, it transformed this mystery into a sacred religious emotion and became one of the objects of their worship.

After the owl Zun was unearthed, the inscription 'Fuhao' was found on the inner wall under the mouth when the object was studied, and it was officially named 'Fuhao Owl Zun'. Fuhao's Owl-shaped Bronze Zun is the earliest bird shaped wine Zun discovered to date. The whole is in the form of a standing owl, with the two feet and the sagging tail forming three stable support points. Behind the head is the mouth of the vessel, with a standing bird cast on the cover (Figure 19). The surface is covered with patterns, the beak and neck are decorated with cicada patterns, the outer side of the high crown is decorated with feather patterns, the inner side is decorated with dragon

patterns, each side is decorated with a strange dragon with two heads, and both wings are decorated with curled long snakes, interspersed with diamond-shaped patterns. The back is decorated with a flying owl with wings under the back of the stool (Figure 20). The Fuhao's Owl-shaped Bronze Zun has a vivid design, a magnificent and magnificent design, and is a masterpiece of Chinese Shang Dynasty bronze ware.



Figure 19 The cover of Fuhao's Owl-shaped Bronze Zun

Source: Xu Mengjin (2023)

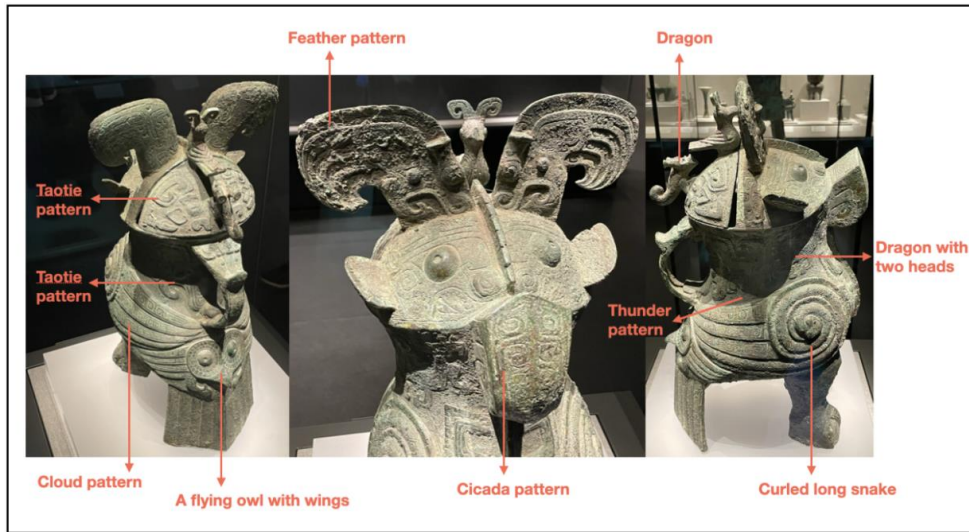


Figure 20 Schematic Diagram of Fuhao's Owl-shaped Bronze Zun Pattern

Source: Xu Mengjin (2023)

Table 6 Analysis of Fuhao's Owl-shaped Bronze Zun


Name of the Cultural Relic	Fuhao's Owl-shaped Bronze Zun
Historical Period	Shang Dynasty, about 3200 years ago
Type	Drinking vessel
Image	 <p>Source: Xu Mengjin (2023)</p>
Appearance	Bronze
Pattern	Cloud pattern, thunder pattern, dragon pattern, Taotie pattern, cicada pattern, feather pattern, bird pattern, snake pattern and other animal patterns
Colour	Greenish-grey

Table 6 (Continued)

<b>Name of the Cultural Relic</b>	Fuhao's Owl-shaped Bronze Zun
<b>Shape</b>	The overall design resembles a standing owl, with its two feet and a drooping tail forming three stable support points. The spout is located at the back of the head, and the lid is cast in the shape of a standing bird.
<b>Function</b>	Vessel used by the queen of the Shang dynasty Fuhao to serve wine.
<b>Usability</b>	Unearthed in pairs, for the queen of the Shang Dynasty Fuhao burial objects.
<b>Cultural Features</b>	Fuhao, as the first documented female general in ancient China, she actively participated in national affairs, presided over sacrificial ceremonies, and led military expeditions, making her a legendary figure. The bronze wine vessels shaped like animals exemplify the deliberate innovation and pursuit of perfection in Shang culture, marking a new peak in the development of the Bronze Age in China.
<b>Historical Significance</b>	Fu Hao's Owl-shaped Bronze Zun is the earliest discovered bird-shaped bronze ritual vessel in China. Its vivid form and intricate decorative patterns reflect the unique religious sentiments and aesthetic concepts of the Shang Dynasty ancestors.
<b>Affection</b>	During the Shang Dynasty, the owl was considered the god of victorious warfare, and also believed to bring good fortune. The owl possessed protective powers against evil spirits and was a sacred bird revered and worshipped by the people.
<b>Source</b>	Henan Museum(2012), Wang Wei(2000), Li, Li (2011)

## (4) The Jade Handle Iron Sword

The Jade Handle Iron Sword dates back to the late Western Zhou Dynasty (1046

BCE to 771 BCE), with a total length of 34.2 centimeters, a handle length of 12.2 centimeters, and a sword body length of 22 centimeters. It was unearthed from the Guoji Tomb in Sanmenxia City, which is one of the "Top Ten Archaeological Discoveries in China in 1990".

The sword handle is made of Hetian jade and resembles a sprouting bamboo. It is a sword of bionic design. The handle is intricately crafted with distinct bamboo nodes, exhibiting a delicate and smooth texture. The hollow interior of the handle contains a copper core, connecting the blade and the handle (Figure 21).



Figure 21 The Jade Handle of Iron Sword

Source: Xu Mengjin (2023)

In traditional Chinese culture, bamboo is regarded as a symbol of the gentleman. Bamboo is renowned for its upright and resilient qualities, representing noble virtues and moral cultivation. It not only serves as a testament to the advanced metallurgical techniques of the time but also represents the cultural significance of the sword as a symbol of power, status, and martial prowess Wang Longzheng (2017).

Archaeology divides the long history of human society into three stages: the Stone Age, the Bronze Age, and the Iron Age, which correspond to the three forms of society in historical terms: primitive society, slave society, and feudal society. The jade handle iron sword, with its combination of a jade handle, copper core, and iron body, encapsulates the past, present, and future within a single sword. It is the earliest artificial iron smelting product unearthed in Chinese archaeological excavations, bringing the age of artificial iron smelting in China forward by nearly two centuries and is known as the "First Sword of China". Its discovery signifies the emergence of iron as the new representative of productive forces, indicating the impending end of the Bronze Age and the arrival of the Iron Age, which represents the era of feudal society.

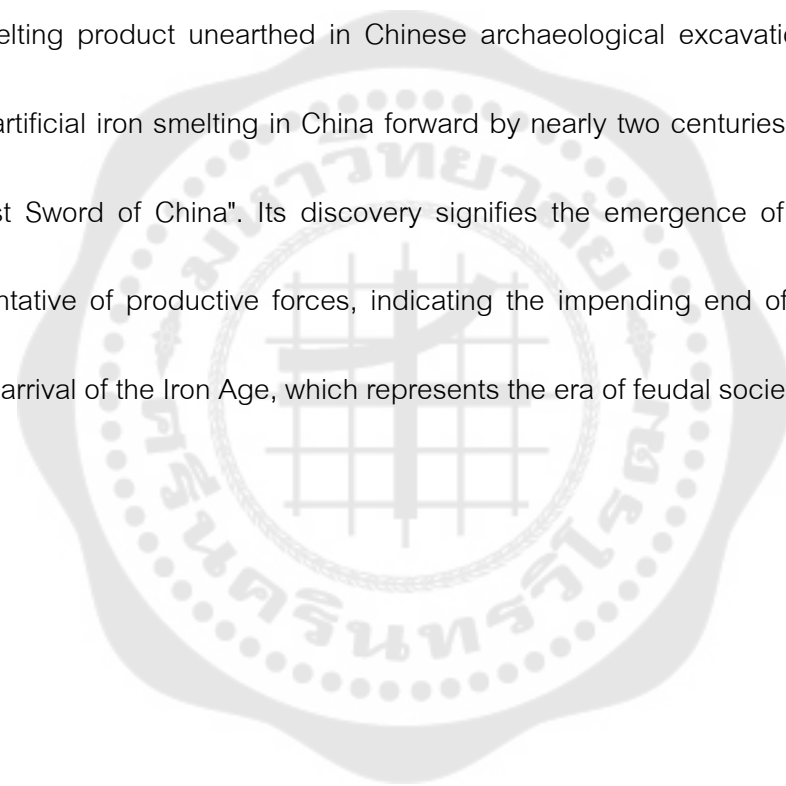



Table 7 Analysis of the Jade Handle Iron Sword

<b>Name of the Cultural Relic</b>	<b>The Jade Handle Iron Sword</b>
<b>Historical Period</b>	Late Western Zhou Dynasty, about 2800 years ago
<b>Type</b>	Weapon
<b>Image</b>	 Source: Xu Mengjin (2023)
<b>Appearance</b>	Jade, copper and iron
<b>Pattern</b>	The jade handle of the sword is crafted in the form of bamboo nodes.
<b>Colour</b>	Rust red, Light bluish-green
<b>Shape</b>	The sword handle is shaped like bamboo, and the sword blade is shaped like bamboo leaves.
<b>Function</b>	It is a weapon used for self-defense, which also symbolizes one's status in ancient China.
<b>Usability</b>	A weapon used for self-defense, for the sovereign of the State of Guo burial objects.
<b>Cultural Features</b>	It is the earliest artificial iron smelting product unearthed in Chinese archaeological excavations. Its discovery signifies the emergence of iron as the new representative of productive forces, which represents the era of feudal society.
<b>Historical Significance</b>	Combining iron, copper, and jade into one, exquisitely crafted, it is the earliest artificially smelted iron artifact unearthed in Chinese archaeological excavations. It is hailed as the 'First Sword of China'.
<b>Affection</b>	In ancient China, gentlemen would carry swords and jade as symbols of their status and refinement. Bamboo, on the other hand, represented qualities such as nobility, elegance, and temperament in the hearts of Chinese people. Combining a jade hilt with an iron sword brings these elements together, reflecting a series of unique cultural spirits in China.
<b>Source</b>	Wang Longzheng (2017), Henan Museum (2013), Xi Yue (2016)

#### (5) The Lotus Crane Square Pot

The Lotus Crane Square Pot dates back to the Spring and Autumn Period (from 770 BCE to 476 BCE), with a total height of 117 centimeters. It can hold both wine and water. The lotus crane square pot has delicate and novel patterns, complex structure, and exquisite casting, making it a model of bronze craftsmanship during the Spring and Autumn period.

The Lotus Crane Square Pot is a flat square-bodied vessel with an incredibly intricate decorative composition. Its design is exceptionally marvelous, and the casting craftsmanship is superbly exquisite. Particularly eye-catching are the dragon patterns adorning the upper and lower parts of the pot body, as well as various additional decorations. The body of the pot features shallow relief carvings and incised lines depicting dragon and phoenix patterns. The pot is adorned with dragon-shaped ears on its two main sides, with their heads turned back, giving the impression of looking backward. These dragon ears are in the form of floral crowns, relatively large and elongated in size. Both the crowns and the bodies of the dragons feature exquisite hollowed-out floral patterns.

At the lower corners of the pot's belly, there are additional winged dragons, appearing to coil upwards in a turning motion. At the base, two dragons with raised heads and attentive gazes are depicted, their bodies covered in scale patterns, arching their bodies and curling their tails, with their heads turned outward and tongues

extended. The dragons supporting the pot body and the dragons and beasts adorning the pot itself ascend in harmony, creating a visual sense of lightness and dynamism to the pot's form.

The topmost part, the pot lid, consists of ten sets of double parallel lotus petal decorations, with hollowed-out dragon patterns on the petals. In the center of the lotus petals, there is a movable small lid, and on top of it, a crane stands in the middle of the petals. The crane appears to be raising its head and flapping its wings, showcasing a lively and dynamic posture (Figure 22).



Figure 22 Schematic Diagram of the Lotus Crane Square Pot

Source: Xu Mengjin (2023)

It draws inspiration from the real natural world, featuring dynamic dragons and chimeras, as well as the presence of a plant: lotus flower petals. This reflects the

tendency of artistic forms to break away from decorative arts during the Spring and Autumn period. Particularly noteworthy is the depiction of a soaring crane perched on the top, symbolizing a new spirit and an era of freedom and liberation.

On top of it stands a winged crane, symbolizing a new spirit and an era of freedom and liberation. In Chinese culture, cranes are one of the most representative objects and images, perfectly combining the noble and holy meanings of lotus and crane, endowed with poetry, dreams, and pursuit.

During the Spring and Autumn period, the old ritual system rapidly collapsed, giving way to the formation of new concepts. As the treasured possessions of the state, bronze artifacts also embraced a new era by transitioning from a deeply entrenched religious style to a pursuit of freshness, freedom, and liveliness. The once heavy and solemn forms became light and graceful, while the designs shifted from imposing to intricate, and the decorative patterns leaned towards realism and vividness. The Lotus Crane Square Pot is a product of its time, with its blooming lotus flowers and soaring cranes. It seems to break free from the fierce and mysterious aura that had dominated the bronze world since the Shang and Zhou dynasties, ushering Chinese history and culture into a new era of diverse voices and abundant creativity. It's a symbol of the spirit of its time, marking a new beginning for Chinese artistic style.

Table 8 Analysis of the Lotus Crane Square Pot


<b>Name of the Cultural Relic</b>	The Lotus Crane Square Pot
<b>Historical Period</b>	The Spring and Autumn Period
<b>Type</b>	Wine or water vessel
<b>Image</b>	 <p>Source: Xu Mengjin (2023)</p>
<b>Appearance</b>	Bronze
<b>Pattern</b>	Lotus petals, dragon patterns, phoenix patterns, coiled chi-dragon patterns, and crane.
<b>Colour</b>	Greenish-grey
<b>Shape</b>	A shape of a square pot, with a flat rectangular body, a lid, two handles, and a circular base. The center of gravity is located at the lower abdomen. The pot lid is cast in the shape of lotus petals. In the center of the lotus petals, there is a movable small lid, and a crane standing in the center of the petal.
<b>Function</b>	The pot is commonly used in significant events such as temple ceremonies and banquets for honored guests.
<b>Usability</b>	The Lotus Crane Square Pot is of significant size and adorned with exquisite decorations. It is not an ordinary vessel for serving drinks but rather a likely display item of the ruler of Zheng State. It symbolizes the owner's status, wealth, and power.

Table 8 (Continued)

Name of the Cultural Relic	The Lotus Crane Square Pot
Cultural Features	The magnificent and intricate decorative patterns, along with exquisite sculptural forms, combined with various techniques such as sculpture and shallow relief, present the elaborate and ornate design of the Lotus Crane Square Pot.
Historical Significance	With its lively form, it symbolizes vitality and reflects a significant shift in the aesthetic ideals of bronze art during the Spring and Autumn period. It's a product of the new era that pursues freshness and freedom, its casting craftsmanship is hailed as the "masterpiece of the Bronze Age."
Affection	The figurine of the crane is simple and elegant, with graceful lines. It stands proudly atop the blooming lotus, creating a perfect fusion of two symbolically pure elements. The combination of the lotus and the crane embodies poetic beauty, dreams, and aspirations.
Source	Jun Buqi, and Liu Qing (2017), Zhang Deshui, and Li Lina (2009), Xu Tianshen (1999), Henan Museum (2020)

The casting craftsmanship of the Lotus Crane Square Pot is also considered a masterpiece of the Spring and Autumn period, earning it the title of "the pinnacle of the Bronze Age" by experts in the field.

On January 18, 2002, it was listed by the National Cultural Heritage Administration of China as "the first batch of cultural relics prohibited from going abroad for exhibition".

#### (6) The Cloud Pattern Bronze Jin

The Cloud Pattern Bronze Jin dates back to the Spring and Autumn period

(from 770 BCE to 476 BCE), with a length of 131 cm, a horizontal length of 67.6 cm, a height of 28.8 cm, a body width of 46 cm, and a weight of 94.2 kg.

Jin was a tool for holding wine vessels, which originated in the early Western Zhou Dynasty and disappeared during the Warring States period. Jin in this context have the meaning of "forbidding" or "prohibition," it's a wine ritual table. Jin are mostly made of bronze and can be understood as ceremonial wine stands.

During the Zhou Dynasty, King Wu of Zhou learned from the downfall of the Xia and Shang dynasties, which were attributed to the excessive drinking culture. As a result, at the beginning of the Zhou Dynasty, the earliest known alcohol prohibition was enacted in China. Drinking was only allowed during ritual ceremonies and other formal occasions. The tables used for holding wine were called "Jin", which reflected the political and social atmosphere of that period. It became the hallmark of China's first era of alcohol prohibition.

The Cloud Pattern Bronze Jin consists of three parts: the body of the Jin, 12 dragon-shaped attached animals, and 12 dragon-shaped pedestal animals. The bronze Jin is decorated with multi-layered openwork cloud patterns on all sides. It has a wall thickness of less than 5 centimeters and is hollow.

The upper part of the Jin is adorned with 12 dragon-shaped mythical creatures, with 4 in the front and back, and 2 on each side. They have curved bodies, coiled tails, protruding heads, and extended tongues, facing the center of the Jin,

creating a magnificent scene of dragons guarding.

The lower part of the Jin features 12 tiger-shaped mythical creatures, with 3 on each long side, and 1 on each corner and short side. They crouch beneath the Jin, serving as feet and supporting the body of the vessel. This well-arranged design, intricate craftsmanship, and exquisite casting technique give the entire object a powerful and imposing presence, creating a mysterious and distinct artistic effect that is truly awe-inspiring (Figure 23).

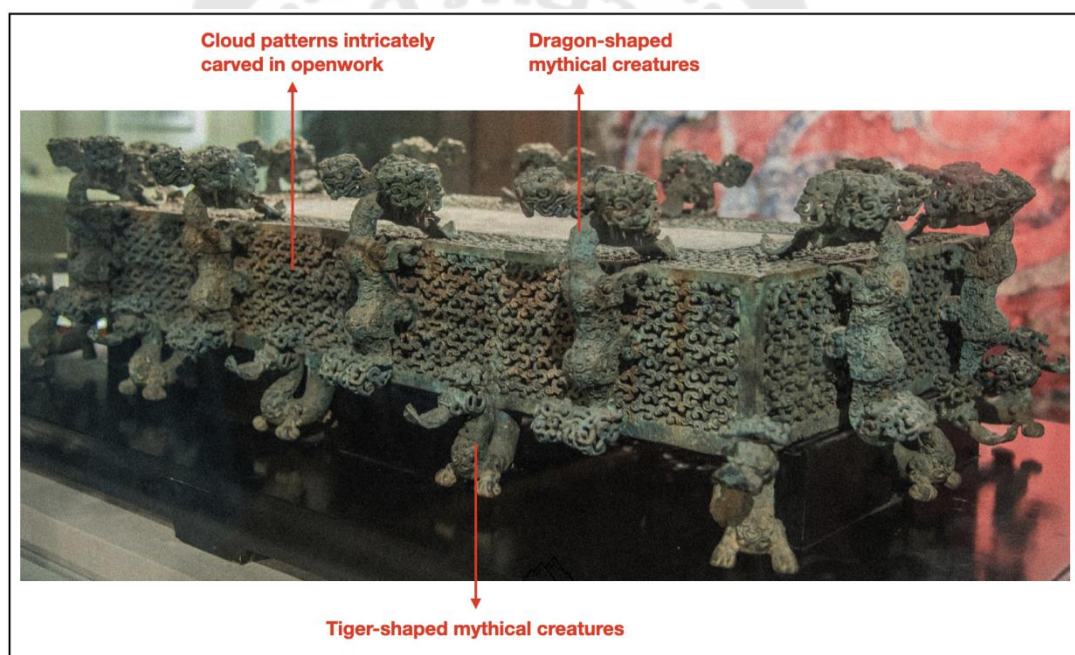


Figure 23 Schematic Diagram of the Cloud Pattern Bronze Jin

Source: Xu Mengjin (2023)

The Cloud Pattern Bronze Jin was cast entirely using the wax loss method, and is the earliest known example of lost-wax method in China. The lost-wax method was originally used as a precise casting technique for bronze objects. In the lost-wax

process, a model of the desired casting is created using beeswax. Beeswax is soft and can be finely carved and manipulated, allowing artisans to create intricate wax molds. Once the molds are prepared, they are filled with refractory materials, such as fire-resistant clay, to form the inner core, and then coated with additional layers to create the outer mold. After the outer mold has solidified, the entire mold is heated, causing the beeswax to melt and drain away, leaving behind an empty shell mold. Molten bronze is then poured into the hollow mold, and once it cools and solidifies, the object is cast.

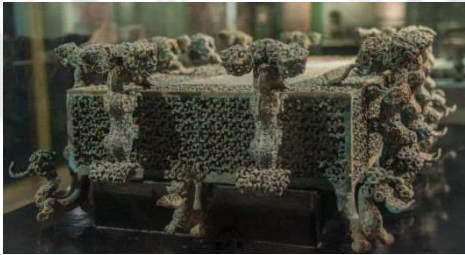
Due to the late discovery of lost wax process literature, the academic community generally believes that Chinese lost wax process originated from India. The excavation of the Cloud Pattern Bronze Jin pushed forward the history of China's lost wax casting process by 1100 years. Therefore, the academic community believes that the lost wax casting process was quite mature in China at least 2500 years ago.

In 1981, when the restoration work on the Cloud Pattern Bronze Jin began, the body of the Jin was fragmented into over ten large pieces, with severe deformation of the panels and numerous missing and peeled-off cloud patterns. The 12 dragon-shaped mythical creatures and 12 tiger-shaped mythical creatures were completely detached from the body and most of them were incomplete. Facing this pile of fragments, Mr. Wang Changqing, a senior technician at the Henan Museum, carefully compared the broken surfaces, matched the copper fragments, observed and analyzed the positions of the creatures in detail, and comprehended the entire structure and casting method.

He employed various restoration techniques including shaping, reinforcement, carving gypsum models, adding missing parts, casting, bonding, coloring, and rusting. It took nearly four years to complete the restoration of the Cloud Pattern Bronze Jin. It was subsequently exhibited in the United States without any deformation, and it remains a classic example of the restoration of cultural relics by the Henan Museum to this day.

On January 18, 2002, it was listed by the National Cultural Heritage Administration of China as "the first batch of cultural relics prohibited from going abroad for exhibition"

Table 9 Analysis of the Cloud Pattern Bronze Jin

<b>Name of the Cultural Relic</b>	The Cloud Pattern Bronze Jin
<b>Historical Period</b>	The Spring and Autumn period
<b>Type</b>	Ceremonial wine ritual table.
<b>Image</b>	
<b>Appearance</b>	Bronze
<b>Pattern</b>	Dragon-shaped mythical creatures, tiger-shaped mythical creatures and cloud patterns.
<b>Colour</b>	Greenish-grey

Source: Xu Mengjin (2023)

Table 9 (Continued)

Name of the Cultural Relic	The Cloud Pattern Bronze Jin
<b>Shape</b>	The main body is in the shape of a rectangular, with 12 tiger-shaped mythical creatures supporting the base. Around the perimeter, there are 12 dragon-shaped mythical creatures as decorations. In the center of the front side, there is a rectangular copper plate.
<b>Function</b>	Wine ritual table, ceremonial wine stands
<b>Usability</b>	It refers to a wine ritual table used in ceremonial and ritual activities. It was also a burial item accompanying Zigeng, the son of King Zhuang of Chu and the prime minister of the State of Chu.
<b>Cultural Features</b>	The cloud pattern bronze Jin perfectly showcases the traditional Chinese lost-wax casting technique. Lost-wax casting, is a casting technique that utilizes the meltable nature of wax to create complex and inseparable components.
<b>Historical Significance</b>	The Cloud Pattern Bronze Jin is the earliest discovered lost-wax casting artifact in China. The excavation of the cloud pattern bronze Jin pushes the history of lost-wax casting in China forward by 1100 years. As a result, the academic community considers that the lost-wax casting technique was already quite mature in China at least 2500 years ago.
<b>Affection</b>	Jin, which signifies prohibition. This practice became a concentrated reflection of the political and social atmosphere of the time, leaving a lasting imprint as the first prohibition era in China. The restoration work of the Cloud Pattern Bronze Jin embodies the dedication of Henan Museum.
<b>Source</b>	Henan Museum (2013), Feng Ziran and Zhai Xuguang (2014), Ren Changzhong and Wang Changqing (1987)

(7) Four Divine Creatures Cloud Diagram Mural

Four Divine Creatures Cloud Diagram Mural dates back to Western Han Dynasty, with a length of 5.14 meters, a width of 3.27 meters, and an area of 16.8 square meters. It was painted in the main chamber of the tomb of Prince Liu Mai of the Western Han Dynasty over 2000 years ago and is currently the earliest, largest, highest level, and most complete preserved mural seen in China.

The mural is composed of four colors: red, white, black, and green. Quantitative analysis using X-ray diffraction indicates that the red color is derived from cinnabar (commonly known as vermilion or red lead), the white color comes from white mica, the green color is derived from malachite, and the black color is a mixture of cinnabar and an equal amount of malachite. These pigments are all inorganic minerals. The mural theme pattern is based on cinnabar, with four divine birds and beasts painted in white, green, and black, as well as auspicious patterns such as ganoderma lucidum, flowers, and cloud patterns.

The Four Divine Creatures—Qinglong (Azure Dragon), Baihu (White Tiger), Zhuque (Vermilion Bird), and Xuanwu (Black Tortoise)—are depicted within a decorative framework outlined by swirling clouds, appearing to roam freely in the heavens. Accompanying them are auspicious clouds, lotus flowers, and ganoderma lucidum, serving as mediums for their ascent to the immortal realm.

The Qinglong holds the most prestigious position, with its agile body coiled in a vigorous S-shaped curve. Various parts of its body often extend outward, sprouting

clusters of grass and lotus flowers. The Baihu follows the Qinglong, lifting its head, opening its mouth, and raising its forelimbs as if soaring upwards. Two delicate lotus flowers extend from its ears. At the top, the Zhuque extends its long tail feathers, while two wisps of clouds gracefully unfurl at its ends. The Xuanwu is situated before the dragon's mouth, rising with the help of its curved and powerful tongue. The dragon's tongue and the creature's body intertwine playfully, as if engaged in a playful struggle (Figure 24).

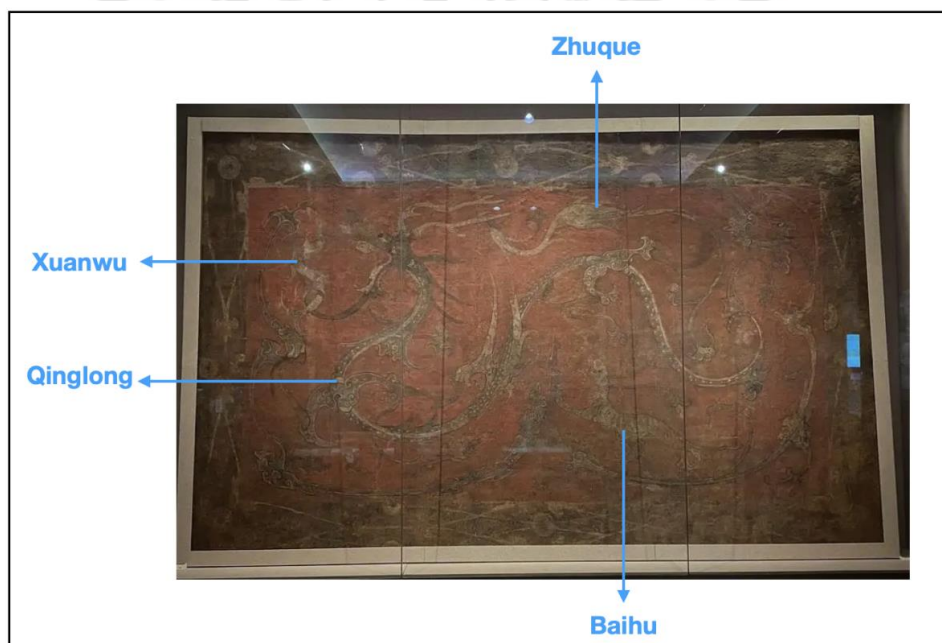


Figure 24 Schematic Diagram of the Four Divine Creatures Cloud Diagram Mura,

Source: Xu Mengjin (2023)

The Four Divine Creatures are the four divine creatures in ancient Chinese mythology, each associated with a specific cardinal direction. The Qinglong represents

the East, the Baihu represents the West, the Zhuque represents the South, and the Xuanwu represents the North. They symbolize the guardians of the four directions and ward off evil forces. During the Qin and Han dynasties, these four divine creatures became a fixed system and were established as the deities representing the four cardinal directions. The concept of immortality was highly prevalent in Han Dynasty, and the Four Divine Creatures were omnipresent.

In the eyes of ancient Chinese people, particularly those of the Western Han Dynasty, ascending to heaven after death meant the continuation of life. Therefore, the depiction of the tomb owner riding a dragon and ascending to heaven in the mural symbolizes the ideal and wish for a blissful afterlife, embodying the beliefs in Chinese immortalism.

Table 10 Analysis of Four Divine Creatures Cloud Diagram Mural

<b>Name of the Cultural Relic</b>	Four Divine Creatures Cloud Diagram Mural
<b>Historical Period</b>	Early Western Han Dynasty
<b>Type</b>	Mural
<b>Image</b>	 Source: Xu Mengjin (2023)
<b>Appearance</b>	Cinnabar, White mica, Malachite
<b>Pattern</b>	Dragon, Bird, Tiger, Mythical animal.
<b>Colour</b>	Red, White, Black, Green
<b>Shape</b>	It is arched and laid on the top of the tomb chamber.
<b>Function</b>	Tomb mural painting
<b>Usability</b>	The mural was used to decorate the tomb ceiling of Prince Liu Mai's main chamber. Its purpose was to express respect and blessings to the deceased, as well as to embody the wishes for the deceased to ascend to heaven and continue to enjoy happiness even after death.
<b>Cultural Features</b>	The concept of immortality was highly prevalent in Han Dynasty, and the Four Divine Creatures established as the deities representing the four cardinal directions were omnipresent.
<b>Historical Significance</b>	At present, China's earliest, largest, highest level, the most complete preservation of murals.
<b>Affection</b>	In the eyes of the ancient Western Han Chinese, people could ascend to heaven after death, implying that death was a continuation of life. The ideals and aspirations of the tomb owners to ascend to heaven by riding the dragon and enjoying happiness after death are depicted in the Four Divine Creatures Cloud Diagram Mural, which epitomizes the idea of Chinese immortals.
<b>Source</b>	Henan Museum (2013), Feng Ziran and Zhai Xuguang (2014), Ren Changzhong and Wang Changqing (1987)

(8) The Golden Jian of Empress Wu Zetian in Tang Dynasty

The Golden Jian of Empress Wu Zetian dates from the Tang dynasty and is 36.2 cm long, 8 cm wide, approximately 0.1 cm thick, and weighs 223.5 g.

Wu Zetian established the Wu Zhou Dynasty and became the only legitimate female emperor in Chinese history. As the owner of Golden Jian, in her later years, Wu Zetian held a deep fascination for the celestial realm of Daoist immortals.

The Golden Jian is rectangular in shape and engraved on the front with a three-line inscription of 63 characters in double line regular script (Figure 25). The Golden Jian of Wu Zetian refers to an incident where Wu Zetian, on July 7th, 700 AD, went to Mount Song to pray for blessings. In the inscription, she explains that she has dispatched Daoist priest Hu Chao as her envoy to deliver the Golden Jian to the gate of Mount Song as a representation of her offering and supplication to the gods, expressing her devout belief in the truths of Daoism and her desire for eternal life, begging the Taoist gods to rid her of illness, seeking forgiveness and exoneration from calamities and misfortunes.



Figure 25 Double line regular scrip of the Golden Jian of Empress Wu Zetian

Source: Xu Mengjin (2023)

The text on the Golden Jian is written in a beautiful and elegant small regular script, exhibiting exquisite craftsmanship. The lines are skillfully rendered, combining both solid and empty strokes, resulting in a balanced and precise expression of the calligraphic intent.

Throughout Chinese history, emperors have performed various rituals, including sacrifices and ascension to the heavens, as their sacred duties to the state, the people, and achieving transcendence. The offering of sacrifices and performing ceremonies on

the sacred mountains of China was a vital aspect of these activities. The Jian inscribed with the thoughts and intentions of the emperor were considered as a way to communicate with the heavens and were regarded as the "private conversations" between the emperor and the gods. They held the highest level of secrecy and significance for the state.

The Golden Jian of Wu Zetian not only represents Wu Zetian's inner world but also reflects the journey of the Chinese nation towards the concept of "unity of heaven and humanity." The "unity of heaven and humanity" is a fundamental concept in Chinese thought. It addresses the relationship between humans and the heavens and the relationship between the spiritual and material realms. The exploration of the relationship between heaven and humanity differs significantly between Chinese and Western perspectives. In the West, the emphasis is often on the struggle between the two, highlighting their differences, contradictions, and divisions. There is a debate about which is prior and who determines whom. In contrast, in China, the emphasis is on the unity of the two, emphasizing their interconnectedness, harmony, coordination, and mutual tolerance. Hence, the concept of "unity of heaven and humanity" is a universal belief in Chinese culture.

As the only orthodox female emperor in Chinese history, Wu Zetian's tomb has still not been opened, and this is the only surviving artefact belonging to her. Indeed, the discovery of the Golden Jian of Empress Wu Zetian, the only known golden Jian found in

China, is not only a direct physical evidence for studying Empress Wu Zetian's reverence for immortality and Daoist beliefs but also a precious source of information for studying the social ideology during the Wu Zhou period. It serves as a valuable cultural artifact, shedding light on the thoughts and beliefs of Empress Wu and providing insights into the social and ideological landscape of the time.



Table 11 Analysis of the Golden Jian of Empress Wu Zetian

<b>Name of the Cultural Relic</b>	<b>The Golden Jian of Empress Wu Zetian</b>
<b>Historical Period</b>	Tang dynasty
<b>Type</b>	Golden Sheet
<b>Image</b>	 <p>Source: Xu Mengjin (2023)</p>
<b>Appearance</b>	Gold
<b>Pattern</b>	A three-line inscription without pattern
<b>Colour</b>	Golden
<b>Shape</b>	Thin rectangular sheet of gold
<b>Function</b>	The Jian inscribed with the thoughts and intentions of the emperor were considered as a way to communicate with the heavens.
<b>Usability</b>	The Golden Jian was delivered to the gate of Mount Song as a representation of Wu Zetian's offering and supplication to the gods pray for forgiveness and blessings.
<b>Cultural Features</b>	The universal belief in the "unity of heaven and humanity" in Chinese culture; The thoughts of Empress Wu Zetian's reverence for immortality and Daoist beliefs.
<b>Historical Significance</b>	The only surviving artefact belonging to Empress Wu Zetian. The only known golden Jian found in China.
<b>Affection</b>	It represents the ancient Chinese people's belief in the concept of "unity of heaven and humanity". It embodies the profound spiritual and philosophical beliefs of the people, highlighting their reverence for the divine and their understanding of the harmonious relationship between humans and the heavens.
<b>Source</b>	Henan Museum (2013), Shi Shuqing(1984), Hu Rulei (2022)

(9) Ru Kiln Sky Blue Glazed Carved Goose-neck Vase of Song Dynasty

Ru Kiln Sky Blue Glazed Carved Goose-neck Vase dates back to the Northern Song Dynasty, with a height of 19.5 centimeters. The neck and abdomen of the vase are engraved with lotus patterns (Figure 26).



Figure 26 Schematic Diagram of Ru Kiln Sky Blue Glazed Carved Goose-neck Vase

Source: Xu Mengjin (2023)

During the Northern Song Dynasty, emperors had a great love for porcelain, and the porcelain industry flourished like never before. Porcelain kilns were scattered across the country. The period witnessed the emergence of the five famous kilns: Ru, Ge, Guan, Ding, and Jun, which reached the pinnacle of ceramic craftsmanship in China. Among these kilns, Ru kiln, known for its exquisite craftsmanship, enjoyed particular favor from the imperial court of the Song Dynasty. It was designated as the official kiln exclusively

producing imperial porcelain for the palace, earning the title of the foremost among the five kilns. However, the production period of Ru kiln was relatively short, lasting only about twenty years. It was unfortunately destroyed and disappeared due to continuous wars, leading to the loss of its technology and craftsmanship. After the disappearance of Ru kiln in the late Northern Song Dynasty, Chinese people made efforts for nearly a thousand years to revive the techniques of Ru kiln, but were unable to reproduce porcelain objects that matched the quality and craftsmanship of the original pieces.

During the Northern Song Dynasty, the style of porcelain pursued a sense of subtlety, elegance, and simplicity. Porcelain wares were highly valued for their exquisite glaze colors. In particular, Ru kiln products were known for their minimal decoration, emphasizing the beauty of the glaze. The colors of the glazes were inspired by the serene sky after rainfall, aiming for pure, refined, and noble hues.

Table 12 Analysis of Ru Kiln Sky Blue Glazed Carved Goose-neck Vase


<b>Name of the Cultural Relic</b>	Ru Kiln Sky Blue Glazed Carved Goose-neck Vase
<b>Historical Period</b>	Northern Song Dynasty
<b>Type</b>	Porcelain
<b>Image</b>	 <p>Source: Xu Mengjin (2023)</p>
<b>Appearance</b>	In the ceramic clay, agate and some metallic elements are added.
<b>Pattern</b>	Engraved with lotus patterns
<b>Colour</b>	Sky blue
<b>Shape</b>	A vase with a rounded mouth, goose-neck, and rounded belly.
<b>Function</b>	Vase, interior decoration
<b>Usability</b>	A vessel for the use and enjoyment of the emperor.
<b>Cultural Features</b>	Ru kiln, known for its exquisite craftsmanship, enjoyed particular favor from the imperial court of the Song Dynasty. Ru kiln products were known for their minimal decoration, emphasizing the beauty of the glaze. The colors of the glazes were inspired by the serene sky after rainfall, aiming for pure, refined, and noble hues. In the Ru kiln porcelain glaze colour, has been to "Celestial green is precious, powder green is still, sky blue is invaluable".
<b>Historical Significance</b>	<p>Ru kiln's technology and craftsmanship have been lost.</p> <p>At present, there are only five Ru kiln works with sky blue glaze in the world, and this goose-neck bottle is the only one with carved.</p>

Table 12(Continued)

<b>Name of the Cultural Relic</b>	<b>Ru Kiln Sky Blue Glazed Carved Goose-neck Vase</b>
<b>Affection</b>	China since ancient times to exquisite ceramic craft famous in the world, the word "China" in English has gradually become synonymous with the country. China has always been "the world's famous porcelain, Ru kiln for the first" that every piece of Ru porcelain, are rare treasures, and the mysterious disappearance of the Ru kiln, more Ru porcelain steeply increased in value. Sky blue glaze engraved goose-neck vase, is also the pinnacle of the development of Chinese ceramics.
<b>Source</b>	Henan Museum (2013), Si Yue; Dong Ming (2010)

The formation of the sky blue glaze in Ru kiln is mainly due to the perfect kiln position and temperature during the firing process, resulting in extremely low yield and very little passed down. So far, a total of 5 ancient sky blue glazed artifacts from the Ru kiln have been discovered, and this Ru kiln sky blue glazed carved goose neck vase in the Henan Museum collection is the only carved work.

### Step 2: Questionnaire

A total of 343 valid questionnaires were collected for this study. The results of the questionnaire are as follows:

#### PART 1:Basic information

Table 13 The result of gender

Gender	Total	Percent (%)
Male	136	39.7%
Female	207	60.3%
Total	343	100%

From the table 13, female accounted for 60.3% of the respondents, while male accounted for 39.7%. The proportion of female participants was higher, indicating a greater representation of women in the survey.

Table 14 The result of age

Age	Total	Percent (%)
Under 18 years old	10	2.92%
18-25 years old	84	24.49%
26-35 years old	112	32.65%
36-45 years old	97	28.28%
46-60 years old	32	9.33%
60 and above	8	2.33%
Total	343	100%

From the table 14, among the age groups, the highest proportion was in the 26-35 age range, accounting for 32.65% of the respondents. The next highest proportions were in the 36-45 age range, accounting for 28.28%, and the 18-25 age range, accounting for 24.49%. The age group of 18-45 years old in this survey is considered to be more representative.

Table 15 The result of education level

Education Level	Total	Percent (%)
Middle School and below	25	7.29%
High School	89	25.95%
University	194	56.56%
Postgraduate and above	35	10.2%
Total	343	100%

From the table 15, the survey respondents are distributed across various educational levels. Among them, the highest proportion is for individuals with a university education, accounting for 56.56% of the respondents. The next highest proportion is for individuals with a high school education, accounting for 25.95%. Overall, the educational level is relatively high, with a majority of respondents having attained a bachelor's degree or higher.

Table 16 The result of education occupation

Occupation	Total	Percent (%)
Student	69	20.12%
Government and public institutions	23	6.7%
Corporate employee	183	53.35%
Self-employed	12	3.5%
Freelancer	38	11.08%
Retiree	8	2.33%
Other	10	2.92%
Total	343	100%

From the table 16, the occupation with the highest proportion of respondents is "corporate employee," accounting for 53.35% of the total. Students account for 20.12% of the respondents, followed by self-employed at 11.08%, government and public institutions at 6.7%, self-employed individuals at 3.5%, and retired individuals at 2.33%.

Table 17 The result of monthly income

Monthly Income	Total	Percent (%)
Less than RMB 2,000	53	15.45%
RMB 2,000-5,000	219	63.85%
RMB 5,000-8,000	46	13.41%
More than RMB 8,000	25	7.29%
Total	343	100%

According to Table 17, the highest proportion of respondents' monthly income is in the range of RMB 2,000-5,000, accounting for 63.85% of the total. The proportion of respondents with a monthly income below RMB 2,000 is 15.45%, while those with a monthly income in the range of RMB 5,000-8,000 account for 13.41%. The proportion of respondents with a monthly income above RMB 8,000 is 7.29%.

From the statistics of basic information in the first part of the questionnaire, it can be observed that the survey data is distributed among different genders, age groups, educational levels, occupations, and income brackets. Particularly, the young to middle-aged group, aged 18-45, stands out. They possess a university-level education, stable employment, and a reliable income source, indicating a relatively stable economic and

cultural awareness. This group with these characteristics represents a significant proportion of the survey, making the data reasonably representative. These data can be effectively utilized to analyze museum cultural and creative products, providing valuable insights for relevant decision-making and research.

## PART 2: Visitor's intention collection

Table 18 The purpose of visiting Henan Museum

Purpose	Total	Percent (%)
Study Research	55	16.03%
Family Education	53	15.45%
Personal Interest	125	36.44%
Work Needs	5	1.46%
To visit special exhibitions	24	7%
Travel and tourism	55	16.03%
Other	26	7.58%
Total	343	100%

From the table 18, the highest proportion of respondents visited the Henan Museum out of personal interest, accounting for 36.44%. The proportions for those visiting for study research purposes, as well as for travel and tourism, are the same, both at 16.03%. The next highest proportion is for family education purposes, accounting for 15.45%. The proportions for visiting special exhibitions and for work needs are relatively low, at 7% and 1.46% respectively.

Table 19 The likability ranking of the “Nine Precious Cultural Relics” of Henan Museum

Cultural Relic	Total	Percent (%)
The Jiahu Bone Flute	158	46.06%
The Duling Square Ding	140	40.82%
Fuhao's Owl-shaped Bronze Zun	125	36.44%
The Jade Handle Iron Sword	45	13.12%
The Lotus Crane Square Pot	129	37.61%
The Cloud Pattern Bronze Jin	55	16.03%
Four Divine Creatures Cloud Diagram Mural	71	20.7%
The Golden Jian of Empress Wu Zetian	99	28.86%
Ru Kiln Sky Blue Glazed Carved Goose-neck Vase	133	38.78%
The number of valid responses	343	

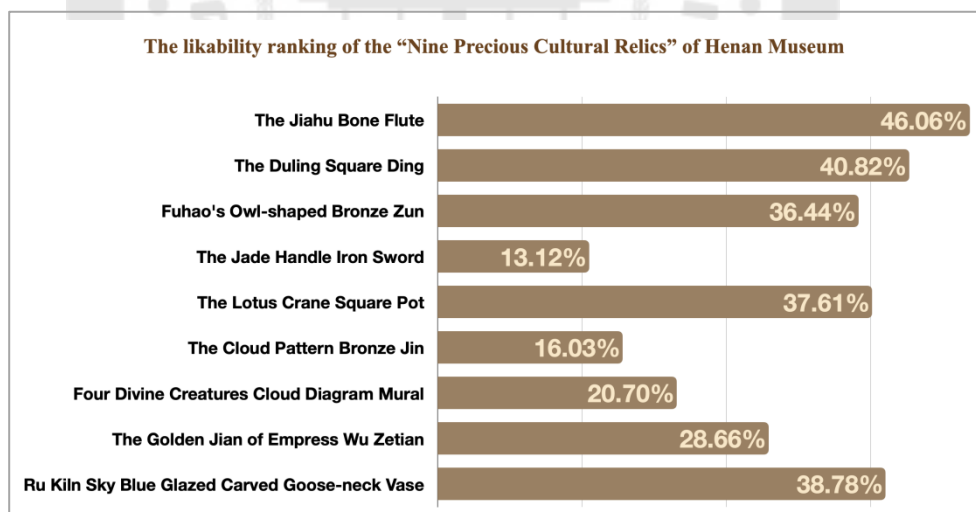


Figure 27 The likability ranking of the “Nine Precious Cultural Relics” of Henan Museum

Source: Xu Mengjin (2023)

From the table 19, respondents' likability rankings for the "Nine Precious Cultural Relics" at Henan Museum are as follows:

1. The Jiahu Bone Flute - Likability: 46.06%
2. The Duling Square Ding - Likability: 40.82%
3. Ru Kiln Sky Blue Glazed Carved Goose-neck Vase - Likability: 38.78%
4. The Lotus Crane Square Pot - Likability: 37.61%
5. Fuhao's Owl-shaped Bronze Zun - Likability: 36.44%
6. The Golden Jian of Empress Wu Zetian - Likability: 28.66%
7. Four Divine Creatures Cloud Diagram Mural - Likability: 20.70%
8. The Cloud Pattern Bronze Jin - Likability: 16.03%
9. The Jade Handle Iron Sword - Likability: 13.12%

According to the bar chart (Figure 27), the top three cultural relics with the highest likability among the respondents are the Jiahu Bone Flute, the Duling Square Ding, and Ru Kiln Sky Blue Glazed Carved Goose-neck Vase. On the other hand, the Jade Handle Iron Sword has relatively lower likability among the respondents.

Table 20 The impressive features of the selected cultural relics

Feature	Total	Percent (%)
Material	120	34.99%
Color	146	42.57%
Pattern	163	47.52%
Shape	57	16.62%
Function	51	14.87%
Using Scenario	37	10.79%
Cultural Significance	218	63.56%
Emotional Value	58	16.91%
The number of valid responses	343	

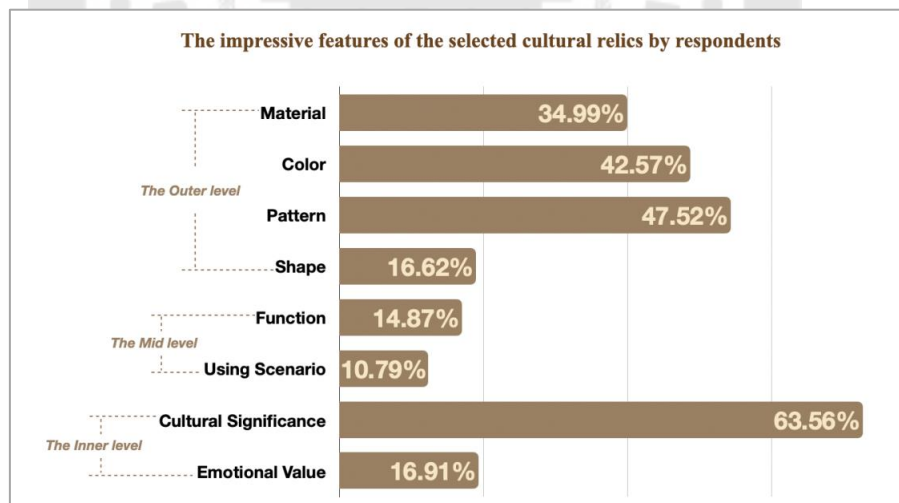


Figure 28 The impressive features of the selected cultural relics by respondents,

Source: Xu Mengjin (2023)

From the table 20, among the features of cultural relics, the majority of respondents found the cultural significance of the artifacts to be the most impressive,

accounting for 63.56%. Following this, 47.52% of the respondents chose the pattern features of the artifacts, and 42.57% mentioned the color as the most striking aspect. The material of the artifacts was chosen by 34.99% of the respondents. The emotional value and the shape of the artifacts had a similar level of impact, with 16.91% and 16.62% of respondents selecting them, respectively. The function and using scenarios of the cultural relics received relatively lower attention, with proportions of 14.87% and 10.79%, respectively.

As shown in the bar chart (Figure 28), among the three levels of features for the “Nine Precious Cultural Relics” at Henan Museum, the cultural significance, representing the inner level, received the most attention from museum visitors. The pattern and color, representing the outer level, ranked second in terms of attention, while the function and using scenario, representing the mid level, received relatively lower levels of attention.

Table 21 The purpose of buying cultural and creative products

Purpose	Total	Percent (%)
Collection and commemoration	247	72.01%
Practical and functional	60	17.49%
Gift to friends and relatives	68	19.83%
Decorate life and enhance the cultural atmosphere in daily life	142	41.4%
Other	25	7.29%
The number of valid responses	343	

According to Table 21, a high percentage of respondents, 72.01%, purchased cultural and creative products as collection and commemoration. The second most common purpose for purchasing cultural and creative products was to decorate life and enhance the cultural atmosphere in daily life, accounting for 41.4%. The purpose of gifting to friends and relatives, as well as their practical and functional, were almost equally popular, with proportions of 19.83% and 17.49%, respectively.

Table 22 The type of buying cultural and creative products in Henan Museum

Type	Total	Percent (%)
Fine collection category (reproduction version of cultural relics)	225	65.60%
Lifestyle products category	111	32.36%
Office stationery category	80	23.32%
Food category	17	4.96%
Jewelry category	89	25.95%
Other	33	9.62%
The number of valid responses	343	

From the results in table 22, it can be concluded that the Fine Collection category (reproduction version of cultural relics) is the most preferred product category among respondents, accounting for 65.60%. Following this, Lifestyle products category, with a proportion of 32.36%. The Jewelry and Office Stationery categories received similar results, accounting for 25.95% and 23.32%, respectively. The Food category has a relatively smaller demand, with a proportion of 4.96%.

Table 23 The factors that inspire the desire to buy cultural and creative products

Factor	Total	Percent (%)
Cheap price	94	27.41%
High functionality and practical value	125	36.44%
Product aesthetics	150	43.73%
Creativity of the product	114	33.24%
Novelty-seeking	24	7%
Interactivity and fun of the product	75	21.87%
Exquisite packaging	18	5.25%
Good quality and material	36	10.5%
Commemorative value	141	41.11%
Other	17	4.96%
The number of valid responses	343	

From the results in Table 23, it can be observed that Product aesthetics is the most significant factor influencing consumer purchasing behavior, accounting for 43.73%. The next influential factor is the Commemorative Value of the product, which impacts the purchasing decisions of respondents at a proportion of 41.11%. High functionality and practical value, along with Creativity of the product, have similar effects on respondents' purchase intentions, with proportions of 36.44% and 33.24% respectively. Cheap price and Interactivity and fun of the product stimulate consumer buying behavior with proportions of 27.41% and 21.87%, respectively. On the other hand, factors like Good quality and material, Novelty-seeking, and Exquisite packaging have relatively lower impact on respondents' purchasing behavior, with proportions of 10.5%, 7%, and 5.25%, respectively.

Table 24 The price willing to accept

Price	Total	Percent (%)
RMB 6-10	35	10.2%
RMB 10-20	51	14.87%
RMB 20-50	71	20.7%
RMB 50-100	72	20.99%
RMB 101-200	46	13.41%
RMB 201-500	33	9.62%
RMB 500-1000	24	7%
RMB 1,000 or more	11	3.21%
The number of valid responses	343	100%

From the results in Table 24, it can be observed that respondents are most willing to accept cultural and creative products with a single-item price in the ranges of RMB 50-100 and RMB 20-50, with both having very close proportions of 20.99% and 20.7%, respectively. The next preferred price range is the lower bracket of RMB 10-20, which is accepted by 14.87% of the respondents. The price range of RMB 101-200 received acceptance from 13.41% of the respondents. There is a similar level of acceptance for the lower price range of RMB 6-10 and the medium-high price range of RMB 201-500, with proportions of 10.2% and 9.62%, respectively. The higher price ranges of RMB 500-1000 and RMB 1,000 or more have relatively lower acceptance rates, with proportions of 7% and 3.21%, respectively.

From these results, it can be seen that consumers are more willing to accept cultural and creative products with single-item prices in the middle to lower price ranges.

Table 25 Purchased creative products from Henan Museum or not

Purchased	Total	Percent (%)
Yes	48	13.99%
No	295	86.01%
Total	343	100%

From the results in Table 25, a significant proportion of respondents, 86.01%, have not purchased any cultural and creative products from Henan Museum. Only 13.99% of the respondents have had purchasing experience, which indicates that the purchase rate of cultural and creative products from Henan Museum is relatively low.

Table 26 Factors do not meet the expectations of buying cultural and creative products

Factor	Total	Percent (%)
Similar to other museum product types, lack of character	80	27.12%
Low quality of products	64	21.69%
Weak practicality	97	32.88%
Lack of cultural expression	65	22.03%
High price	139	47.12%
Lack of aesthetics	41	13.9%
Lack of creativity Inability to meet individual needs	55	18.64%
Other	20	6.8%
The number of valid responses	295	

According to Table 26, nearly half of the respondents, 47.12%, consider the high price of museum cultural and creative products as a factor that does not meet their

purchasing expectations. The next influential factor is "Weak practicality," which affects the purchasing decisions of 32.88% of the respondents. 27.12% of the respondents believe that the existing products are "Similar to other museum product types, lack of character," which does not meet their purchase expectations. "Lack of cultural expression" and "Low quality of products" account for 22.03% and 21.69%, respectively. 18.64% of the respondents think that the existing products "Lack creativity and inability to meet individual needs," while only 13.9% of the respondents believe that "Lack of aesthetics" is a reason that does not meet their purchasing expectations. From the results, it can be seen that respondents generally approve of the aesthetics of the existing products but find issues with their high prices and weak practicality.

#### Mult Response Groups of Visitor's intention collection

The second part of the questionnaire consists of multiple-choice questions. The survey results for this section will be analyzed using SPSS software and presented in the form of cross-tabulations using Mult Response Groups. The data will be categorized based on respondents' age, education, occupation, and monthly income. The questions included in this analysis are:

7. Please choose your favorite of the "Nine Precious Cultural Relics" of the Henan Museum.

8. Which features of the cultural relics impressed you?

9. If you buy cultural and creative products, what is your purpose?

10. Which type of cultural and creative products in Henan Museum will you buy?

11. What are the factors that inspire your desire to buy cultural and creative products?

14. What are the factors that do not meet your expectations when buying cultural and creative products?

Regarding the intention to purchase cultural and creative products, a significant proportion of respondents indicated that they would buy such products for "Collection and Commemoration" purposes, with 247 selections and a percentage of 72%.

In terms of categories of cultural and creative products, the "Fine collection category" (reproduction version of cultural relics) is the most preferred product category by consumers, with 225 selections, accounting for 65.6%.

Regarding the factors influencing consumer purchasing behavior, "Product aesthetics" and "Commemorative value" emerged as significant and closely ranked factors. They were selected 150 and 141 times, representing 43.7% and 41.1% respectively.

Nearly half of the respondents, 138 out of them, or 47.12%, considered the "High Prices" of museum cultural and creative products as a factor that did not meet their purchasing expectations.

Among all the variables considered, the groups with the highest proportions of

selections were relatively concentrated. These groups include respondents aged 26-35 years, those with a "University" education level, "Corporate employee" occupation, and a monthly income of "RMB2000-5000". These groups demonstrated a relatively unified choice pattern and can be seen as representative of the overall preferences of the respondents regarding cultural relics and cultural creative products.

PART 3: Consumer's personalized demands collection (Open-ended question, based on the questionnaire structure, 48 respondents answered "Yes" to Question 13 and provided the following responses.)

15. Result of "Apart from the Henan Museum, name one impressive cultural and creative product from other museums and one factor that influenced you to buy it."

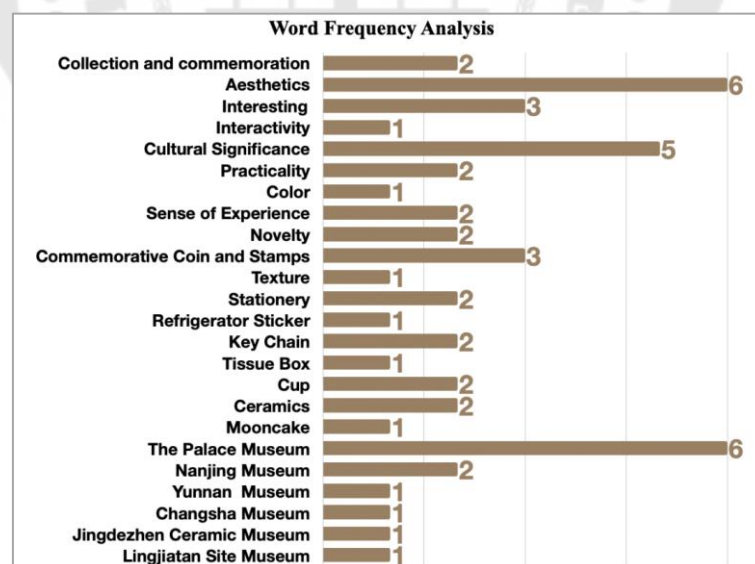


Figure 29 Word Frequency Analysis of cultural and creative product from other museums,

Source: Xu Mengjin (2023)

According to the question, a word frequency analysis was conducted (Figure 29).

The results show that the existing cultural and creative products from the Palace Museum have a relatively high acceptance, being mentioned 6 times. Similarly, product aesthetics, as a factor influencing consumer purchases, was mentioned 6 times. The cultural significance of the products was mentioned 5 times, and the interesting aspect was mentioned 3 times. Regarding specific products, the most mentioned ones were commemorative coins and stamps that respondents have purchased, with a total of 3 mentions. From the results, it can be seen that respondents who have had experience purchasing cultural and creative products show a certain level of emphasis on product aesthetics and cultural significance.

16. Result of “What kind of products do you think the creative products shop of the Henan Museum lacks?”

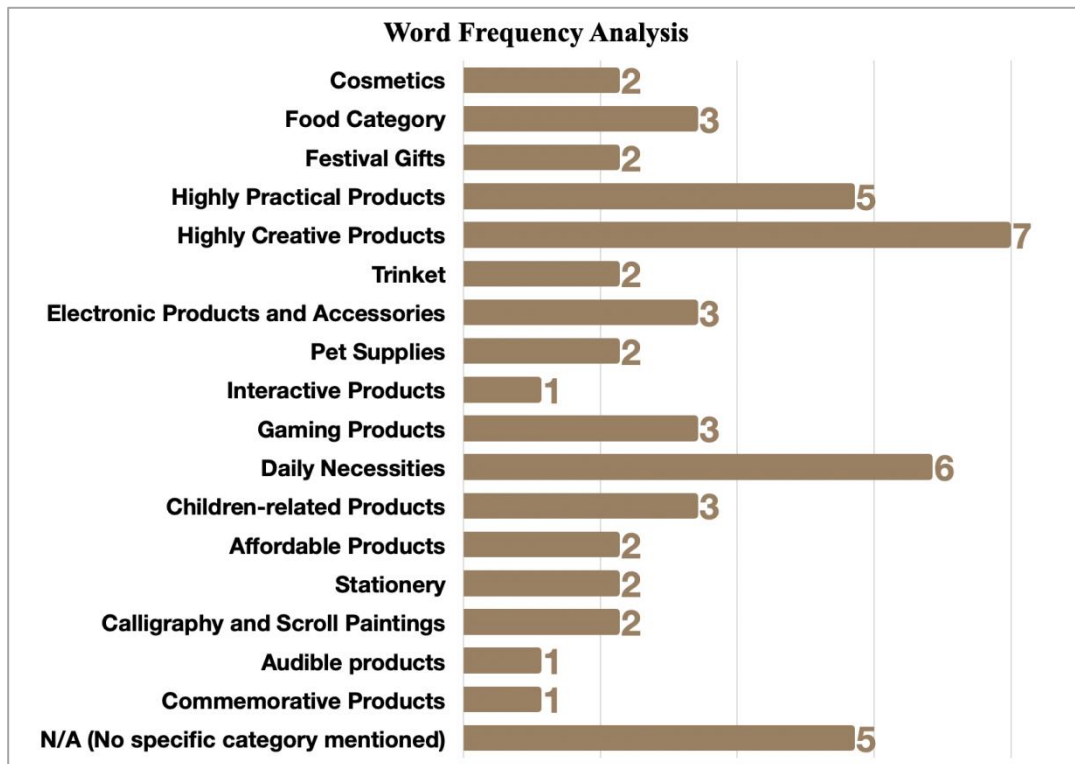


Figure 30 Word Frequency Analysis of the creative products shop of the Henan Museum

lacks,

Source: Xu Mengjin (2023)

Based on the question, a word frequency analysis was conducted (Figure 30).

The results show that respondents most desire to see an increase in Highly Creative Products, which was mentioned 7 times. Daily Necessities were mentioned 6 times as the second most desired product category. Besides, no specific category mentioned 5 times. Similarly, there were 5 mentions suggesting a desire for more Highly Practical Products. Food Category, Electronic Products and Accessories, Gaming Products, and Children-related Products were all mentioned 3 times each. From the results, it can be

seen that respondents have a high demand for highly creative daily products, and their preferences tend to be more youthful and entertainment-oriented.

17. Result of “ What do you think is the difference between cultural and creative products purchased by museums and ordinary products in daily use? ”

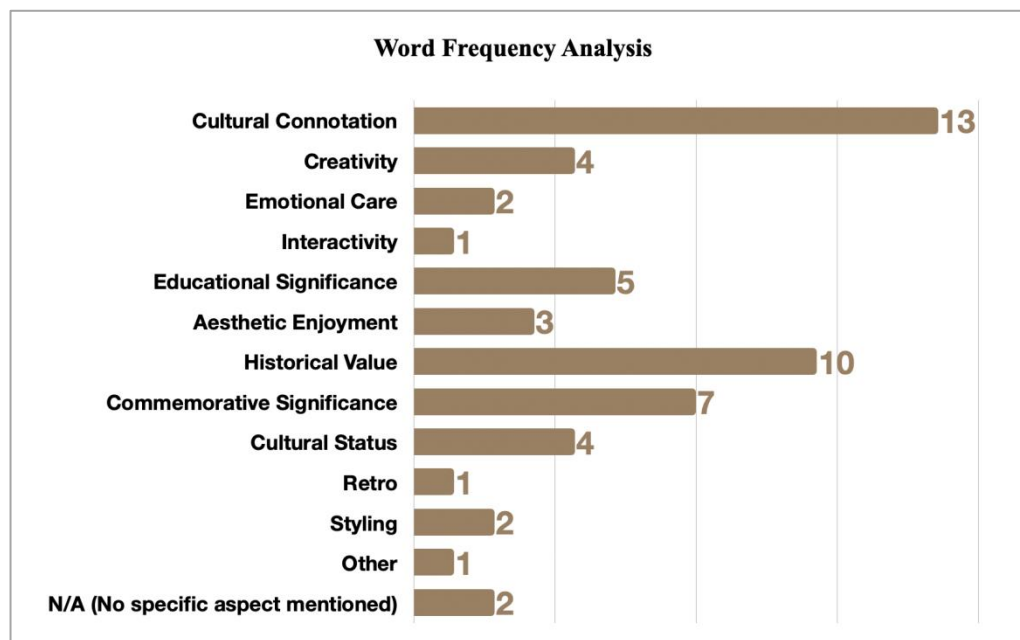


Figure 31 Word Frequency Analysis of the difference between cultural and creative products purchased by museums and ordinary products in daily use

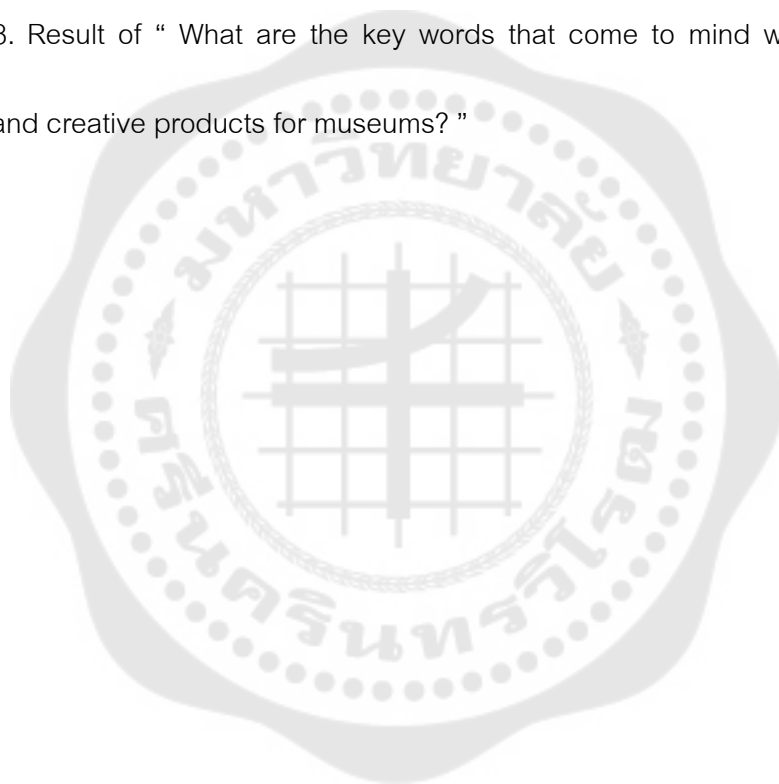
Source: Xu Mengjin (2023)

Based on the question, a word frequency analysis was conducted (Picture 31).

From the results, it can be seen that Cultural Connotation is the most important factor that respondents consider to differentiate cultural and creative products from ordinary products in daily use, being mentioned 13 times. The Historical Value and Commemorative Significance are also perceived as important factors for cultural and

creative products, with 10 and 7 mentions, respectively. Creativity and Cultural Status were each mentioned 4 times as significant factors distinguishing cultural and creative products from everyday products. From the results, it is evident that respondents have a general understanding and perception of cultural and creative products as having rich cultural connotation and historical and commemorative significance.

18. Result of “ What are the key words that come to mind when you think of cultural and creative products for museums? ”



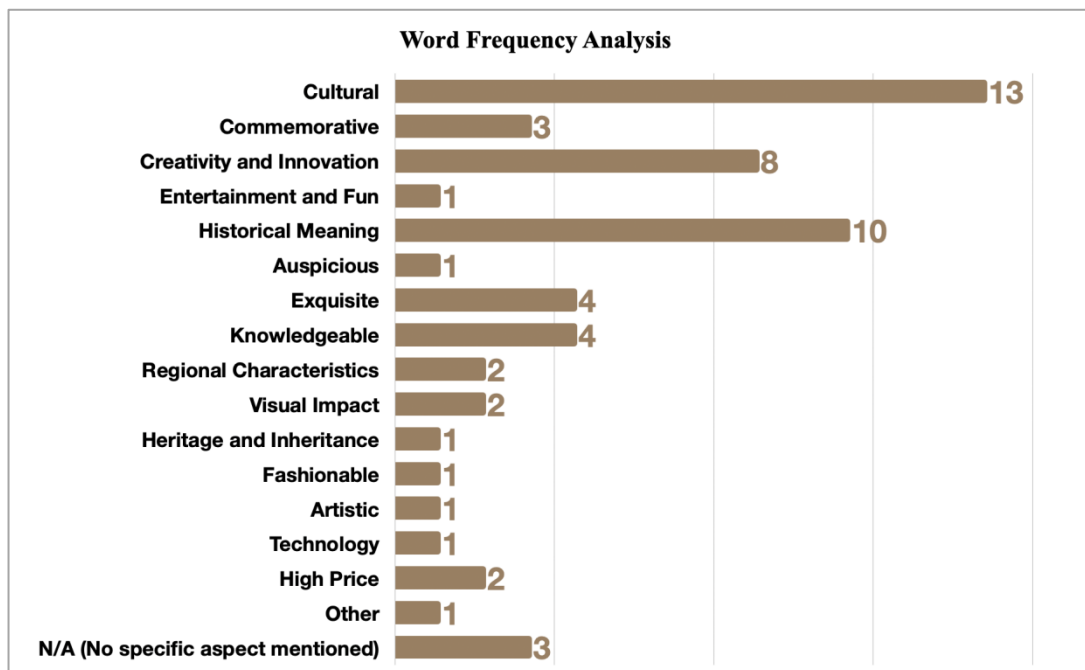


Figure 32 Word Frequency Analysis of the keywords of museum cultural and creative products

Source: Xu Mengjin (2023)

Based on the question, a word frequency analysis was conducted (Figure 32).

The results show that "Culture" is the primary positioning that respondents associate with cultural and creative products from museums, being mentioned 13 times. Following that, "Historical Meaning" and "Creativity and Innovation" were mentioned 10 and 8 times, respectively, as key attributes of cultural and creative products. "Exquisite" and "Knowledgeable" were also recognized as important characteristics of these products by the respondents. From the results, it is evident that respondents have a profound impression of the cultural and historical connotations of cultural and creative products, and creativity and innovation are equally important attributes associated with these

products.

According to the results of the questionnaire, it can be seen that the most of the respondents are between 26 and 35 years old, and most of them have a certain level of education. The Jiahu Bone Flute ranked No.1 in likability of the nine precious cultural relics, and the most impressive feature is cultural significance. In terms of cultural and creative products, with product aesthetics, the price is between RMB 50-100 reproduction version of cultural relics is a cultural and creative product that visitors are willing to buy.

With cultural connotation, high creativity and practicality, daily necessities can be the direction of the future development of cultural and creative products of Henan Museum.

### Step 3: Interview

The summaries of the interviews with the two cultural experts and the two design experts will be summarised according to the objectives of the study.

#### 1) Summary of Cultural Expert Interview:

- ① Jia Zhengxian

Table 27 Jia Zhengxian's suggestion on the extraction of cultural elements

<p>Suggestion on the effective extraction of cultural elements from heritage</p>	<p><b>Extraction of the Outer Tangible Level</b></p> <ul style="list-style-type: none"> <li>● It is not only about presenting the external elements of cultural relics such as materials, colors, and patterns, but also about understanding what these elements intended to convey in their cultural context at that time. Merely showcasing the superficial aspects of culture cannot meet the demands of cultural communication.</li> <li>● Each cultural relic has its unique form, and it should be collected and analyzed to identify the cultural resources that can be utilized for different relics.</li> <li>● The integration of cultural relic elements with products should not be arbitrary; rather, it requires a deep understanding and respect for the culture itself.</li> </ul> <p><b>Extraction of the Mid Behavior Level</b></p> <ul style="list-style-type: none"> <li>● It is important to focus on the relationship between products and people. The essential attribute of a product is its functional aspect.</li> <li>● Cultural and creative products' functionality should not rigidly replicate the inherent functions of historical artifacts. They can be associated with the historical usage context or entirely develop new functional experiences.</li> </ul>
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Table 27 (Continued)

<p>Suggestion on the connection to modern life through cultural and creative products</p>	<p><b>Extraction of the Inner Intangible Level</b></p> <ul style="list-style-type: none"> <li>● Cultural and creative products can enhance the general understanding of a specific culture among the masses. The essence of culture lies in the presentation of "spiritual culture," and the cultural core presented through traditional cultural elements has been modernized through transformation.</li> <li>● It allows for the redefinition of cultural value, the creation of new cultural experiential contexts, the conceptualization of innovative product scenarios, and the juxtaposition of traditional and modern elements to create a sense of contrast. Choosing culturally resonant content can evoke profound emotions. Additionally, through product narratives, consumers can establish a personal connection and achieve empathy.</li> <li>● Cultural and creative products represent the tangible continuation and inheritance of culture, embodying a unique sense of cultural belonging and identity that is specific to the Chinese people.</li> <li>● Culture should not only be a historical legacy but also a realm of innovation and development. China's economy has transitioned from a product-oriented economy to a service-oriented one, and further to an experience-oriented economy. Within this context, people's values and lifestyles have evolved. Consumption is no longer solely about acquiring the basic functions of products; instead, there is a growing desire for products to provide deeper experiential dimensions. In contrast to passive acceptance, individuals increasingly seek pleasure through active engagement.</li> </ul>
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② Gao Chen

Table 28 Gao Chen's suggestion on the extraction of cultural elements

<p>Suggestion on the effective extraction of cultural elements from heritage</p>	<p><b>Extraction of the Outer Tangible Level</b></p> <ul style="list-style-type: none"> <li>● There are generally three forms of extracting external cultural elements from cultural relics: Replication, Extraction, and Interpretation. Extraction and Interpretation are more comprehensive in conveying cultural content. In essence, it involves reinterpreting surface cultural elements through methods such as extraction, separation, synthesis, and reconstruction.</li> <li>● The process of extracting cultural elements should take into account the compatibility between the product carrier and the symbolic elements, while also fully considering the form and functionality of the product. The expression of cultural elements can involve innovations in materials and carriers, among other aspects.</li> </ul> <p><b>Extraction of the Mid Behavior Level</b></p> <ul style="list-style-type: none"> <li>● The design of cultural and creative products based on cultural relics should consider functional substitution, even breaking away from the original functions of the relics. Starting from the aspects of clothing, food, housing, transportation, and leisure that are part of people's daily lives, new functions that cater to current needs can be endowed to cultural and creative products.</li> <li>● Alternatively, the inherent functional attributes of cultural relics can be retained, presenting them in forms that better align with modern lifestyles and habits.</li> </ul>
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Table 28 (Continued)

<p>Suggestion on the connection to modern life through cultural and creative products</p>	<p><b>Extraction of the Inner Intangible Level</b></p> <ul style="list-style-type: none"> <li>● One approach is to leverage the history and stories behind cultural relics, creating narrative contexts and cultural atmospheres that offer people immersive cultural experiences.</li> <li>● Another strategy involves bridging the intrinsic cultural layers of relics with modern novelty, fun, experiential, practical, and technological aspects.</li> <li>● The purpose of cultural and creative products is to enhance public identification and passion for culture. Therefore, the design of these products should be more interesting, useful, and artistic compared to everyday ordinary products. Using everyday items as carriers, they should embody a cultural atmosphere and quality of life. This can be achieved through the details, style, materials, and other aspects of the product.</li> <li>● The design of cultural and creative products should target the younger demographic, as speaking history in the language of the youth is crucial to ensure that history is not lost on them. Therefore, these products should primarily cater to the younger generation, reflecting the characteristics of the current era.</li> <li>● Cultural and creative products should not only fulfill basic functionality but also achieve emotional design and humanistic care at a spiritual level. For instance, products can incorporate personalization, customization, and intelligence to create a more personalized and thoughtful experience for individuals.</li> </ul>
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## 2) Summary of Design Expert Interview:

## ① He Zijiang

Table 29 He Zijiang's suggestion on the extraction of cultural elements

<p>Suggestion on the effective extraction of cultural elements from heritage</p>	<p><b>Extraction of the Outer Tangible Level</b></p> <ul style="list-style-type: none"> <li>● In the extraction of external cultural elements from cultural relics, the selection of materials should be rational and aligned with the everyday logic of contemporary life.</li> <li>● When extracting patterns, it's advisable to avoid direct 1:1 replication. Instead, partial selection or appropriate deformation of patterns based on cultural relics can be employed to create a sense of form and extend creativity. Combining color coordination that aligns with modern aesthetics is important for the design.</li> <li>● Similarly, when extracting forms, they should be in harmony with everyday life scenarios. Skillfully incorporating cultural relic forms into products that align with the behavioral logic and habits of modern people is essential.</li> </ul> <p><b>Extraction of the Mid Behavior Level</b></p> <ul style="list-style-type: none"> <li>● Many historical uses of cultural relics are less relevant in modern life. Directly incorporating these uses can make products difficult to integrate into modern living.</li> <li>● However, it's possible to extract and integrate sensory elements such as sounds, smells, and tactile sensations associated with the historical use of relics. This approach extends beyond visual perception, engaging people's senses and immersing them in historical scenarios, creating instant sensory experiences.</li> </ul>
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Table 29 (Continued)

<p>Suggestion on the connection to modern life through cultural and creative products</p>	<p><b>Extraction of the Inner Intangible Level</b></p> <ul style="list-style-type: none"> <li>● The extraction of inner intangible elements from cultural relics primarily focuses on conveying the aesthetic significance and cultural essence of the relics. Often, this is achieved through the use of metaphors, analogies, and symbolism to express the connection between the relics and the products.</li> <li>● Another approach is to find points of alignment between the relics themselves and the aspirations of modern individuals, thereby establishing an emotional connection between cultural and creative products and consumers.</li> <li>● Cultural and creative products need to fulfill certain functional requirements. They use modern everyday items as carriers, grafting ancient cultural elements onto them. The distinctive features of cultural relics are transformed into functional aspects of daily life, thus creating a cultural ambiance within real-life usage scenarios.</li> <li>● The design of cultural and creative products presents a cultural highlight, delving deep into the intricacies of a particular culture.</li> <li>● The medium of cultural and creative products can also be low-frequency used items in daily life, serving a specific function, but the emphasis is on creating a cultural ambiance in everyday life and highlighting the quality of life.</li> </ul>
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Table 30 Cui Jie's suggestion on the extraction of cultural elements

<p>Suggestion on the effective extraction of cultural elements from heritage</p>	<p><b>Extraction of the Outer Tangible Level</b></p> <ul style="list-style-type: none"> <li>● The extraction of visual elements from cultural relics can be categorized into three approaches: holistic application, partial extraction, and deconstructive reassembly.</li> <li>● Select the elements that best represent the relic. Focus on one or two distinctive features for in-depth expression, while avoiding visual clutter caused by excessive design.</li> </ul> <p><b>Extraction of the Mid Behavior Level</b></p> <ul style="list-style-type: none"> <li>● The first approach involves designing cultural and creative products that maintain the original function of the cultural relic. These products share the same usage scenarios as the prototype relics, either extending or expanding upon their original functions.</li> <li>● The second approach aims to preserve the external characteristics of the cultural relic while completely changing its intended use, integrating it into modern life scenarios.</li> </ul> <p><b>Extraction of the Inner Intangible Level</b></p> <ul style="list-style-type: none"> <li>● The extraction of intangible elements from cultural relics aims to provide a sensory and psychological understanding for cultural and creative products.</li> <li>● Consumers can become active participants and creators in the process. During the extraction of non-material aspects, it's essential to consider whether the product can establish an emotional connection with consumers.</li> <li>● Through interactive engagement with the product, consumers can have a more comprehensive experience, a stronger sense of immersion, and gain a deeper understanding of the cultural significance embedded within the product.</li> </ul>
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Table 30 (Continued)

<p>Suggestion on the connection to modern life through cultural and creative products</p>	<ul style="list-style-type: none"> <li>● Consumers' rational choices for cultural and creative products ultimately rely on functionality and experiential aspects. First and foremost, it is important to align the design with the functional requirements of the product. By employing techniques such as simplification, exaggeration, and stylization, the symbolic and stylistic elements of cultural relics can be artistically transformed to seamlessly integrate with the intended functionality. This ensures that consumers perceive a harmonious blend of artistic expression and practical utility in the product.</li> <li>● It is important to choose cultural relics that can effectively bridge the gap between ancient and modern life. Through techniques such as replication, miniaturization, enlargement, or functional adaptation, the essence of the relics' appearance can be retained while undergoing modernization in design. This approach allows for a seamless integration of the relics into contemporary contexts while preserving their inherent historical characteristics.</li> <li>● Redefining the value of culture involves delving into consumer needs and the unique features of the museum, uncovering aspects that previous products may have overlooked, and establishing differentiated services. This process entails a thorough understanding of consumer demands and aligning them with the distinct attributes of the museum, thereby creating a unique and tailored experience that sets the products apart from the competition.</li> </ul>
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Based on the interviews with cultural and design experts, the following points can be summarized and categorized:

Table 31 Summarized and categorized of experts' suggestion

<p>The effective extraction of cultural elements from heritage</p>	<p><b>Extraction of the Outer Tangible Level</b></p> <p>Three Approaches to Extracting External Elements from Cultural Relics:</p> <ol style="list-style-type: none"> <li>1. Replication Approach: Directly copying and applying the entire cultural relic's visual elements.</li> <li>2. Extraction Approach: Selectively extracting specific features or abstracting and summarizing certain aspects of the cultural relic.</li> <li>3. Interpretation Approach: Deconstructing and recombining the cultural relic's essence based on a deeper understanding of its context.</li> </ol> <ul style="list-style-type: none"> <li>● Key Considerations for Extracting Elements:</li> <li>● Focus on highlighting one or two most representative features of the cultural relic.</li> <li>● Ensure alignment between the extracted elements and the intended functionality of the product.</li> <li>● Extraction should be reasonable and compatible with modern behaviors and lifestyle habits.</li> </ul> <p><b>Extraction of the Mid Behavior Level</b></p> <ul style="list-style-type: none"> <li>● Preserve the original functions of cultural relics or expand and extend them.</li> <li>● Replace functions to break away from the original functions of cultural relics and graft new functions that align with modern lifestyles onto the cultural and creative products.</li> <li>● Fully engage people's five senses in cultural and creative products, creating various sensory experiences.</li> </ul>
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Table 31 (Continued)

<p>The connection to modern life through cultural and creative products</p>	<p><b>Extraction of the Inner Intangible Level</b></p> <ul style="list-style-type: none"> <li>● Create a new cultural atmosphere and cultural experience, and establish new story contexts.</li> <li>● Find points of convergence between the cultural significance of artifacts and modern people's thoughts, establishing an emotional connection between cultural relics and consumers.</li> <li>● Enhance the interactivity and experiential aspects of cultural and creative products, adding novel and enjoyable usage experiences.</li> <li>● In order to effectively convey the cultural essence of cultural relics, the design of cultural and creative products should avoid direct 1:1 replication of the artifacts.</li> <li>● Explore overlooked functional aspects or design perspectives in daily products to establish distinctive characteristics for cultural and creative products.</li> <li>● Cultural and creative products should be anchored in functionality and establish a meaningful connection with modern life.</li> <li>● Reflect the sense of quality in the product through details, style, materials, and concepts.</li> <li>● Interactive products can establish a communicative relationship where individuals actively experience and engage with the product.</li> </ul>
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From the interview, it can be seen that in terms of “Extraction of the Outer Tangible Level”, there are three approaches to extracting outer elements from cultural relics: Replication Approach, Extraction Approach, Interpretation Approach.

In terms of “Extraction of the Mid Behavior Level”, the products can break away

from the original functions of cultural relics and endowed new functions that align with modern lifestyles.

In terms of “Extraction of the Inner Intangible Level”, the products should get points of convergence between the cultural significance of cultural relics and modern people's thoughts, establishing an emotional connection between cultural relics and consumers.

In terms of the integration of history and contemporary life. The design should avoid direct 1:1 copying of cultural relics. The products should reflect the sense of quality in the product through details, style, materials, and concepts. Products should be based on functionality to establish meaningful connections with modern life and enhance interactivity. Cultural atmosphere and experience can be created through products to establish a story contexts.

#### **Step 4: First draft design**

Based on the results of the previous questionnaire, the Jiahu Bone Flute received the highest level of likability among the "Nine Precious Cultural Relics" at the Henan Museum. This design initiative takes the Jiahu Bone Flute as its prototype for developing cultural and creative products. The design process will incorporate the analysis of the cultural relic on three different levels, along with the questionnaire and interview results.

The design concept is shown below.

##### (1) Outer (Tangible Level)

###### 1) Questionnaire Result

According to the results of Question 8 of the Questionnaire, "Pattern" and "Colour" are the most impressive external features to the respondents. Since the Jiahu bone flute has no patterned decorations, the colour features of the flute will be

extracted and used in the design.

## 2) Interview Result

Gao Chen suggested that "The process of extracting cultural elements should take into account the compatibility between the product carrier and the symbolic elements." At the same time, design expert He Zijiang proposed "Combining colour coordination that aligns with modern aesthetics is important for the design." All the experts suggested that for the external presentation of cultural elements, 1:1 exact copy should be avoided, cultural elements should be presented artistically on the basis of understanding the connotation of cultural relics. The colour of the Jiahu bone flute can be used on the surface of the product in the product design.

## 3) Analysis Result

According to the analysis of the Jiahu Bone Flute in Chapter 4 Step1, the Jiahu Bone Flute is the colour of bone, similar to beige.

### (2) Mid (Behavioral Level)

#### 1) Questionare Result

According to the results of Question 10 of the Questionnaire, in addition to the "Fine collection category (reproduction version of cultural relics)", the "Lifestyle products category" is the category of cultural and creative products that respondents are most willing to buy. In addition, the 12th question of the Questionnaire shows that the price range of cultural relics that the respondents are most willing to accept is RMB50-100, so

the design is positioned as a small and medium-sized lifestyle product that is frequently used in daily life.

## 2) Interview Result

Replace functions to break away from the original functions of Jiahu Bone Flute.

Jia Zhenxian, proposed that "The essential attribute of a product is its functional aspect.". At the same time, all four experts suggested that product design can replace the original function of cultural relics and develop a new function that is more in line with the living habits of modern people. Gao Chen suggested that product design can come from people's daily life. Therefore, based on the results of the expert interviews, the product can be given a brand new function and take people's daily life as the function carrier.

## 3) Analysis Result

Meeting the spiritual needs of the ancestors

The original function of Jiahu bone flute is to be used in large events to express the good wishes for life. In order to satisfy the need for cultural and creative products to be more integrated into contemporary life, the functionality of the product can be set to give it a new and more in line with the habits of modern people.

### (3) Inner (Intangible Level)

#### 1) Questionare Result

According to the results of Question 8, the most impressive characteristic of

cultural relics is "Cultural Significance", while the results of Question 17 show that "Cultural Connotation" is the characteristic that respondents think distinguishes cultural and creative products from ordinary products in daily use. The result of question 17 shows that "Cultural Connotation" is the feature that respondents believe distinguishes cultural and creative products from ordinary products. The cultural atmosphere of Jiahu Bone Flute should be conveyed in the design of cultural and creative products.

## 2) Interview Result

Gao Chen suggests that the design should excavate the stories behind cultural relics to create an immersive cultural experience for users. Both Jia Zhengxian and Cui Jie emphasize that product design should incorporate user interaction, enabling users to actively engage with the product and have a unique and differentiated experience.

In the design of cultural and creative products, the primary focus should be on portraying the cultural ambiance of the relics. It can also be based on the more frequently used lifestyle products in daily life, with a contrasting shape to create a distinctive cultural image, establishing a unique and distinctive experience for the product.

## 3) Analysis Result

The cultural background of the crane in Jiahu bone flute is the emotional link between ancient people and modern Chinese people. The cranes are regarded as the spiritual aspirations of Chinese civilization, and are used by modern people to signify

longevity, beauty and wealth.

So the crane can be used as the main cultural element of the product. The crane can rendering the cultural atmosphere.

As Figure 33 shown, in terms of the Outer (Tangible Level) of the product the design will focus on extracting visual elements directly from the Jiahu Bone Flute itself. Since the flute lacks intricate patterns, the emphasis will be on its colour characteristics, which is similar to beige. Colour features will be used on the surface of the product. Incorporating Graphic and Abstract Extraction in the Design of the Bone Flute. Utilize simplified and abstracted line drawings that depict the distinctive shape of the bone flute. These lines can be stylized to evoke the flute's curves and proportions, conveying its essence through minimalistic yet visually appealing forms.

In terms of the Outer Mid (Behavioral Level) of the product design, a small table lamp serves as the medium to infuse the product with an entirely new function unrelated to the artifact itself. In order to establish a unique and distinctive experience for the product, the lamp's overall form takes the shape of a book, this will distinguish it from the common image of table lamps in daily life, creating a sense of contrast and novelty. To enhance user interaction, the lamp is activated by opening the book-like structure, allowing the pages to illuminate, this will also give users a new sensory experience.

In terms of the Inner (Intangible Level) of the product design, the cultural background of the crane in Jiahu bone flute is the emotional link between ancient

people and modern Chinese people. People at that time used this flute to play rhythmic notes as an expression of their feelings and good wishes for life. The ancients chose the bones of cranes as the material for bone flutes. This choice aligns with the positive hopes and aspirations that people today associate with cranes. Therefore, this design will focus on cranes as the central theme, aiming to convey the enduring spiritual essence that the bone flute has transmitted for centuries in Chinese culture. The objective is to establish a bridge between ancient artifacts and the contemporary spiritual world of modern individuals, by emphasizing the symbolism of cranes as carriers of aspirations and ideals.

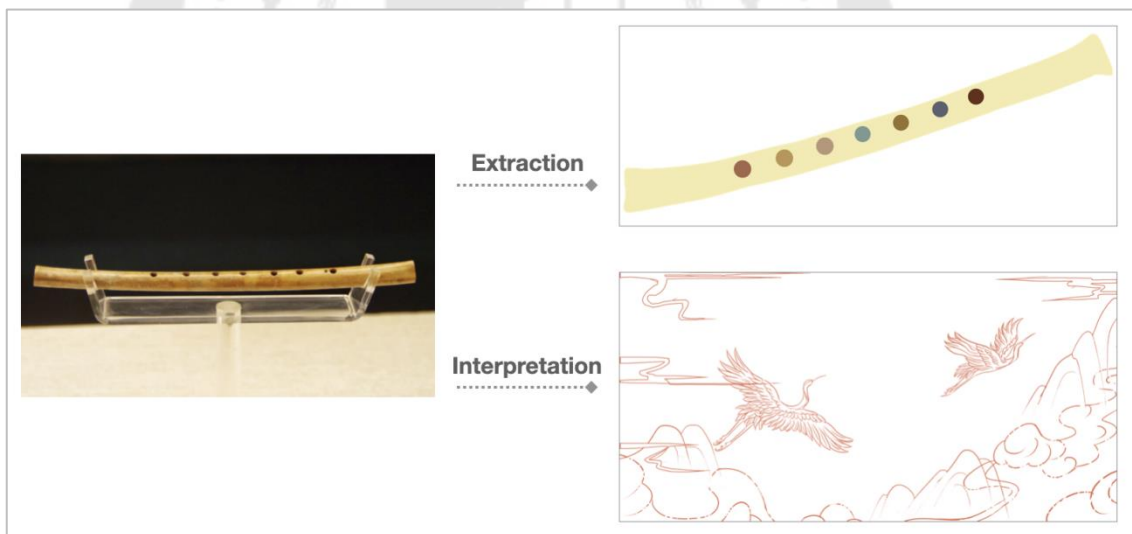


Figure 33 Extraction of elements from the Jiahu Bone Flute,

Source: Xu Mengjin (2023)

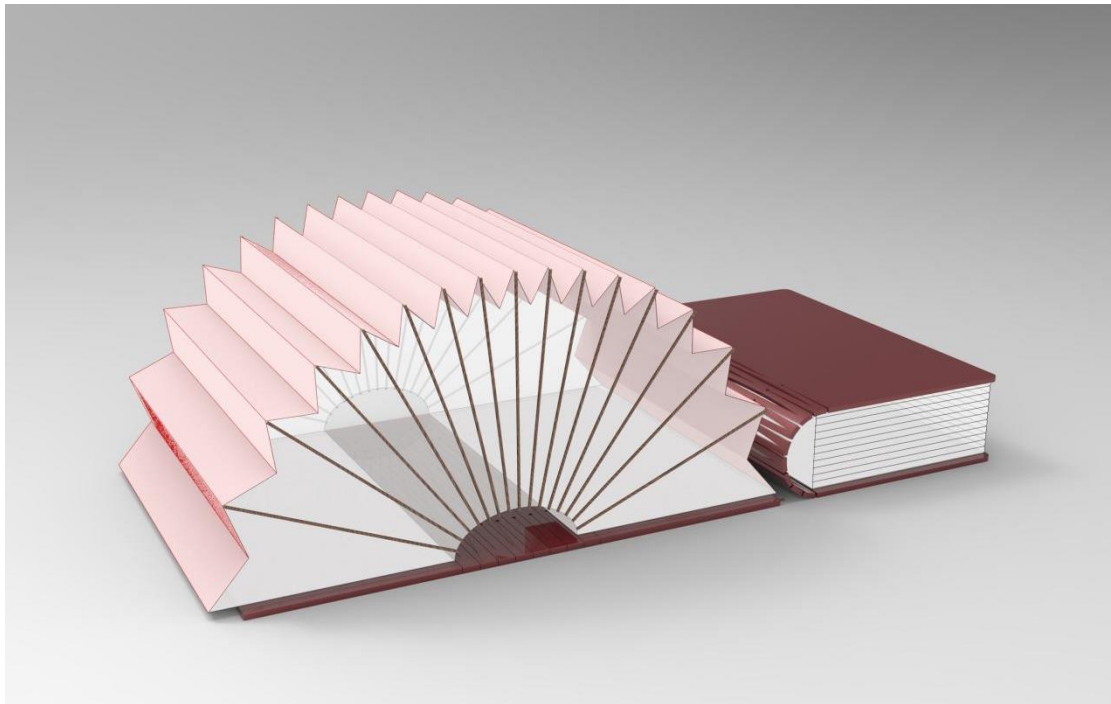


Figure 34 Small table lamp model sketch

Source: Xu Mengjin (2023)

Upon opening the lamp, the interior features a illustration predominantly centered around cranes, aim to render the cultural atmosphere associated with the crane element through illustration, and to bring users into the visual scene more directly. The illustration prominently showcases cranes as the main subject, accompanied by imagery of auspicious clouds, the moon, and mountains. This composition creates a tranquil, harmonious, and beautiful scene that not only highlights the profound cultural connotations of the Jiahu Bone Flute but also aims to evoke emotional resonance and solace for modern individuals through its depiction of new imagery.



Figure 35 Illustration line drawing

Source: Xu Mengjin (2023)

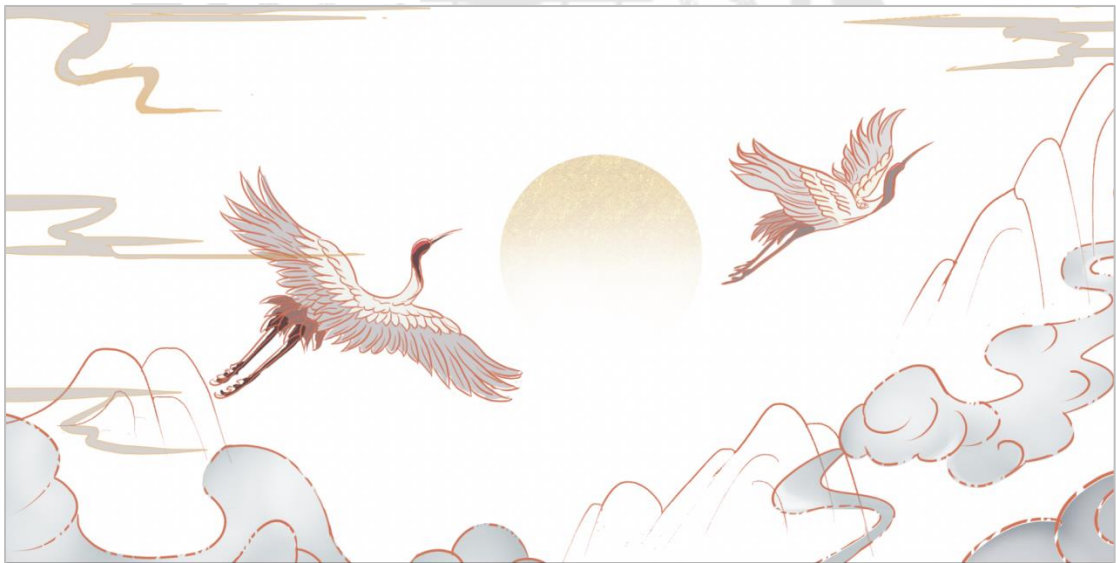


Figure 36 Illustration sketch

Source: Xu Mengjin (2023)

#### Step 5: Interview expert suggestion

The experts made suggestions based on the sketches, which are collated below.

1) Summary of Cultural Expert Interview:

① Jia Zhengxian

Suggestion on effectively convey cultural content: 1. The illustration can be refined to create a more intricate and detailed depiction. The aim should be to craft a serene and beautiful atmosphere that resonates with viewers; 2. Illustrations should be rich in detail, and by completing the picture can quickly allow the user to substitute into the scene and bring an immersive cultural experience.

Suggestion on integrate well with contemporary life: 1. As a daily lifestyle product, the table lamp can be made more lightweight and can be placed in various locations in the room, which is in line with the many scenarios of people's life. Therefore its lightness should be considered; 2. Considering the scenarios of night time use and the long cultural heritage, the choice of colours should be mainly dark.

Suggestion on achieve a balance between functionality and aesthetics: 1. For the external cover, options like linen or fabric would be ideal. These materials align with the lamp's traditional and cultural essence, while avoiding the use of overly modern materials; 2. The way the table lamp opens and closes is cleverly done, and at a later stage you could consider adjusting the lightness or darkness of the lamp depending on the angle of opening and closing.

② Gao Chen

Suggestion on effectively convey cultural content:1. The choice of the crane

as the design element is very appropriate, but the image needs to be more exquisite. To better symbolize the spiritual aspirations that Chinese people have had for cranes throughout history, it is essential to enrich the visual elements and employ exquisite color combinations to create a beautiful and desired visual atmosphere. 2. This design can add a separate feature inside the table lamp, resembling a "bookmark" shape, which provides a detailed introduction about the Jiahu bone flute. This will allow users to gain a comprehensive understanding of the historical artifact and the product.

Suggestion on integrate well with contemporary life: 1. Considering the lamp's purpose as a nighttime illumination source, adjust the illustration's color palette and overall tone to create a serene and enchanting nighttime scene. 2. The Jiahu bone flute's shape can be simplified and incorporated into the surface of the product, such as shaping it into another switch. The entire table lamp can be designed with a dual-switch system, making it more user-friendly.

Suggestion on achieve a balance between functionality and aesthetics: 1. For the lamp's internal structure, selecting a textured paper material. This material choice can evoke a sense of warmth and tradition; 2. The paper should have a gentle texture to enhance the tactile experience and retain the innate feel of traditional paper; 3. For this design, the most crucial and visually striking aesthetic feature should be reflected in the illustration design. Therefore, the illustrations must be exquisite and evoke a strong sense of ambiance.

## 2) Summary of Design Expert Interview:

### ① He Zijiang

Suggestion on effectively convey cultural content: 1. For the exterior color, extracting the hues from the bone flute as the primary theme colors. By using these colors, a strong visual connection can be established with the original artifact. Using a beige colour resembling bone color on the exterior of the table lamp can make it look cozier and more textured; 2. Besides the lamp's shape, the most crucial aspect of conveying cultural content is the design of the illustrations. While the lamp's design cleverly integrates the form of a book, there is room for improvement in the illustrations; 3. In illustration design, incorporate a gentle, moonlit color palette with soft blues, silvers, and subdued purples. These colors can convey a peaceful and tranquil night setting, enhancing the lamp's role as an ambient light source.

Suggestion on integrate well with contemporary life: 1. Even when the lamp is not in use, it should be aesthetically pleasing and able to enhance the decor of a room; 2. This aesthetic quality doesn't necessarily mean extravagant design. On the contrary, the exterior design should reflect simplicity and texture. This will enable it to harmonize with various interior styles and prevent users from experiencing aesthetic fatigue. A design that provides a lasting impression is more likely to resonate with people..

Suggestion on achieve a balance between functionality and aesthetics: 1. The

table lamp's size doesn't need to be overly large. It can be designed to be slightly narrower but longer in dimension to create a more aesthetically pleasing appearance.

② Cui Jie

Suggestion on effectively convey cultural content:1. Each element of the illustration, from the cranes to the auspicious clouds, the moon, and the mountains, can be finely rendered to ensure that the scene is not only visually captivating but also exudes a sense of tranquility and positivity; 2. Use delicate shading and subtle highlights to create a soft luminous effect on the cranes, clouds, and landscape elements. This technique will mimic the gentle glow of the moonlight, adding to the lamp's calming atmosphere. This attention to detail will enhance the emotional impact and cultural significance of the design.

Suggestion on integrate well with contemporary life:1. Consider incorporating a dimming feature into the lamp's design. This way, users can adjust the lamp's brightness, enhancing the lamp's adaptability to different environments.

Suggestion on achieve a balance between functionality and aesthetics: 1. In terms of material selection, linen or fabric can contribute to the lamp's aesthetic appeal and create a sense of nostalgia, resonating with the cultural and artistic themes of the design; 2. By choosing these materials, the lamp's design can achieve a balanced combination of traditional aesthetics, tactile engagement, and a connection to cultural heritage, resulting in a unique and authentic product experience.

### Step 6: Final design

Based on suggestions on the revision of the draft design, the lamp's cover is in an ivory-white color, similar to the hues of the bone flute. The internal lampshade is made from a textured paper material, aiming to retain the natural textures of paper and fabric, creating an authentic visual and tactile experience in line with traditional aesthetics, and also achieve a balance between functionality and aesthetics (Figure 37).

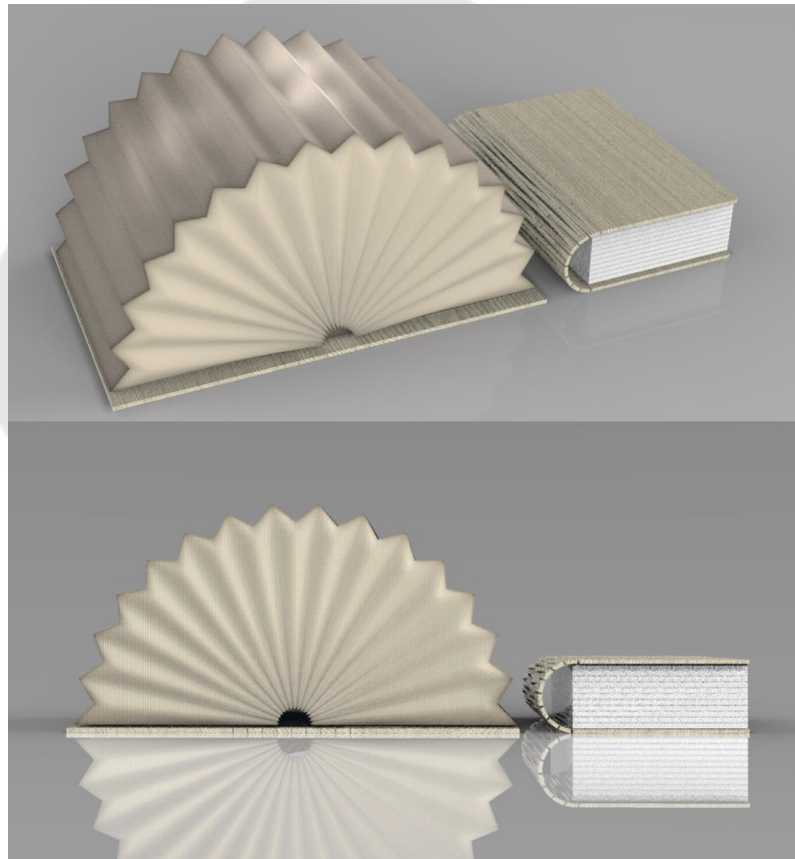


Figure 37 Table Lamp Design Model

Source: Xu Mengjin (2023)

In terms of illustration design, the scene has been refined to meticulous detail. A serene color palette dominated by deep blue and dark purple has been chosen,

aligning with the lamp's using scenario during nighttime. Elements like auspicious clouds and mountain peaks have been incorporated to enhance the interplay of reality and illusion in the scene. Additionally, touches of gold have been added as accents, enriching the visual effect and creating a traditional cultural atmosphere (Figure 38).

Since the flute is made of the bones of cranes, which considered as an auspicious animal in traditional Chinese culture, and playing this flute at that time reflects people's aspirations for life, the design describe the scene of cranes and auspicious clouds. The illustration showcases cranes as the main subject, accompanied by imagery of auspicious clouds, the moon, and mountains, creates a quiet, harmonious, and beautiful scene, also establishing a sense of tranquility and positivity. Through this giving spiritual support to modern people and also meet the spiritual aspirations of beauty and blessing.



Figure 38 Table lamp interior illustration design

Source: Xu Mengjin (2023)

The design rendering is as follows. Picture50 is the overall effect of the table lamp,

Picture51 is the effect of the table lamp on the light. In terms of the Outer (Tangible Level) of the product the design will focus on extracting visual elements directly from the Jiahu Bone Flute itself. Colour features will be used on the surface of the product.

In terms of the Outer Mid (Behavioral Level) of the product design, a small table lamp serves as the medium to infuse the product with an entirely new function unrelated to the artifact itself. In order to establish a unique and distinctive experience for the product, the lamp's overall form takes the shape of a book, this will distinguish it from the common image of table lamps in daily life, creating a sense of contrast and novelty. To enhance user interaction, the lamp is activated by opening the book-like structure, allowing the pages to illuminate, this will also give users a new sensory experience.

In terms of the Inner (Intangible Level) of the product design, the cultural background of the crane in Jiahu bone flute is the emotional link between ancient people and modern Chinese people. People at that time used this flute to play rhythmic notes as an expression of their feelings and good wishes for life. The ancients chose the bones of cranes as the material for bone flutes. This choice aligns with the positive hopes and aspirations that people today associate with cranes. Therefore, this design focus on cranes as the central theme, aiming to convey the enduring spiritual essence that the bone flute has transmitted for centuries in Chinese culture. The objective is to establish a bridge between ancient artifacts and the contemporary spiritual world of modern individuals, by emphasizing the symbolism of cranes as carriers of aspirations

and ideals.

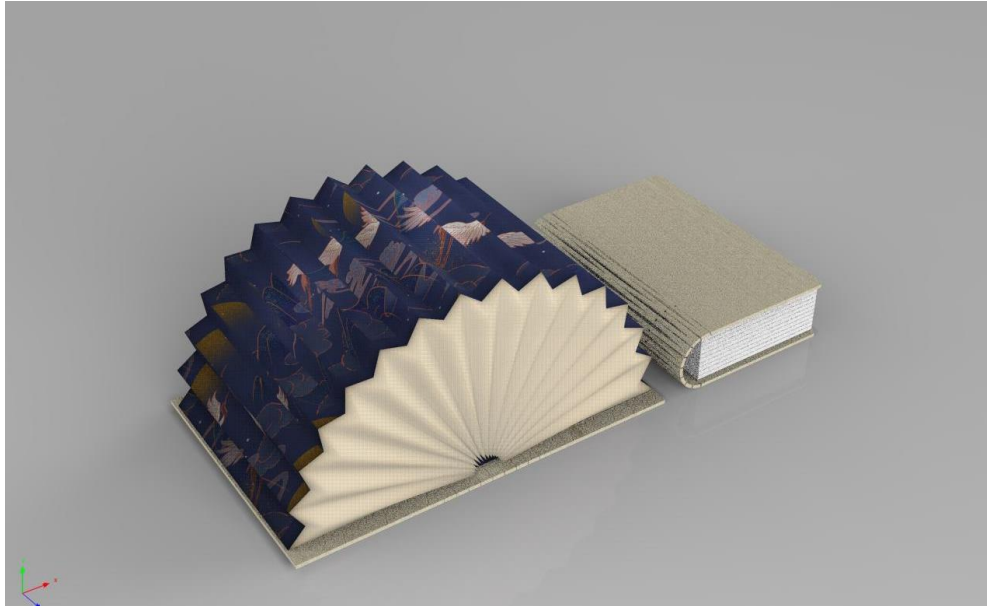


Figure 39 Table lamp Design Rendering

Source: Xu Mengjin (2023)



Figure 40 Table lamp on the light Rendering

Source: Xu Mengjin (2023)

## CHAPTER 5

### CONCLUSION DISCUSSION AND SUGGESTION

#### 5.1 Conclusion

Museum cultural and creative products are significant mediums for showcasing the aesthetic, artistic, and cultural aspects of museum artifacts, and they have become beloved cultural products among modern audiences. Through research and practical investigations, it is evident that cultural and creative products lacking aesthetic appeal and cultural depth, unable to integrate into contemporary society, greatly deviate from the cultural consumption preferences of modern society.

The museum cultural and creative products lies in their ability to harmoniously blend historical significance with modern sensibilities. Products that fail to achieve this balance not only miss the opportunity to resonate with today's audience but also fall short of effectively conveying the cultural richness of the artifacts they are inspired by.

Therefore, in response to the dual demand of current market cultural trends and user quality of life, this study is rooted in users' consumption preferences for cultural and creative products. Guided by the analysis of culture on three different levels, the aim is to enhance the cultural significance of Henan Museum's cultural and creative products. Through these products, the aim is to bridge the gap between historical cultural relics and the contemporary society, allowing culture to seamlessly integrate into the present. This endeavor seeks to broaden the development trajectory of museum cultural and

creative design, catering to the diverse and quality-focused consumption preferences of users.

This research centers around the development and design of cultural and creative products based on the "Nine Precious Cultural Relics" from the collection of Henan Museum. The conclusions corresponding to the research objectives are as follows:

(1) Research on the extraction, in-depth excavation of cultural elements of cultural relics.

Cultural relics can be extracted in three levels to achieve in-depth extraction, elements such as "cultural content", "historical significance", "emotional value", "function", "usability", "patterns", "materials", "colour" and "shape" can be the design features.

Three approaches can be used to extracting outer elements: Replication Approach, Extraction Approach, Interpretation Approach.

Cultural atmosphere and experience can be created through products to establish a story contexts.

(2) To investigate the integration of history and contemporary life in cultural and creative products.

With product aesthetics, cultural connotation, high creativity and practicality, daily necessities can be the direction of future development of cultural and creative products of Henan Museum.

Products should be based on functionality to establish meaningful connections with modern life and enhance interactivity.

(3) To design a new cultural and creative product for Henan Museum based on the first two steps.

A lamp based on the Jiahu bone flute was designed

In accordance with the findings of this paper, the author summarises the design framework of museum cultural and creative products.

Firstly, determine the outer elements of the product based on three cultural extraction approaches. Secondly, give products functions that fit the modern lifestyle. Finally, find convergence between cultural relics and modern people's thoughts, establishing an emotional connection.

The design framework is shown below:

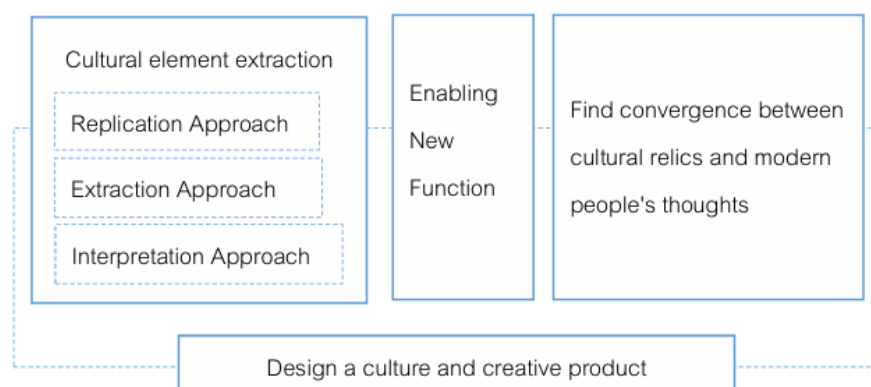


Figure 41 Design framework of museum cultural and creative products

Source: Xu Mengjin (2023)

In summary, this study approached the design of museum cultural and creative products through the lens of the three layers and levels of culture. It provided insights into the development of design strategies and suggestions. The overarching goal is to broaden the design horizons for museum cultural and creative products that align more closely with user demands. In the long run, this research aims to contribute design theories and practical insights that make museum cultural and creative products more accessible and appreciated by users.

By integrating cultural depth, aesthetic appeal, and user preferences, this study aims to bridge the gap between historical cultural relics and contemporary society. The proposed design approaches and recommendations serve as a foundation for creating cultural and creative products that resonate with modern audiences while preserving the essence of cultural heritage. This research not only informs the development of new products but also offers valuable insights into the symbiotic relationship between cultural artifacts and the design of products that extend their legacy.

## **5.2 Discussion**

### **5.2.1 Cultural aspects**

Regarding the cultural aspect of cultural and creative products, as suggested by scholar(Z. Li et al., 2021), the low efficiency of the use of cultural relics in Chinese museums is reflected in the lack of in-depth excavation of cultural relics' value, and some museums simply display their collections, failing to transform professional cultural

relics knowledge into popular language, and even more so failing to present esoteric, abstract and boring content in a lively and vivid form. The study of her research pointed out the importance of the knowledge of cultural relics. Her study sharply points out the common problems that exist in most Chinese museums in the process of contemporary development, but lacks the exploration of corresponding solutions. The problems raised by Li fit with the research objectives of this study, and in this study, the corresponding solutions are proposed based on the three levels of culture theory.

One of the objectives of this research is to integrate relics and culture into contemporary life and to propose appropriate solutions accordingly, as (Shan, 2014), Director of the Palace Museum, suggests that the so-called good museums are those that look at the extent to which the cultural resources of the museums contribute to the society and the people, and what people gain from them, so that the heritage can live in the present day and be integrated into the lives of the people.

However, some scholars' views deviate from the results of this study. In the questionnaire results of this study, "cultural connotation" is the most important difference between cultural and creative products and other daily products, and "cultural significance" is the most valued feature of cultural heritage selected by the respondents. However, (Bao & Shen, 2013), in his research on China's cultural and creative industries, proposed that the development of cultural and creative industries should achieve the following four points: first, the government should strongly support the development of

cultural and creative industries; second, it should vigorously support creative enterprises and actively guide the creation of leading enterprises; third, it should increase the protection of intellectual property rights and improve the scope of intellectual property rights protection; and fourth, it should make efforts to cultivate creative professionals. Fourth, efforts should be made to cultivate creative professionals.

The research focuses on the economic development and market development of cultural industries, but does not mention the important role and value of culture as a basic content in cultural and creative industries, which is a point of deviation from the author's research direction.

In this study, the analysis of "Nine Precious Cultural Relics" of Henan Museum is based on the three levels of culture proposed by Lin, that is, the cultural content of the relics is analysed from Outer (Tangible level), Mid (Behavior level) and Inner (Intangible level), and the design performance should be corresponding to these three levels in the design practice of cultural and creative products. At the same time, in the design practice of cultural and creative products, the design performance should correspond to these three levels, and the author believes that these three levels should work together and assist each other in the design process of cultural and creative products. This is also different from (Cui, 2019) study, which analyses and designs cultural relics based on the visual elements of cultural relics only.

These differences in research perspectives also reflect the limitations of this

study in the theoretical conception, and also provide new ideas for the author to carry out more research on cultural and creative products.

### 5.2.2 Design aspects

At the design level of cultural and creative products, the author found through interviews that experts in different fields have proposed that cultural relics should be brought into real-life situations, relying on practical functions to connect with current people's life scenes, so as to integrate cultural relics and culture into real life. This is just as (Jun Zhou, 2016) proposed to introduce contextual thinking into the design process of cultural and creative products on the basis of contextual design related theories, and decomposed cultural and creative products into cultural product contexts and modern life product contexts, and came up with the design problems and design conditions to meet different environmental needs under different contextual analyses, which provides new ideas for the subsequent development of emotional design of cultural and creative products.

Different biases in the results were also observed in the internal processes of this study. During the questionnaire survey, the most popular type of cultural and creative products selected by the respondents was "Fine collection category (reproduction version of cultural relics)", which means that among the existing cultural and creative products consumers are more willing to choose products that reproduce cultural relics as they are, rather than products that have been artistically extracted and recreated.

However, in the expert interview stage, all four experts mentioned that the design of cultural and creative products should avoid the direct copying of cultural relics, and that the cultural content should be conveyed through the extraction and cultural interpretation of cultural relics. The author believes that the reason why there is a divergence of choices between consumers and experts is precisely because the current market of cultural and creative products in museums lacks functional, artistic and creative products that lead the aesthetic interest of consumers, which is also the direction of the future development of China's cultural and creative market that experts intend to lead, and which will serve as a direction of research for the author to devote himself to leading the positive, culturally and creatively creative market in the future.

Not only that, but the results of the current study also appeared to have a different viewpoint from that of some previous scholars. Wang (2018) proposed that we should tap the public's concerns about museum cultural and creative products, shape the concerns into a communication element (meme) suitable for communication, and put forward corresponding creative communication strategies in combination with the form of new media resources. However, from the results of this study, the "purpose of buying cultural and creative products" and "factors that inspire the desire to buy cultural and creative products" selected by the respondents with the highest percentage are "Collection and Commemoration" and "Value of Collection" respectively. It can be seen that the public's concern for cultural and creative products lies in the commemorative

significance. According to Wang, the commemorative significance of cultural and creative products should be used as an important medium for the cultural dissemination of cultural and creative products, and the commemorative value of the products should be reflected in the design of cultural and creative products rather than the practical value. But through the interviews with the cultural experts and design experts, all four experts proposed that cultural and creative products need to fulfill certain functional requirements, and should be anchored in functionality and establish a meaningful connection with modern life, which means that designers need to enhance the public's awareness of cultural and creative products through the functional value of cultural and creative products, so as to better integrate cultural relics into modern life.

The deviation of these studies not only reflects the shortcomings of this research in design conception, investigation and analysis, but also reflects the real problems existing in the design practice of cultural and creative products, and the question of whether the cultural and creative products should focus on "commemorative value" or "functional value" will also provide ideas for the author to continue the research on this topic in the future. The author will continue to provide ideas for the research of this topic in the future.

### 5.3 Suggestion

As an extremely important part of China's cultural construction, in recent years, expanding the cultural consumption of museums has become a hot issue and an

important field of academic research to enhance cultural dissemination and promote economic development in China. Based on the background of the era of majestic development of cultural consumption, the museum creative industry is surging into the development of the boom. Through the research of the subject, the author hopes to develop museum cultural and creative products on the premise of effective communication of cultural connotation and cultural relics into the life of modern people, so that the excellent culture handed down for thousands of years can be inherited and continued.

### 5.3.1 Cultural aspect

The cultural and creative products of museums are products derived from the cultural resources of museums, so they are bound to have the unique cultural imprint of museums. Museum cultural and creative products have fixed cultural elements to be absorbed in design and development, therefore, compared with other similar products on the market, they have a heavier humanistic connotation, require more comprehension and grasp of culture, and should pay particular attention to the combination of functionality and aesthetics, history and modernity. These combined composite features increase the added value of the museum's cultural and creative products, thus realizing more comprehensive benefits.

At the same time, the research and development of cultural and creative products of the museum is by no means a simple copy can be completed, but a kind of

cultural and creative behaviours, should be based on different cultural forms to develop different forms of creative ideas, or combined with different social situations to create the design according to the time, according to the local conditions, so as to make the design of the cultural and creative products more in-depth and more in sync with the aesthetic interests of the society.

It is important to align the design with the functional requirements of the product. By employing techniques such as simplification, exaggeration, and stylization, the symbolic and stylistic elements of cultural relics can be artistically transformed to seamlessly integrate with the intended functionality. This ensures that consumers perceive a harmonious blend of artistic expression and practical utility in the product.

It is important to choose cultural relics that can effectively bridge the gap between ancient and modern life. Through techniques such as replication, miniaturization, enlargement, or functional adaptation, the essence of the relics' appearance can be retained while undergoing modernization in design. This approach allows for a seamless integration of the relics into contemporary contexts while preserving their inherent historical characteristics.

Redefining the value of culture involves delving into consumer needs and the unique features of the museum, uncovering aspects that previous products may have overlooked, and establishing differentiated services. This process entails a thorough understanding of consumer demands and aligning them with the distinct attributes of

the museum, thereby creating a unique and tailored experience that sets the products apart from the competition.

### **5.3.2 Policies aspect**

Although China's museum cultural and creative products have entered a stable development stage, there are still some deficiencies, such as the lack of clear authorisation of museum policy in terms of policy, and the insufficient development of cultural resources in the museum. At the same time, the museum itself should change its business development strategy, and make the museum audience experience and communication, social education and the operation of the museum shop as the top priority in the process of entrepreneurial industry development. In today's increasingly homogenised museum cultural creative products, museums should pay attention to the integration of innovation and culture, and develop cultural creative products with their own characteristics. All these issues need the joint efforts of the museum authorities as well as all sectors of the society to explore and seek solutions, so that the museum cultural and creative industry can develop healthily.

### **5.3.3 Market aspect**

The development of cultural and creative products in museums is a subject that involves a strong intersectionality of disciplines and covers a wide range, and this study only puts forward the development ideas of cultural and creative product design in museums from three levels of culture, failing to put the cultural and creative products in

the whole market in the long term to study. As an important part of the cultural creative industry and cultural market, museums should actively join forces with all sectors of the society to explore their own rich collection of cultural resources, so that the museums' cultural creative industry can become a living force to lead the trend of the times. Museums should be based on the development of cultural creative products with the characteristics of the museum, in order to enhance the aesthetic literacy of the public for the purpose of fostering the consumption concept of popular cultural products, and enhance the cultural atmosphere at the social level, so as to make the museums' cultural creative products to be developed in a sustainable manner.

The museum cultural and creative industry, as a crucial component of China's cultural development, has gained increasing prominence. In recent years, expanding its cultural consumption has emerged as a pivotal concern domestically, highlighting its significance in enhancing cultural communication and fostering economic growth.

Amidst the backdrop of the burgeoning era of cultural consumption, the museum cultural and creative industry is currently experiencing a wave of development.

Through this research endeavor, the author aspires to capitalize on effective transmission of cultural connotations and the integration of cultural relics into the modern lives of individuals, thereby developing museum cultural and creative products that ensure the continued inheritance and preservation of exceptional cultural heritage spanning millennia.

Ultimately, the author remains committed to ongoing learning within this industry, actively staying abreast of developments and delving further into the cognitive framework of museum cultural and creative products. This dedication is vital to contributing to the industry's growth and enhancing its enduring impact on cultural preservation and economic vitality.



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APPENDIX

## Appendix details

Questionnaire cross-tabulation charts

## 1) Cross-Tabulation Based on Age

Age & Q7 Cultural relics Cross Tabulation												
			Multiple Choice <sup>a</sup>									Total
			q7.1 The Jiahu Bone Flute	q7.2 The Duling Square Ding	q7.3 Fuhao's Owl-shaped Bronze Zun	q7.4 The Jade Handle Iron Sword	q7.5 The Lotus Crane Square Pot	q7.6 The Cloud Pattern Bronze Jin	q7.7 Four Divine Creatures Cloud Diagram Mural	q7.8 The Golden Jian of Empress Wu Zetian	q7.9 Ru Kiln Sky Blue Glazed Carved Goose-neck Vase	
Age	Under 18 years old	Count	5	4	8	0	6	2	0	0	3	10
		Percentage of total	1.5%	1.2%	2.3%	0.0%	1.7%	.6%	0.0%	0.0%	.9%	2.9%
	18~25	Count	39	23	36	13	38	11	18	17	36	84
		Percentage of total	11.4%	6.7%	10.5%	3.8%	11.1%	3.2%	5.2%	5.0%	10.5%	24.5%
	26~35	Count	52	43	42	12	38	28	21	32	43	112
		Percentage of total	15.2%	12.5%	12.2%	3.5%	11.1%	8.2%	6.1%	9.3%	12.5%	32.7%
	36~45	Count	47	48	27	14	31	10	24	35	35	97
		Percentage of total	13.7%	14.0%	7.9%	4.1%	9.0%	2.9%	7.0%	10.2%	10.2%	28.3%
	46~60	Count	10	17	10	5	12	4	6	14	13	32
		Percentage of total	2.9%	5.0%	2.9%	1.5%	3.5%	1.2%	1.7%	4.1%	3.8%	9.3%
	60 and above	Count	5	5	2	1	4	0	2	1	3	8
		Percentage of total	1.5%	1.5%	.6%	.3%	1.2%	0.0%	.6%	.3%	.9%	2.3%
	Total	Count	158	140	125	45	129	55	71	99	133	343
		Percentage of total	46.1%	40.8%	36.4%	13.1%	37.6%	16.0%	20.7%	28.9%	38.8%	100.0%

Age & Q8 The impressive features of the selected cultural relics Cross Tabulation												
			Multiple Choice <sup>a</sup>							Total		
			Q8.1 Material	Q8.2 Color	Q8.3 Pattern	Q8.4 Function	Q8.5 Usability	Q8.6 Cultural Significance	Q8.7 Emotional Value		Q8.8 Form	
Age	Under 18 years old	Count	1	3	6	3	3	7	2	3	10	
		Percentage of total	.3%	.9%	1.7%	.9%	.9%	2.0%	.6%	.9%	2.9%	
	18~25	Count	33	48	45	14	7	48	14	9	84	
		Percentage of total	9.6%	14.0%	13.1%	4.1%	2.0%	14.0%	4.1%	2.6%	24.5%	
	26~35	Count	38	44	56	18	9	68	17	23	112	
		Percentage of total	11.1%	12.8%	16.3%	5.2%	2.6%	19.8%	5.0%	6.7%	32.7%	
	36~45	Count	33	43	38	12	13	66	17	11	97	
		Percentage of total	9.6%	12.5%	11.1%	3.5%	3.8%	19.2%	5.0%	3.2%	28.3%	
	46~60	Count	12	8	15	3	3	23	5	9	32	
		Percentage of total	3.5%	2.3%	4.4%	.9%	.9%	6.7%	1.5%	2.6%	9.3%	
	60 and above	Count	3	0	3	1	2	6	3	2	8	
		Percentage of total	.9%	0.0%	.9%	.3%	.6%	1.7%	.9%	.6%	2.3%	
	Total	Count	120	146	163	51	37	218	58	57	343	
		Percentage of total	35.0%	42.6%	47.5%	14.9%	10.8%	63.6%	16.9%	16.6%	100.0%	

Age& Q9 The purpose of buying cultural and creative products Cross Tabulation								
			Multiple Choice <sup>a</sup>					Total
			a9.1 Collection and commemoration	a9.2 Practical and functional	a9.3 Gift to friends and relatives	a9.4 Decorate life and enhance the cultural atmosphere in daily life	a9.5 Other	
Age	Under 18 years old	Count	4	3	4	7	0	10
		Percentage of total	1.2%	.9%	1.2%	2.0%	0.0%	2.9%
	18~25	Count	62	21	21	37	1	84
		Percentage of total	18.1%	6.1%	6.1%	10.8%	.3%	24.5%
	26~35	Count	85	20	25	41	7	112
		Percentage of total	24.8%	5.8%	7.3%	12.0%	2.0%	32.7%
	36~45	Count	70	13	16	38	11	97
		Percentage of total	20.4%	3.8%	4.7%	11.1%	3.2%	28.3%
	46~60	Count	24	1	1	15	3	32
		Percentage of total	7.0%	.3%	.3%	4.4%	.9%	9.3%
	60 and above	Count	2	2	1	4	3	8
		Percentage of total	.6%	.6%	.3%	1.2%	.9%	2.3%
Total		Count	247	60	68	142	25	343
		Percentage of total	72.0%	17.5%	19.8%	41.4%	7.3%	100.0%

Age& Q10 The type of buying cultural and creative products in Henan Museum Cross Tabulation									
			Multiple Choice <sup>a</sup>					Total	
			b10.1 Fine collection category (reproduction version of cultural relics)	b10.2 Lifestyle products category	b10.3 Office stationery category	b10.4 Food category	b10.5 Jewelry category		b10.6 Other
Age	Under 18 years old	Count	4	2	8	3	2	0	10
		Percentage of total	1.2%	.6%	2.3%	.9%	.6%	0.0%	2.9%
	18~25	Count	55	28	26	5	24	5	84
		Percentage of total	16.0%	8.2%	7.6%	1.5%	7.0%	1.5%	24.5%
	26~35	Count	80	41	27	4	27	7	112
		Percentage of total	23.3%	12.0%	7.9%	1.2%	7.9%	2.0%	32.7%
	36~45	Count	56	32	16	3	31	12	97
		Percentage of total	16.3%	9.3%	4.7%	.9%	9.0%	3.5%	28.3%
	46~60	Count	27	6	2	1	3	6	32
		Percentage of total	7.9%	1.7%	.6%	.3%	.9%	1.7%	9.3%
	60 and above	Count	3	2	1	1	2	3	8
		Percentage of total	.9%	.6%	.3%	.3%	.6%	.9%	2.3%
Total		Count	225	111	80	17	89	33	343
		Percentage of total	65.6%	32.4%	23.3%	5.0%	25.9%	9.6%	100.0%

**Age& Q11 The factors that inspire the desire to buy cultural and creative products Cross Tabulation**

			Multiple Choice <sup>a</sup>										Total	
			c11.1 Cheap price	c11.2 High functionality and practical value	c11.3 Product aesthetics	c11.4 Creativity of the product	c11.5 Novelty-seeking	c11.6 Interactivity and fun of the product	c11.7 Exquisite packaging	c11.8 Good quality and material	c11.9 Commemorative value	c11.10 Other		
Age	Under 18 years old	Count	2	3	5	5	0	3	4	0	5	0	10	
		Percentage of total	.6%	.9%	1.5%	1.5%	0.0%	.9%	1.2%	0.0%	1.5%	0.0%	2.9%	
	18~25	Count	33	40	43	32	5	22	2	7	27	2	84	
		Percentage of total	9.6%	11.7%	12.5%	9.3%	1.5%	6.4%	.6%	2.0%	7.9%	.6%	24.5%	
	26~35	Count	31	44	53	39	8	25	5	12	46	2	112	
		Percentage of total	9.0%	12.8%	15.5%	11.4%	2.3%	7.3%	1.5%	3.5%	13.4%	.6%	32.7%	
	36~45	Count	20	28	39	24	5	18	5	14	46	8	97	
		Percentage of total	5.8%	8.2%	11.4%	7.0%	1.5%	5.2%	1.5%	4.1%	13.4%	2.3%	28.3%	
	46~60	Count	6	8	8	11	4	5	2	3	15	3	32	
		Percentage of total	1.7%	2.3%	2.3%	3.2%	1.2%	1.5%	.6%	.9%	4.4%	.9%	9.3%	
	60 and above	Count	2	2	2	3	2	2	0	0	2	2	8	
		Percentage of total	.6%	.6%	.6%	.9%	.6%	.6%	0.0%	0.0%	.6%	.6%	2.3%	
	Total		Count	94	125	150	114	24	75	18	36	141	17	343
			Percentage of total	27.4%	36.4%	43.7%	33.2%	7.0%	21.9%	5.2%	10.5%	41.1%	5.0%	100.0%

**Age& Q14 Factors that do not meet the expectations of buying cultural and creative products Cross Tabulation**

			Multiple Choice <sup>a</sup>							Total		
			e14.1 Similar to other museum product types, lack of character	e14.2 Low quality of products	e14.3 Weak practicality	e14.4 Lack of cultural expression	e14.5 High price	e14.6 Lack of aesthetics	e14.7 Lack of creativity Inability to meet individual needs		e14.8 Other	
Age	Under 18 years old	Count	3	2	2	2	3	2	1	2	8	
		Percentage of total	1.0%	.7%	.7%	.7%	1.0%	.7%	.3%	.7%	2.7%	
	18~25	Count	18	12	21	13	32	12	18	2	69	
		Percentage of total	6.1%	4.1%	7.1%	4.4%	10.8%	4.1%	6.1%	.7%	23.4%	
	26~35	Count	33	27	33	21	38	18	23	1	96	
		Percentage of total	11.2%	9.2%	11.2%	7.1%	12.9%	6.1%	7.8%	.3%	32.5%	
	36~45	Count	17	16	30	23	45	7	5	7	85	
		Percentage of total	5.8%	5.4%	10.2%	7.8%	15.3%	2.4%	1.7%	2.4%	28.8%	
	46~60	Count	7	6	7	4	18	1	7	4	31	
		Percentage of total	2.4%	2.0%	2.4%	1.4%	6.1%	.3%	2.4%	1.4%	10.5%	
	60 and above	Count	1	0	3	1	2	0	0	2	6	
		Percentage of total	.3%	0.0%	1.0%	.3%	.7%	0.0%	0.0%	.7%	2.0%	
	Total		Count	79	63	96	64	138	40	54	18	295
			Percentage of total	26.8%	21.4%	32.5%	21.7%	46.8%	13.6%	18.3%	6.1%	100.0%

## 2) Cross-Tabulation Based on Education Level

			Multiple Choice <sup>a</sup>										Total
			q7.1 The Jiahu Bone Flute	q7.2 The Duling Square Ding	q7.3 Fuhao's Owl-shaped Bronze Zun	q7.4 The Jade Handle Iron Sword	q7.5 The Lotus Crane Square Pot	q7.6 The Cloud Pattern Bronze Jin	q7.7 Four Divine Creatures Cloud Diagram Mural	q7.8 The Golden Jian of Empress Wu Zetian	q7.9 Ru Kiln Sky Blue Glazed Carved Goose-neck Vase		
Education Level	Middle School and below	Count	14	13	7	6	8	4	2	8	8	25	
		Percentage of total	4.1%	3.8%	2.0%	1.7%	2.3%	1.2%	.6%	2.3%	2.3%	7.3%	
	High School	Count	39	43	24	10	32	13	22	37	25	89	
		Percentage of total	11.4%	12.5%	7.0%	2.9%	9.3%	3.8%	6.4%	10.8%	7.3%	25.9%	
	Junior college education	Count	42	37	28	13	27	16	15	18	37	86	
		Percentage of total	12.2%	10.8%	8.2%	3.8%	7.9%	4.7%	4.4%	5.2%	10.8%	25.1%	
	University	Count	49	37	43	14	45	14	27	30	47	108	
		Percentage of total	14.3%	10.8%	12.5%	4.1%	13.1%	4.1%	7.9%	8.7%	13.7%	31.5%	
	Postgraduate and above	Count	14	10	23	2	17	8	5	6	16	35	
		Percentage of total	4.1%	2.9%	6.7%	.6%	5.0%	2.3%	1.5%	1.7%	4.7%	10.2%	
	Total		Count	158	140	125	45	129	55	71	99	133	343
			Percentage of total	46.1%	40.8%	36.4%	13.1%	37.6%	16.0%	20.7%	28.9%	38.8%	100.0%

			Multiple Choice <sup>a</sup>								Total	
			Q8.1 Material	Q8.2 Color	Q8.3 Pattern	Q8.4 Function	Q8.5 Usability	Q8.6 Cultural Significance	Q8.7 Emotional Value	Q8.8 Form		
Education Level	Middle School and below	Count	13	6	10	4	4	16	4	3	25	
		Percentage of total	3.8%	1.7%	2.9%	1.2%	1.2%	4.7%	1.2%	.9%	7.3%	
	High School	Count	25	36	42	14	11	56	14	17	89	
		Percentage of total	7.3%	10.5%	12.2%	4.1%	3.2%	16.3%	4.1%	5.0%	25.9%	
	Junior college education	Count	27	31	40	4	7	59	11	19	86	
		Percentage of total	7.9%	9.0%	11.7%	1.2%	2.0%	17.2%	3.2%	5.5%	25.1%	
	University	Count	47	58	56	18	12	64	22	12	108	
		Percentage of total	13.7%	16.9%	16.3%	5.2%	3.5%	18.7%	6.4%	3.5%	31.5%	
	Postgraduate and above	Count	8	15	15	11	3	23	7	6	35	
		Percentage of total	2.3%	4.4%	4.4%	3.2%	.9%	6.7%	2.0%	1.7%	10.2%	
	Total		Count	120	146	163	51	37	218	58	57	343
			Percentage of total	35.0%	42.6%	47.5%	14.9%	10.8%	63.6%	16.9%	16.6%	100.0%

Education Level & Q9 The purpose of buying cultural and creative products Cross Tabulation									
			Multiple Choice <sup>a</sup>					Total	
			a9.1 Collection and commemoration	a9.2 Practical and functional	a9.3 Gift to friends and relatives	a9.4 Decorate life and enhance the cultural atmosphere in daily life	a9.5 Other		
Education Level	Middle School and below	Count	18	4	3	9	3	25	
		Percentage of total	5.2%	1.2%	.9%	2.6%	.9%	7.3%	
	High School	Count	66	12	9	32	9	89	
		Percentage of total	19.2%	3.5%	2.6%	9.3%	2.6%	25.9%	
	Junior college education	Count	61	10	14	36	9	86	
		Percentage of total	17.8%	2.9%	4.1%	10.5%	2.6%	25.1%	
	University	Count	76	26	32	50	3	108	
		Percentage of total	22.2%	7.6%	9.3%	14.6%	.9%	31.5%	
	Postgraduate and above	Count	26	8	10	15	1	35	
		Percentage of total	7.6%	2.3%	2.9%	4.4%	.3%	10.2%	
	Total		Count	247	60	68	142	25	343
			Percentage of total	72.0%	17.5%	19.8%	41.4%	7.3%	100.0%

Education Level & Q10 The type of buying cultural and creative products in Henan Museum Cross Tabulation										
			Multiple Choice <sup>a</sup>					Total		
			b10.1 Fine collection category (reproduction version of cultural relics)	b10.2 Lifestyle products category	b10.3 Office stationery category	b10.4 Food category	b10.5 Jewelry category		b10.6 Other	
Education Level	Middle School and below	Count	14	8	8	2	3	4	25	
		Percentage of total	4.1%	2.3%	2.3%	.6%	.9%	1.2%	7.3%	
	High School	Count	57	26	9	4	28	12	89	
		Percentage of total	16.6%	7.6%	2.6%	1.2%	8.2%	3.5%	25.9%	
	Junior college education	Count	58	27	13	5	15	11	86	
		Percentage of total	16.9%	7.9%	3.8%	1.5%	4.4%	3.2%	25.1%	
	University	Count	73	41	32	3	34	5	108	
		Percentage of total	21.3%	12.0%	9.3%	.9%	9.9%	1.5%	31.5%	
	Postgraduate and above	Count	23	9	18	3	9	1	35	
		Percentage of total	6.7%	2.6%	5.2%	.9%	2.6%	.3%	10.2%	
	Total		Count	225	111	80	17	89	33	343
			Percentage of total	65.6%	32.4%	23.3%	5.0%	25.9%	9.6%	100.0%

Education Level & Q11 The factors that inspire the desire to buy cultural and creative products Cross Tabulation														
			Multiple Choice <sup>a</sup>										Total	
			c11.1 Cheap price	c11.2 High functionality and practical value	c11.3 Product aesthetics	c11.4 Creativity of the product	c11.5 Novelty-seeking	c11.6 Interactivity and fun of the product	c11.7 Exquisite packaging	c11.8 Good quality and material	c11.9 Commemorative value	c11.10 Other		
Education Level	Middle School and below	Count	6	8	7	4	2	2	2	5	13	0	25	
		Percentage of total	1.7%	2.3%	2.0%	1.2%	.6%	.6%	.6%	1.5%	3.8%	0.0%	7.3%	
	High School	Count	17	34	33	26	4	11	6	8	39	8	89	
		Percentage of total	5.0%	9.9%	9.6%	7.6%	1.2%	3.2%	1.7%	2.3%	11.4%	2.3%	25.9%	
	Junior college education	Count	25	25	35	21	2	16	6	6	39	7	86	
		Percentage of total	7.3%	7.3%	10.2%	6.1%	.6%	4.7%	1.7%	1.7%	11.4%	2.0%	25.1%	
	University	Count	37	43	57	47	12	31	4	13	40	1	108	
		Percentage of total	10.8%	12.5%	16.6%	13.7%	3.5%	9.0%	1.2%	3.8%	11.7%	.3%	31.5%	
	Postgraduate and above	Count	9	15	18	16	4	15	0	4	10	1	35	
		Percentage of total	2.6%	4.4%	5.2%	4.7%	1.2%	4.4%	0.0%	1.2%	2.9%	.3%	10.2%	
	Total		Count	94	125	150	114	24	75	18	36	141	17	343
			Percentage of total	27.4%	36.4%	43.7%	33.2%	7.0%	21.9%	5.2%	10.5%	41.1%	5.0%	100.0%

Education Level & Q14 Factors that do not meet the expectations of buying cultural and creative products Cross Tabulation												
			Multiple Choice <sup>a</sup>							Total		
			e14.1 Similar to other museum product types, lack of character	e14.2 Low quality of products	e14.3 Weak practicality	e14.4 Lack of cultural expression	e14.5 High price	e14.6 Lack of aesthetics	e14.7 Lack of creativity Inability to meet individual needs		e14.8 Other	
Education Level	Middle School and below	Count	2	3	4	4	13	3	2	4	23	
		Percentage of total	.7%	1.0%	1.4%	1.4%	4.4%	1.0%	.7%	1.4%	7.8%	
	High School	Count	20	9	22	12	41	7	12	5	77	
		Percentage of total	6.8%	3.1%	7.5%	4.1%	13.9%	2.4%	4.1%	1.7%	26.1%	
	Junior college education	Count	17	18	30	19	32	13	13	5	78	
		Percentage of total	5.8%	6.1%	10.2%	6.4%	10.8%	4.4%	4.4%	1.7%	26.4%	
	University	Count	29	26	28	20	40	11	20	4	89	
		Percentage of total	9.8%	8.8%	9.5%	6.8%	13.6%	3.7%	6.8%	1.4%	30.2%	
	Postgraduate and above	Count	11	7	12	9	12	6	7	0	28	
		Percentage of total	3.7%	2.4%	4.1%	3.1%	4.1%	2.0%	2.4%	0.0%	9.5%	
	Total		Count	79	63	96	64	138	40	54	18	295
			Percentage of total	26.8%	21.4%	32.5%	21.7%	46.8%	13.6%	18.3%	6.1%	100.0%

## 3) Cross-Tabulation Based on Occupation

Occupation & Q7 Cultural relics Cross Tabulation												
			Multiple Choice <sup>a</sup>									Total
			q7.1 The Jiahu Bone Flute	q7.2 The Duling Square Ding	q7.3 Fuhao's Owl-shaped Bronze Zun	q7.4 The Jade Handle Iron Sword	q7.5 The Lotus Crane Square Pot	q7.6 The Cloud Pattern Bronze Jin	q7.7 Four Divine Creatures Cloud	q7.8 The Golden Jian of Empress	q7.9 Ru Kiln Sky Blue Glazed Carved	
Occupation	Student	Count	30	17	37	4	36	11	8	10	33	69
		Percentage of total	8.7%	5.0%	10.8%	1.2%	10.5%	3.2%	2.3%	2.9%	9.6%	20.1%
	Government and public institutions	Count	10	6	11	5	8	6	3	7	9	23
		Percentage of total	2.9%	1.7%	3.2%	1.5%	2.3%	1.7%	.9%	2.0%	2.6%	6.7%
	Corporate employee	Count	88	84	53	24	61	31	45	58	67	183
		Percentage of total	25.7%	24.5%	15.5%	7.0%	17.8%	9.0%	13.1%	16.9%	19.5%	53.4%
	Self-employed	Count	6	6	4	2	5	1	2	3	4	12
		Percentage of total	1.7%	1.7%	1.2%	.6%	1.5%	.3%	.6%	.9%	1.2%	3.5%
	Freelancer	Count	13	18	16	6	12	5	10	13	16	38
		Percentage of total	3.8%	5.2%	4.7%	1.7%	3.5%	1.5%	2.9%	3.8%	4.7%	11.1%
	Retiree	Count	4	4	3	0	5	0	2	3	2	8
		Percentage of total	1.2%	1.2%	.9%	0.0%	1.5%	0.0%	.6%	.9%	.6%	2.3%
	Other	Count	7	5	1	4	2	1	1	5	2	10
		Percentage of total	2.0%	1.5%	.3%	1.2%	.6%	.3%	.3%	1.5%	.6%	2.9%
Total		Count	158	140	125	45	129	55	71	99	133	343
		Percentage of total	46.1%	40.8%	36.4%	13.1%	37.6%	16.0%	20.7%	28.9%	38.8%	100.0%

Occupation & Q8 The impressive features of the selected cultural relics Cross Tabulation												
			Multiple Choice <sup>a</sup>							Total		
			Q8.1 Material	Q8.2 Color	Q8.3 Pattern	Q8.4 Function	Q8.5 Usability	Q8.6 Cultural Significance	Q8.7 Emotional Value		Q8.8 Form	
Occupation	Student	Count	17	40	35	16	9	39	12	10	69	
		Percentage of total	5.0%	11.7%	10.2%	4.7%	2.6%	11.4%	3.5%	2.9%	20.1%	
	Government and public institutions	Count	8	7	13	2	3	15	5	4	23	
		Percentage of total	2.3%	2.0%	3.8%	.6%	.9%	4.4%	1.5%	1.2%	6.7%	
	Corporate employee	Count	67	77	89	22	13	117	26	32	183	
		Percentage of total	19.5%	22.4%	25.9%	6.4%	3.8%	34.1%	7.6%	9.3%	53.4%	
	Self-employed	Count	3	5	5	3	5	9	1	4	12	
		Percentage of total	.9%	1.5%	1.5%	.9%	1.5%	2.6%	.3%	1.2%	3.5%	
	Freelancer	Count	21	13	13	7	5	27	10	4	38	
		Percentage of total	6.1%	3.8%	3.8%	2.0%	1.5%	7.9%	2.9%	1.2%	11.1%	
	Retiree	Count	3	2	6	0	1	4	3	2	8	
		Percentage of total	.9%	.6%	1.7%	0.0%	.3%	1.2%	.9%	.6%	2.3%	
	Other	Count	1	2	2	1	1	7	1	1	10	
		Percentage of total	.3%	.6%	.6%	.3%	.3%	2.0%	.3%	.3%	2.9%	
Total		Count	120	146	163	51	37	218	58	57	343	
		Percentage of total	35.0%	42.6%	47.5%	14.9%	10.8%	63.6%	16.9%	16.6%	100.0%	

Occupation & Q9 The purpose of buying cultural and creative products Cross Tabulation								
		Multiple Choice <sup>a</sup>					Total	
		a9.1 Collection and commemoration	a9.2 Practical and functional	a9.3 Gift to friends and relatives	a9.4 Decorate life and enhance the cultural atmosphere in daily life	a9.5 Other		
Occupation	Student	Count	45	20	18	27	5	69
		Percentage of total	13.1%	5.8%	5.2%	7.9%	1.5%	20.1%
	Government and public institutions	Count	19	3	5	9	2	23
		Percentage of total	5.5%	.9%	1.5%	2.6%	.6%	6.7%
	Corporate employee	Count	134	30	32	81	11	183
		Percentage of total	39.1%	8.7%	9.3%	23.6%	3.2%	53.4%
	Self-employed	Count	10	0	3	4	2	12
		Percentage of total	2.9%	0.0%	.9%	1.2%	.6%	3.5%
	Freelancer	Count	29	6	8	15	1	38
		Percentage of total	8.5%	1.7%	2.3%	4.4%	.3%	11.1%
	Retiree	Count	4	0	0	4	3	8
		Percentage of total	1.2%	0.0%	0.0%	1.2%	.9%	2.3%
	Other	Count	6	1	2	2	1	10
		Percentage of total	1.7%	.3%	.6%	.6%	.3%	2.9%
Total		Count	247	60	68	142	25	343
		Percentage of total	72.0%	17.5%	19.8%	41.4%	7.3%	100.0%

Occupation & Q10 The type of buying cultural and creative products in Henan Museum Cross Tabulation									
		Multiple Choice <sup>a</sup>						Total	
		b10.1 Fine collection category (reproduction version of cultural relics)	b10.2 Lifestyle products category	b10.3 Office stationery category	b10.4 Food category	b10.5 Jewelry category	b10.6 Other		
Occupation	Student	Count	44	20	31	5	18	3	69
		Percentage of total	12.8%	5.8%	9.0%	1.5%	5.2%	.9%	20.1%
	Government and public institutions	Count	17	9	3	2	4	3	23
		Percentage of total	5.0%	2.6%	.9%	.6%	1.2%	.9%	6.7%
	Corporate employee	Count	116	64	40	5	51	15	183
		Percentage of total	33.8%	18.7%	11.7%	1.5%	14.9%	4.4%	53.4%
	Self-employed	Count	7	3	2	1	5	1	12
		Percentage of total	2.0%	.9%	.6%	.3%	1.5%	.3%	3.5%
	Freelancer	Count	32	13	3	2	8	3	38
		Percentage of total	9.3%	3.8%	.9%	.6%	2.3%	.9%	11.1%
	Retiree	Count	4	1	0	1	2	4	8
		Percentage of total	1.2%	.3%	0.0%	.3%	.6%	1.2%	2.3%
	Other	Count	5	1	1	1	1	4	10
		Percentage of total	1.5%	.3%	.3%	.3%	.3%	1.2%	2.9%
Total		Count	225	111	80	17	89	33	343
		Percentage of total	65.6%	32.4%	23.3%	5.0%	25.9%	9.6%	100.0%

**Occupation & Q11 The factors that inspire the desire to buy cultural and creative products Cross Tabulation**

			Multiple Choice										Total
			e11.1 Cheap price	e11.2 High functionality and practical value	e11.3 Product aesthetics	e11.4 Creativity of the product	e11.5 Novelty-seeking	e11.6 Interactivity and fun of the product	e11.7 Exquisite packaging	e11.8 Good quality and material	e11.9 Commemorative value	e11.10 Other	
Occupation	Student	Count	24	29	38	28	3	16	5	4	23	1	69
		Percentage of total	7.0%	8.5%	11.1%	8.2%	0.9%	4.7%	1.5%	1.2%	6.7%	.3%	20.1%
	Government and public institutions	Count	3	9	9	10	2	8	1	0	11	2	23
		Percentage of total	0.9%	2.6%	2.6%	2.9%	0.6%	2.3%	0.3%	0.0%	3.2%	0.6%	6.7%
	Corporate employee	Count	48	66	79	55	13	37	6	23	79	11	183
		Percentage of total	14.0%	19.2%	23.0%	16.0%	3.8%	10.8%	1.7%	6.7%	23.0%	3.2%	53.4%
	Self-employed	Count	4	3	3	8	1	2	2	1	4	0	12
		Percentage of total	1.2%	0.9%	.9%	2.3%	0.3%	.6%	.6%	0.3%	1.2%	.0%	3.5%
	Freelancer	Count	8	15	16	12	3	10	3	7	17	0	38
		Percentage of total	2.3%	4.4%	4.7%	3.5%	0.9%	2.9%	0.9%	2.0%	5.0%	0.0%	11.1%
	Retiree	Count	3	2	2	1	1	1	0	0	2	2	8
		Percentage of total	0.9%	0.6%	.6%	0.3%	0.3%	.3%	0.0%	0.0%	.6%	0.6%	2.3%
	Other	Count	4	1	3	0	1	1	1	1	5	1	10
		Percentage of total	1.2%	0.3%	.9%	.0%	0.3%	.3%	.3%	0.3%	1.5%	.3%	2.9%
Total		Count	94	125	150	114	24	75	18	36	141	17	343
		Percentage of total	27.4%	36.4%	43.7%	33.2%	7.0%	21.9%	5.2%	10.5%	41.1%	5.0%	100.0%

**Occupation & Q14 Factors that do not meet the expectations of buying cultural and creative products Cross Tabulation**

			Multiple Choice*								Total
			e14.1 Similar to other museum product types, lack of character	e14.2 Low quality of products	e14.3 Weak practicality	e14.4 Lack of cultural expression	e14.5 High price	e14.6 Lack of aesthetics	e14.7 Lack of creativity Inability to meet individual needs	e14.8 Other	
Occupation	Student	Count	18	9	17	12	28	12	12	3	58
		Percentage of total	6.1%	3.1%	5.8%	4.1%	9.5%	4.1%	4.1%	1.0%	19.7%
	Government and public institutions	Count	4	4	7	0	8	2	4	1	17
		Percentage of total	1.4%	1.4%	2.4%	0.0%	2.7%	.7%	1.4%	.3%	5.8%
	Corporate employee	Count	39	39	55	41	71	20	28	8	160
		Percentage of total	13.2%	13.2%	18.6%	13.9%	24.1%	6.8%	9.5%	2.7%	54.2%
	Self-employed	Count	3	3	2	1	4	1	4	0	10
		Percentage of total	1.0%	1.0%	.7%	.3%	1.4%	.3%	1.4%	0.0%	3.4%
	Freelancer	Count	13	6	11	8	17	3	5	2	33
		Percentage of total	4.4%	2.0%	3.7%	2.7%	5.8%	1.0%	1.7%	.7%	11.2%
	Retiree	Count	1	1	3	0	2	0	1	3	7
		Percentage of total	.3%	.3%	1.0%	0.0%	.7%	0.0%	.3%	1.0%	2.4%
	Other	Count	1	1	1	2	8	2	0	1	10
		Percentage of total	.3%	.3%	.3%	.7%	2.7%	.7%	0.0%	.3%	3.4%
Total		Count	79	63	96	64	138	40	54	18	295
		Percentage of total	26.8%	21.4%	32.5%	21.7%	46.8%	13.6%	18.3%	6.1%	100.0%

## 4) Cross-Tabulation Based on Monthly Income

			Monthly income & Q7 Cultural relics Cross Tabulation									
			Multiple Choice <sup>a</sup>									Total
			q7.1 The Jiabu Bone Flute	q7.2 The Duling Square Ding	q7.3 Fuhao's Owl-shaped Bronze Zun	q7.4 The Jade Handle Iron Sword	q7.5 The Lotus Crane Square Pot	q7.6 The Cloud Pattern Bronze Jin	q7.7 Four Divine Creatures Cloud Diagram Mural	q7.8 The Golden Jian of Empress Wu Zetian	q7.9 Ru Kiln Sky Blue Glazed Carved Goose-neck Vase	
Monthly income	Less than RMB 2,000	Count	25	13	27	6	25	5	10	12	21	53
		Percentage of total	7.3%	3.8%	7.9%	1.7%	7.3%	1.5%	2.9%	3.5%	6.1%	15.5%
	RMB 2,000-5,000	Count	100	96	72	28	77	41	41	72	82	219
		Percentage of total	29.2%	28.0%	21.0%	8.2%	22.4%	12.0%	12.0%	21.0%	23.9%	63.8%
	RMB 5,000-8,000	Count	17	19	15	8	20	7	14	9	21	46
		Percentage of total	5.0%	5.5%	4.4%	2.3%	5.8%	2.0%	4.1%	2.6%	6.1%	13.4%
More than RMB 8,000	Count	16	12	11	3	7	2	6	6	9	25	
	Percentage of total	4.7%	3.5%	3.2%	.9%	2.0%	.6%	1.7%	1.7%	2.6%	7.3%	
Total		Count	158	140	125	45	129	55	71	99	133	343
		Percentage of total	46.1%	40.8%	36.4%	13.1%	37.6%	16.0%	20.7%	28.9%	38.8%	100.0%

			Monthly income & Q8 The impressive features of the selected cultural relics Cross Tabulation								
			Multiple Choice <sup>a</sup>							Total	
			Q8.1 Material	Q8.2 Color	Q8.3 Pattern	Q8.4 Function	Q8.5 Usability	Q8.6 Cultural Significance	Q8.7 Emotional Value		Q8.8 Form
Monthly income	Less than RMB 2,000	Count	13	30	27	11	5	30	10	9	53
		Percentage of total	3.8%	8.7%	7.9%	3.2%	1.5%	8.7%	2.9%	2.6%	15.5%
	RMB 2,000-5,000	Count	84	91	105	28	24	139	33	32	219
		Percentage of total	24.5%	26.5%	30.6%	8.2%	7.0%	40.5%	9.6%	9.3%	63.8%
	RMB 5,000-8,000	Count	18	19	22	5	5	31	10	12	46
		Percentage of total	5.2%	5.5%	6.4%	1.5%	1.5%	9.0%	2.9%	3.5%	13.4%
More than RMB 8,000	Count	5	6	9	7	3	18	5	4	25	
	Percentage of total	1.5%	1.7%	2.6%	2.0%	.9%	5.2%	1.5%	1.2%	7.3%	
Total		Count	120	146	163	51	37	218	58	57	343
		Percentage of total	35.0%	42.6%	47.5%	14.9%	10.8%	63.6%	16.9%	16.6%	100.0%

Monthly income & Q9 The purpose of buying cultural and creative products Cross Tabulation								
			Multiple Choice <sup>a</sup>					Total
			a9.1 Collection and commemoration	a9.2 Practical and functional	a9.3 Gift to friends and relatives	a9.4 Decorate life and enhance the cultural atmosphere in daily life	a9.5 Other	
Monthly income	Less than RMB 2,000	Count	37	17	13	21	3	53
		Percentage of total	10.8%	5.0%	3.8%	6.1%	.9%	15.5%
	RMB 2,000-5,000	Count	157	33	38	94	17	219
		Percentage of total	45.8%	9.6%	11.1%	27.4%	5.0%	63.8%
	RMB 5,000-8,000	Count	35	7	8	19	2	46
		Percentage of total	10.2%	2.0%	2.3%	5.5%	.6%	13.4%
	More than RMB 8,000	Count	18	3	9	8	3	25
		Percentage of total	5.2%	.9%	2.6%	2.3%	.9%	7.3%
Total		Count	247	60	68	142	25	343
		Percentage of total	72.0%	17.5%	19.8%	41.4%	7.3%	100.0%

Monthly income & Q10 The type of buying cultural and creative products in Henan Museum Cross Tabulation									
			Multiple Choice <sup>a</sup>						Total
			b10.1 Fine collection category (reproduction version of cultural relics)	b10.2 Lifestyle products category	b10.3 Office stationery category	b10.4 Food category	b10.5 Jewelry category	b10.6 Other	
Monthly income	Less than RMB 2,000	Count	31	16	24	5	14	2	53
		Percentage of total	9.0%	4.7%	7.0%	1.5%	4.1%	.6%	15.5%
	RMB 2,000-5,000	Count	149	73	38	8	53	28	219
		Percentage of total	43.4%	21.3%	11.1%	2.3%	15.5%	8.2%	63.8%
	RMB 5,000-8,000	Count	28	16	9	1	17	1	46
		Percentage of total	8.2%	4.7%	2.6%	.3%	5.0%	.3%	13.4%
	More than RMB 8,000	Count	17	6	9	3	5	2	25
		Percentage of total	5.0%	1.7%	2.6%	.9%	1.5%	.6%	7.3%
Total		Count	225	111	80	17	89	33	343
		Percentage of total	65.6%	32.4%	23.3%	5.0%	25.9%	9.6%	100.0%

Monthly income & Q11 The factors that inspire the desire to buy cultural and creative products Cross Tabulation													
			Multiple Choice <sup>a</sup>										Total
			c11.1 Cheap price	c11.2 High functionality and practical value	c11.3 Product aesthetics	c11.4 Creativity of the product	c11.5 Novelty-seeking	c11.6 Interactivity and fun of the product	c11.7 Exquisite packaging	c11.8 Good quality and material	c11.9 Commemorative value	c11.10 Other	
Monthly income	Less than RMB 2,000	Count	23	28	24	21	3	13	4	2	15	1	53
		Percentage of total	6.7%	8.2%	7.0%	6.1%	.9%	3.8%	1.2%	.6%	4.4%	.3%	15.5%
	RMB 2,000-5,000	Count	59	78	94	64	11	39	11	23	98	12	219
		Percentage of total	17.2%	22.7%	27.4%	18.7%	3.2%	11.4%	3.2%	6.7%	28.6%	3.5%	63.8%
	RMB 5,000-8,000	Count	10	14	22	21	5	11	2	6	20	2	46
		Percentage of total	2.9%	4.1%	6.4%	6.1%	1.5%	3.2%	.6%	1.7%	5.8%	.6%	13.4%
More than RMB 8,000	Count	2	5	10	8	5	12	1	5	8	2	25	
	Percentage of total	.6%	1.5%	2.9%	2.3%	1.5%	3.5%	.3%	1.5%	2.3%	.6%	7.3%	
Total		Count	94	125	150	114	24	75	18	36	141	17	343
		Percentage of total	27.4%	36.4%	43.7%	33.2%	7.0%	21.9%	5.2%	10.5%	41.1%	5.0%	100.0%

Monthly income & Q14 Factors that do not meet the expectations of buying cultural and creative products Cross Tabulation											
			Multiple Choice <sup>a</sup>								Total
			e14.1 Similar to other museum product types, lack of character	e14.2 Low quality of products	e14.3 Weak practicality	e14.4 Lack of cultural expression	e14.5 High price	e14.6 Lack of aesthetics	e14.7 Lack of creativity Inability to meet individual needs	e14.8 Other	
Monthly income	Less than RMB 2,000	Count	12	8	14	10	24	9	6	2	43
		Percentage of total	4.1%	2.7%	4.7%	3.4%	8.1%	3.1%	2.0%	.7%	14.6%
	RMB 2,000-5,000	Count	45	34	65	42	91	24	36	15	195
		Percentage of total	15.3%	11.5%	22.0%	14.2%	30.8%	8.1%	12.2%	5.1%	66.1%
	RMB 5,000-8,000	Count	11	13	11	4	18	4	9	1	36
		Percentage of total	3.7%	4.4%	3.7%	1.4%	6.1%	1.4%	3.1%	.3%	12.2%
More than RMB 8,000	Count	11	8	6	8	5	3	3	0	21	
	Percentage of total	3.7%	2.7%	2.0%	2.7%	1.7%	1.0%	1.0%	0.0%	7.1%	
Total		Count	79	63	96	64	138	40	54	18	295
		Percentage of total	26.8%	21.4%	32.5%	21.7%	46.8%	13.6%	18.3%	6.1%	100.0%

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