



AESTHETIC ART RESEARCH ON THE ARTISTIC DESIGN AND CULTURAL  
IN HERITANCE OF ANCIENT WESTERN REGION DOLLS IN CHINA



A Thesis Submitted in Partial Fulfillment of the Requirements  
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By  
Miss Dan YANG



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REGION DOLLS IN CHINA  
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Field of Study       Design  
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Art knows no boundaries. In today's world of economic globalization and cultural exchange, the fusion of cultures has always been the driving force behind global development. The exchange and integration of world cultures promote mutual development. In this social context of cultural exchange and integration, the inheritance and development of ethnic culture are crucial for a country's comprehensive strength. The design of fondant cakes combines both edible and visual values, and some high-end works even possess artistic value for collection. By incorporating traditional elements of the ethnic cultures in Ancient Western Region, Xinjiang, and surrounding areas of China into the design of these cakes, not only can works of artistic value be created, but also substantial market value can be achieved. At the same time, it helps promote and inherit traditional ethnic culture. Based on the value of fondant works, drawing inspiration from the ethnic culture and mythical stories of Ancient Western Region, the thesis aims to design fondant dolls that combine modern fondant techniques with the distinctive features of ancient-style dolls. By examining the process and historical development of ethnic doll design in the Ancient Western Region, and combining modern fondant production techniques with ancient-style dolls, the thesis ultimately presents strategies for creating ancient-style dolls in the Ancient Western Region.

The research mainly focuses on fondant doll design, where Ancient Western Region doll design not only embodies artistic and market value but also endows ethnic cultural heritage value, integrating ethnic cultural inheritance into the creation of modern fondant art. The research methods employed in this study mainly include literature review, questionnaire survey, IPA analysis, AHP hierarchical analysis, mathematical statistics, logical analysis, design showcase, and design realization. From topic selection to the realization of ethnic doll design in the Ancient Western Region. This research has significant reference value for the cultural inheritance and development of ethnic dolls in the Ancient Western Region. Meanwhile, it provides a great reference for the entire process of ethnic doll design and creation in the Ancient Western Region.

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YANG DAN



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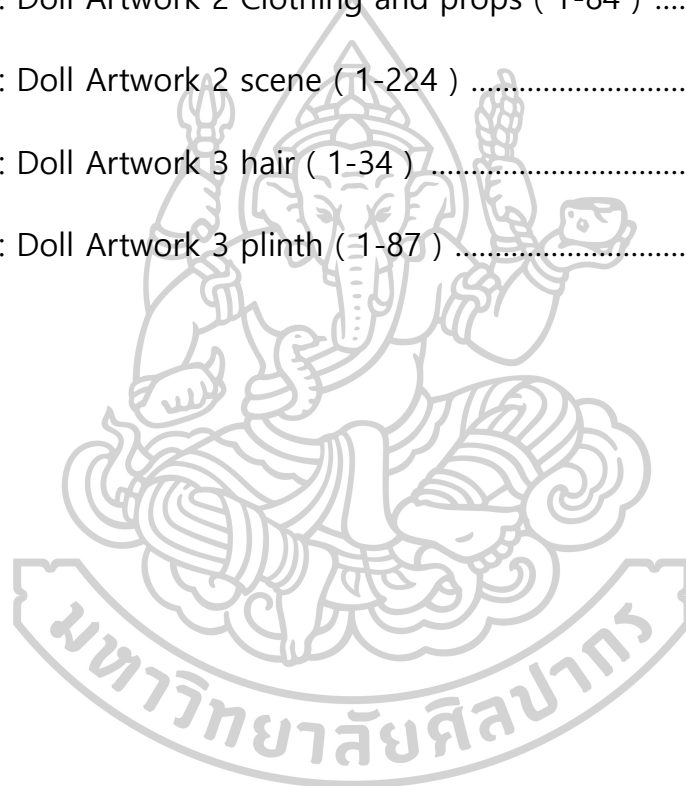
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## Chapter 1 Introduction

### 1.1 Background and Motivation for the Creation

#### 1.1.1 Background of the Creation

##### 1.1.1.1 Rich and Diverse Ancient Western Region Culture and Mythological Stories

"There are only four cultural systems in the world with a long history, vast territory, distinct characteristics, and profound influence: China, India, Greece, and Islam. There is no fifth one. And the only place where these four cultural systems converge is the Hexi Corridor in China, including Dunhuang and Xinjiang. There is no second place." — Ji Xianlin

In the vast world, one of the four major cultural systems that promote extensive communication is the Xinjiang region in China. Cultural exchange primarily relies on people, as cultural exchange without people is meaningless and even nonexistent. Moreover, human interaction not only drives cultural exchange but also enhances the beauty of the interaction area. This is an undeniable fact. After intense and passionate discussions, netizens have finally reached a consensus on the location of the most beautiful women in China, and the answer is —Xinjiang.

The Xinjiang Uygur Autonomous Region, located in the central part of the mainland, benefits from convenient transportation infrastructure and the connection to the Silk Road, which has brought together the scattered oases into a cohesive whole. Throughout its long and winding history, the ancient Western Regions have seen the fusion and integration of different ethnic cultures through long-term exchanges, creating a splendid ancient Western Regions culture. As history continues to unfold, the distinctive ethnic cultures, as carriers, have undergone continuous evolution and enrichment in the process of historical development. Due to differences in geographical location and the development of human history, different ethnic groups have formed their own unique cultural characteristics in the ancient Western Regions. The exchange and influence of different ethnic groups in the region

have contributed to cultural permeation, resulting in a diverse and unique minority ethnic culture. Cultural exchanges in this region have enriched the cultural inheritance of the Chinese nation and added diverse elements to the entire process of cultural transmission, becoming an essential part of it. Xinjiang has been a region of coexistence of multiple ethnic groups since ancient times. In order to obtain more survival resources, inevitable wars, plundering, and annexations have occurred. The only fortunate thing is that ethnic civilizations have always been inherited and continued. The disappearance of a certain ethnic group in competition often gives birth to a new culture and civilization in a state of fusion. The ancient culture of the Western Regions is rich and diverse, possessing significant heritage value. The mythological culture of the ancient Western Regions is exquisite, with the beautiful images of fairies, goddesses, and spirits. The figures portrayed in these myths have conveyed the artistic aesthetic produced by the clash of multiple cultures. This aesthetic has inspired the creation of puppets in the Western Regions, with the multi-element fusion of puppet images forming initial models in people's minds.

#### **1.1.1.2 The Demand and Value of Fondant Art in the Cake Market**

In General Secretary Xi Jinping's report at the 19th National Congress, he emphasized that socialism with Chinese characteristics has entered a new era of development. The principal contradiction of current Chinese society is that the unbalanced and inadequate development cannot satisfy people's ever-growing needs for a better life. Surveys on public needs are reflected in various aspects. According to a survey on the status and development trends of the dessert industry conducted by China Industry Research Network and the Chinese Dessert Industry in 2016, the public's demand for desserts is gradually moving towards personalization, imagery, and distinctiveness (Yu Hao, 2019) . " Food is the first necessity of the people ." however, under the background of continuously enriched material life, people's demand for food has evolved from merely satisfying hunger to pursuing a combination of color, aroma, and taste, with some new requirements for the aesthetics and artistry of food (ChenYongfang,



2020). Over the past 20 years of the global pastry industry's development, diversification has been the trend, and personalized pastries have become the main form of development (Wu Ji, 2020). Correspondingly, traditional cakes can no longer meet consumers' pursuits in terms of spirit, aesthetics, and a sense of ceremony against the backdrop of increasingly diverse demands for desserts and pastries. In this context, fondant cakes have emerged, gradually showing competitive advantages and market development prospects in the nearly saturated traditional cake market (Cai Changchun, Xu Xinling, Gendi Jin, & Sun Changhua, 2021). The design of fondant cakes has various art forms. In the creation of fondant cakes in China, some cake artists integrate ethnic elements into their fondant cake designs, achieving a fusion of Chinese and Western cultures (Ge Yan, 2021). Integrating ethnic elements into the artistic creation of fondant cakes is of significant value for the promotion of ethnic culture and the enhancement of the artistic value of fondant cake works.

### **1.1.2 Motivation for Creation**

The development of nations and the integration between nations mutually promote global prosperity and progress. The exchange of ethnic cultures is a reflection of world cultural exchange. In a highly integrated society, the comprehensive strength of a nation is reflected in the inheritance and development of its ethnic culture, which is of crucial importance (Jiang Yihua, 2019). Art knows no boundaries, and although the art of creating fondant cakes originated from the West, it has become a global trend. The design of artistic fondant cakes combines both edible and aesthetic value, and some high-end works even possess collectible value and artistic significance (Xu Yang, 2019). With the continuous expansion of the market for artistic fondant cake creations, world-class artistic fondant cake competitions have gained broader attention. By incorporating the cultural elements of ancient Western China into the artistic design of fondant cakes, not only can valuable artistic works be created, but also significant market value can be obtained. It can promote and inherit the distinctive traditional culture of the ancient Western Region

in China. Therefore, this paper focuses on the aesthetic art of cultural inheritance in the artistic creation of ancient Western Region figurines, drawing inspiration from the ethnic culture and mythical stories of the ancient Western Region in China. It aims to create figurines that showcase the artistic beauty of the ancient Western Region and reflect the rich and splendid Chinese ethnic culture.

## **1.2 Statement of Research Questions**

As a new material for figurine design, fondant not only has strong plasticity but also possesses a unique and novel texture. In this innovative study, the design of figurines in the context of ancient Western China will utilize fondant as the main edible material, aligning with current market trends. The traditional ethnic culture and mythical stories of ancient Western China are rich and diverse. Based on the development of figurine design in the region's artistic creation, with a focus on ethnic figurine design, this study will analyze the design and artistic aesthetics of ethnic figurines in different periods of ancient Western China. It will also investigate the current aesthetic demands of the public and, based on the current market demand, creatively design fondant figurines that showcase the artistic characteristics and mysterious features of the artistic creation in ancient Western China. These figurines will reflect the artistic beauty of the blending of Chinese and Western cultures as well as the ethnic beauty of the exotic style of ancient Western China. This study aims to showcase the figurine artistic creation in ancient Western China to the world, proposing strategies for the cultural inheritance of figurine art in the region, injecting ethnic characteristics, and endowing fondant figurine artworks with both market and artistic value.

## **1.3 Research Objectives**

The objectives of this research are as follows:

- 1 、 through the review of relevant literature, the historical development of ethnic figurine design will be examined, focusing on the unique aesthetic characteristics and mythical stories of different ethnic

groups in the ancient Western region of China. The goal is to design Chinese ancient Western region figurine artworks that possess high aesthetic and artistic value.

2、 through market research, the study aims to identify the challenges in the inheritance of ethnic figurines and propose targeted strategies for the cultural inheritance of figurine art in the ancient Western region of China. These strategies will serve as theoretical references for the design of figurine artworks in this region.

3、 the study aims to design fondant dolls with ethnic elements from the ancient Western region of China, inheriting the exotic cultural characteristics of this region. Through the design and production of fondant cakes featuring ancient Western region figurines, the artistic value of fondant cake art will be showcased. This research aims to integrate Eastern and Western art, infusing the essence of figurine art into the design of the ancient Western region of China. The goal is to promote Chinese ancient Western region figurine artworks on a global scale and showcase the mysterious beauty and unique attractiveness of the Western region of China to the world.

## **1.4 Research Characteristics and Approach**

### **1.4.1 Research Characteristics**

With the improvement of people's economic conditions, there has been an increasing pursuit of emotional well-being, which is evident in the current trend in the cake consumption market. Fondant cakes, with their rich and exquisite designs, have gained popularity among consumers. The ingredients and craftsmanship of fondant cakes embody the spirit of artistic creation, indicating their potential for significant change and development. In the art world, the artistic thinking behind creating fondant cakes has also been recognized and received attention. Various competitions have showcased different artistic creations, demonstrating their high artistic and aesthetic value. Additionally, the fact that the materials used in the design of fondant cakes are edible further adds to

their market value. These unique handmade artistic creations have a market value ranging from RMB 50,000 to 300,000, reflecting both their artistic merit and market potential (Li Jian, Ma Liping, Li Yinhua, & Liu Yanyan, 2020) .

In daily life, fondant cake designs often feature a separation between the upper and lower parts. The lower part is made of edible cake, while the upper part is a scene or figurine made of fondant material. This design not only preserves the edible function of the cake but also adds aesthetic and collectible value to the fondant portion. The lower cake part can be consumed, while the upper fondant decoration can be admired or preserved, showcasing its aesthetic and collectible significance. To preserve the fondant decoration, it is important to avoid long exposure to sunlight, as it can cause the fondant to melt. Instead, it should be kept in a dry and well-ventilated environment, away from moisture. The fondant is fragile and easily breakable, so it should be handled with care to maintain its integrity and beauty. Using custom transparent acrylic packaging boxes or glass containers can help protect the decoration. Additionally, placing drying powder around the artwork can help maintain its dryness for up to 24 hours. The transparent acrylic cover prevents dust and debris from adhering to the artwork and reduces air contact, thus extending its shelf life.

This thesis is based on the intrinsic value of artistic creation in fondant works. Drawing inspiration from the exotic ethnic culture and mythical stories of the Ancient Western Region in China, it focuses on the design of ethnic doll works in the Ancient Western Region style. By combining modern artistic techniques in fondant craftsmanship with the distinctive characteristics of ancient-style dolls in the Chinese Ancient Western Region style, it proposes an overall strategy for the ethnic ancient-style dolls in the Ancient Western Region of China. The research highlights the design of doll works in the Chinese Ancient Western Region style, which not only embodies their artistic and market value but also imbues them with the value of cultural heritage in the Chinese Ancient Western

Region style. By incorporating the cultural heritage of the Chinese Ancient Western Region art into modern artistic creations, it not only showcases the exquisite craftsmanship of inheritors of Chinese intangible cultural heritage but also allows people worldwide to gain a deeper understanding of the mysterious colors of the Chinese Ancient Western Region culture and the soul of the understated and enigmatic cultural essence of the ethnic minorities in the Ancient Western Region of China.

#### **1.4.2 Research Approach**

First, collect information on the development of ethnic cultures in the Ancient Western Region of China, as well as myths, legends, and stories associated with the region. This will serve as initial inspiration for the design of ethnic dolls in the Ancient Western Region style, further establishing the design concept.

Second, examine the historical development of ethnic doll design, including the evolution of artistic features, cultural significance, and other relevant aspects. This will provide a foundation for understanding the formation of aesthetic art in the current Ancient Western Region doll design.

Third, conduct research on the consumer psychology of the general public towards artistic creations of fondant doll works. Summarize the importance and limitations of creating and inheriting artistic fondant dolls in the ancient style.

Fourth, analyze the current situation of artistic design in the cultural inheritance of ethnic dolls. Summarize the application and development of new forms, materials, and concepts.

Fifth, design fondant dolls in the Ancient Western Region style through the cultural inheritance of ethnic art, and present the design process in its entirety, showcasing the artistic features of fondant doll creation in the Ancient Western Region style.

Finally, based on the research results mentioned above, propose a

strategy for cultural inheritance in artistic design, with a focus on dolls representing the Ancient Western Region.

### **1.5 Creative Research Methods and Process**

In this study, titled "Aesthetic Art Research on the Artistic Design and Cultural Inheritance of Ancient Western Region Dolls in China", the author has conducted research on the unique ethnic culture of the ancient Western Region in China, the distinctive folk customs and mythical legends of the region, and the ethnic doll designs with exotic styles in the ancient Western Region of China. We have also explored the historical development of these dolls and conducted surveys based on modern consumer demands. Furthermore, we have elucidated the artistic creation of fondant doll artworks in the ancient Western Region of China, including the design process and aesthetic characteristics. Ultimately, we have proposed strategies for the cultural inheritance of ethnic doll art in the ancient Western Region of China. This study focuses on a comprehensive and in-depth examination of ethnic dolls in the ancient Western Region of China, as well as comparative analysis with dolls from other regions. Various research methods have been employed, including literature review, questionnaire surveys, and IPA analysis.

Literature review method: Various databases were used to retrieve relevant materials. Using the keyword "Ancient Western Region dolls in China", a total of 22 related articles were found, including 3 from intermediate journals, 16 academic papers, and 3 conference abstracts and newspaper articles. Searching with the keyword "Ancient Western Region ethnic culture in China" yielded a total of 18,900 related materials in various literature databases, including 10,900 academic journals, 5,494 dissertations, 312 conference abstracts, 766 newspapers, and 77 books. Additionally, searching with the keyword "Ancient Western Region mythical stories in China" retrieved a total of 10,300 literature sources, including 2,643 academic journals, 6,240 dissertations, 145 conference abstracts, 62 newspapers, and 443 books. Finally, using the keyword "fondant", a total of

60 relevant literature sources were retrieved, including 20 academic journals, 4 dissertations, and 36 other research forms. Currently, research on traditional culture and mythical stories in the Ancient Western Region of China is relatively abundant, serving as a foundation for further studies. However, research on dolls and artistic creation of fondant artworks in the Ancient Western Region of China is relatively limited, highlighting the innovative and unique value of this study. The comprehensive analysis of various reference materials and the review of related research outcomes have provided theoretical basis and foundational content support for this study.

Survey method: Currently widely used in social surveys, the purpose of a questionnaire is to gather information and collect data required for survey questions. The questions are presented in a tabular form to state the problems. In this study, the questionnaire method is used as a professional controlled measurement method by the author to measure a series of research questions and search for the required information from this measurement. Generally, respondents will fill in the answers according to the questions set in the questionnaire to meet the research needs. By designing standardized questionnaires, information can be effectively collected and data can be quantified, providing a better understanding of public opinions and the demand for doll consumption. A questionnaire survey was conducted to understand the basic doll consumption situation among the public and their demand for doll consumption. This survey lays the foundation for the conceptualization of ethnic doll design and the formulation of ethnic doll inheritance strategies.

Analytic Hierarchy Process (AHP): A method that combines qualitative and quantitative analysis to decompose complex problems into multiple levels and then compare and synthesize the factors at each level to help decision-makers make more systematic and effective decisions. This method quantitatively analyzes the hierarchical structure to clearly determine the importance between different factors and provide a scientific basis for decision-making. In practical applications, the AHP

method can help solve complex problems and guide decision-makers in making wise choices. In the research process, decision-makers typically decompose the research problem into different levels, including objectives, criteria, and alternatives, and then conduct qualitative and quantitative analysis to formulate decision plans. This hierarchical analysis method helps decision-makers consider the relationships between various research elements comprehensively and makes the decision-making process more systematic and organized. The AHP method decomposes the problem into different constituent factors according to the structure and overall objective of the problem, and then combines them into a multi-level analytical structure model based on their relationships and dependencies. Through this method, the relative importance weights of each factor with respect to the overall objective can be determined, and the ranking of decision alternatives or measures at the lowest level relative to the highest-level overall objective can be determined. This method helps decision-makers have a clearer understanding of the problem structure and the relationships between factors, enabling effective decision-making and option prioritization. In the research process, the AHP method is used to analyze the problem hierarchically and then use matrix comparisons to handle importance, in order to calculate the weights of various indicators. This method quantifies qualitative analysis results and presents the importance of indicators at different levels more intuitively. This study is based on a foundational research on consumer satisfaction surveys, applying the AHP method to determine the weights of various evaluation indicators, and using analysis software such as Excel and SPSS to calculate and statistically analyze the weights of various indicators, laying the foundation for identifying pain points in consumer needs analysis.

IPA (Importance-Performance Analysis) is a widely used method for evaluating customer satisfaction. It was first proposed by Martilla and James in 1977. Some literature refers to it as the Service Importance-Performance Analysis. This method is commonly used in consumer demand and satisfaction surveys, dividing the evaluation system into areas of good



performance, areas requiring additional resources, areas for slow improvement, and areas for key improvement. Through IPA analysis, decision-makers can better distinguish the strengths and weaknesses of services, providing a scientific basis for developing strategies to improve service quality. This method is popular because it is easy to operate and has low cost, making it widely applicable by utilizing the advantages of decision-making.

Statistical methods: Scientifically process and quantitatively analyze data from consumer satisfaction surveys, which is an important research method. Researchers can use Excel, SPSS software, or SPSS 21.0 to analyze survey data and calculate the weights of various indicators based on the research objectives. This method requires the data to be true and reliable, which is the basis for quantitative analysis. It can meet the requirements of fast, accurate, and large-scale data calculation without relying on computer assistance.

Logical analysis method: By using the method of logical analysis, comb through the exotic features, ethnic traditional culture, folklore of the ancient Western Region in China, and analyze the design of ethnic dolls in the ancient Western Region in China, the historical development context, and the deep analysis of ancient and modern art aesthetics, as well as the psychological needs of modern consumers. By applying the knowledge and methods of logic, classify, compare, induce, and synthesize the relevant content, and finally propose cultural strategies suitable for the inheritance of ethnic doll art design in the ancient Western Region in China.

## **1.6 Research Scope**

The research object of the study, "Aesthetic Art Research on the Artistic Design and Cultural Inheritance of Ancient Western Region Dolls in China," is to select and summarize mythological stories with character images and the folk customs of the ancient Western Region, as well as representative exotic features and ethnic traditional culture of the ancient Western Region. The aim is to find inspiration for artistic creation. Using a

random sampling method, the study conducts satisfaction and demand surveys on the consumer group of doll artworks. This research aims to provide insights for the creation of fondant doll designs in the ancient Western Region. By proposing strategies for promoting and inheriting the cultural design of ancient Western Region doll art, the study emphasizes the importance of sustainable development for future professional careers.



## **Chapter 2: Literature Review**

### **Historical Development of Ethnic Doll Design**

#### **2.1 Historical Development of Ethnic Dolls**

##### **2.1.1 Historical Development of Ethnic Dolls in China**

In ancient times, Xinjiang and its surrounding areas were collectively referred to as the Ancient Western Region. Throughout ancient civilization, the Ancient Western Region witnessed the establishment of the Thirty-Six Kingdoms of the Western Region. This term refers to the 36 vassal states and territories established by China in certain Asian regions. During the Han Dynasty and Western Han period, the Ancient Western Region encompassed Yumen Pass, Yang Pass, and the Dunhuang region, which were considered as a whole, referring to the western extent of these three areas. The Ancient Western Region is now located in Xinjiang and its surrounding areas (including the Yumen Pass area, Yang Pass area, and Dunhuang area in present-day Gansu province). The contemporary culture of the Western Region integrates the traditional cultures of the various regions within the Thirty-Six Kingdoms of the Ancient Western Region, giving rise to the fascinating and mysterious Western Region culture that we see today. In summary, the culture of the Ancient Western Region includes the traditional culture of the Yumen Pass

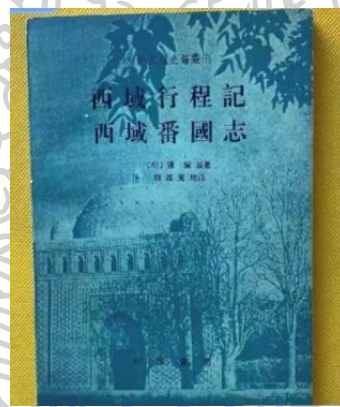
area in present-day Gansu province (now in Yumen Pass, Dunhuang city, Gansu province), the traditional culture of the Yang Pass area in present-day Gansu province (near Gudong Tan, southwest of Dunhuang City, Gansu Province) , the traditional culture of the Dunhuang area in present-day Gansu province (18 kilometers southwest of Dunhuang city, Jiuquan city, Gansu province, in the vast Gobi Desert), and the traditional cultures of the Western Region and its surrounding areas to the west of these three regions. The vassal states of the Ancient Western Region began to accept the jurisdiction of the central dynasty and the Western Region Protectorate was established. Zheng Ji officially assumed the position of "Western Region Protector", establishing this new order and formalizing the governing relationship under the title "Western Region". During that specific period, the "Thirty-Six Kingdoms of the Western Region" constituted the regions under the administration of the "Western Region Protectorate".

Dong Wan dispatched envoys to the Western Regions based on the orders of Emperor Taiwu of Northern Wei, Tuoba Tao, and his own insights. They conducted detailed investigations and studies of the Western Regions and divided it into "four regions": Region One: "East of Congling, west of Liusha"; Region Two: "West of Congling, east of Hequ"; Region Three: "South of Jieshe, north of Yuezhi"; Region Four: "Between the Western Sea and the southern water marshes" (the latter three regions are all located in the Pamir Plateau in present-day East and West). (See "The History of Northern Dynasties: Records of the Western Regions"). It was during this period that many Central Asian regions began to be considered part of the "Western Regions".

In the Tang Dynasty, the term "Western Regions" also had a distinction between "broad sense" and "narrow sense". In the broad sense, it aligned with Dong Wan's understanding, encompassing the region from Dunhuang westward to the Tian Shan Mountains, as well as extending to Central Asia and West Asia. In the narrow sense, it referred to the area west of the Congling Mountains, extending all the way to Persia (modern-day Arabian Peninsula). In the narrow sense, the concept of the "Western Regions" was

closely tied to the territorial changes of the Tang Dynasty. The Tang Dynasty established military and administrative institutions, administrative regions, and counties that reached as far as the Persian region, reflecting the significance and influence of the Western Regions during that time.

During the Ming Dynasty, the term "Western Regions" was commonly used to refer to the Dunhuang area, which extended to regions such as the Arabian Peninsula. This region held significant importance in terms of commercial and cultural exchanges, encompassing vast geographical areas and diverse ethnic cultures (see Figure 1).



*Figure 1: "Record of the Western Regions"*

During the Qianlong period of the Qing Dynasty, the "Xiyu Tuzhi" (Illustrated Gazetteer of the Western Regions) provided a detailed description of the scope of the Western Regions: "The land is located outside of Suzhou Jia Yuguan, southeast adjacent to Suzhou, northeast to Kala Khan (present-day Mongolia), west to Congling, north to Russia, south to Tibet, covering a circumference of over 20,000 li". During the Qianlong era, people began to refer to the "Western Regions" as the "Ancient Western Regions". In the Jiaqing period, the "Jiaqing Da Qing Yitong Zhi" (Comprehensive Gazetteer of the Great Qing Dynasty) replaced the term "Western Regions" with "Ancient Western Regions" and provided a detailed description of the region's scope. According to the "Jiaqing Da Qing Yitong Zhi", the area

known as the "Ancient Western Regions" not only included Kala Khan, the Gobi Desert, and the border of Gansu, but also extended to other eastern regions, reaching the border of Right Kashgar and Congling in the west, as well as the border of Lhasa in the south, forming a vast region known as the "Ancient Western Regions", extending north to the border of Russia and Left and Right Kashgar, covering a vast territory with a total length of over 20,000 li. The Qing Dynasty's scope of the "Western Regions" extended westward from Dunhuang to the region of Lake Balkhash and the western area of Congling (see Figure 2).

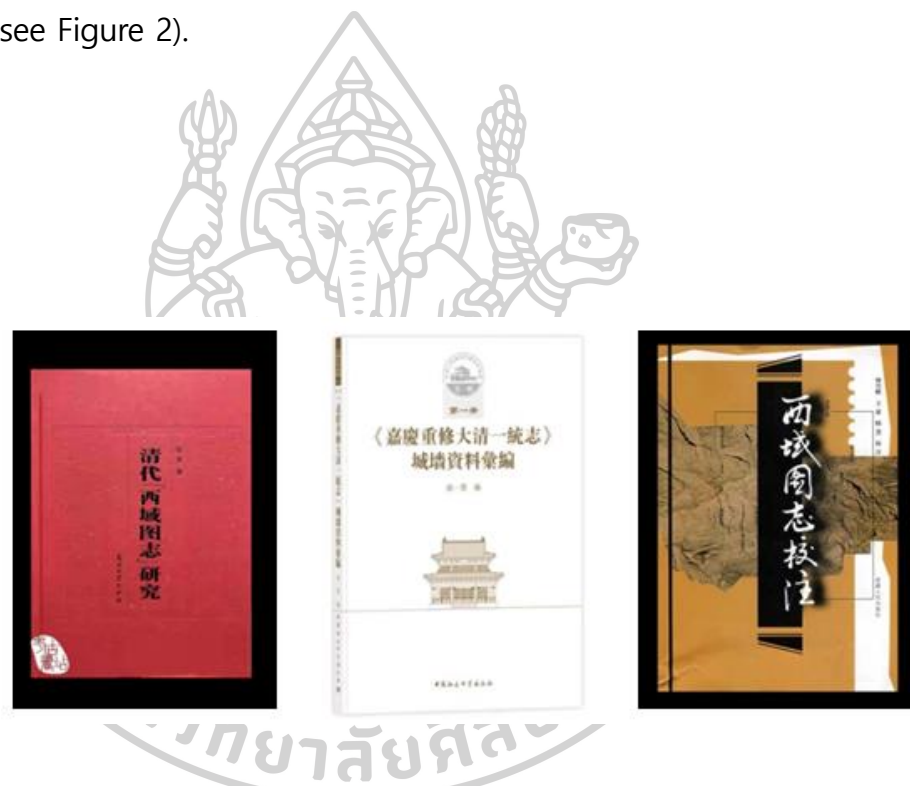


Figure 2: "Illustrated Record of the Western Regions", "Jiaqing Dynasty Unified Record", "Annotated Edition of the Illustrated Record of the Western Regions"

During the late Qin Dynasty and early Han Dynasty, the vast land of the Western Regions was home to more than fifty states of varying sizes. As the focal point of commercial competition and cultural collision, different ethnic groups developed independently and merged with each other in this region. In 138 BC, Zhang Qian's first arrival in the Western Regions opened up a series of new opportunities for foreign exchange

and trade. The region consisted of a total of 36 countries, which are historically referred to as the "Thirty-Six Kingdoms of Ancient Western Regions." These countries had their own political independence and cultural characteristics. Zhang Qian's diplomatic mission strengthened the connections between China and the Ancient Western Regions, paving the way for cultural exchanges and cooperation between the two regions. The "Thirty-Six Kingdoms of Ancient Western Regions" differed from modern states in that they lacked strict organizational structures and political implications. It referred to some tribes or ethnic organizations in the Western Regions, rather than modern states with strict organizational structures and political meanings. It was based on oases or grassland areas, rather than the strict organizational structures and political significance of modern states. These "countries" actually represented a certain way of survival based on production under specific historical conditions. They often maintained relatively stable relationships through cooperation, trade, alliances, and other means. This multi-state system was relatively common in the ancient Western Regions and significantly different from the organizational structure and political concepts of modern nation-states.

In the ancient civilization of China, the Western Regions were home to many tribes and ethnic organizations (see Appendix 1: Exploring the Ancient Western Regions), such as Kucha, Yanqi, Ruoqiang, Loulan, and other Western Region countries like Wusun, Dawan, Anxi, and Dayuezhi (see Table 1). These regions held significant importance in ancient China, as they fostered rich exchanges and communication between ancient China and the Western Regions. The development of cultural exchanges, commercial contacts, and political relationships between ancient China and these regions had a profound impact on societal prosperity and progress. By studying these countries, we can better understand the connections between ancient China and the Western Regions and further explore the profound historical and cultural exchanges and interactions.

*Table 1:* Statistical Table of the Thirty-Six Ancient Western Region States in China

Ancient Country Names	Present Place Names	Reasons for extinction
Shanshan (Loulan)	Ruoqiang County and its surrounding areas in the present-day Western Regions of China	Cut-off water source
Ruoqiang	Southeast of Ruoqiang County in the present-day Western Regions of China	Annexation by Shanshan
Wuzhi	150 kilometers southwest of Taxkorgan County in the present-day Western Regions of China	Acceptance of Tang Dynasty rule
Xiye (Piaosha)	South of Yecheng County in the present-day Western Regions of China	Conquered by Shache in early Eastern Han Dynasty, and merged by Shule in late Eastern Han Dynasty
Zihe	Southwest of the present-day Western Regions of China	Merged with Shache and belonged to Qiang during the Eastern Han Dynasty
Huhu	Yulegan Tielieke in the northwest of Turpan in the present-day Western Regions	Annexed by Cheshi
Juandu	100 kilometers west of Wuqia County in the present-day Western Regions of China	Accepting foreign rule
Xiaowan	Southwest of Qiemo County in ancient Western Regions of China, South of Cherchen River	Annexed by Shanshan
Yinai	Ancient Western Regions of China, Tashkurgan	Merged into Shache
Jingjue	In the desert downstream of the Niyah River, north of present-day Minfeng County, remains of the Niyah site can still be found	Annexed by Shanshan
Qiemo	Southwest of Qiemo County in ancient Western Regions of China	Annexed by Shanshan
Yutian	Near ancient Western Regions and Hetian County in China	Accepting Tang Dynasty rule
Danhuan	Northwest outskirts of Urumqi	Merged into other countries
Ronglu	South of Yutian County in ancient Western Regions of China	Annexed by Yutian

Yumi	North of Cele County and northeast of Yutian County in the desert region.	Annexed by Yutian
Beilu	Southern edge of the Junggar Basin, extending to the southeast of Urumqi City	In the Three Kingdoms and Wei-Jin period, it was merged with Cheshi later
Qule	South of Cele County in the Hotan region of present-day Western Regions.	Annexed by Yutian
Pishan	Southeast of Pishan County in ancient Western Regions of China, near Zanggui	Annexed by Yutian
Moshan (Shanguo)	Kuruk Mountain range located east of Kurla County	Annexed by Yanqi
Guizi	Nearby Kucha County in ancient Western Regions of China	Accepted Tang Dynasty rule
Taohuai	Upper Pamir region, located on the source of the Amu River	Warfare and annexation by other countries
Gumo	Aksu City and Wensu County today.	Annexed by Guizi

Wensu	In the present-day Ush County, not Wensu County	Annexed by Guizi
Weitou	A nomadic kingdom, situated in the vicinity of present-day Ahqi County and Bachu County.	Annexed by Guizi
Xiuxun	The valley of the upper Kyzyl River, located in the outer Alay Range in southern Kyrgyzstan	Revolted and completely annihilated by enemy forces
Wulei	Northeast of the Badakhshan Mountains in Afghanistan	Annexed
Huaguo (Yeda)	Balkh Province in northern Afghanistan	Annexed by the Sasanian Empire
Shule	Kashgar, an ancient city in the Western Regions of China	Accepted Tang Dynasty rule
Shache	Shache County, an ancient county in the Western Regions of China	Annexed by Shule
Jieshi	South of Samarkand, Uzbekistan	Annexed by the Arab



(Shiguo)		Empire
Yanqi	Yanqi Autonomous County, an ancient county in the Western Regions of China	Accepted Tang Dynasty rule
Weixu	Northeast of Yanqi County, within the territory of Heshuo County	Annexed by Yanqi
Jibin	Peshawar, Pakistan	Annexed by the Han Dynasty
Jianbing	Baltistan, northeastern region of Kashmir, Pakistan	Annexed
Weili	Korla and Yuli regions in ancient Western Regions of China	Annexed by Yanqi
Jieguo	Ancient Fukang County in the Western Regions of China.	Annexed by Yanqi
Cheshi	Jimusaer County and Turpan Basin in ancient Western Regions of China	Annexed by Gaochang
Wutanzi	Manas County and north of Changji City in the present-day Western Regions of China	Annexed

Many years before the Common Era, the central Han dynasty government established trade and transportation hubs in the Western Regions, which facilitated the economic development of the ancient Western Regions. The ancient Western Regions were officially incorporated into China's jurisdiction, marking a milestone event that demonstrated China's expansion of power and control over the region. In 1884, during the Qing dynasty, the local government established an administrative institution with provincial-level status, further strengthening its rule over the region. In 1949, the ancient Western Regions experienced a peaceful liberation, signaling a fundamental change in the regional governance. With the establishment of the People's Republic of China during this period, the ancient Western Regions were peacefully liberated. On October 1, 1955, Xinjiang was officially established, encompassing 14 regions, prefectures, and cities, as well as 89 county-level administrative units, of which 33 were designated as border counties (cities)

adjacent to foreign countries. The autonomous region has a unique geographical location, bordering 8 countries, with a total length of over 5,600 kilometers of border that spans the entire ancient Western Regions of the Xinjiang Uygur Autonomous Region. In ancient times, this region served as a crucial passage connecting the Silk Road, and now it has developed into the second important land transportation artery connecting Asia and Europe. This region played an important role as a gateway to the Silk Road in ancient times and is now regarded as a vital hub connecting Asia and Europe, with its geographical location possessing significant strategic importance.

The development of ethnic dolls in China has a long and extensive history, dating back thousands of years. Archaeological excavations have unearthed artifacts from prehistoric times, indicating that the origin of toys can be traced back to primitive societies. At sites such as the Yangshao Culture Site, Banpo Site, and Hemudu Site in Zhejiang Province, small toys, mainly in the form of stone balls, pottery balls (see Figure 9), and pottery whistles (see Figure 10), have been discovered (Zhao Zhou, 2021). The discovery of bone flutes made from animal bones in Wuyang County, Henan Province (see Figure 11), can be considered an ancient whistle. This represents an upgrade in toys, as the bone flute can produce sound and play seven different notes, serving both as a toy for children and as a tool for hunting. Toys originated from daily life, and labor gave toys a unique perspective. The production of toys by the people also played an indispensable role. Toys appeared earlier than dolls, which can be traced back to the Eastern Han Dynasty. The main forms of dolls included clay-made horse riders (see Figure 12) and performing arts dolls (see Figure 13), which were made from clay and fired. As time passed, the development of dolls progressed to the Sui and Tang Dynasties, where "Tang Sancai" (see Figure 14) pottery figurines and female dolls (see Figure 15) emerged and flourished. This promoted the development and advancement of clay dolls. A group of Tang Dynasty female figurines with vibrant colors and unique artistic value were discovered in the Turpan site. The production process involved hand molding and meticulous coloring, making the dolls appear

more vivid and highlighting their artistic value (Li Ang, 2020)



Figure 3: Stone Balls, Pottery Balls



Figure 4: Xun (Unearthed from Hemudu Site in Zhejiang Province)



Figure 5: Bone Flute  
(A Type of Whistle, Unearthed from Jiahu in Henan Province)



Figure 6: Horse Rider (Eastern Han Dynasty, Made of Clay)



Figure 7: Performing Kabuki (Eastern Han Dynasty, Made of Clay)



Figure 8: "Tang Sancai" (Sui and Tang Dynasties, Clay Pottery) Figure and Whistle (Li Cunsong Collection)



Figure 9: Female Figurine

(Tang Dynasty, Excavated from Turpan in the Ancient Western Region)

With the continuous development of time, the art of doll creation has gradually matured, reaching its peak during the Song Dynasty in terms of design, production, and sales. It has become a relatively mature industry with a high level of popularity. Designers create dolls based on seasonal festivals. For example, there is the "Huang Pang" doll for the Qingming Festival (see Figure 16) and the "Mo He Le" auspicious mascot for the Qixi Festival (see Figure 17)—these chubby doll figures holding lotus leaves convey the auspicious meaning of fertility and good fortune (Wu Weihui, & Cheng Bucui, 2019). They were discovered in the Song Dynasty ruins unearthed in Wudai Street, Zhenjiang. A group of five playful clay dolls with different forms were also found (see Figure 18). These clay dolls have rich and vivid images, fully showcasing the exquisite craftsmanship of doll creation during the Song Dynasty. As the development progressed to the Yuan Dynasty, the types and designs of dolls remained largely the same as those in the Song Dynasty.



Figure 10: "Huang Pang" (Song Dynasty, Qingming Festival)



*Figure 11: "Mo He Le" (Song Dynasty, Qixi Festival)*



*Figure 12: Five Children Playing with Mud Dolls*  
(Song Dynasty, excavated from Wudai Street in Zhenjiang)

The Ming Dynasty was another significant period in the further development of doll design, marked by the emergence of professional doll-making workshops and toy shops called "Shua Huo Pu". During this era, toys from different regions showcased their distinct characteristics. Among them, the most famous and influential were the Wuxi Huishan clay figurines (see Figure 19). These clay figurines originated during the Southern Dynasties and reached their peak during the Ming Dynasty (Li Dan, 2014). In the local area, there were dozens of clay figurine shops and over two hundred clay figurine workshops, forming a well-known area called "Clay Figurine Street" in Huishan, which is the birthplace of these renowned clay figurines. In terms of themes, Huishan clay figurines can be

divided into two categories: "coarse products" and "exquisite products". The "coarse products" mainly represent festive-themed doll works, with the most representative one being the "Big Afu" (see Figure 20), symbolizing blessings, warding off evil, and bringing peace. On the other hand, the "exquisite products" are named so because of their intricate craftsmanship, often handcrafted, and draw inspiration from folktales, myths and legends, customs, and opera characters. The production process involves kneading, material selection, shaping, making molds, refining details, and cutting, among other complex procedures, to create a variety of works depicting folk customs and opera characters. The "exquisite products" have a more diverse range of doll forms and vibrant colors, with higher artistic value. This is similar to the design of ancient Western Region dolls in China, as different materials were used to create art in different periods. The subject matter created by Beijing clay figurines differs from that of Huishan clay figurines. Under the influence of old Beijing culture, the creative themes of Beijing clay figurines mainly revolve around the "Three Hundred and Sixty Trades", depicting various aspects of life in old Beijing, including street vendors selling various goods and masters repairing fans, among others. Beijing clay figurines require a higher level of precision and showcase the luxury and sophistication of doll design in their design details. When a group of clay figurines is displayed together, it forms a lifelike scene reminiscent of the painting "Along the River During the Qingming Festival". In the Beijing area, doll design has its unique characteristics, represented by the "Tuer Ye" (see Figure 21), a popular doll during the Mid-Autumn Festival. It is designed with a rabbit head and a human body, symbolizing auspiciousness. In addition to Beijing, Tianjin, Hebei, and other regions are also important production areas for clay figurines. These places design clay figurines with different styles and unique characteristics based on their respective cultural traits (Wu Yutong, 2021) .



*Figure 13: Huishan Clay Figurines*

(Southern Dynasties, in the present-day Wuxi area)



*Figure 14: "Big Afu"*

("Rough Goods," collected by Wuxi Clay Doll Research Institute)



*Figure 15 Figure 21: "Lord Rabbit" ("Fine Goods," Mid-Autumn Festival)*

In the Qing Dynasty, doll toys were made with more exquisite craftsmanship and a wider range of materials, resulting in more diverse shapes. The materials used for making dolls were not limited to clay, but also included fabric, straw weaving, bamboo, and wood, among others. This period saw a more abundant development of dolls. Doll making in different regions had unique styles and characteristics, with variations in



design. In the northern Shaanxi and eastern Gansu regions, dolls were mainly made of fabric, with the design based on the pattern of the "bun doll" (see Figure 22). There were also differences in the male and female doll designs, with male dolls having round heads and long braids, while female dolls had double braids or double buns. The dolls would hold auspicious symbols such as lotus flowers, birds, fish, and rabbits in their hands, and their bodies would be decorated with auspicious patterns such as cloud patterns, sun and moon patterns, and peony patterns. These dolls were loved by the people for their cute appearance and were endowed with meanings of warding off evil, summoning spirits, and healing by their creators and disseminators. Dolls with childlike appearances were a common type of doll in the Qing Dynasty. In Qingyang, Gansu, the "fish doll" was popular, which had a doll head and a fish body, and was decorated with accessories such as pumpkin, small fish, and peach, conveying the auspicious meanings of abundance every year, many children, and success in the imperial examination. It was also a type of auspicious doll (Zhang Yukui, 2020). "Zongren" is a doll toy with unique characteristics of Beijing. It is also called "Pan Opera" (see Figure 23). The creation of this type of doll is based on characters from Peking Opera, and it combines multiple materials. Each doll is about 10 cm tall, with the head and base made of glue clay, the main material for the body frame being millet straw, and cotton used as filling material. The exterior is then made with colored paper or silk to create exquisite costumes. The distinctive feature of the Zongren doll lies in its facial makeup and costumes, with every stroke carefully delineated to embody the artistic value and aesthetic appeal of the doll (Cai Zhiqiang, 2016).



Figure 16: Hairpin doll



Figure 17: "Plate Play" (Beijing regional characteristic)

The craftsmanship of the Zongren dolls has already demonstrated the complexity and artistic nature of doll design. In the Fujian region, similar dolls are called "zhizha" or "zhihuo" (see Figure 24). "Zhihuo" is a type of doll with a clay head and a body made of colored crepe paper, gold and silver paper, and bamboo strips. The dolls are inspired by characters from folklore, opera roles, and various animals. The distinctive feature of zhizha is the meticulous coloring of the doll's facial features. Various exquisite clay sculptures (see Figure 25) are also abundant in this stage. Through the use of manual techniques, creators knead, knead, cut, fit, select, and press the clay to create dolls of various styles, and finally apply fine coloring. The manufacturing process of clay sculpture is similar to the design and creative techniques of fondant dolls. In the process of

creating artistic fondant works with exotic styles in the Ancient Western Region of China, the manufacturing process of clay sculpture can be referred to for further research and extension.



*Figure 18: "Paper Sculpture" (Fujian regional characteristic)*



*Figure 19: "Dough Sculpting" (Fujian regional characteristic)*

Chinese folk traditional art includes the form of clay sculpture, which uses flour as the main raw material. Clay sculpture (see Figure 26) is made from mature dough made of flour, glutinous rice flour, glycerin, and clear flour. Through manual techniques and various specialized tools, the dough is molded into various specific images such as flowers, birds, fish, insects, landscapes, objects, figures, and animals. This skill originated from folk traditional art in Shandong, Shanxi, Beijing, and other regions of China. Clay sculptors use their dexterity and simple tools to knead, rub, press, roll, and shape different colors of dough according to their needs. They then skillfully use small bamboo knives to dot, cut, carve, and draw, ultimately creating lifelike figures. Hair accessories and costumes are added to the head and body, completing the artistic creation in an instant.



*Figure 20: "Dough Sculpting" Four Heavenly Kings, Good Weather (present-day folk art in Wuhan)*



*Figure 21: "Dough Sculpting" Old Longevity God and Eight Immortals Crossing the Sea (present-day folk art in Wuhe District, Heze)*

According to records, clay sculpture (see Figure 27), as a historically significant traditional handicraft, has existed for a long time. In the development process of thousands of years of traditional craftsmanship, clay sculpture has become an important component of Chinese culture and folk art. Clay sculpture works not only possess artistic qualities but also serve as important physical materials that can be used in various research fields, including archaeology, sculpture, and aesthetics. The clay sculptures in the Yellow River Basin exhibit a simple and profound style, while those in the Yangtze River Basin showcase different characteristics in terms of molding style, displaying delicate, elegant, and intricate styles. These different molding styles reflect the cultural and artistic traditions of the local regions.

The art of clay sculpture can be traced back to the Han Dynasty, and its history dates back a long time. The history of Yibin clay sculpture can be traced back to the late Qing Dynasty and the early Republic of China, with a history of over 100 years of inheritance. According to archaeological research, clay sculpture figurines and little pigs were

unearthed from Tang Dynasty tombs over 1,340 years ago in Astana, Turpan (see Figure 28). The content related to clay sculpture can also be found in the book "Dongjing Meng Hua Lu" written during the Southern Song Dynasty (see Figure 29), which provides a detailed description of how to make clay sculpture figures using oil, flour, and sugar syrup to create facial expressions. According to historical records, during the Three Kingdoms period, the renowned strategist Zhuge Liang was recorded to have conquered the southern barbarian regions. He used cloth to make human heads and animal figures for sacrificial purposes, offering prayers to the river god. Under his leadership, the army successfully crossed rivers and ultimately conquered the southern regions. Those engaged in the art of clay sculpture regard Zhuge Liang as their ancestor, continuing this tradition. These legends and historical records all demonstrate the important position and rich tradition of clay sculpture in Chinese culture.



Figure 22: Ancient Western Region of Turpan Astana Cemetery  
(Tang Dynasty tomb)



Figure 23: "Dongjing Meng Hua Lu" (Southern Song Dynasty)

### 2.1.2 The International History of Ethnic Doll Development

Backgrounds of different ethnic cultures around the world have shaped the development history of ethnic dolls in different countries, each

with its own unique characteristics in doll art. For example, the origin of French costume dolls (see Figures 30/31/32/33) can be traced back to court culture, initially created to showcase the elaborate clothing worn by the French royal family and nobility. In the past, noblewomen in France often used ethnic dolls adorned with fashionable attire to display their sense of style. These lavishly decorated dolls were then gifted to members of royal families in other European countries, and they were reproduced in life-size proportions based on the clothing characteristics of these dolls. This tradition not only showcased French fashion and elegance but also facilitated the exchange and inheritance of clothing culture among European nations. As the popularity of costume dolls grew, they were mutually shared and further developed among the wealthy and merchants, gradually evolving into sophisticated costume dolls. By the 17th and 18th centuries, costume dolls had reached their peak, becoming more than just simple toys for Western countries. They were exquisite handicrafts symbolizing the clothing style and fashion culture of a nation, serving as gifts exchanged between countries (Li Xin, 2019). However, with the rise of live fashion models and fashion magazines in the 19th century, the status of costume dolls faced challenges, and their influence gradually weakened. During this period, the function of costume dolls transitioned from a medium of communication to toys and collectibles. After the end of World War II, costume dolls regained attention. In the post-war era, they became a product of resource scarcity, as the shortage of resources led to the use of costume dolls to display clothing instead of using live models, reducing costs. In the 21st century, amidst various fashion shows featuring live models, the fashion industry continues to strive for innovation, bringing designers' focus back to costume dolls. In recent years, clothing brands and designers have increasingly recognized the role of costume dolls in showcasing fashion, injecting new vitality into the field of fashion.



*Figure 24: Doll No.1 in a Silk Dress, with Cute Big Eyes*



*Figure 25: Doll No.2 in a Chiffon Dress with a Flower Crown*



*Figure 26: Exquisite and Lovely Shoes for Dolls*



*Figure 27: Doll No.3 in a College Outing Style*

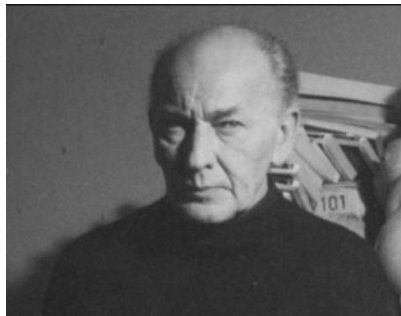
The origin of Japanese dolls (see Figure 34) can be traced back to March 3rd (Girls' Day), when families would create and display exquisite dolls, especially those with daughters. These elaborately dressed dolls were meant to pray for the happiness, health, and growth of their daughters. This type of ritual and form is called "Hinamatsuri" in Japan and was originally passed down from China (Zhu Yu, 2016). In ancient Japan, people believed that March 3rd would bring disaster, and they also believed that water had a mysterious power to cleanse impurities from the body. Therefore, they performed a ritual called "Maki" to cleanse themselves of misfortune using water (Shu Ting, 2021). In the early Heian period, nobles and emperors would use special dolls or paper dolls for this ritual. They would touch the dolls, blow on them, and let them float away with the water, symbolizing the removal of disaster and misfortune with the flow of water (Zhu Yu, 2016). These rituals also inspired the tradition of playing with dolls and changing their costumes during festivals, which was associated with praying for good health. This activity originated in the Muromachi period in the 13th century and continued until the Edo period in the 16th century. It was held on March 3rd, which gradually became Girls' Day and spread to the general public. During this time, people began to decorate hina dolls, especially during the hina doll festival held after the birth of a baby girl. By decorating the dolls, it was believed that any misfortune and disaster that may befall the baby girl would be transferred to the doll, in order to protect the girl's safety. I wish for the girl's lifelong health, happiness, and prosperity. Gradually, these dolls developed into protective deities for girls, warding off misfortune.





*Figure 28: Japanese Hina Dolls*

Ball-jointed dolls can be traced back to around 200 BC, when they were initially made of clay and wood and used in ancient Egypt and ancient Rome, with joints connected by balls. In modern times, the earliest known ball-jointed dolls originated in the 19th century and gained popularity in France and Germany. These dolls had ceramic heads and bodies made of both ceramic and wood, supported by materials such as leather and papier-mâché. Due to the complex manufacturing process, the production of these dolls was limited, making them highly sought after by collectors. The German artist Hans Bellmer's surrealistic ball-jointed doll art (see Figure 35) had a profound influence on the development of this type of doll, although he was not its original creator. His artistic works and ideas played a significant role in promoting the development of ball-jointed dolls. In addition to dolls used for ritual purposes, Japan is also known for its ball-jointed dolls, represented by BID (Ball-Jointed Doll) dolls. The Super Dollfie series of dolls, introduced by the Japanese company Volks in 1999 (see Figure 36), used cost-effective and durable materials, which contributed to the advancement of international doll design. With the progress of time, in 2005, Dollzone became the first company in China to produce ball-jointed dolls (see Figure 37), making significant contributions to the global popularity of ball-jointed dolls (see Figures 38/39/40/41) (Shu Ting, 2021) .



*Figure 29: Hans Bellmer (German Surrealist Artist)*



*Figure 30: Artwork by Hans Bellmer*



*Figure 31: Ball-Jointed Dolls (Referred to as BJD Dolls)*



Figure 32: Poster for the BJD Doll Exhibition at Naisi's Little Kingdom on August 14, 2021



Figure 33: Floor Plan of the BJD Doll Exhibition at Naisi's Little Kingdom on August 14, 2021



Figure 34: Exhibition Scene of the BJD Doll Exhibition at Naisi's Little Kingdom on August 14, 2021



Figure 35: Doll Tea Party on July 10, 2021 at DTP

Barbie dolls, designed by Ruth Handler, the co-founder of Mattel, are symbols of fashion and elegance (see Figure 42). Inspired by popular fashion paper dolls of the 1950s, Barbie dolls embody the fashion trends and vitality of that era. The name "Barbie" was given by Ruth in honor of her daughter. The first display of Barbie dolls took place at the American International Toy Fair on March 9, 1959. Since then, the fashion series has undergone over 500 improvements and enhancements, and over 1 billion Barbie dolls have been sold since 1995. Barbie's career spans over 80 different fields and represents 45 different ethnicities. She has been sold in over 150 countries, with over 1 billion boxes sold. With continuous

improvements in manufacturing, Barbie dolls have continuously adjusted their craftsmanship in clothing and accessories, resulting in increasingly excellent doll details (Zhang Zhihua, 2016) .



*Figure 36: Ruth Handler, Founder of Mattel and Barbie Doll*

In comparison to the development of ethnic dolls in China and internationally, different ethnic and regional cultures have shaped different types of dolls. In terms of international influence, international doll dolls have a greater impact than Chinese dolls. Currently, the design and production of Chinese dolls are largely influenced by Western countries and East Asian countries such as Japan and South Korea. The development of ethnic dolls in China faces certain obstacles or hindrances.

## **2.2 Origin and Development of Ethnic Doll Culture**

### **2.2.1 Chinese Culture**

In terms of ethnicity, the origins of the Chinese population can be traced back to the Paleolithic era, with the discovery of ancient human fossils such as the Wushan Man, Yuanmou Man, and Peking Man. However, these ancient humans are not direct ancestors of modern Chinese people. The main origin of modern Chinese people can be traced back to Africa, around 200,000 years ago, from where they began to migrate to different parts of the world about 100,000 years ago. In China, there are three major ethnic groups: the Mongoloid race (with the Y chromosome being O), the Australoid race (with the Y chromosome being C), and the Negrito race (with the Y chromosome being D). Among these, the Mongoloid race is the

main component of the current Chinese population (Ouyang Qian, 2023) .

In terms of clothing, Chinese clothing culture has a long history, dating back to the late Paleolithic era in primitive society. During this time, people used natural materials such as animal skins to make simple garments. With the progress of agriculture and animal husbandry during the Shang and Zhou dynasties, people began to use more sophisticated materials such as silk and linen to make clothing. Throughout the long course of history, Chinese clothing gradually evolved into distinctive styles and characteristics. Some notable examples include the Hanfu (traditional Han Chinese clothing), Tang suit (traditional clothing from the Tang dynasty), and qipao (a form-fitting dress with a high collar). These styles showcase the unique features and aesthetics of Chinese clothing (Jiang Jianhui, 2015) .

In terms of makeup, Chinese makeup culture also has a long history, dating back to the early Shang and Zhou dynasties. Women began to apply cosmetics to enhance their beauty during this time. As time progressed, Chinese makeup culture continued to evolve and innovate. Each dynasty had its own distinctive makeup styles and popular trends. For example, during the Han dynasty, there was a preference for light and natural makeup, while the Tang dynasty was known for its heavy and elaborate makeup (Huang Bingbing, 2020) .

Chinese hairstyle culture is also very rich. In ancient times, men mainly had hairstyles such as tied-up hair or loose hair, while women focused more on the decoration and variation of their hairstyles. As time went on, Chinese hairstyle culture continued to change and innovate. During the Ming and Qing dynasties, women's hairstyles became more complex and diverse, with styles such as "liangbatou" (two buns) and "dala chi" (big wings).

In terms of jewelry and accessories, Chinese jewelry and accessory culture has a long and ancient history. As early as the primitive society, people began to use stone ornaments to enhance beauty. With the rise of

bronze and jade artifacts during the Shang and Zhou dynasties, the craftsmanship of jewelry and accessories also made significant progress. Throughout history, Chinese jewelry and accessories have developed their own distinctive styles and features through continuous cultural evolution and innovation. The Ming and Qing dynasties are a good example, where jade, pearls, and other gemstones were widely used in jewelry making, forming unique "jade culture" and "pearl culture".

In terms of lifestyle, it is evident that the Chinese way of life is deeply influenced by history and culture. For example, in terms of diet, Chinese people value the concept of food therapy and the idea of the medicinal properties of food. This reflects their emphasis on health and well-being, viewing food as an important means of treating illnesses and maintaining good health. It demonstrates the Chinese people's concern for health and well-being. In terms of housing, Chinese people value living in harmony with nature and pursue the concept of "unity of man and nature". They show respect for the environment and strive for harmonious coexistence with it. In terms of social interactions, Chinese people emphasize the spirit of "etiquette" and "harmony", focusing on harmonious relationships and mutual respect among individuals (Jin Hong, 2014) .

### **2.2.2 Indian Culture**

In terms of race, the population of India is complex and diverse, primarily stemming from the ancient migration of the Aryans and their intermingling with the local populations. The Aryans were originally a nomadic Central Asian ethnic group who eventually settled and developed their own culture and society. They migrated to the Indian subcontinent around 1500 BCE and mixed with the local Dravidian people, resulting in the unique racial composition of India. The Indian population includes various types, such as the Indo-Aryans and Dravidians, who exhibit differences in skin color and facial features (Guo Ruijun, 2013) .

In terms of clothing, India has a long history of clothing culture that has been influenced by various religions and cultures. In ancient India,

people wore a variety of garments, including robes, saris, and trousers. The sari is one of the most representative traditional garments in India, made from a rectangular piece of fabric that can be draped in various styles. Over time, Indian clothing has developed distinct regional and ethnic characteristics, such as the salwar kameez of Punjab and the saree of West Bengal.

In terms of makeup, India has a rich and vibrant makeup culture. In ancient India, women's makeup was seen as an art form and a religious ritual. They used various natural materials such as pollen, clay, and plant oils to create cosmetics, enhancing their facial features and emphasizing their eyes. In Hinduism, women's makeup was considered a way to show reverence to the deities and seek their blessings. Over time, India's makeup culture has developed distinct regional and ethnic characteristics, such as heavy makeup in Punjab and subtle makeup in West Bengal (Kou Yueling, 2007) .

In terms of hairstyles, India also has a very unique hairstyle culture. In ancient India, men typically braided their hair or tied it up in a bun, while women enjoyed styling their hair into various intricate hair accessories. Over time, India's hairstyle culture has developed distinct regional and ethnic characteristics. In Hinduism, women's hairstyles are considered a religious symbol, and they often wear their hair in high buns or intricate hair accessories as a way to show reverence to the deities.

In terms of jewelry and accessories, India has a long-standing culture of jewelry and accessories. In ancient India, jewelry and accessories were seen as symbols of wealth and status. People used various gemstones such as diamonds, gold, and pearls to create jewelry and accessories, showcasing their wealth and status. Over time, with advancements in technology, India's jewelry and accessory making has developed a unique style and characteristics. In Indian culture, jewelry and accessories are seen as symbols of heritage and blessings, and people often gift them to loved ones or use them as part of wedding dowries (Tang Chao, & Jiang Bo, 2023) .



In terms of lifestyle habits, Indians are deeply influenced by their ancient history and unique culture. In Hinduism, people emphasize cleanliness and hygiene, and have unique bathing and cleaning habits. They use various spices and herbs to create incense and soaps, to maintain cleanliness and fragrance of the body. In India, people pay attention to vegetarianism and a balanced diet, which has led to a unique food culture and cooking methods. They use various spices and herbs to create dishes, aiming for both taste and nutritional value. In terms of social interactions, Indians value politeness and respect for others, and have unique social etiquette and customs. They enjoy engaging in conversations and drinking tea as a way to communicate and foster friendship and mutual understanding (Huang Lele, 2023) .

### **2.2.3 Greek Culture**

In terms of ethnicity, Greeks represent a distinct European ethnic group known as the Euroborean type, which is specific to the Mediterranean region. Greeks have close connections with other European white populations. Their ancestors can be traced back to the ancient inhabitants of Greece, who mixed with Indo-European-speaking ethnic groups from the European mainland, resulting in the modern Greek ethnicity.

In terms of clothing, the ancient Greek fashion style was highly unique and incorporated artistic elements. Men typically wore a garment called a "Chiton", which was a long robe made from a rectangular piece of fabric that could be wrapped around the body and secured with pins. Women would wear garments called "Peplos" or "Chiton and Himation", which were also made from a single piece of fabric but had more complex styles and ways of wearing. The clothing of ancient Greece emphasized showcasing the natural beauty of the human body, and it reflected the society's pursuit of harmony, balance, and the natural ideal of beauty (Yan Li, 2017) .

In terms of makeup, the ancient Greek makeup culture was relatively simple but had its unique features. Women would typically use cosmetics to highlight the beauty of their eyes and lips, while also using fragrances and other items to enhance their personal charm. In ancient Greek society, makeup was seen as a form of artistic expression and a means for women to express themselves and pursue beauty.

In terms of hairstyles, ancient Greek hairstyles were diverse and ever-changing. Men would typically opt for short or medium-length haircuts, while women enjoyed styling their hair into various intricate hair accessories. The hairstyle culture in ancient Greek society reflected the aesthetic ideals and fashion trends of the time. In ancient Greek artistic works, we can see a wide range of exquisite hairstyles that not only showcased the Greeks' pursuit of beauty but also demonstrated their creativity and artistic talent (Li Jinfeng, 2011).

Ancient Greece showcased an equally rich and vibrant culture in jewelry and accessories. They used various materials such as gold, silver, and gemstones to create jewelry and accessories that served not only as decorative items but also reflected the wealth and status of ancient Greek society. In ancient Greek society, jewelry and accessories were seen as symbols of social status and also served as a means of inheritance and commemoration. The jewelry and accessory designs of ancient Greece were exquisitely crafted, which displays exceptional craftsmanship and carrying high artistic and cultural value.

The lifestyle of the ancient Greeks also reflected their unique cultural traditions and social trends. They emphasized healthy eating, physical exercise, and the pursuit of spiritual fulfillment. In ancient Greek society, various fields such as philosophy, literature, and art displayed outstanding achievements and profound depth. These accomplishments not only showcased the Greeks' intelligence and talent but also demonstrated their exceptional performance and their pursuit and yearning for a good life. Additionally, the ancient Greeks placed importance on social etiquette and public morality. They respected others, emphasized

integrity and justice, and these qualities were also integral parts of ancient Greek culture (Wei Mingqin, 2017) .

#### **2.2.4 Islamic Culture**

In terms of ethnicity, Islamic race mainly refers to people of different races who follow the Islamic faith. They are dispersed across various continents and include Arabs, Persians, Turks, Indians, and Southeast Asians. Throughout history, these races have engaged in exchanges and assimilation with various cultures and ethnic groups, forming a unique Islamic culture.

In terms of clothing, Islamic clothing culture emphasizes simplicity, comfort, and modesty. Men typically wear robes (such as the dishdasha), trousers, and head coverings (such as the Turkish cap or Arab turban). Women, on the other hand, wear robes (such as the abaya), long skirts, and head coverings. These garments not only comply with Islamic regulations regarding body coverage but also showcase the dignity and elegance of Islamic culture (Ma Lina, 2024) .

In terms of makeup, Islamic makeup culture is relatively conservative. Women typically do not wear heavy or flashy makeup, but instead focus on a natural and fresh look. They use natural ingredients to create cosmetics, such as olive oil, honey, etc., to maintain healthy and radiant skin. In some Islamic countries, wearing makeup is considered a social etiquette for women, but in religious rituals and places of worship, women typically maintain a natural and bare-faced appearance.

In terms of hairstyles, Islamic hairstyle culture varies depending on the region and ethnicity. In some Islamic countries, men typically keep their hair short or in a cropped style, while women often prefer to braid their hair or style it into a bun. In some traditional households, women also wear veils or headscarves to cover their hair and face. These hairstyles and head coverings not only comply with the Islamic requirement of body coverage but also reflect the traditions and characteristics of Islamic culture (Wang Chuan, Zhang Qixiong, Lan Meihua, & Wu Qine, 2015) .

In the field of jewelry and accessories, Islamic culture has a rich and diverse tradition that dates back centuries. Arab, Persian, Turkish, and other ethnic groups each have their own unique techniques and styles in jewelry making. These pieces of jewelry and accessories are typically crafted using precious materials such as gold, silver, and gemstones, and often feature intricate patterns and motifs. In Islamic culture, jewelry and accessories are seen as symbols of wealth and status, as well as a means of heritage and commemoration (Zhang Yang, 2019) .

In terms of lifestyle, the daily behavior of Muslims is shaped by their beliefs and cultural traditions in Islam. They emphasize etiquette, respect for others, and place importance on family and social responsibilities. In terms of diet, Islam has strict dietary regulations, such as the prohibition of consuming pork and alcohol. In social interactions, Muslims value honesty, fairness, and respect for others. They enjoy engaging in conversations and activities like tea-drinking to foster friendship and mutual understanding. Additionally, Islam emphasizes personal spiritual development and faith. Muslims strive to practice the moral principles and spiritual pursuits outlined in their religious teachings in their everyday lives (Fang Lai, 2014) .

### **2.3 Myths and legends related to the ancient western regions**

The Ancient Western Region in China has always been characterized by its multiculturalism and the coexistence of multiple ethnic groups. This diversity was particularly evident in different periods, such as the Spring and Autumn period and the Warring States period. As a channel of communication between South Asia and Europe, the Ancient Western Region provided a solid foundation for ethnic migration and exchange, leading to the increasing diversity of ethnic groups in the region. The main ethnic groups in the Ancient Western Region were the Mongolian and European peoples, and the regions of Gansu Yumen Pass, Yangguan, Dunhuang, Xinjiang, and surrounding areas were historically interconnected and shared similar customs, establishing a brotherly relationship. Before the liberation of China, many ethnic minorities from these

regions migrated westward, bringing their families and livestock, and gradually becoming indigenous residents in the Ancient Western Region. However, intermarriage between different ethnic groups led to the increase of mixed-race individuals. The development and integration of different ethnic groups have contributed to the unique characteristics of the Ancient Western Region. Currently, the Western Region is a place where 56 different ethnic groups gather, including 13 long-term resident ethnic groups, promoting mutual integration and development in the ancient Western Region. According to archaeological research, the Ancient Western Region has undergone many changes throughout its long history, and the cultural integration of various ethnic groups in the region has resulted in unique characteristics. Religious culture is one of the distinctive cultural aspects of the Ancient Western Region. In the development history of religious culture in the Ancient Western Region, various religious beliefs have left behind unique cultural heritage. During the spread of the Silk Road, including but not limited to Shamanism and Buddhism, these ancient Western Region cultures have been widely inherited and gradually formed a situation of coexistence of multiple religions. The previous text elaborated on the blending of various ethnic groups in the Ancient Western Region and the diversity of ethnic cultures. Under the influence of various cultures such as Ancient Greece, India, the Han Dynasty, the Turkic people, Islam, and Russia, the culture of the Ancient Western Region and its surrounding areas has merged and developed. The formation of the culture of the Ancient Western Region highlights the remarkable development of ethnic cultural integration and presents a colorful and charming cultural landscape. This collision and fusion of multiculturalism not only adds charm to the local culture but also leaves behind valuable treasures in history. In the Ancient Western Region, powerful tribes emerged and conquered other ethnic groups, but the transfer of power was a common occurrence. The cultures of different ethnic groups intermingled and flowed like running water. However, no single culture could establish a dominant position and become the exclusive mainstream culture.

Based on the geographical differences in the ancient Western Region, the Xinjiang region can be divided into Southern Xinjiang and Northern Xinjiang. Southern Xinjiang is characterized by oases, while Northern Xinjiang is dominated by grasslands. The different regional environments have nurtured the cultural differences between the southern and northern civilizations in the ancient Western Region. The oasis culture in Southern Xinjiang and the nomadic culture in Northern Xinjiang have together formed the rich cultural foundation of the ancient Western Region. The history of coexistence of diverse ethnic groups has left a profound imprint on the region, laying a unique foundation for the development of local ethnic history and culture. From the Han to the Sui and Tang dynasties, the development and integration of ethnic cultures in the ancient Western Region has never ceased. In the southern Xinjiang region, including cities such as Khotan, Shanshan, and Gaochang, a cultural fusion of inland Chinese culture, Central Asian culture, and European cultural elements has formed. Nomadic culture was formed in the ancient Western Region and involved the mutual influence of various ethnic groups such as the Xiongnu and Rouran. In addition, the Han and Tibetan people, who have multiplied and thrived in the ancient Western Region, have collided and produced splendid cultural exchanges, adding to the diversity of the ancient Western Region's culture with their own Han and Tibetan cultures. During the Song and Ming dynasties, various ethnic groups such as the Hui, Mongols, and Khitans roamed the ancient Western Region and its surrounding areas, enriching the grassland culture of the region. Subsequently, the introduction of Islam brought about changes in the ancient Western Region's culture, making it even more diverse and colorful. "The introduction of Islam added new cultural elements, and various other ethnic cultures with their own characteristics coexisted in this region. These cultures eventually blended together to form a diverse and coexisting cultural landscape".

The diverse ethnic characteristics of the ancient Western Region, Xinjiang, and its surrounding areas have also created a rich variety of mythological stories. Mr. Wang Zhongling once said, "Mythology is the memory of a nation, gathering everything about the ancient times that a

nation has preserved: its major historical changes, its joys and sorrows, its unique understanding and experience of nature, society, and life. Mythology not only constructs the superficial crust of primitive images and concepts on which various ethnic cultures rely for growth, but also harbors the most passionate emotional experiences beneath the crust, forming a vast mantle. Therefore, mythology is also the carrier of national emotions ( Wang Xianzhao, & Wang Jing, 2020 ). Through mythology, we can explore different perspectives and gain a deeper understanding of the history of a nation and humanity." The ancient Western Region has passed down many fascinating mythological stories, such as:

### **"The Princess of Loulan: Mantoudalin"**

Princess Loulan is a legendary princess of the ancient kingdom of Loulan. Historical records state that her name is Mantoudalin. Legends describe her as exceptionally beautiful, intelligent, and wise, symbolizing the kingdom of Loulan. According to the legend, Princess Loulan displayed extraordinary wisdom and beauty from a young age, earning her admiration and pursuit from many people.

However, the fate of Princess Loulan was not favorable. Legend has it that she was forced to marry a man who did not love her. In order to escape this marriage, she had to plan her escape from the palace. Along the way, she overcame numerous obstacles and eventually arrived at a distant desert land. There, she began to establish her own kingdom, where people could live a happy and prosperous life. It is said that Princess Loulan's kingdom became a thriving place, attracting many merchants and travelers who came for trade and sightseeing.

However, the fate of Princess Loulan eventually turned into a tragedy. According to legend, at that time, the vast desert of the Western Region was experiencing a terrible drought, and many people died of hunger. In this situation, Princess Loulan decided to abandon her kingdom and go to the desert to help those suffering. She traveled through the desert for a long time and eventually exhausted herself, collapsing on a sand dune. It is said

that her soul ascended and transformed into a beautiful crane, flying in the sky.

The legend of the ancient kingdom of Loulan reflects the human spirit of courageously exploring the unknown, pursuing dreams, and striving to survive. According to the legend, Loulan was a distant and mysterious kingdom, and its downfall was due to people's greed and indifference, disregarding the natural ecology, which ultimately led to a disaster (Xie Re Ya zi dan ·Ma Er sa ke, 1987) .

### **"The Swan Maiden"**

In ancient times, there was a general named Hadierhalisha. He led his army on numerous campaigns, enduring countless hardships during long journeys. In one battle, he was severely injured and found himself alone in a deserted and arid wilderness. He endured both pain and thirst, but no matter how hard he tried, he couldn't make any progress and eventually collapsed on the ground. In his struggle with death, a white swan flew down from the sky and brought him water to quench his thirst. The swan then led him to a vast lake. It turned out that the white swan was a beautiful maiden who had transformed herself. She shed her swan feathers and returned to her human form. With great care, she healed Hadierhalisha's wounds and they became husband and wife. Later, they had a son named "Hasaki" (White Swan). Later on, Hasaki had three sons named Akeares, Bekeares, and Jiangles. Subsequently, Akeares developed into the Great Yuzi, Bekeares became the Middle Yuzi, and Jiangles became the Little Yuzi (Bi Xun, 1992) .

### **"The Song of Loulan"**

Loulan Ancient Kingdom was an ancient civilization in the northwest region of China, located in the Lop Nur Basin in present-day Xinjiang Uygur Autonomous Region. Loulan Ancient Kingdom was once an important country along the Silk Road and served as a crucial hub for cultural exchange between the Western Regions and the Central Plains. Its history can be traced back to around the 2nd century BCE and reached its peak between the 4th and 6th centuries CE. However, after the 6th century CE, Loulan Ancient Kingdom



gradually declined and eventually disappeared into the depths of history.

According to legend, "The Song of Loulan" is a mysterious melody that has been passed down from the Loulan Ancient Kingdom. Its melody is beautiful and enchanting, captivating anyone who hears it and making them unable to resist its allure. It is said that those who listen to this song are irresistibly drawn to its charm, to the point of forgetting their own identity and purpose, ultimately becoming deeply immersed and unable to break free.

It is said that the melody of "The Song of Loulan" was composed by a prince of the ancient Loulan Kingdom. He wrote this piece of music because he could not forget a beautiful woman named "Yue Niang." This song has also become a symbol of the Loulan civilization and is still praised and celebrated by people today.

The tragic and beautiful love story between the prince of Loulan and Yue Niang is legendary. It is said that the prince of Loulan was kind-hearted, handsome, and greatly loved by the people. Yue Niang was a beautiful and intelligent girl who had traveled with her parents in the Western Regions since childhood, gaining broad knowledge and winning the affection of her parents. One day, while passing through the Loulan Kingdom, Yue Niang and her parents met the prince of Loulan, and they fell deeply in love with each other. They often met under the moonlight, cherishing their time together and falling deeply in love.

However, their happiness was shattered by a sudden war. The Loulan Kingdom was invaded by enemies, and the prince of Loulan had to lead his army to fight against them. Yue Niang's parents tragically lost their lives in the chaos of war, and she was forced to leave Loulan Kingdom for her own safety. In order to protect herself, she concealed her identity and became a singing girl.

For a period of ten years, the prince of Loulan searched far and wide for Yue Niang, eventually arriving in the city where she resided. He heard her singing voice and recognized her, but Yue Niang refused to acknowledge her true identity. In a violent storm, the prince of Loulan saved the injured Yue

Niang, and their feelings for each other reignited. However, Yue Niang had become the daughter of the city lord, and she had to reveal her identity and the demands of the city lord to the prince of Loulan.

Under the irreconcilable conflicts and pressures, the two decided to make the ultimate sacrifice and died together. They quietly departed under the moonlight, carrying their love into another world. Although the story of the Loulan Song is shrouded in mystery, it is, in fact, just a legend. The true history of the ancient city of Loulan still requires further archaeological research and study for reconstruction. However, the Loulan Song, as a part of Western Regions culture, has already become an important component of Chinese culture (Yuan Zongguo, 1989) .

### "Jing"

According to the legend of Lianxin Creek, a prince from the Kingdom of Shule was injured while hunting in the mountains. He was saved by a beautiful shepherdess named Jing . They began meeting frequently under the pretense of hunting, and the shepherdess was moved by the prince's sincerity and loyalty, falling in love with him. When the King of Shule found out about this, he was furious and secretly imprisoned the shepherdess in a maze in the mountains behind the kingdom. The shepherdess, filled with longing for the prince, spent her days in the valley, grieving and shedding tears, but she was unable to find her way out of the maze.

When the prince learned of this, he ventured into the valley alone to search for his beloved. He called out Jing's name, searching through numerous valleys. After running out of food and water, he searched for seven days and seven nights but still couldn't find his beloved. However, the prince continued his search in the valley, growing increasingly exhausted. In despair, he poured all his strength into calling out Jing's name, and his voice shook the heavens and the earth. Suddenly, a gorge split open in the mountains, and the prince fell unconscious by the side of Lianxin Creek. At that moment, the shepherdess also heard the prince's call.

Her tears flowed like a spring, forming a stream that followed the valley and reached the prince's side. Sensing Jing 's tears, the prince knew she was not far away. He gathered his strength and continued searching along the stream. However, due to exhaustion, the prince eventually collapsed. Jing was trapped in the valley, and she cried for 49 days and 49 nights, her tears drying up and her eyes going blind. Finally, she transformed into a stream, hoping that one day the prince would find her along the stream. As the stream water irrigated the land, a dense poplar forest grew where the prince had died, and the unchanging stream and poplar forest became permanently intertwined in the valley. In memory of this faithful couple, future generations named the low depression between the two mountains "Xunqing Valley", and the small stream that Jing had transformed into became known as "Lianxin Creek".

### **"Nimanji"**

In the ancient Western Region of Xinjiang, China, there is a legendary myth among the Xibe ethnic group in the Chabuhaer Xibe Autonomous County. The story goes as follows:

Nimanji lost her mother at a young age and soon gained a stepmother who brought along a daughter named Huaningzhi.

The stepmother was cruel and abused Nimanji in various ways, but she only grew more beautiful as she grew older. On the other hand, Huaningzhi, despite being dressed in fine clothes and well-fed, became increasingly ugly as she grew older.

Out of jealousy, the stepmother made Nimanji tend to the cows every day.

With the help of a talking old cow, Nimanji's situation improved.

However, the stepmother discovered the secret and killed the cow to eat its meat.

Following the cow's instructions, Nimanji wrapped its bones in cowhide and buried them under a pile of wild grass in the field.

The following spring, during the annual horse racing event, Nimanji appeared at the racetrack wearing clothes and a headdress made of the cow's bones, resembling a fairy who had descended to earth. The handsome son of Zhangjing, Xilin'a, fell in love with her at first sight.

The stepmother and her daughter conspired to deceive Nimanji and steal her bone clothes and headdress. They pushed her into a stone well, causing her death.

The stepmother then plotted to have Huaningzhi take Nimanji's place in marriage.

Later, with the help of a red-beaked bird that was the embodiment of Nimanji's soul, Xilin'a retrieved Nimanji's body from the well and gave her a proper burial.

The stepmother was so frightened that she hanged herself, and her daughter died of shock. Xilin'a, accompanied by the red-beaked bird, remained unmarried for the rest of his life.

#### (1) The Inspiration Behind the Doll Design of "Princess Loulan: Mantoudalin"

Princess Loulan was a princess from the ancient Kingdom of Loulan, located in the region of Loulan (now in the Robe Desert area of Xinjiang, China.) Her life is believed to have taken place during the Han Dynasty, around the 1st century BC. Loulan was an important city along the Silk Road, and the story of Princess Loulan is filled with mystery and miracles. The legend of Princess Loulan reveals the close political, economic, and cultural connections between the Han Dynasty and the Western Regions. Her legend not only adds to the mystery of the Kingdom of Loulan but also reflects the significant influence of the ancient Silk Road on the exchange of Eastern and Western civilizations. The story of Princess Loulan is full of mystery and legend, and her beauty and wisdom have made her an important figure in the history of the Western Regions (Wang Huan, 2018) . Her legend has not only attracted many explorers and archaeologists but has also inspired them to delve deeper into history and culture. It has also sparked the creation of numerous literary and artistic works. Taking the beauty and wisdom of

Princess Loulan as the theme, this doll design aims to capture her elegance and charm through delicate character portrayal.

### (2) The Source of Inspiration for the Doll Design in "The Song of Loulan"

Similar to Princess Loulan, the love interest of the Prince of Loulan also lived in the Kingdom of Loulan during the Han Dynasty. Her identity is closely related to the political alliances and cultural exchanges of the Loulan royal family. The historical significance of the Prince of Loulan's love interest lies in her love story with the prince. This not only forms a part of ancient love stories in the Western Regions but also reflects the social customs and aesthetic concepts of that time. Her story provides important insights into the court life and views on love in ancient Western Regions. The work can focus on the love story between the Prince of Loulan and his love interest, as well as her position and influence in the court of Loulan. By vividly portraying the characters and incorporating elements of Loulan's court culture and political struggles, the work can enhance its historical and cultural significance.

### (3) The Source of Inspiration for the Doll Design in "Jing"

As one of the Thirty-Six Kingdoms of the Western Regions, the Kingdom of Shule (now Kashgar, Xinjiang) held a crucial position as a major trade route between the Han Dynasty and the Western Regions. The specific identity and story of the love interest of the Prince of Shule may be somewhat vague due to incomplete historical records. However, her existence is undoubtedly closely connected to the history and culture of the Kingdom of Shule. Although the details of her story may not be fully known, her presence undoubtedly enriches the history of Shule and adds significant cultural connotations. Her love story may reflect the social customs and aesthetic concepts of that time, which is of great importance in understanding the historical culture of Shule. By creating works related to her, we can further explore and showcase the historical and cultural charm of Shule, enhancing people's understanding and knowledge of this ancient kingdom in the Western Regions.

The existence of mythological stories further adds to the diversity

and mystery of ancient Western Region culture in China. Throughout history, the ancient Western Region has witnessed the convergence of multiple cultures due to changes in human lifestyles. In modern times, the diverse ethnic cultures of the ancient Western Region are mostly the result of the integration of various ancient ethnic groups during the historical development process. Currently, ancient and modern civilizations coexist in the Western Region, and the coexistence of different ethnic groups is still the state of the region's multiculturalism. Due to different religious beliefs and specific social and psychological characteristics, there are differences between ethnic groups, and Han ethnic groups from all over the country have also settled in this region. Therefore, the culture reflected in the region also has certain differences. In the Western Region, people integrate their own cultures into the new social environment, resulting in the blending and dissemination of cultures. As one of the components of Chinese culture, the Western Region has a long history and showcases the unique cultural charm of various ethnic groups. For example, the Uighur and Uzbek ethnic groups inherit oasis farming culture, the Kyrgyz and Kazakh ethnic groups retain the characteristics of grassland nomadic culture, the Tajik ethnic group, with Iranian culture, is the only ethnic group in the Western Region whose mother tongue is Iranian, the Xibe ethnic group belongs to the Manchu-Tungusic language family, and the Mongolian ethnic group has Mongolian as its mother tongue. Different ethnic groups exhibit distinct cultural characteristics in terms of cultural features, lifestyle habits, religious beliefs, and moral norms.

"Culture continuously influences people's minds, and the tradition passed down from generation to generation is the precious spiritual heritage of a nation, reflecting the inherent spiritual traits of the ethnic group and possessing timeless and eternal spiritual charm". The stability of culture is rooted in the human living and production environment, thus possessing a long-standing characteristic. Throughout the long history of human evolution, stable modes of living and production have gradually been established, which has contributed to the stability of culture. The ancient Western Region was limited to the Tianshan Mountains, while different ethnic groups lived north of

the Tianshan Mountains, with a lifestyle and production primarily based on nomadic practices influenced by the terrain. In the oases south of the Tianshan Mountains, irrigation agriculture was the dominant way of life and production. "The traditional production methods of ethnic minorities in the ancient Western Region play a crucial role in shaping the culture of each ethnic group". The interaction between natural economy and geographical characteristics has created an internal circulation system for culture within the region, resulting in diverse external manifestations. Even among Muslim ethnic groups with the same belief, there are relatively stable cultural traditions maintained between different ethnic groups. Even within the same ethnic group, differences in individuals' living environment and educational level can lead to certain variations in their acceptance of cultural information. For example, the Uighur people living in southern Xinjiang, influenced by Islam, exhibit stronger internal stability within the ethnic group, while those living in northern Xinjiang, under the joint influence of multiculturalism, may not exhibit obvious stable ethnic characteristics.

The diverse cultures in the ancient Western Region, including grassland nomadism, oasis agriculture, and religion, have laid a rich cultural foundation for the region. The presence of religious culture has brought great diversity to the culture of the ancient Western Region, where religious culture exhibits a vibrant fusion of characteristics. Islam and Tibetan Buddhism, as the main representatives, have a dominant position in the ancient Western Region, with Mongolian and Yugur ethnic groups widely inheriting Tibetan Buddhism. The spread of Islamic culture has expanded, and each ethnic group has its own beliefs, adhering to different religious cultures. In these ethnic groups, the dissemination and development of religious culture are closely related to politics, coordinating and jointly promoting social development, gradually permeating into the customs, literature and art, moral concepts, and social development structure of various ethnic groups. Guided by the Quran (see Figure 3), the believers of Islam have formed a set of common values and behavioral guidelines. Religious culture has an important influence on the culture of ethnic minorities, and the dissemination of religion intertwines with social culture, becoming a common psychological

characteristic of the masses. Artistic creation brings us diverse perspectives and inspirations.

In the book "The Settlement of Gods in the Ancient Western Region" (see Figure 4), it is described as "the flattest and widest chest on the Eurasian continent. When the wind blows and the sun rises and sets, perceptive humans who sense the rhythms of nature mount their horses and migrate freely. Europe and Asia, the East and the West, different races and city-states transmit messages, whether overt or covert. So many ethnic groups have floated over this vast land like white clouds, disappearing and merging. Over the course of 5000 years, the skin of the people here gradually darkened, ultimately acquiring a golden hue from the sun. Some city-states were lost, civilizations died, but other civilizations continued to exist in different ways, lurking in the present day, determining the diverse and enchanting colors of the ancient Western Region. The ancient Western Region is a complex beauty, with each glance as deep as the sea and as illusory as a dream. To unveil the mysterious veil of the ancient Western Region, one must return to the past".

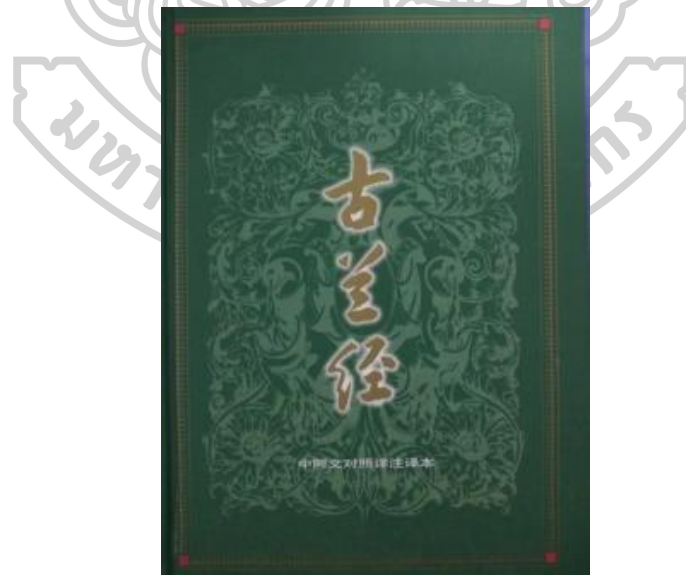
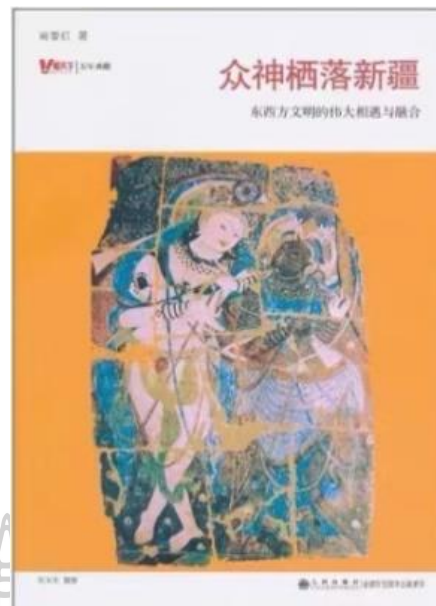


Figure 37: "The Quran"





*Figure 38: The Settlement of Gods in*  
the Ancient Western Region

The culture of the Ancient Western Region is rich and diverse, with enduring value. The mythological stories of the region are beautiful, portraying ethereal beings such as fairies, goddesses, and spirits. These images convey the artistic beauty that emerged from the collision of diverse cultures in the Ancient Western Region. It is precisely this beauty, spirituality, and transformation that inspire the thinking, creation, shaping, and formation of Ancient Western Region dolls. The diverse ethnic characteristics of the Xinjiang region and its surrounding areas have also contributed to the unique and artistic works of Ancient Western Region dolls, which are imbued with a sense of spirituality. Immersed in the mysterious art of the Ancient Western Region, one can perceive the flame of beauty taking shape deep within their soul.

#### **2.4 Development of fondant cake**

Cake is one of the desserts traditionally enjoyed by Europeans during festive occasions. In the medieval period, a legend prevailed in Europe that on one's birthday, people would gather with family and friends to celebrate and offer blessings. It was believed that on this special day, one's soul was most susceptible to evil forces. Therefore, gifting a birthday

cake symbolized good luck and blessings, as it was believed to ward off evil and bring protection and well-wishes to the birthday celebrant. Over time, this custom has persisted, and both adults and children invite loved ones to share cake on their birthdays and receive their blessings. During the medieval period, due to limited transportation and economic development, European countries relied on trade exchanges for basic commodities. Sugarcane, nuts, citrus fruits, dates, and figs were mainly imported from Eastern and Southern countries. In the dark ages of European development, these simple ingredients were considered precious and expensive, and only a few nobles and monks could afford them. Due to the limitations in ingredients, European pastry creations mainly focused on biscuits. However, with the development of transportation and increased international trade, the connections between different countries and regions became closer. In this trend, Western dessert innovation and culinary culture were influenced and changed (Sun Yijia, 2017) .

As time has passed, various types of cakes have emerged, and cakes are no longer just desserts but also an expression of art. Fondant cakes belong to the category of artistic cakes and are a form of cake making that requires intricate craftsmanship. Unlike the traditional use of buttercream on cakes, fondant cakes are primarily made with fondant as the main ingredient and are then meticulously decorated to become beautiful and eye-catching (Zhang Chencheng, 2021) . This type of cake also has a longer shelf life. When baking a fondant cake, ingredients such as milk powder, powdered sugar, and gelatin are used. Lemon juice, natural essential oils, and fruit powders can also be added to create a variety of flavors. Similar to kneading dough, this process requires skill and patience. Liquid ingredients are simmered together and then mixed with the powdered ingredients to create a smooth sugar paste.

Fondant cakes, originating in 18th century England, had a relatively crude design when they first gained popularity. Wild fruits were used to decorate the cakes, adding flavor and color. A layer of white sugar frosting was then sprinkled over the entire surface, increasing the sweetness and texture of the cake. This unique combination of ingredients

made the cake's taste more diverse, earning it the name "frosting cake." Due to its longer shelf life, fondant cakes require high standards for preserving freshness. In the later stages of development, edible chemicals are added during the cake-making process to extend the shelf life, and the cakes are sealed to create an airtight environment (Luan Yimei, 2017). In order to meet market competition and cater to different consumer demands, continuous improvements in cake-making techniques have been made to enhance shelf life. In the decade from 1970 to 1979, sugar confectionery was further developed by Australians, leading to advancements in extending the shelf life of fondant cakes and enhancing their malleability (Wu Yang, 2022). With deepening global economic and cultural exchanges, this technique was introduced to and further developed in the UK. British sugar artists drew inspiration from sugar paste techniques to create a variety of exquisite sugar art decorations, including flowers, animals, and figures. These handmade decorations bring unique charm and vitality to the cakes, sometimes even surpassing the beauty of real flowers. The overall process of making fondant cakes is complex, and they are priced relatively high. Initially, high-quality fondant cakes were mostly seen at royal weddings. For example, at the grand wedding banquet of Prince Charles and Kate Middleton in 2011, they used fondant cakes.

When making holiday cakes and desserts, fondant, a special material, is widely used for surface decoration. Unlike traditional buttercream cakes, fondant requires complex processing during the production process. It replaces buttercream as the main decorating material. Fondant is directly applied to the surface of the cake and various sugar art techniques are used to create beautiful confectionery and decorations. Utilizing this technique and method, decorations made from sugar art materials become the finishing touch of the entire cake, resembling exquisite, beautiful, and charming artworks. Fondant, as a material, offers longer preservation time and aesthetic appeal compared to decorations made with fresh cream, attracting customers with its visually appealing appearance, three-dimensional shape, and ease of creating the final artistic effect. In the early stages of conception, creation, and later

handcrafting processes, there is a greater creative space for shaping artistic creations. Therefore, this new technique and material have been widely recognized abroad and have become popular cake artworks. Especially for weddings, large events, and commemorative occasions, people often choose themed cakes decorated with fondant.

Due to the use of special ingredients and techniques, fondant cakes possess outstanding plasticity that far surpasses traditional buttercream cakes. Through the process of fondant art, we can achieve various three-dimensional creative shapes in everyday life, even surpassing our imagination, showcasing limitless creative possibilities.

Fondant cakes are characterized by strong sense of shape, rich design, and high artistic value. The creators combine their own creative inspiration with the clever use of fondant modeling and various artistic expressions to integrate artistic design into cake design. The basic materials required for making fondant cakes include cake, cream, and coffee, which have a novel taste and natural ingredients, making them popular among young consumers (Zhang Ming, 2014). In the development environment of the traditional powdered cake market, the cake industry is approaching saturation in the fierce market competition. Fondant cakes, with their innovative and artistic characteristics, have gained a significant market position through their unique cake design style. Compared to traditional cakes, this type of pastry is more distinctive, with more complex production processes and higher raw material manufacturing and processing costs, resulting in higher prices. It belongs to the mid-to-high-end artistic cake series, and therefore, the market saturation of fondant cakes is relatively low, which becomes an important selling point for their sales and a favorable condition for developing new high-end customer groups (Chen Yongfang, 2019). In addition to its unique taste, the artistic creative series of fondant cakes also has stunning visual effects and reflects artistic value in cake design. Currently, there have been several world-class top competitions for artistic fondant cake design internationally, such as the Cake International in the UK in 2017 and 2019 (see Figure 6), Cake Masters Organization in 2018 (see Figure 7), and

Birmingham Cake International in the UK (Highlights of the 2018 World Cup) (see Figure 6). These global competitions have showcased a large number of fondant cake works with high artistic value, and the artistic value of fondant cake art has been recognized by market value. Each design work is unique, and its creative value is irreplaceable (Li Wen, 2014) . For the artistic creative fondant cake market, pricing is determined based on its modeling characteristics and artistic value. The existing pricing for fondant cakes on the market ranges from RMB 50,000 to 300,000. Each artistic fondant cake creation is edible, with a taste similar to the rich aroma of White Rabbit milk candy, giving the audience a sweet sense of happiness when smelled (Zheng, Yongjuan, 2022) .



*Figure 39: Birmingham International Cake Competition*

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**Judges' Feedback Sheet**  
November 2020  
Virtual Edition

Category: C  
Competition Number: CV016  
Judge No: 13  
Head Judge: David Olson

This sentence - description of exhibit & set of cakes decorated as a Christmas theme

Does this entry comply with the schedule: YES/NO  YES  NO  If NO, please state WHY not below

Reasons:

Assess:

1. Overall General Design Presentation & Concept	100	100
2. Visual Appeal/WHY Factor Overall Display (in the photo)	100	100
3. Degree of Difficulty/Complexity/Creativity	100	100
4. Quality of Workmanship/Techniques Used	100	100
5. Attention to Detail	100	100
<b>Total</b>	<b>500</b>	<b>500</b>
Assess:	100/100	

Overall Comments: These Christmas themed cakes are a delight to look at! The excitement of Christmas morning shines through. I love the parts on the carol, he looks like he's out of the table. The painted detail is sharp and clear and plenty of texture and movement. The cakes look well baked and evenly risen. I do feel though that Father Christmas is an established figure and sometimes you can have to find a new and exciting character to attract and catch the eye of the Judges. Heavily said that, you have produced a super exhibit.

We have applied the following award for Cake International Virtual Edition.

1st 100  
2nd 100  
3rd 100  
4th 100  
5th 100  
6th 100  
7th 100  
8th 100  
9th 100  
10th 100

Head Judge: David Olson

Figure 40: British International Cake Competition



Figure 41: International Cake Masters Organization

In Western society, there is a higher level of importance placed on the artistic creation of fondant cakes. In festive celebrations or weddings, the artistic creation of fondant cakes is not only an essential part but also reflects the status and creative expression of the event organizers. In China, we can occasionally see the production of fondant cakes that combine Chinese festive activities with Western characteristics, showcasing the unique charm of cultural integration (Mu Zi, 2022). The expression of public demand can be seen in various aspects. According to a survey conducted by China Industrial Research Network in 2016 on the current situation and development trends of the dessert industry (see Figure 8), the results showed that the public's demand for desserts is gradually moving towards personalization, image-oriented, and specialization (Yu Hao, 2019). As society evolves and people pursue a higher standard of living, their demand for food continues to rise. This indicates that people's belief in the importance of food goes beyond satisfying hunger; they seek delicious and abundant culinary enjoyment. People now pay attention to the appearance and artistic aspects of food, requiring it to not only be delicious but also visually appealing (Chen Yongfang, 2022). Examining the development of the global pastry industry over the past 20 years, it has shown diverse development patterns, with personalized pastries becoming the main form of development (Wu Ji, 2020). Traditional cakes can no longer meet consumers' emotional needs, pursuit of aesthetics, and sense of solemnity in this context. Against this background, the emergence of artistic creation of fondant cakes has gradually demonstrated its competitive advantage and market development prospects in the saturated traditional cake market environment (Cai Changchun, Xu Xinling, Jin Gendi, & Sun Changhua, 2021). The design of artistic creation of fondant cakes can incorporate various forms of expression. Pastry chefs skillfully integrate ethnic elements into their designs, showcasing the fusion and integration of Chinese and Western cultures (Ge Yan, 2020). In the art of fondant cakes, some chefs incorporate ethnic characteristics into their design creations, demonstrating the diversity and integration of culture. This has important value in promoting ethnic culture and enhancing the

artistic value of fondant cake creations.



Figure 42: China Industrial Research Network

## 2.5 Artistic Features of Ethnic Dolls

Ethnic dolls in China and various regions around the world are created with a focus on folk and religious cultures, resulting in strong regional characteristics. The design materials and forms of different ethnic groups in different countries and regions are diverse and rich, reflecting their unique customs and cultural backgrounds (Liu Yang, 2013). The functionality of ethnic dolls in China and different regions of the world also showcases their complexity. Both Chinese ethnic dolls and those from various countries and regions around the world are deeply rooted in their respective ethnic cultures, embodying the artistic characteristics of mutual learning and inheritance. Therefore, regardless of the country, region, or ethnic style, the diverse designs and styles of these dolls demonstrate a rich cultural connotation, while also preserving the traditional artistic forms and styles through the influence of craftsmen from different countries worldwide. Ethnic dolls in China and various regions around the world possess distinct regional characteristics and serve as tangible representations of the creators' life experiences. They are a means of inheriting and developing tangible cultural resources (Wang Yijing, 2008).

### 2.5.1 Materials of Ethnic Dolls

Ethnic dolls of different ethnic groups in China have regional



characteristics. There are certain differences in ethnic dolls in different regions. One of the reasons for these differences is that ethnic doll designs are often inspired by local materials. For example, in the northern and southern regions of China, where the soil has good stickiness, clay sculpture is more famous. Representative cities include Tianjin, Suzhou, Beijing, Shandong, and Shaanxi, which are also known for their clay sculptures. The southern region has abundant bamboo resources, so dolls made in this area are primarily made of bamboo. On the other hand, in the northern region, dolls are mainly made from wood, as trees are more common there. The materials used in the production of ethnic dolls are affordable and easily accessible, making ethnic dolls closely connected to the daily lives of the people. In summary, the materials used in ethnic dolls can be categorized into six main types (see Table 2).

*Table 2: Statistical Table of Materials for Ethnic Dolls*

Materials	Typical Cases	Distribution Area
Clay	Clay figurines etc.	Beijing, Tianjin, Hebei, Huaiyang in Henan, Fengxiang in Shaanxi, Gaomi in Shandong, Huishan in Wuxi
Bamboo	Wooden dolls, stick dolls, threshing dolls, bamboo weaving, bamboo carving, straw weaving, ball-jointed dolls, costume dolls etc.	Tancheng in Shandong, Zigong in Sichuan, Beijing, Xinning in Hunan, as well as Western countries represented by Japan, Germany, and France, and Asian countries.
Fabric	Fabric dolls, fabric tigers, talisman dolls, baby dolls, hairpin dolls, chick dolls, puppets, costume dolls, Four Joyful Baby Dolls, etc.	Ball-jointed dolls, Barbie dolls, ball-jointed dolls, ball-jointed dolls
Metals	Four Joyful Baby Dolls	Jiangxi, etc
Paper	Paper sculptures, paper-cutting, lanterns, costume dolls, etc	Beijing, Weixian County in Hebei, Tianjin, Zhejiang, Shaanxi, Guangdong, as well as in the United Kingdom.
Food	Sugar sculpture, sugar painting, blown sugar figures, etc.	Sugar sculpture mainly originates from northern regions of China such as Shanxi, Shaanxi, Shandong, and Henan. On the other hand, sugar painting is found in both northern and southern regions of China.

Porcelain	Ball-jointed dolls、costume doll	Representative Western countries such as Japan, Germany, and France, as well as Asian countries
Resin	Ball-jointed dolls、 Barbie dolls,	Asia, Europe, and other countries.
wax	Ball-jointed dolls	Asia, Europe, and other countries.
skin	Ball-jointed dolls	Asia, Europe, and other countries.

## 1. Clay

Clay with strong stickiness has high plasticity. Ethnic dolls made of clay are usually created by hand molding or using molds. The clay dolls are first shaped with clay and then painted. The clay dolls made in these regions showcase diverse and realistic characters (see Figure 43). The art of clay doll making has gained widespread attention, particularly in well-known areas such as Beijing, Tianjin, Hebei, and Huaiyang in Henan. These regions have developed rich and diverse forms of clay doll art.



Figure 43: "Clay Figure"

## 2. Bamboo and Wood

Doll makers make use of local resources, particularly in areas abundant in bamboo and wood. They use bamboo and wood to create

doll structures and incorporate external decorations to bring out dynamic and expressive doll toys. Examples of bamboo and wood dolls include carved and painted wooden toys in Beijing, the stickman dolls in Tancheng, Shandong (see Figure 44), and the threshing dolls (see Figure 45/46/47). These are outstanding examples of bamboo and wood doll art.



*Figure 44: "Threshing Person"*



*Figure 45: "Straw Weaving"*



*Figure 46: "Wooden Doll"*



*Figure 47: "Bamboo Carving"*

### **3. Fabric**

In the regions of Hebei, Shaanxi, and Longdong, fabric is commonly used as the material for doll making. Representative products include various fabric dolls, talisman dolls, and topknot dolls. These dolls are not just toys; they often serve the purpose of warding off evil spirits and are spread among the public as auspicious symbols (Liu Yang, 2013) .

The main material used in fabric doll creation is textiles (see Figure 48). They can be entirely made of textiles, using coarse cotton and linen fabrics, delicate and soft silk, elegant and firm wool, and various fabrics of different textures stitched together. The intricate decorations give a visually unique and novel feel. The details of the doll's head are sewn with threads, and the doll's clothing is adorned with embroidery patterns. Textiles are combined with other materials such as ceramics, wood, and composite materials, adding more creativity. The dolls have a clean and pure appearance, resembling the smooth skin of a baby, with finely hand-painted facial features, while the rest of the body and clothing are made of textiles. Wooden parts are incorporated into the fabric, making them more perfect. Wood dolls are carved and assembled from hard wood, coated with glossy paint, and have a smooth skin-like appearance. Various natural wood colors exhibit ancient and natural characteristics. With the development of technology, advanced materials such as resin, rubber, metal, ABS, PVC, and environmentally friendly textiles are combined to create more vivid and realistic fabric dolls.



*Figure 48: "Fabric Tiger"*

#### **4. Metal**

Metal is also a material used in doll making, and a representative example is the copper-made "Four Joyful Baby Dolls" (see Figure 49). These dolls are typically used as home decorations or ornaments, symbolizing good luck and wealth. They are composed of a pair of

adorable copper dolls, wearing bellybands, holding banana fans and gold ingots. The two heads and four bodies are connected to form a circle, depicting the joyful and playful scene of the dolls. Their festive appearance is loved by people.



Figure 49: "Four Joyful Baby Dolls"

## 5. Paper

When designing paper dolls, we can use paper as the main material. The products can be presented in either a two-dimensional or three-dimensional art form. Two-dimensional designs mainly refer to paper-cutting art (see Figure 50). Three-dimensional designs include paper sculptures and paper lanterns (see Figure 51/52), as mentioned earlier. Representative regions for these designs include Tianjin, Beijing, Hebei, Guangdong, and other areas.



Figure 49: "Paper Cutting"



*Figure 50: "Paper Sculpture"*



*Figure 51: Lantern*

## 6. Food

Dolls made from food materials have existed since ancient times and have a long history of development. Creators use dough and sugary foods to shape dolls with diverse forms, which serve both as decorative items and edible treats. Representative works include dough sculptures, sugar paintings (see Figure 53), and sugar figurines (see Figure 54), which are traditional Chinese art forms. These art forms are most commonly associated with the northern regions of China, particularly Shandong and Henan. These handmade crafts carry the essence of Chinese culture and have been passed down to this day, showcasing the creativity and skills of the creators. These art forms are not only beautiful and exquisite but also hold significant cultural and historical value in Chinese society. The distribution of sugar sculptures is more widespread, found in both northern and southern regions. Using fondant as a material in the design of ancient

Western Region dolls represents the inheritance and development of traditional handicraft culture.



Figure 52: "Sugar Painting"



Figure 53: "Sugar Figure"

## 7. International Dolls

In terms of material selection, international doll designs place more emphasis on cost-effectiveness and commercial value compared to China. Apart from early French fashion dolls and Japanese Hina Matsuri dolls, which utilize fabrics, wood, paper, and other materials for doll design, widely circulated and influential dolls internationally are often made from materials such as ceramics and resin. These materials possess stable design characteristics. In terms of international doll design and circulation, other countries have certain advantages compared to China.

### 2.5.2 Themes of Ethnic Dolls

The diversity of materials used in the creation of ethnic dolls, as well as the regional variations in their distribution, contribute to the rich



and varied themes of these dolls. Some dolls are inspired by folk life, while others draw inspiration from mythological legends. There are also dolls that are products of the creators' subjective imagination. According to statistics, the main thematic types (as shown in Table 3) can be categorized into eight categories.

*Table 3: Statistical Table of Themes for Ethnic Dolls*

Themes	Typical Cases
Folk characters	Beijing clay figurines
Theatrical characters	"Bai Gou clay figurines" from Baigou Town, Hebei Province
Mythological characters	"Tu'er Ye" from Beijing, "Da Afu" from Huishan, Wuxi
Auspicious patterns	Scented sachets for the Dragon Boat Festival, "Yuwa" from Qingyang, Gansu Province
Imagination and legends	"Ni Gu Gu" from Huaiyang, Henan Province
Rituals and ceremonies	Japanese Hina dolls,
Cultural exchange	French fashion dolls
Leisure and entertainment, fairy tales	Ball-jointed dolls, Barbie, Disney dolls

## 1. Folk characters

Folk characters, as the name suggests, are derived from the everyday lives of the general public. They depict and reflect the images of ordinary people in their daily lives. The design of these dolls is vivid and rich, showcasing the diverse aspects of everyday life such as clothing, food, housing, and transportation. Representative examples of folk character designs include the Beijing clay figurines (see Figure 55) and the Baigou clay figurines (see Figure 56). Among them, the most famous is the "360 Occupations" clay figurines. These dolls typically depict the images of ordinary people in the community but are full of lively charm. The intricate

details of the character's appearance also enhance the artistic value of Beijing clay figurines.



Figure 54: Beijing Clay Figure



Figure 55: Baigou Clay Figure

## 2. Theatrical characters

Theatrical characters are also commonly represented in doll designs. The inspiration for these designs comes from characters in theatrical stories. Additionally, these folk character designs are often presented in sets, such as the well-known theatrical stories like "The Legend of the White Snake", "The Match Made in Heaven" and, "The Oath of the Peach Garden". Designers create doll designs based on the characters from these theatrical stories, successfully achieving a highly realistic representation of the dolls.

## 3. Mythical characters

Ancient people had an infinite longing for the mysteries of the universe and imagined a variety of mythical stories. They gave realistic appearances to the characters in these myths. For example, the "Tu'er Ye" in Beijing is derived from a mythical story about a jade rabbit in the Moon Palace that can concoct magical elixirs. The story of "Da Afu" originated from a local tale and the character's appearance is based on a mythical child named "Sha Haizi," who had the symbolic meaning of warding off evil spirits and disasters by eliminating poisonous snakes and fierce beasts (Wang Yijing, 2008) .

#### **4. Auspicious patterns**

Since ancient times, people in our country have had a great fondness for auspicious patterns or objects with symbolic meanings. Therefore, the design themes of dolls also reflect auspicious patterns. One representative example is the sachets for the Dragon Boat Festival (see Figure 57), which are embroidered with the twelve zodiac animals, rare birds, and exotic animals. Another example is the "Fish Baby" from Qingyang, Gansu, where the combination of a baby's head and a fish's body represents people's aspirations for a prosperous life for their future generations and grandchildren.



*Figure 56: Dragon Boat Festival Sachet*

### 5. Imagination and legends

Imagination and legends are also important themes in doll design. People have a longing for a better life and pursue beautiful things. Based on local folk customs, doll designs are created. The "Ni Gu Gu" from Huaiyang, Henan (see Figure 58), is a typical representative of this type of doll. The designs of these dolls usually have unique and rustic characteristics, highlighting the features of ethnic culture (Tang Di, 2008) .



*Figure 57: "Ni Gu Gu"*

## **6. Others**

In contrast to the design themes of Chinese ethnic dolls, the international doll design themes, in addition to the Hina Matsuri dolls influenced by ethnic culture and costume dolls representing cultural exchanges, mostly reflect modern design concepts. The main purpose of these dolls is for people's enjoyment and to obtain commercial value.

### **2.5.3 Modeling Methods of Ethnic Dolls**

The design of ethnic dolls exhibits a wide range of colorful features, influenced by the different materials used and the inspiration drawn from various design themes. Additionally, the subjective ideas of the designers contribute to the diversity in the appearance of ethnic dolls. There are five main styles that encompass the design approach for these dolls. During the process of creating each doll, attention is given to the design of its appearance, which can be achieved through the following ways:

1. **Geometric Combination:** Every natural form is composed of multiple geometric shapes, with larger geometric forms forming the framework of the natural structure.

2. **Exaggerated Deformation:** A common technique in image design involves improving the shape by making adjustments based on the natural form. This alteration takes into consideration the natural appearance of animals, including the distribution of muscles and the direction of fur.

3. Anthropomorphization: In the creative process, there is a tendency to anthropomorphize the details, accessories, and surrounding forms of the artwork.

Points to consider in character design:

(1) Identify the target audience: It is crucial to consider the intended audience during the design process to ensure that the character aligns with their preferences and needs. Often, basic shapes and vibrant colors are used to design characters, with core features and personalities broken down.

(2) Reference similar designs: Studying existing designs helps create unique and distinct characters. Analyze successful elements and favorite aspects from these designs.

(3) Create unique and eye-catching visuals: Characters should stand out visually and be intriguing to capture the audience's attention.

(4) Use exaggeration in character design: Emphasize and exaggerate features to make the character more lively and interesting. Exaggeration helps viewers identify and remember the character's distinctive traits, emphasizing specific character features.

(5) Use colors to evoke emotions: Colors such as black, purple, and gray are often used to depict antagonistic characters, conveying their evil and complex thoughts. White, blue, and pink are commonly used to depict kind and pure characters, conveying their goodness and freshness. Yellow represents innocence, purity, and positivity. Red, yellow, and blue can also lend heroic qualities to character designs.

(6) Develop character personalities: Creating an outstanding character design goes beyond just visual appeal. Exploring their personality traits is crucial. In some cases, a character's personality can be conveyed through their physical form.

(7) Pay attention to details: When creating artwork, focus on every element, especially the facial details of the character. Even small

adjustments can have a significant impact on the character's overall image.

### 1. Abstract Styling

Abstract styling refers to the bold simplification and summarization of character images from source materials. It is a highly condensed method that captures the essence of expressions, appearances, and dynamic features in doll design. One representative example of abstract styling is shadow puppetry.



Figure 58: Shadow Puppet



Figure 59: Shadow Puppet Show



*Figure 60: Inside and Outside of Shadow Puppet Show Scene*

Shadow puppetry (see Figure 59) primarily focuses on character modeling, which can be classified as ethnic dolls despite its flat design characteristics. The character modeling in shadow puppetry possesses unique stylistic features and represents the artistic and cultural values of excellent ethnic heritage. To adapt to the basic form of stage art, shadow puppetry has developed a distinctive aesthetic style and pattern. In order to demonstrate flexible and diverse movements during performances, shadow puppet dolls (see Figures 60/61) are composed of multiple parts such as the head, limbs, torso, and hands, which are connected together. Performers manipulate the shadow puppets to display a wide range of mechanical movements. By combining with opera performances, the actions of the shadow puppets become more vivid and rich (Guo Yaowei, 2023). The flat design is a prominent characteristic of shadow puppetry, with the head mainly designed in a five-fifths or seven-fifths facial proportion. In terms of the limbs, the upper body and limbs are relatively longer to facilitate performance. The abstract styling method is fully reflected in the character modeling of shadow puppetry, employing a highly refined approach that makes the facial expressions of the shadow puppet characters lively, exaggerated, and artistically unique (Meng Dan, 2018). Line drawing is a common technique for outlining the form of shadow puppet characters, which complements the simplicity of colors and the performance of the shadow screen, achieving a concise yet visually stunning effect. As most shadow puppetry is combined with traditional opera performances, the movement portrayal of shadow puppets is more dynamic and rich. Since shadow puppetry is often used to showcase the image of opera characters, its artistic form surpasses that of stage dramas. In addition to character modeling, the design and depiction of characters are also influenced by traditional culture and values. The stage scenery of shadow puppetry typically includes various elements such as plants,



animals, buildings, weapons, and horses, which fully display its vibrant and distinctive aesthetics.

Process of Shadow Puppet Making:

### **Step 1: Selecting the Leather**

Shadow puppetry has a long history, and different regions have their own unique characteristics in terms of performance style and material production. Depending on the available animal leather resources in each region, the maker may choose to use different types of leather such as cowhide, sheepskin, donkey hide, or pigskin. In China, cowhide is the most common material used, but the raw materials for shadow puppet production may vary in different regions.

### **Step 2: Leather Preparation**

There are two methods for preparing cowhide: "cleaning" and "tanning". The process of cleaning involves soaking the selected cowhide in cool, clean water for a period of two to three days (the specific soaking time depends on the local temperature, thickness of the cowhide, and water quality). The peeling process should be carried out with caution: first, remove the cow hair, then clean off any meat residue from the inner skin, and finally gradually remove the inner skin to make it thinner. After each scraping process, the leather should be soaked in clean water until it becomes smooth and translucent, with a thin and shiny appearance. This entire process continues until the scraping is complete. Once the leather is scraped, it is hung on a wooden frame to air dry completely. When the leather is clean and transparent, it is ready for shadow puppet making. By repeating the soaking and scraping process multiple times, the cowhide can be transformed into "tanned leather" or "soft scraped leather". This scraping method makes the leather smooth like glass, making it easier for further production.

### **Step 3: Drawing the Design**

When creating shadow puppets, artists use their inspiration and

skills to express the storylines. They often rely on specially designed patterns to guide the production process. These design sketches carry rich traditional and cultural values and are precious legacies of shadow puppet artists.

#### Step 4: Sketching

The master carver will cut the leather into suitable sizes for further processing. After softening it with a damp cloth, a special push board is used to shape it into the desired form. Adding a small amount of oil to the leather helps make it softer and smoother before starting the pattern drawing. It is crucial to consider the intended use of the final leather product before drawing the pattern. When creating, smooth and fine-textured leather is usually chosen for prominent areas such as the head, chest, and abdomen, while thicker and darker-colored leather is used for the legs and other general props to ensure stability during shadow puppet performances. The contours and designs of each part are then meticulously traced onto the leather using steel needles, a process known as "sketching". Afterwards, the leather is placed on a wooden board for carving.

#### Step 5: Carving

The carver typically prepares a variety of different types of tools, ranging from eleven to over thirty blades. These tools come in various shapes and sizes, each with its unique design and function, suitable for different carving techniques and requirements. Artists need to have knowledge and skills in using different tools to accurately express their creativity during the carving process. For creating straight lines, a flat knife is commonly used. Circular patterns are often carved on the edges of traditional costumes using a gouge. Carvers follow specific rules during their creations: fir wood is carved with a blade knife, gourd colors are carved using a hanging knife, the edges of sleeves are carved with a gouge, and flower patterns are made with a pointed knife. It is important to pay attention to the clarity and fluency of the lines during the carving process. Distinction between dashed lines, solid lines, and closed lines must

be clear and distinct.

In leather carving, dashed lines are used to depict the local form and spatial relationships, a technique often employed in the art of shadow puppetry. Solid lines are used to outline the contours of objects, removing excess parts to create shadows. This technique is commonly used for depicting the faces of main characters, supporting roles, and other white objects. Dashed and solid lines refer to leaving intermittent open lines on both sides of the contour, often used for carving landscape and architectural details. Dark lines are carved by cutting without penetrating the leather, primarily used for connecting soft objects. Drawing lines is done by using brush strokes to outline the shape and structure of the object. In the preparation of leather carving, there are traditional rhymes and procedures. When creating sculptures, it is important to establish the overall outline first before proceeding to carve the details. After carving the overall features, such as the eyebrows and eyes, the tip of the nose is then carved. When carving clothing patterns, the "卍" symbol is first drawn, followed by drawing the four sides and corners. Snowflake patterns are first drawn vertically. In painting, the overall outline is first outlined before adding details to make the artwork more rich and vivid. When carving armor, the yellow armor is first drawn, and then the basic principles are mastered before delving into the details to make the structure clearer. When conducting decorative carving, different geometric shapes are used to enhance beauty and artistic sense, filling the "水" character grid.

## **2. Exaggerated Styling**

Exaggeration is a common technique in the design of ethnic doll art, and this exaggerated style is often associated with ancient Chinese religion, rituals, and mythology. The "Shehuo" masks, a representative cultural heritage in Shaanxi province, are characterized by their exaggerated features and are also known as "tiger masks" (Bao Jiabin, 2023). These masks are inspired by the devout belief and awe of the Chinese laboring people towards land and fire, and their inspiration can be

traced back to ancient witchcraft rituals where various spectacular performances were displayed. "Shehuo" (see Figure 62) originated from the Zhou Dynasty, with "She" representing the land god and "huo" representing warmth and enthusiasm. During the performance, the audience recognizes different characters through the masks worn by the performers. The design of "Shehuo" masks is based on realistic human figures, and the use of exaggerated techniques allows for the depiction of various patterns such as sun and moon, fire, frog, and whirlpool on the masks, highlighting the distinctive characteristics of the characters. The symbolic meaning of colors is used to discern the true intentions of the characters, with red representing honesty, white representing cunning, and gold and silver representing mystery. Similarly, in traditional opera, facial makeup is used to differentiate character traits based on similar color schemes. The unique artistic value of "Shehuo" masks lies in their exaggerated expression, portraying historical figures and whimsical spirits through symbolic means. The masks showcase a variety of changes within a unified style and vibrant colors, with character designs mainly derived from human figures. However, through the use of exaggerated techniques, the masks embody a mysterious and peculiar artistic form that is rich in ethnic characteristics (Yu Mengjie, 2022).



Figure 61: "Shehuo" Mask

### 3. Symmetrical design

Due to the influence of traditional Chinese culture and popular aesthetics, symmetrical design is a common approach in doll making. Dolls with symmetrical design showcase a sense of symmetry and visual balance. One iconic example of symmetrical dolls is the "Bun Doll", which is a mysterious and colorful folk doll. It is regarded as the guardian and fertility deity of the Chinese nation. The bun doll incorporates the art of paper cutting, with its arms symmetrically raised or hanging down, and its legs in a squatting position resembling the shape of a woman giving birth. The hands and feet of the bun doll are in an outward position, symbolizing "the continuous cycle of life" and the prosperous future of the Chinese people.

The bun doll is endowed with gender characteristics and is typically depicted as a female figure, although there are also designs that are not clearly gendered. The distinguishing features of the doll lie in its craftsmanship and facial expression design. Female bun dolls often showcase elegant and sophisticated hairstyles, while male bun dolls typically have simple and neat hairstyles. Female bun dolls are often adorned with exquisite decorations such as rabbits or lotus flowers, while male bun dolls may be decorated with symbols of masculinity, such as peony flowers or cloud patterns. The bun doll (see Figure 63) is a folk-style doll that embodies symmetrical beauty and is beloved by the public.



Figure 62: Topknot Baby Doll

#### **4. Casual styling**

Casual styling refers to a lack of fixed templates in the design process, where designers independently explore and discover materials from everyday life. One representative example of casual styling is sugar painting. Sugar painters possess exquisite painting and modeling skills, allowing them to unleash their imagination using various techniques. Although doll making in casual styling appears to be spontaneous, the production process is still highly refined. To create a sugar painting, an appropriate amount of sugar is boiled in boiling water until the syrup can be pulled into threads. The sugar painter uses a spoon as a container to draw and shape the envisioned design on a slate or other non-stick surface. Once the syrup has cooled, bamboo sticks are attached to stabilize the sugar painting, and then the painting is carefully peeled off from the container using a blade. The design theme of a sugar painting can be freely chosen, including figures, animals, landscapes, and text. The production of sugar paintings requires a high level of craftsmanship from the sugar painter, emphasizing the coherence and fluency of lines (Cheng Xiaorui, & Cao Xuerui, 2017).

#### **5. Homogeneous styling**

Homogeneous styling is a distinctive form of design that involves the overall consistency of ethnic doll creations. It encompasses the mutual imitation and repetition among different forms. The stylistic characteristics of these ethnic dolls require designers to possess bold synthesis and summarization abilities. A paradigmatic example of homogeneous structural styling is the "Four Joyful Dolls".

The "Four Joyful Dolls" are often used as household ornaments, symbolizing good luck and happiness. Their iconic homogeneous styling features a pair of chubby and auspicious-looking dolls, with two heads and four bodies arranged in a circle. The dolls are depicted holding banana fans and gold ingots, showcasing a dynamic image of four playful children. Their rich appearance is highly endearing. The "Four Joyful Dolls" adopt a

shared form in the homogeneous structural styling. Their dynamic design characteristics allow for the perception of four independent and complete child figures from any angle. The "Four Joyful Dolls" beautifully exemplify the exquisite nature of homogeneous styling. In ancient times, the "Four Joyful Dolls" were often used as props in folk marriage ceremonies. They symbolize a prosperous and fortunate family. The earliest appearance of the "Four Joyful Dolls" can be traced back to the Tang Dynasty. Before the Ming Dynasty, they were mostly made of paper-cuttings, while during and after the Ming Dynasty, they were commonly made of copper or other materials such as ceramics, jade, clay, or wood, in three-dimensional forms. During the Qing Dynasty, the "Four Joyful Dolls" gained immense popularity and were revered as deities of happiness.

## 6. Realistic styling

In the design of dolls from other countries, influenced by the functionality of dolls, the design of dolls largely aims to recreate human features. They are designed based on the proportional facial features of real humans, creating dolls with different ethnic styles. For example, Barbie dolls (see Figure 64) and ball-jointed dolls are designed with a high degree of realism, based on the distinctive features of different ethnicities and races. These dolls are created to represent different genders, ages, ethnicities, and personality traits (Wang Pei, 2012).



Figure 63: Barbie Doll

### 2.5.4 Artistic Characteristics of Ethnic Dolls

1. Vivid and Simple Styling, Strong Exaggeration, and Strong Local Flavor

The prominent characteristic of ethnic dolls lies in their embodiment of ethnic features. The styling of ethnic dolls often draws inspiration from the daily lives of the working people, thus reflecting a simple and harmonious rural atmosphere. They represent the aspirations and longings of the working people for a better life. The design and production of ethnic dolls differ from court dolls. Ethnic dolls are creations of the working people, infused with their diligent wisdom and simple folk customs. The design of ethnic dolls carries unique meanings and practical values, deeply reflecting the authentic folk customs.

The Ni Gu Gu from Xun County represents the inheritance of traditional craftsmanship and ethnic culture. This type of doll art showcases a simple yet symbolically rich appearance, capturing people's attention (Huang Yuhong, 2017). The creative themes of Ni Gu Gu include characters, animals, and birds, covering various categories such as the Three Kingdoms, Water Margin, and the Wugang Army (Xu Junxue, 2022).

Although the design elements and themes of Xun County mud dolls vary, their overall style and artistic characteristics are relatively consistent. The use of black as the base color and other colors applied with a brush make the design features more distinct and rich (Lv Kaiyue, 2021). Additionally, some mud dolls have a brown base with other bright colors applied, using mostly primary colors and less color blending, resulting in a sharp color contrast that highlights the beauty of the dolls (Yu Xiabing, 2020). Mud dolls are a type of folk doll with distinct ethnic characteristics, and their unique folk features and artistic value are deeply loved by people. Professional experts and scholars also recognize that they represent the continuation and inheritance of historical culture (Niu Juirong, & Chen Ting, 2019).

## 2. Lively, fresh and simple design styles

The design styles of ethnic dolls are lively, fresh, and simple. Different themes and shapes of the dolls reflect their diverse functions.



Some dolls have practical uses in daily life, while others serve as artistic and decorative items. Various materials are used in the production of ethnic dolls, including clay, wood, fabric, and paper, among others. With exquisite design techniques, designers create a wide range of doll characters. Although the inspiration for ethnic doll designs comes from everyday life, they are not simply replicas of real-life images. The creation of doll characters is often based on the artistic imagination and processing of the designers, expressing their love and yearning for a better life. As a result, ethnic dolls possess a lively and romantic design style (Qu Kewa, 2021) .

"Mudman Zhang" (see Figure 65) is truly an artist, as the doll's image is incredibly lifelike. Despite being only 11 centimeters in size, "Door God Jiang" is considered one of his masterpieces. Mudman Zhang excels at realistically portraying negative characters, showcasing the unpleasant and detestable aspects of evil forces (Wan Yanjun, 2022) . This artistic expression serves as his criticism and exposure of societal realities. In the analysis of the image of "Door God Jiang," we can see that although it is not a realistic portrayal of a specific individual, Mudman Zhang demonstrates exceptional sculpting skills and showcases exquisite artistic abilities. The artist's work displays superb realistic techniques and profound expressive capabilities. Mudman Zhang's mud doll sculptures exhibit a delightful and refreshing artistic style, making the doll images decorative and full of fascination (Ding Meirong, 2016) .



Figure 64: "Mudman Zhang" Zhang Mingshan's "Door God Jiang "

*sculpture* **3.Vibrant, bold, and intense colors**

Vibrant, bold, and intense colors are key elements that reflect the artistic characteristics of ethnic dolls. Throughout history, the hardworking Chinese people have shown a strong desire and yearning for vivid colors. Mudman Zhang's love for vibrant colors is fully expressed in his works, where he often chooses contrasting primary colors and intermediate shades. Due to their less stimulating nature, these colors are used sparingly. The distinct and intense color contrasts give ethnic dolls a unique sense of festivity, which is a common artistic characteristic of Chinese ethnic dolls and reflects the distinct cultural features of our nation (Wang Jing, 2019) .

Huishan mud dolls are acclaimed as "Huishan Artistic Color Sculptures" and "Da Afu" is one of their masterpieces (Shi Jiayi, 2023) . The expression on the doll's face is filled with happiness and contentment, and the overall work conveys a sense of compassion and auspiciousness. The rounded shape and abundance of curved lines, along with vibrant colors such as ingots, longevity peaches, and peonies, convey auspicious meanings of wealth, longevity, success, and warding off evil, making them beloved by people.

**4. The decorations with intricate patterns**

Ethnic doll designs are often rich in auspicious and positive symbolism, which is a major characteristic of ethnic patterns in minority areas. It reflects the designer's pursuit and yearning for beauty. In addition to the basic appearance, the uniqueness and notable artistic characteristics of ethnic dolls are also reflected in their decorative patterns. These patterns, derived from ethnic regions, go beyond reality and become more abstract, with each pattern in every work carrying rich and intricate meanings, showcasing the aesthetic taste and cultural beliefs of different ethnic groups (Song Wanchen, 2021) . Common patterns in China include flowers, fruits, and various mythical creatures. The materials are mostly derived from

natural elements in real life, while some are products of the artist's imagination, such as dragons, phoenixes, qilins, butterflies, and longevity flowers. These patterns often carry auspicious and desirable meanings, representing people's aspirations for a better life. In summary, the basic types of patterns express people's desires for a better life, depict natural scenery, and showcase mythical legends, which can be categorized into three types:

First, plants: flowers and plants, etc.

Second, animals: Various animal patterns representing auspicious meanings can be real animals or imaginary creatures such as dragons, phoenixes, and qilins (Sun Yi, 2021).

Third, others: It includes cloud patterns, sun and moon patterns, and auspicious words with positive meanings, such as "福" (fortune), "禄" (prosperity), "寿" (longevity), etc.

For example, traditional patterns such as butterflies and chrysanthemums convey the hope for the continuation of a beautiful life. The texture of the sun and crow represents the rebirth and revival of all things, heralding the arrival of spring. Sun and moon patterns express the designer's awe of nature and often appear on children's carriers, symbolizing prayers for their healthy growth. Different ethnic groups attribute different meanings to the same patterns due to their cultural backgrounds. For example, the octagonal star is seen as the radiant and vast sky. While appreciating the beauty of these patterns, we also marvel at their diversity and profound symbolism. We cannot help but admire the design ingenuity of local women who use silk, cloth, and other mediums to record the little joys of life and their aspirations for a better life in the form of patterns, ensuring their transmission through generations.

## **5. Adaptation to local conditions and using local materials**

The stylistic characteristics and artistic features of ethnic dolls in different regions also have certain differences, which are related to the local material resources and lifestyle. Ethnic doll designers draw inspiration

from daily life to design the appearance of ethnic dolls, and the materials used are often sourced locally. For example, in regions with good soil stickiness like North China and Jiangnan, clay dolls are more common. In southern and northern regions, where bamboo and wood are abundant, bamboo and wood are primarily used as raw materials for creating ethnic dolls. The rich availability of local materials makes it easier to create ethnic doll designs with lower production costs. Therefore, ethnic doll designs help to better reflect people's lifestyles and habits.

Populus and phoenix trees are widely planted in Fannian Village, Tancheng County, Shandong Province. Therefore, wooden toys in this area ( see Figure 66), often attract attention, representing the unique ethnic characteristics of this region's doll art. The "Stick Stick Man" (Yin Anqi, 2019) (see Figure 67) is a typical cylindrical body of a spinning carousel, decorated with painted features and torso. Its design is simple yet highly expressive. Although it lacks limbs, various patterns are painted on it, showcasing vibrant colors and a well-composed structure that embodies the overall sense of ethnic dolls (Pan Wei, 2024) .



*Figure 65: Swallow Car*

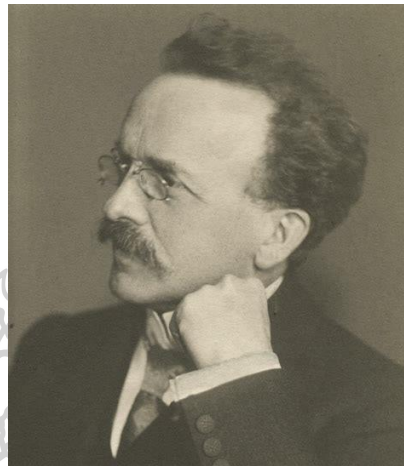


*Figure 66: Stick Stick Man*

## **6. Meeting aesthetic needs and conveying culture**

From a historical perspective of doll development, exploring the doll cultures of different countries, the purpose of dolls has gradually evolved from being substitutes for rituals to objects of cultural exchange and worship. As people's understanding of the world deepens, artworks and toys tend to depict human figures more realistically. Dolls become increasingly humanoid, and their owners imbue them with "personality" and "soul". In cultural exchange, French fashion dolls play a significant role, while Japanese Hina dolls symbolize substitutes for humans and serve as a mission to ward off disasters (Zhang Meng, 2015). Barbie dolls and ball-jointed dolls are famous for their highly realistic human appearances, allowing individuals to satisfy their aesthetic needs through playing, dressing up, and appreciating. In an era of increasing social pressure, dolls represented by Barbie and ball-jointed dolls have become a source of warmth and comfort for many individuals. Theodor Lipps (see Figure 68), a German psychologist, in his representative work "Aesthetic Spaces" (see Figure 69), explores the concept of resonance and the importance of tactile empathy in the experience of beauty. The theory of empathy perfectly explains the emotional connection people have with dolls. It elucidates the pleasure and psychological healing effects derived from aesthetic

satisfaction during the process of playing with dolls. Players can freely change and design dolls according to their preferences and needs, achieving subjective satisfaction that cannot be compared with other toys (Wang Yijing, 2018) .



*Figure 67: German Psychologist Theodor Lipps*



*Figure 68: "Aesthetics of Space"*

## **2.6 Cultural Heritage of Ethnic Dolls**

### **2.6.1 Close Integration of Ethnic Dolls and Folk Culture**

Ethnic dolls, carefully created by the working people, are an emotional expression of their aspirations for a better life and cultural development. They incorporate their emotions, thoughts, beliefs, and wishes into the process of creating ethnic dolls. Therefore, ethnic doll designs closely align with popular folk culture and continue to evolve and

enrich with the development of human civilization and ethnic activities (Wang Libo, 2020). Ethnic dolls not only have aesthetic value but also hold cultural significance and practical applications in various ceremonies such as weddings, funerals, religious festivals, and different holiday celebrations. The creation of ethnic dolls in different regions is currently in a period of prosperity and vitality. Looking at the basic situation of ethnic doll creation in different regions of China, it is closely related to traditional festival customs. Traditional Chinese festivals include eight major festivals in different seasons: spring, summer, autumn, and winter. The design of ethnic dolls is closely related to the origins and customs of different festivals, gradually becoming an indispensable part of festival celebrations. In fact, these ethnic dolls enhance the festive atmosphere during the holiday period (Tang Di, 2008) (see Figure 70/71).

Table 4 illustrates the variety of ethnic dolls corresponding to different festivals and celebrations:

*Table 4: Statistical Table of Varieties for Ethnic Dolls*

Seasons	Seasonal Toys	Corresponding Festivals
Spring	Blown Sugar Figures, Dough Sculptures, Clay Figures, Flower Lanterns, etc.	Spring Festival, Lantern Festival, Qingming Festival
Summer	Fragrant Sachets, Cloth Tigers, Five Poisonous Frog Pillows, River Lanterns, etc.	Dragon Boat Festival, Ghost Festival
Autumn	Tu'er Ye, etc.	Mid-Autumn Festival
Winter	Clay Hanging Tigers, Dough Sculptures, etc.	New Year's Eve



*Figure 69: Five Poisonous Frog Pillow*



*Figure 70: River Lantern*

### **1. Spring folklore and toys**

The Spring Festival has always been the most important festival in China and holds a special place in people's hearts. Whether it is the celebration activities or the toys associated with this period, they are quite abundant. Among the representative ethnic dolls in toys are sugar dolls, dough figurines, and clay dolls. These dolls symbolize auspiciousness, good fortune, peace, and joy. For example, "Da Afu" and "Ni Gu Gu " symbolize warding off evil spirits and praying for blessings and fertility. This statement expresses the hardworking spirit of the working people while also showcasing their aspirations for the future (Wu Gaicui, & Li Binbin, 2011) .

The representative toy of the Lantern Festival is the lantern. Lanterns of various shapes and designs reflect real-life themes and symbolize the desire for a happy life.

Lanterns have their origins in ancient agricultural times in China and are a cultural heritage of that period, combining practical functionality and artistic features. As an important component of Han ethnic traditional



culture, lanterns carry the folk sentiments of thousands of years and are not only used ceremonially to worship deities but also represent people's longing and pursuit of a better life. They also convey emotional sedimentation of cultural traditions and are considered treasures of Han folk culture. The origin of lanterns can be traced back to Emperor Han Wudi, where grand ceremonies were held in the palace. Lanterns were used to provide illumination throughout the night during these ceremonies, thus establishing the tradition of lanterns during the Lantern Festival. Regardless of social status, everyone would hang lanterns, and this tradition combines characteristics of both Eastern and Western cultures. The Lantern Festival is a traditional celebration of the 15th day of the first lunar month, and lanterns are used in China to celebrate the New Year and other important festivals. During the Lantern Festival, people can see various styles and shapes of lanterns decorating the streets, adding to the festive atmosphere. The colorful lanterns illuminate the entire city, creating a joyful ambiance. The origin of lanterns can be traced back to the Han Dynasty, reaching its peak during the Tang Dynasty, and becoming popular in daily life during the Song Dynasty. As Tang Yin, a Ming Dynasty painter, wrote in his poem "Yuanxiao": "Even the streets without lanterns can bring joy, and a night without the moon can still be considered spring. With the spring breeze blowing, flowers blooming like brocade, stars shining in the night sky, the streets bustling with laughter, and the festive atmosphere filling the air, people's hearts are filled with joy. How can one enjoy this beautiful time without seizing the opportunity to show oneself?"

The Qingming Festival is a time when people are enthusiastic about flying kites, and in earlier times, kites were mainly used for military purposes. The use of kites to transmit military information is a historical event. During the Tang Dynasty, kites were popular as daily toys in people's lives. Kites of various shapes, depicting figures, animals, and other simplified forms, were adorned with rich patterns, expressing people's desire to use the spring breeze to carry away "misfortune".

During the Spring and Autumn period of the Eastern Zhou

Dynasty, the ancient laboring people of China invented a unique flying tool - the kite. During the Northern and Southern Dynasties, kites also played an important role in folk entertainment and celebrations. In the Song Dynasty, kites became widely loved. The application of Chinese kites is not limited to entertainment but is also widely used for transmitting important information and handling various challenges. With the arrival of the Tang and Song Dynasties, the development of papermaking technology gradually matured, and kites made of paper paste quickly became popular toys among the people, gradually becoming a part of their daily lives. Chinese kites have a long history and tradition, and their patterns often reflect local culture and traditional values. In the long river of history, our ancestors used various patterns to convey their pursuit of a better life and blessings. Kites reflect the charm of traditional culture and convey people's good wishes and blessings, showcasing China's long-standing cultural traditions and rich folk customs. Therefore, these kites are widely circulated and loved among the people. With a history of over two thousand years, the patterns commonly seen on traditional Chinese kites symbolize auspiciousness, family happiness, harmonious coexistence, and other beautiful meanings, all embodying people's yearning and dreams for happiness and well-being.

Spring is the best season for making traditional sugar figurines in folk crafts due to suitable temperature conditions. There are three different techniques for making sugar figurines: blowing, painting, and sculpting. As a traditional handicraft, sugar figurines hold significant importance in showcasing folk culture and craftsmanship. Folk art provides an important avenue for people to understand and inherit traditional culture. With the passage of time and advancements in technology and innovation, the craftsmanship and styles of sugar figurines have continued to evolve and enrich.



*Figure 71: Sugar Blowing, Sugar Painting, and Sugar Sculpting*

Some parts of the design work incorporate sugar art techniques: (The following are the core techniques of sugar art).

Sugar painting, sugar pulling, sugar blowing, and sugar pouring (see Figure 72) are combined with personal creativity and imagination to create various vivid human or animal figures, as well as abstract flowers and ribbons. Sugar pulling art brings out the hidden qualities in ordinary granulated sugar and pushes them to the realm of artistic works. Even today, this traditional craft still thrives and shines on large decorative cakes. In the French pastry industry, Stephane Klein (see Figure 73) is renowned as a master of sugar pulling for his innovative ideas. He has been honored as a "Sugar Art Master" for receiving the "Le Charles Proust Special Prize". Inspired by his wife and son, Stéphane Klein has showcased a new charm, exploring a dynamic balance between the professional and innovative fields. Originally a pastry chef, he later embarked on the path of sugar pulling art. However, since the 1990s when he began to delve into sugar art, he gradually shifted his focus and eventually solely dedicated himself to the art. He opened a studio where he teaches sugar art to students from all over the world, including M.O.F and world champions. Stephane Klein has achieved great accomplishments in the field of sugar art.



*Figure 72: French Sugar King Stephane Klein (SK)*

Stephane Klein is the person who strives to improve quality from 99% to 99.99%! He also has a strong interest in painting, which has become his second hobby. He successfully merges painting and sugar art to create unique works. His astonishing sugar pulling skills are breathtaking, resulting in creations that are characterized by vibrant colors, innovative forms, and unparalleled creativity. His works showcase the delicate beauty and vitality of plants. He always carves lifelike human figures and has traveled to many places, witnessing unique symbols from around the world. He has collected a wealth of information and recorded them as inspiration, creating a book that can be considered the "Sugar Pulling Bible" — "Cokorico" SK (see Figure 74), representing the world of sugar art techniques and creativity. What we need to learn from him is not only his techniques but also his extraordinary creativity (see Figure 75).



*Figure 73: Live Signing Ceremony by French Sugar King Stephane Klein*



*Figure 74: Live Teaching Session by French Sugar King Stephane Klein*

Tools and materials needed for sugar pulling include:

The tools and materials needed for sugar pulling include: silicone mat, blowtorch, dedicated aluminum pot for boiling sugar, an art knife. The initial sugar pulling technique is used for further processing of the sugar mixture, with the purpose of reducing the temperature of the sugar mixture by pulling it and injecting a suitable amount of gas into it. By squeezing the gas, the sugar mixture produces a refractive effect, displaying a shiny gloss. When the temperature of the sugar mixture drops to 80°C, the hard core or crystalline structure becomes completely softened, requiring quick and clean pulling operations. When sugar pulling is completed, it is important to maintain the temperature of the sugar mixture at around 60°C.

The specific steps and process of pulling sugar are as follows:

Before using the low-temperature fondant for pulling, first take it out from the refrigerator and let it sit at room temperature for two hours to allow the fondant to adjust to the ambient temperature. The next step is to slowly heat the fondant syrup on a specialized heater, stirring frequently to restore the softness of the sugar. Make sure to control the temperature between 22 to 26 °C and the relative humidity does not exceed 50% during the operation. Adding a small amount of glucose syrup during the cooking process can improve the plasticity of the blown sugar.

(1) When the temperature of the sugar syrup drops, the outer layer will cool and harden first. At this time, the edge should be folded back into the interior to exchange heat with the hotter syrup, in order to

avoid uneven temperature distribution and the formation of hard particles. If used directly, it will be difficult to separate the hardened sugar blocks and they need to be reheated to melt.

(2) When the sugar syrup is completely detached from the non-stick mat, slowly combine the sugar mass to facilitate even heat exchange during the cooling process and slow down the cooling rate.

(3) When the temperature of the sugar syrup is close to 80°C, the sugar mass starts to harden. At this point, roll the soft sugar into evenly sized sticks, and then fold it twice to evenly distribute the heat within the sugar mass.

(4) During the initial process of pulling sugar, the movements should be slow to allow heat to dissipate quickly. However, avoid using a fan to blow air, as it may rapidly decrease the surface temperature, causing hardening or the formation of particles.

(5) As the temperature of the pulled sugar decreases, to prevent hardening, the pulling speed can be slightly increased to ensure sufficient inflation and the increased injection of air will result in more pronounced bubbles and a stronger texture in the soft sugar.

The texture of the soft sugar may be affected, with tiny crystals present in the pressure medium and the appearance of iridescent bubbles. The sugar coating will begin to shimmer with a metallic sheen.

(6) During the process of pulling sugar, gradually increase the stretching amplitude and fold in the sugar blocks that have not been fully pulled apart, in order to minimize the bubbles inside the sugar blocks and keep them in the most vibrant state.

(7) When the sugar mass is pulled to a glossy, silky smooth and translucent state, emitting a jade-like warmth, it has reached the ideal state. Continuing to pull will make the sugar mass too hard and the color will start to fade. Over-inflating the sugar mass will cause it to lose its vitality and gradually become "dead sugar" as it loses its reducibility during the

oxidation process.

(8) Cut the sugar mass into small particles, trim the cut edges to make them even, flatten them with the palm of your hand, and then place them on a non-stick mat with a thickness of less than 1 cm. Each piece of sugar mass should weigh about 120 g. It is important to ensure that the sugar mass is used up within the specified time. If the sugar blocks are too large, they cannot be consumed in time, and the sugar mass will gradually age, lose its gloss, and even become sandy, resulting in waste.

(9) The number of sugar masses placed on the heater should not be too many. Calculate the time it takes for the first sugar mass to be used up, and ensure that the two sugar masses fit perfectly together. When handling the sugar temperature, attention should be paid to the techniques of refining sugar. Training in systematic science is necessary. Using more than a few sugar masses can activate the sugar mass, but the amount used should be moderate to avoid resource waste. The activity of sugar can be classified into three levels: mild, moderate, and severe, depending on specific requirements. The used sugar mass needs to be constantly stirred. The activity of the sugar mass will transition from mild to moderate and finally to "excessive" and "dead". Therefore, when pulling sugar, these factors should be considered appropriately.

## **2. Summer folklore and toys**

The Dragon Boat Festival falls during the transition from spring to summer, and its timing provides favorable conditions for the spread of diseases due to the characteristics of the solar terms. Therefore, during the Dragon Boat Festival, people sew and carry scented sachets and fabric tigers to ward off diseases and disasters. The scented sachets are adorned with a variety of patterns including birds, animals, fish, shrimp, vegetables, and fruits, which serve as the basic elements of the decorative designs. In folk culture, there is a high admiration for tigers, as they are believed to be protective gods that can dispel evil spirits. Therefore, fabric tigers are represented in different styles throughout the country. The Ghost Festival,

also known as the Hungry Ghost Festival, is a time when people release Kongming lanterns to express their hopes for a happy and bright future.

In some regions, there is a traditional custom during the Dragon Boat Festival where children exchange colorful ropes as gifts. The scented sachets they personally make have the function of warding off evil and expelling toxins. In their first year of marriage, the newlyweds spend the Dragon Boat Festival together, and the bride must make and give scented sachets to relatives and friends. In addition to giving them to loved ones, scented sachets are often worn by children as well. Through the traditional practice of gifting scented sachets, elders convey their wishes for the smooth development and well-being of the younger generation. As a traditional gift, scented sachets can also be used to express children's respect and gratitude to their elders.

Scented sachets, as gifts, convey deep affection and sincerity towards loved ones, showcasing a romantic and genuine emotion. The making of each scented sachet is filled with ingenuity and meticulousness, reflecting the dedication and craftsmanship of the creator. In the past, women would make farewell gifts for their children as they embarked on a journey, wishing them a safe journey. It was also a reminder that someone back home was eagerly awaiting their return. However, in modern times, this heartwarming traditional custom is less commonly seen.

With the continuous advancement of medical technology, the traditional functions of scented sachets have gradually lost their influence. People's daily lives are becoming busier and more fast-paced, and an increasing number of working women have less time to dedicate to intricate handicrafts. As a result, before and after the Dragon Boat Festival each year, there is a large market for beautifully designed scented sachets, often using synthetic fragrances that may not last as long. The development of modern industrialization has made significant progress, and the unique charm and atmosphere of traditional scented sachets are gradually being forgotten.



### 3. Autumn folklore and toys

The Mid-Autumn Festival is a symbolic holiday for the Chinese people, representing the importance of reunion. The bright full moon is a source of romanticism in people's hearts. It is a traditional festival where people often admire the moon and enjoy the pleasure of being together. There is a mythical jade rabbit that resides on the moon and can make elixirs that can cure all diseases. Therefore, people hold great respect for the jade rabbit and refer to it as Tu'er Ye (Rabbit God) (Wang Yuting, 2022). The traditional auspicious doll toy that is beloved during the Mid-Autumn Festival is called the "Rabbit God", with a rabbit head and human body, various forms, and a majestic presence (Yin Huaye, 2020).

### 4. Winter folklore and toys



Figure 75: Sugar Sculpture (by sugar sculpture artist Chen Hailiang)



Figure 76: Lanshan County Sugar Sculpture



*Figure 77: Shanxi Sugar Sculpture*

The New Year's Eve is the moment when the old year bids farewell and the new year is eagerly anticipated, representing the transition from the old to the new. It is a holiday that is highly valued in our country. When the festival arrives, people enjoy purchasing decorative items that symbolize good luck and blessings to adorn their homes, creating a joyful and festive atmosphere. For example, people in the Fengxiang area of Shaanxi Province like to purchase clay tiger decorations, symbolizing harmony. In northern regions, sugar sculpture (see figures 76/77/78) is a form of folk doll-making that explores which forms best represent local cultural characteristics. Sugar sculptures come in a variety of shapes and can depict figures, animals, or plants (Ji Yulan, 2018).

Our lives are influenced by a rich and diverse culture throughout the course of history. People are fond of various traditional customs, which they cannot live without. In the balance between preserving and improving cultural traditions, there is a continuous search for new breakthroughs and creativity. These customs and rituals carry people's nostalgia and cherishment of the past. Traditional dolls representing different festivals are imbued with rich cultural significance and have established close connections. For example, the sugar dolls and clay dolls during the Spring Festival, the cloth tigers during the Dragon Boat Festival, the lanterns during the Lantern Festival, and the Tu'er Ye during the Mid-Autumn Festival all have obvious symbolic meanings, becoming indispensable cultural symbols and iconic symbols of festive celebrations. The production of traditional dolls is an important cultural tradition, reflecting the inheritance and development of customs and showcasing the transmission and innovation of culture (Zhang Yumei, 2023).

### **2.6.2 The Diversity and Unity of Ethnic Doll Culture**

China is a country of diverse ethnicities, with 56 different ethnic

groups. Throughout history, these ethnic groups have interacted and influenced each other, resulting in a shared cultural identity in our country while also showcasing the diverse ethnic customs. Due to China's vast territory, it possesses abundant natural resources and cultural heritage. Different ethnic groups reside in various parts of China, each region having its unique characteristics and charm in terms of nature, geography, and culture. Therefore, ethnic dolls also reflect a wide variety of types and artistic styles. With China's rich and diverse ethnic cultures, ethnic dolls also demonstrate diverse yet unified artistic characteristics ( Zu Hailaiguli • Musilaiding, 2020) .

The richness of ethnic doll culture is an objective fact that relies on ethnic cultures. This richness primarily manifests in diversity, including various cultural characteristics and customs. Our country is composed of various ethnic groups, totaling 56 ethnicities (1. Mongolian; 2. Tibetan; 3. Miao; 4. Zhuang; 5. Hui; 6. Uighur; 7. Yi; 8. Buyi; 9. Korean; 10. Dong; 11. Bai; 12. Hani; 13. Dai; 14. Lisu; 15. Lahu; 16. Lahu; 17. Manchu; 18. Yao; 19. Tujia; 20. Kazakh; 21. Li; 22. Wa; 23. Gaoshan; 24. Shui; 25. Dongxiang; 26. Jingpo; 27. Tu; 28. Mulao; 29. Blang; 30. Maonan; 31. Xibe; 32. Pumi; 33. Naxi; 34. Kirgiz; 35. Daur; 36. Qiang; 37. Sala; 38. Gelao; 39. Achang; 40. Tajik; 41. Nu; 42. Russian; 43. De'ang; 44. Yugur; 45. Tatar; 46. Oroqen; 47. Menba; 48. Jino; 49. Uzbek; 50. Ewenki; 51. Bao'an; 52. Jing; 53. Dulong; 54. Hezhen; 55. Lhoba; 56. Han). Different ethnic groups present unique and diverse cultural characteristics and charm. The human and geographical environment shape distinct cultural features in different regions. Even within the same ethnic group, unique cultural styles may be exhibited in different places due to variations in environmental conditions and fundamental differences between ethnic and regional cultures.

Ethnic doll culture has rich and vibrant characteristics:

First, the formation of ethnic cultures in our country is not simply the accumulation and combination of various ethnic cultures. It is a process of mutual fusion and interaction of historical and cultural elements, ultimately creating a diverse and rich overall culture.

Second, on the path of mutual learning and common growth, ethnic cultures are gradually showing characteristics of diversity and inclusiveness. Over time, ethnic doll culture has gradually exhibited diversity and individuality.

Third, while preserving local characteristics, different ethnic groups and regions are also learning from and exchanging doll culture. Chinese ethnic doll culture has attracted widespread attention and love. Against the backdrop of the integration of local and ethnic cultures, Western Region doll culture serves as a higher level of identity. People are more inclined to identify with ethnic doll culture, followed by local doll culture.

Ethnic doll culture exhibits coexistence between identity and integration, rather than being opposing and independent entities. It embodies a general and individual, ordinary and special holistic relationship. Doll culture is not only an artistic expression but also an important component that carries ethnic traditions and values. The doll cultures of different ethnic groups and regions present a rich and diverse appearance, showcasing their unique traditional cultures. The traditional cultures of various ethnic groups demonstrate a diverse and rich charm, all belonging to the overall ethnic doll culture, but also with their own distinctive features and independent existence. The unity of ethnic doll culture among different ethnic groups is the result of mutual influence and integration in the long river of historical development. Although each has its unique characteristics, ethnic doll culture also possesses universal and common ethnic attributes. The complementarity between individual uniqueness and team cohesion is crucial for the development of a team. The richness exists in the diversity of ethnic doll culture, while unity is manifested in its diversity.

The essence of dolls designed in different countries around the world contains rich cultural connotations. For example, there is the function of cultural exchange in doll cultures such as dress-up dolls. There is the value of doll rituals in festivals like Hina Matsuri in Japan. There are also dolls like Barbie and ball-jointed dolls that embody cultural characteristics

of the current era. In the context of increasingly close global cultural exchanges, the diversity and unity of dolls from different countries are gradually being manifested.

## **2.7 Analysis of New Ethnic Ancient-style Dolls**

### **2.7.1 New Styling**

Ancient Western Region ethnic dolls in China differ from other forms of toys in that they embody multifunctional characteristics and distinct Chinese Ancient Western Region ethnic style. Generally, the unique stylistic features of Ancient Western Region ethnic dolls in China are showcased in various aspects such as their appearance, costumes, props, hairstyles, and accessories. Ethnic dolls from different Chinese ethnic groups exhibit diverse characteristics, while doll designs from other countries also demonstrate notable features. With the improvement of living standards and the acceleration of social pace, our inner needs and aesthetic standards have undergone changes. People's demand for doll toys is no longer limited to traditional regions, and they have begun to discover the innovative intersection between different ethnic cultures. In this context, the design of new Chinese Ancient Western Region ethnic dolls is an inevitable trend in market development. Innovative Chinese Ancient Western Region ethnic dolls have driven market development. Compared to the basic forms of traditional ethnic dolls, the fusion design of Chinese multiculturalism has given rise to numerous new doll designs. Generally, doll toys can be classified into two main categories: realistic and exaggerated surrealistic.

#### **2.7.1.1 Realistic Figurative Modeling**

"Realistic" refers to the meaning of realism in the art of painting, which involves the imitation and modeling of real objects. Realism is the artistic expression form that Western artists excel in. In the design of realistic figurative modeling dolls, forms that conform to the aesthetic standards of the general public are commonly chosen for design. Through artistic creation, these dolls showcase the idealized character images of the general public.

The design of such dolls varies according to the differences in aesthetic preferences of different periods.

The realistic figurative modeling approach is characterized by its highly concise and condensed nature. It concentrates and refines the aesthetic sense of the real world. This refined modeling beauty is the intuitive embodiment of the artistic characteristics of realistic figurative modeling dolls. The inspiration for the design of realistic figurative modeling dolls comes from the beauty that objectively exists in reality. Therefore, the high degree of fidelity allows people to not only appreciate the beauty of the dolls but also feel a sense of authenticity. This pursuit of beauty is embodied in practical doll works and can better stimulate resonance among the general public, providing aesthetic pleasure.

#### **2.7.1.2 Exaggerated and Surrealistic Modeling**

Exaggeration is a common artistic technique that differs from the realistic figurative modeling approach in terms of realistic representation. This modeling method focuses more on the presentation of the visual effect. By emphasizing and stretching the doll's form, the final representation possesses unique and meaningful characteristics, highlighting symbolic character images. Surrealism explores the artistic approach of exaggeration and distortion of form. This type of modeling style is deeply influenced by Freudian psychoanalysis, aiming to excavate and embody the latent psychological activities of humans. Surrealism, as the name suggests, transcends the existence of realistic images. It showcases the imaginary world constructed within human consciousness through doll works, creating a unique beauty that combines reality, imagination, subjective consciousness, and dreams.

In doll modeling design, exaggerated forms are prominent in terms of color and external appearance. However, surrealism focuses more on revealing the internal meaning and themes of the doll's form. The dolls display surrealistic modeling, drawing inspiration from real life. However, these doll works are limited by the existing objects in real life and exist as

a surreal and unnatural presence.

Surrealistic modeling allows designers to showcase their imagination and unleash their creativity.

The aesthetic demands of the public are constantly changing, and with the changing market and cultural environment in the new era, innovation in the design of modern ethnic dolls is of utmost importance. For the development of ethnic dolls, it is rooted in ethnic culture, which is fundamental. Therefore, innovative design of ethnic dolls needs to be based on traditional ethnic doll culture, exploring unique artistic inspiration. China has a long history of ethnic doll development, and the rich stylistic features reflect the distinct characteristics of different ethnic groups. The exaggerated and realistic forms, as well as the vibrant color contrasts between solid colors or contrasting colors, have contributed to the artistic characteristics of ethnic dolls in China.

However, compared to the international influence of Japanese and American dolls, the development of ethnic dolls in China has relatively low international recognition. By transcending geographical boundaries and subverting traditional customs, ethnic dolls integrate ethnic characteristics into the exploration of beauty in modern society. The field of doll design is moving towards an indispensable direction of development. Modern doll design has derived numerous methods and concepts in terms of form, but the inheritance of ethnic culture remains the core and soul of sustained development for a nation. Chinese ethnic doll culture is vast, profound, and has a long history. Its artistic value has not been overshadowed by technological advancements and progress in society. Modern doll design works integrate innovative and traditional elements, already possessing distinctive forms. The Ancient Western Region in China, as a region where diverse cultures coexist and develop, has formed a unique ethnic culture. In order to promote culture, doll forms with Chinese ethnic styles have gradually enriched and developed throughout the process of cultural inheritance.



*Figure 78: Guli Doll from Ancient Western Region in China*

The "Guli Doll" from the Ancient Western Region in China (see Figure 79) and the embroidered sculpture dolls combining traditional embroidery techniques and sculpting from the Ancient Western Region in China (see Figure 80) are both modernized forms of ethnic dolls. The "Guli Doll" draws inspiration from the styling features of Barbie dolls and incorporates them into its clothing and accessories, resulting in fashionable dolls with distinctive characteristics of the Ancient Western Region in China. It promotes the ethnic elements of the ancient Western Region in China to a wider market platform (Kang Fengqin, & Qiu Anlu, 2016) .



*Figure 79: Embroidered Sculpture Work "Manas"*



from Ancient Western Region in China

The founder of the embroidered sculpture art in the Ancient Western Region in China is Shan Xiumei (see Figure 81). In his book "Shan Xiumei's Embroidered Sculpture Puppet Art", he combines needle embroidery and thread sculpting techniques (see Figure 82) to create a unique art form with strong ethnic characteristics. The dolls and embroidered sculptures from the Ancient Western Region in China draw inspiration from well-known children's fairy tales and ancient myths, using high-tech knitted fabrics and biomimetic technology to create a soft touch similar to human skin. They have created a unique style of dolls representing ethnic minorities in the western region. The "Guli Doll" and "Western Region Embroidered Sculpture Doll" inherit and develop the traditions of ethnic dolls, playing a crucial role in the artistic development of ethnic dolls in this field (see Figure 83).



*Figure 80: Shan Xiumei*

(Founder of Xiu Sculpture Art in the Ancient Western Region)



*Figure 81: "Shan Xiumei's Xiu Sculpture Puppet Art"*



*Figure 82: Shan Xiumei and Xiu Sculpture Puppets*

### **2.7.2 New Materials**

The advancement of technology has driven the innovation of production techniques, and traditional material processing methods continue to evolve and innovate. New materials are constantly being developed and widely used. In the field of new ethnic doll design, there is an expanding vision in the use of materials, abandoning traditional materials such as clay, bamboo, cotton, sugar, and flour, and continuously applying newly developed materials. The use of new materials in production signifies an improvement in productivity. New materials, such as ceramics, plastics, fibers, and metals, are increasingly being applied in various production fields. This trend is not only reflected in ethnic doll design but also plays a positive role in other aspects of human life and production. The use of new materials has made the creative design of ethnic dolls more diverse, and the sculptural design more bold and unique.

#### **2.7.2.1 Plastics**

Plastic is a commonly used and widely applied material in modern human life, production, and toy manufacturing processes. This new synthetic material is lightweight, cost-effective, easy to process, and offers advantages such as easy coloring and safety. Plastic also comes in a wide variety of types, all of which have strong plasticity. In addition, the simple processing techniques of plastic make it a commonly used new material in doll design. Resin tends to soften and flow under high temperatures, and

additional components can be added according to different purposes and needs to improve the usability and shaping performance of plastic.

The characteristics of plastic can be summarized as follows:

Firstly, plastic has high plasticity. As a synthetic material, plasticity is one of its fundamental features. Under specific external conditions, such as high temperatures and pressure, plastic can be molded into various forms. Once shaped, plastic can maintain its form without changes under natural environmental conditions. The high density and strong plasticity exhibited by plastic lay the foundation for shaping doll designs in various shapes, providing infinite possibilities.

Secondly, plastic is colorless, which provides a basis for arbitrary coloring. The artistic characteristics of doll design partly rely on conveying through colors. The colorless nature of plastic allows for flexible coloring during the doll-making process, enabling dolls to showcase a rich variety of colors according to design inspiration.

Thirdly, plastic is lightweight and durable. Despite having a density ranging from 0.9 to 2.3 grams per cubic centimeter, plastics still exhibit impressive impact resistance, appearing lightweight yet strong.

Fourthly, plastic has excellent wear resistance and flexibility, which also provide a foundational support for shaping plastic into various forms.

Fifthly, plastic exhibits excellent chemical stability. It has outstanding durability in natural environments and possesses remarkable resistance to UV rays and corrosion.

Sixthly, while plastics demonstrate excellent electrical properties, their thermal conductivity is relatively poor. In doll design, different plastic materials' characteristics are usually considered together, and they are mixed for use in doll-making. Common plastics and engineering plastics are typically prioritized in doll design as they have wide applications and excellent performance in doll shaping.

Common plastics can be divided into multiple types:

Firstly, polyethylene (PE). Polyethylene has a smooth surface and appears as a white or semi-transparent solid. It is the lightest plastic material with excellent insulation properties. With an increase in molecular weight, polyethylene also exhibits improved strength and ductility, achieving a balance between impact resistance, tensile strength, and hardness. Therefore, polyethylene is widely used in the manufacturing process of large children's toys. Many hollow or injection-molded toys are made of polyethylene.

Currently popular in the market, the material for vinyl dolls is polyethylene. Liquid polyethylene material is injected into molds and solidified to form the doll. Due to the hollow structure, vinyl dolls require less material, resulting in a lightweight product. The simple production process and low cost make vinyl dolls one of the new product types in the market.

Secondly, polypropylene (PP). Polypropylene has a translucent appearance and a semi-crystalline structure. It is also thermoplastic. Polypropylene exhibits high strength, insulation properties, low water absorption, high temperature resistance, and low density. It can maintain its shape even at temperatures as high as 150°C. Therefore, this material is used in various mechanical and chemical parts. Polypropylene is also used in the production of medical equipment and containers that require heating and sterilization. In the toy industry, polypropylene is widely used in the design of injection-molded materials due to its thermoplastic and impact resistance properties.

Thirdly, polyvinyl chloride (PVC). In China, there are numerous factories producing PVC resin. PVC has a slightly yellow appearance. It is widely used in various industries. During the production process, different proportions of plasticizers may be added to adjust the flexibility of the material. Due to its strong plasticity, PVC is commonly used in toy production. It has a soft and flexible texture, making it suitable for toys and inflatable products. Additionally, PVC exhibits excellent resistance to oil, water, and chemicals. It is commonly used in the design of injection-

molded toys, including the modeling design of vinyl dolls.

Fourthly, polystyrene (PS), commonly known as "hard plastic". Polystyrene has a clear and transparent appearance, with a certain degree of gloss and high transparency. Its appearance and characteristics are similar to glass. When struck, it produces a crisp sound and is prone to breakage. It is easily scratched when in contact with hard objects. Polystyrene has excellent insulation properties, high corrosion resistance, and is non-absorbent. It has high transparency at room temperature, second only to organic glass. When polystyrene material comes into contact with water, it forms a new substance called polystyrene foam or styrofoam, which is widely used in sound insulation, packaging, salvage, and other fields. It is particularly widely used in the packaging industry to ensure the safety of goods during transportation.

Fifthly, Acrylonitrile-Butadiene-Styrene (ABS) is a copolymer of several substances. This material is a synthetic resin polymer that can be molded by heating. ABS exhibits excellent overall mechanical properties and its performance is well balanced in various aspects, making it suitable for different needs through cutting and shaping. It is characterized by being opaque, strong, and rigid. It has excellent high-temperature resistance, impact resistance, chemical stability, and electrical properties. The surface of ABS can be chrome-plated and it is easy to process and shape. It is mainly used in the manufacturing of core components for high-end toys.

There are several different types of engineering plastics available for toys and doll applications:

Firstly, Polyamide (PA), commonly known as nylon, is a common type of polyamide material. There are various types of nylon to choose from. Nylon has advantages in terms of wear resistance, lubrication, toughness, and strength. Its good molding effect also makes it widely used in doll modeling. In toys, transmission and bearing parts are often made of nylon, while doll hair is commonly made of nylon.

Secondly, Polycarbonate (PC) is a composite plastic composed of a rigid phenyl structure and a flexible carbonate. It exhibits excellent mechanical properties and is a commonly used thermoplastic material. It is preferred for its impact resistance and dimensional stability. It has a transparent appearance and is often referred to as "transparent metal" due to its own advantages. It has superior fatigue strength compared to other thermoplastics and similar characteristics. Its strength and hardness can be improved by incorporating reinforcing materials such as glass fibers and carbon fibers, resulting in new reinforced plastics with excellent performance. In the manufacturing field, polycarbonate is often used to produce high-strength and wear-resistant mechanical parts.

Thirdly, Polyoxymethylene (POM), also known as acetal, is suitable for high-strength and durability applications. POM materials have excellent high-temperature resistance and outstanding weather resistance, but they have relatively poor stability and require processing at higher temperatures. Additionally, POM may change color when exposed to fire and can undergo aging when exposed to prolonged sunlight. In the toy manufacturing industry, POM is widely used, particularly in the production of gears and other components due to its outstanding performance.

### **2.7.2.2 Other Materials - Latex, Microfiber, Fondant**

#### **2.7.2.2.1 Latex Material**

In addition to plastic materials, the use of latex has also seen rapid development due to its environmental advantages compared to plastics. Latex is derived from the sap of rubber trees and possesses natural and harmless characteristics. In the natural environment, latex will turn into powder when exposed to sunlight and naturally decompose in the soil after 3-5 years. Latex has good elasticity and is resistant to deformation, making it suitable for doll modeling. During the doll modeling process, latex exhibits similar advantages to plastic in terms of shaping, and it can even achieve shapes that some plastics cannot. Compared to plastic materials, latex has become a new material for doll

production due to its environmental characteristics, aligning with requirements for green, ecological, and sustainable development.

#### **2.7.2.2.2 Microfiber Material**

Microfiber refers to fibers with a very small diameter, typically less than 5 micrometers, and it is known for its excellent softness and surface smoothness. It has gradually been introduced into the field of doll design and has become one of the highly regarded new materials. Due to its extremely fine fibers, microfiber exhibits significant advantages in terms of softness. It is commonly used in the production of silk fabrics, providing a flexible and smooth texture with excellent drape and fullness. Microfiber also demonstrates remarkable water resistance and waterproof properties, making it highly suitable for doll clothing. It is an ideal choice. As a new material for doll clothing manufacturing, microfiber provides strong support for expanding doll forms and establishes a solid foundation for the development of diverse doll images.

#### **2.7.2.2.3 Fondant Material**

The introduction and application of new materials have provided a favorable environment and conditions for the advancement of doll modeling. Against the backdrop of the continuous enrichment of new materials and the ongoing development of ethnic dolls, the multifunctionality of ethnic dolls has gradually gained attention based on contemporary consumer concepts and needs. The design of ethnic dolls is no longer solely focused on play and appreciation, but also emphasizes the combination of their edible and artistic value. For the artistic Chinese ancient Western Region doll designs, fondant, made from protein and powdered sugar, is a new material widely used in doll design. Currently, the use of fondant in Chinese ancient Western Region doll modeling is mainly in the field of artistic cakes, showcasing its comprehensive value in terms of competition, appreciation, profitability, and consumption. More and more people are using fondant cakes as a way to display creativity and individuality (Xiang Ling, 2019) .

Fondant cake modeling design has a high level of craftsmanship and is made from fondant, a material composed primarily of protein and powdered sugar. It replaces traditional cream decorations and adds other embellishments to create exquisite forms. The production process of fondant is similar to the clay sculpture technique used in ethnic doll making. However, due to differences in raw materials and production techniques, fondant cake designs can achieve effects that cream cannot. All three-dimensional forms can be realized through fondant production techniques. Fondant cakes, with their smooth texture, aesthetic appeal, and artistic value, have a competitive advantage in the market. Combining ethnic doll designs with fondant cakes is an effective way to promote the internationalization of ethnic dolls. At the same time, the cultural characteristics embodied by ethnic dolls will elevate the artistic value of fondant cakes to new heights. The combination of fondant cakes and ethnic dolls results in a win-win outcome (Chen Quanzhong, 2014) .

#### Development of Fondant Material (Introduction to Raw Materials):

Fondant Cakes originated in the UK and gained popularity in the United States, where they are beloved by the general public. Fondant is a highly malleable edible material commonly used for cake decoration. It was introduced into pastry making in the 1970s. Its excellent elasticity allows for the creation of various shapes, making it one of the standards for measuring cake artistry. Fondant techniques include sculpting, English-style sugar flowers, and royal icing.

#### Fondant Recipe and Making Method:

Gum paste is a material used for sugar artistry, which has a slightly different texture from fondant. When creating delicate sugar flowers, it has a brittle and fragile texture. To allow the sugar flowers to dry quickly, the production speed needs to be increased accordingly. It is important to seal and store them properly to prevent them from drying out and becoming hard. By adding tylose to royal icing, the icing forms a dough-like consistency. The presence of protein allows the sugar flowers to



dry and set quickly during the production process, saving time. However, this quick-drying characteristic may pose challenges in terms of shaping. Mastering the technique requires repeated practice. Simply follow the instructions on the packaging, add water, and knead the mixture into a ball. Adding fresh egg whites will increase elasticity but should be done by experienced individuals.

#### Recipe Information:

Use 1 egg white, 250 grams of powdered sugar, 1 tablespoon of Tylose powder, and 1-2 teaspoons of vegetable shortening for the recipe.

Method: In a mixing bowl, whisk the egg white until it forms soft peaks and can be pulled into soft peaks. Gradually add the powdered sugar and mix until the mixture becomes thick. Finally, slowly add the Tylose powder and knead it with your hands until it forms a ball. Rub the vegetable shortening between your palms until it becomes warm, then knead it into the dough. Place the dough in a sealed container, wrap it in double layers of plastic wrap, and let it sit for a day. The dough will have good elasticity.

#### Notes:

1. Gum paste tends to dry out quickly, so it is important to always wrap it tightly with plastic wrap or store it in an airtight bag. Even a short exposure to air can cause it to harden rapidly. It is recommended to divide the gum paste into multiple portions and wrap each portion separately with plastic wrap. Only take out the amount needed for each use to minimize unnecessary waste.

2. Gum paste is a white sugar paste that can be kneaded with food coloring to change its color. If desired, after drying and setting, you can use a dry brush to apply powdered pigments onto the surface or dissolve the pigments with edible alcohol and apply them wet onto the surface.

#### Details of Fondant Crafting Process:

The fondant crafting process can be divided into three main

categories and nine subcategories of fondant materials. These include fondant paste, dry gum paste, moisture-proof series, original doll gum paste, soft porcelain gum paste, and sugar brand gum paste. The soft porcelain and sugar brand gum pastes have become industry leaders. The moisture-proof series has allowed fondant to be used in various fields, including buttercream, ice cream, and desserts.

The raw materials include:

(1) Fondant paste;(2) Milk-flavored fondant paste;(3) Flower gum paste;(4) Doll gum paste;(5) Soft porcelain gum paste;(6) Moisture-proof sugar brand gum paste;(7) Moisture-proof doll gum paste;(8) Moisture-proof flower gum paste;(9) Instant lace paste;(10) Lace sauce;(11) Premixed lace powder;(12) Fondant-specific white oil;(13) Royal icing;(14) Drying agent;(15) Natural edible colorants (9 colors in the entire series);(16) High-concentration edible colorants (48 colors in the entire series);(17) Fondant color powder (108 colors in the entire series).

Here is the specific introduction:

(1)Fondant Paste (see Figure 84): Fondant paste is used to make the fondant covering. High-quality fondant paste has fine particles, a smooth texture without a grainy feel, excellent stretchability, and better shaping ability, resulting in a silky smooth surface. This material has high transparency, a fair color, strong stretchability, and a solid texture. It effectively retains moisture, allowing for a slow drying process, which gives the surface a dry appearance while keeping the interior moist and soft. It is commonly used to cover cakes, providing a smooth finish without cracks or wrinkles. It can be reused and is easy to work with, making it suitable for beginners. It has a wide range of applications and produces excellent results when creating European-style patterns and curtains.



Figure 83: Fondant

(2) Milk-flavored Fondant Paste (see Figure 85): The main difference between milk-flavored fondant paste and regular fondant paste lies in its taste. It has a pure and authentic milk flavor that lingers in the mouth, providing a better taste experience. High-quality milk-flavored fondant paste has excellent moisture retention, a delicate texture, and strong workability. After the cake is made, it will remain soft and moist for up to 2 days, ensuring that the surface maintains a freshly made texture when customers consume the cake.



Figure 84: Fondant with Milk Flavor

(3) Flower Gum Paste (see Figure 86): Floral gum paste is a type of fondant ingredient that has strong stretchability, quick setting, and short drying time. It can be used to create intricate and lifelike flower branches, leaf veins, flower buds, and patterns. Sugar flowers made with floral gum paste have a realistic appearance, with thin and translucent petals, resulting

in a better overall effect. High-quality floral gum paste is made from slightly moisture-retaining materials, which extends the drying time without affecting the final shaping of the artwork. It is more suitable for creating delicate small objects and does not quickly crack or show signs of drying during the crafting process. When making flowers, multiple petals can be rolled out at once (around 5-10 petals) to improve work efficiency without compromising the final result. This means even beginners can create beautiful sugar flowers.



*Figure 85: Moisture-proof Flower Dry Paste*

(4) Doll Gum Paste (see Figure 87): Doll gum paste is a new product derived from the modern use of fondant. Similar to flower gum paste, the introduction of doll gum paste aims to provide a more flexible texture for creating beautiful and intricate sugar dolls. This material dries quickly, so it is important to isolate and keep the semi-finished products moist during the crafting process. Its surface is smooth, dries slowly, sets quickly, and is non-sticky, making it suitable for sculpting facial features and delicate positions that depict the fine texture of the skin. The slow drying speed allows for ample time to work without worrying about surface cracking. It also benefits the shaping process when creating arms and hair, as the finished parts start to harden within 5 minutes, making it easier to handle.



Figure 86: Doll Gan Peisi

(5) Soft Porcelain Gum Paste: The new generation of soft porcelain gum paste shows significant improvements in flexibility, moisture retention, and translucency compared to traditional materials. The petals of flowers made with this soft porcelain gum paste are soft, with clear patterns, and are not easily damaged, making them indistinguishable from real flowers. When used to create realistic clothing for figurines, soft porcelain gum paste exhibits excellent flexibility. The durability and high transparency of the clothing give a realistic and transparent appearance.

(6) Moisture-proof sugar brand gum paste (see Figure 88): The sugar brand gum paste can prevent moisture and is suitable for making all kinds of accessory products, such as small dolls, decorations, flowers, sugar plaques, semi-three-dimensional accessories, etc. It can be used as decoration on butter cakes, desserts, and ice cream. The texture is delicate and solid, not sticky to hands, tables, or tools, easy to demold, with a soft and easy-to-handle texture, and excellent moisture-proof effect after drying.



Figure 87: Moisture-proof Sugar Gan Peisi

(7) Moisture-proof doll gum paste (see Figure 89): Slow-drying type with strong plasticity, once set, it does not bounce back and allows for longer working time, enhancing creativity.



Figure 88: Moisture-proof Doll Gan Peisi

(8) Moisture-proof flower gum paste: quick-drying, strong stretchability, good transparency, short drying time, fast setting, clear pattern on the finished product, vivid and detailed leaf veins.

(9) Instant Lace Paste (see Figure 90): Instant lace gel is a new type of product that replaces traditional lace powder. It is not only more affordable but also eliminates the waiting time for demolding. It has a clean white color and can be mixed with any desired color. This material has excellent stretchability during the molding process, and it rarely breaks. It has a soft texture and is easy to work with, making it effortless for women to create lace designs.



Figure 89: Instant Lace Gel

(10) Lace Sauce: Lace sauce has only been in the spotlight for a short year, and many friends are still unaware of it. Its main colors are

dazzling gold and silver. Simply spread it on a lace mat and bake for 10 minutes. When making gold and silver products, there is no need to spend time applying gold powder on top. Just wrap the surface of the fondant cake with a delicate lace, and it can be sold, adding a touch of elegance and nobility to the cake. This not only reduces time and material costs but also elevates the overall quality.

(11) Pre-mixed Lace Powder (see Figure 91): Suitable for making lace decorations for fondant cakes, the high-performance pre-mixed lace powder is not intended for direct consumption. This high-performance powder has strong resilience and is not easily crushed or broken. The finished products made with it can be stored for a long time, and the surrounding decorations are more beautiful. During the mixing process, colorants can be added according to the proportion. Pour 50 grams of pre-mixed lace powder into a bowl, mix and stir in 165 grams of water and 23 grams of glycerin until smooth. The texture of the just-mixed sauce may be a bit rough, but let the pre-mixed powder absorb moisture first, and then it can be directly spread on the lace mat. Bake at 100°C for 15 minutes or leave overnight to form (it is recommended to let the baked lace sit at room temperature for a while for easier demolding). Pour 50 grams of pre-mixed lace powder into the bowl, then slowly pour in 165 grams of water and 23 grams of glycerin, mix and stir until smooth. The texture of the just-mixed sauce may be rough, so let it sit for 5 minutes after stirring to allow the pre-mixed powder to absorb moisture. Then it can be directly spread on the lace mat. Bake at 100°C for 15 minutes or leave overnight to form (it is recommended to let the baked lace sit at room temperature for a while for easier demolding).



*Figure 90: Lace Pre-mixed Powder*

(12) Fondant-specific White Oil (see Figure 92): White oil is an important ingredient in fondant recipes, just like starch. It serves as a medium to prevent the fondant from sticking to hands during the process. Depending on personal preferences, many masters use white oil as an anti-stick medium from start to finish, instead of using starch or powdered sugar. Adding white oil when kneading large pieces of fondant also helps lubricate and moisturize, preventing the fondant from drying out.



*Figure 91: Fondant-specific White Oil*

(13) Royal Icing: Royal icing is made by mixing powdered sugar with egg whites and water. It is commonly used for creating various stringwork, lace decorations, and sugar art. Its texture is similar to buttercream frosting. It can also be used to adhere different parts of fondant cakes together. The multiple uses of royal icing depend on the ratio of its ingredients, and they vary in terms of softness, hardness, flexibility, and the level of firmness in the finished product.

(14) Desiccant: Placing blue silica gel desiccant in a sealed cover can absorb moisture. The particles will undergo a change, and once they absorb moisture, the lime will turn into a liquid form for use. Fondant modeling further absorbs this liquid.

(15) Natural edible colorants (9 colors in the entire series): Natural edible colorant is made by blending natural extracts. It has the characteristics of low usage restrictions, non-synthetic composition, and healthiness, making it suitable for modern health concepts. In the current trend of health-consciousness, using natural food coloring will make



products more popular. The most suitable for fondant modeling is the use of dedicated powdered and gel colors for coloring fondant. Specialized fondant pigments are dissolved in edible alcohol, and after the alcohol evaporates, the color effect of the artwork will become more outstanding. If water-based pigments are used, it may cause the fondant or royal icing to become too moist, and the colors of water-based pigments are prone to fading, resulting in a loss of vibrancy in the artwork's colors.

(16) High-concentration edible colorants (48 colors in the entire series) (see Figure 93): Made with imported ingredients, these colorants have a wide range of colors, strong coloring power, and are resistant to fading. They have high color saturation and are suitable for coloring various baked goods, desserts, chocolates, candies, etc., adding vibrant colors to them.



Figure 92: High-concentration Edible Pigment

(17) Fondant color powder (108 colors in the entire series) (see Figure 94): This includes 48 regular colors, 48 advanced colors, and 12 high-level cool tones. Made with imported ultra-fine materials, these color powders provide even and easy adhesion, high purity, minimal usage, resistance to fading, minimal color deviation, rich color options, and a wide selection space. Oil-soluble color powders are typically used for coloring

chocolate models, while they are mainly used for fondant modeling. This is because they cannot completely dissolve and may result in the appearance of particles in the internal structure.



Figure 93: Fondant Color Powder

To make fondant, you will need the following tools:

1. Large main sculpting knife: Used for shaping the overall facial features and larger doll creations, referred to as the "large main knife".
2. Medium main sculpting knife: Used for creating smaller facial features such as eye sockets and lips, referred to as the "medium main knife".
3. Small main sculpting knife: Used for making tiny doll portraits or clothing folds, referred to as the "small main knife".
4. Blade-shaped modeling tool: Used for creating hair textures, clothing textures, and cutting fabric.
5. Bean-shaped modeling tool: Used for creating eye sockets for characters and cartoon figures, giving the eyes a more three-dimensional shape.
6. Cone-shaped modeling tool: Used for making flower centers and twisting flower petals.

7. Eye-opening knife: Used for creating eyes, clothing, and hair textures for characters.

8. Needle-shaped modeling tool: Used to secure the head and create clothing ruffles.

9. Scale-shaped modeling tool: Used for creating hair textures, shell patterns, etc.

10. Metal eye-opening knife: Used for opening mouths, eyes, and assisting in attaching eyelashes.

11. Small ball tool: Used for positioning facial features on the doll and creating circular textures.

12. Large ball tool: Used for twisting thin petal edges, clothing edges, and creating larger circular textures.

13. Tweezers: Used for embedding gemstones and attaching decorations.

14. Small scissors: Used for trimming fingers, toes, hair, and clothing.

15. Pliers: Used for making doll stands.

16. Liner brush: Commonly used are 000 (known as three zeros) and 00000 (known as five zeros) liner brushes (more zeros indicate finer tips) for applying facial makeup.

17. Dusting brush: Used for coloring the face and other areas.

18. Carving knife (craft knife): Used for cutting clothes, shoes, etc.

19. Fondant powder puff (see Figure 95).



*Figure 94: Fondant Powder Puff*

20. Edible glue: The adhesive is made by mixing tylose powder and mineral water in a ratio of 50:1 (or 70:1, may vary by brand). It is mainly used for bonding delicate details like flower stems and petals. Using water directly for bonding may cause mold growth on the adhesive surface, and after the water evaporates, the shape may crack.

21. Edible glue pen: Used for dispensing edible glue.

22. 12-piece set of sugar flower modeling tools: Used for making cakes, doll accessories, etc.

23. Cutting mat: Can be used for cutting on without damaging the tabletop.

24. Sponge pad: Used for twisting flower petals, creating various patterns, and folds.

25. Airbrush: Used for coloring cakes and figurines.

26. Toolbox: Used for storing various tools and molds.

27. Wire: Used for making body frames, hair frames, clothing frames, etc. (Different sizes of wire have different thicknesses, with larger numbers indicating thinner wire).

28. Small rolling pin: Used for rolling out thinner fondant for making clothes or shoes, etc.

29. Concave-shaped tool: Used for holding the created head to prevent deformation and can also be used to assist in shaping petals.

30. Paper tape: Used for binding various stands, flower stems, etc. (see Figure 96).

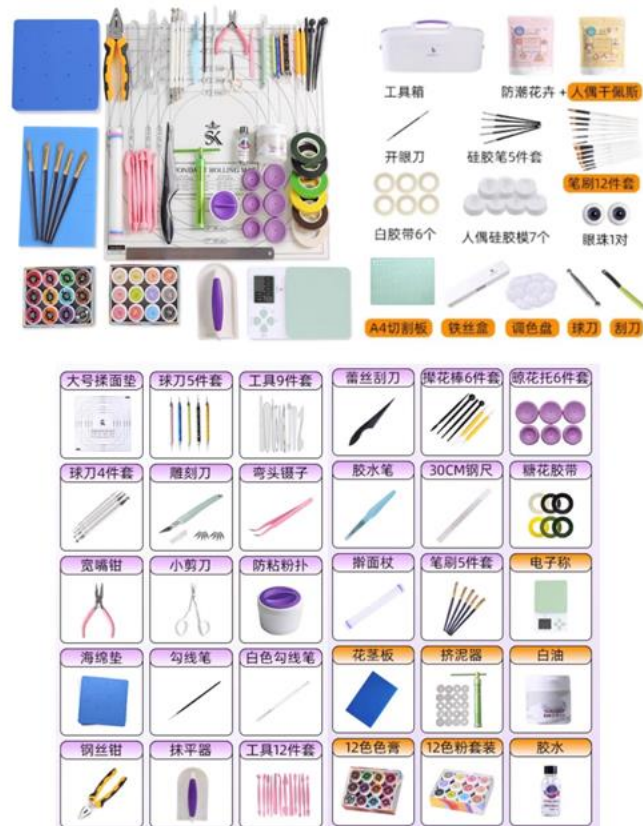


Figure 95: Tools for Making Fondant

### 2.7.3 New Concept

In the process of cognition, humans extract, induce, and summarize the common features of things through experience, thus forming concepts. This is a basic way of thinking. The so-called new concepts refer to innovative forms of thinking and logic, and can be simply understood as innovative consciousness and thinking logic. Innovation is the core idea of development in the new era, and different industries attach great importance to innovation. In the design of Ancient Western Region ethnic dolls in China, in order to cater to modern people's pursuit of beauty, continuous innovation and development are also carried out.

DIY is an innovative development mindset in the cultural heritage of ethnic dolls. Faced with the stereotypical doll toys, when consumers experience aesthetic fatigue, the innovative concept of DIY emerged. "Make what you need, create what you want" is the core concept of DIY. Initially, doll sales were not finished products, but required consumers to design

hairstyles, makeup, clothing, and accessories according to their preferences. Well-known dolls such as Blythe dolls, Barbie dolls, Jenny dolls, and SD dolls abroad, as well as Guli dolls in China, have adopted the DIY design concept, fully reflecting the cultural and humanized development of doll toys.

In addition, cross-industry development is also a new concept in the cultural heritage of ethnic dolls. The combination of doll design and the cake industry is a popular approach to cultural heritage, and this cross-industry win-win development approach is worth learning from and promoting.

## 2.7.4 Comparison of Different Regional Doll Styles

### 2.7.4.1 Comparison of Foreign Doll Styles



*Figure 96: American Hero Doll*



*Figure 97: Disney Doll*

The styling of American doll designs primarily revolves around Hollywood heroes (see Figure 97) and cute animated characters from Disney (see Figure 98). American doll design has a long history of development. Hollywood movies and Disney animated films not only have great popularity within the United States but also have significant influence internationally. The American-style individual heroism portrayed in Hollywood films resonates with people's inner desire for heroes. The adorable animated characters created by Disney also align with the public's aesthetic pursuit of innocence and romance. Therefore, the styling of American doll designs deeply influences the characteristics of doll styling. This design style is gradually becoming a renowned international doll style (Luo Chaoyue, 2022). In the Chinese market, American doll toys have attracted attention. According to a survey of members on domestic doll forums, the products from American company Kenner, particularly the Blythe dolls (see Figure 99), ranked first in terms of popularity. The avant-garde fashion and adorable styling of these dolls are widely recognized by the public.



Figure 98: Blythe



Figure 99: Japanese Anime Doll Figure 101: Pullip

Japanese-style dolls (see Figure 100/101) also have significant influence worldwide. In terms of the characteristics of Japanese doll styling, there are differences compared to American doll styling. The cultural differences between countries make Japanese doll designs more prominent in terms of their sense of style, fashionability, and idolization. The source of inspiration for their styling often comes from Japanese anime works, which fulfill people's desires for self-admiration and ideal pursuits. The rapid development of the Japanese anime industry has become a crucial factor in influencing national industrial development. The characteristics displayed in Japanese anime are distinct from Western cultural anime styles and Eastern civilization characteristics, which have conquered mainstream markets in Europe and America. In the market environment, both Japanese-style and American-style dolls hold significant market shares. With the continuous development of doll design culture, numerous new doll styles have emerged. Korean dolls, with their unique styling features, have



gradually increased their market shares (Wu Yutong, 2021) .



*Figure 100: Korean Doll*

Compared to Japanese-style and American-style dolls, Korean dolls (see Figure 102) have a purer and more peaceful styling. They also exhibit a prominent ethnic style, with costumes and accessories reflecting Korean cultural characteristics. The overall color scheme of the clothing is vibrant, creating a striking appearance and highlighting the artistic quality (Li Shengchen, 2019) .

#### 2.7.4.2 Comparison of Different Regional Doll Styles in China



*Figure 101: Kurhn*

From the perspective of modern doll design and market share,

China's doll design development does not have an advantage compared to foreign doll designs. In terms of stylistic characteristics, the embodiment of ethnic culture is a significant feature of different regional doll styles in China. Kurhn (see Figure 103), as a representative doll brand in China, has gained a certain market share with its ethnic style. Various traditional costumes, hairstyles, and accessories can be customized according to personal preferences, making Kurhn appealing to a specific consumer group (Zhang Zhihua, 2016) .

The design styles of different ethnic traditional cultures are also influenced to some extent. In addition to the Ancient Western Region dolls mentioned earlier, Manchu dolls (see Figure 104) also embody significant ethnic characteristics (see Figure 105). The Manchu people have long lived in a natural environment, with men skilled in equestrianism and archery, and women adept at driving horse-drawn carriages. Therefore, Manchu dolls often showcase life scenes and have distinct regional characteristics.



*Figure 102: Manchu Doll*



Figure 103: Realistic Ethnic Fabric Doll

### 2.7.5 The Creator of Doll Souls - Zhou Yi

Zhou Yi has studied and inherited the traditional Chinese sugar sculpture, a form of intangible cultural heritage. He has integrated it with the popular international cake decorating techniques, creating fondant figurines that possess both profound artistic and cultural value. Through the fusion of dessert shapes and Chinese ethnic culture, Zhou Yi has given these fondant figurines a soul, endowing them with sublime artistic and cultural significance (Qiang Jianghai, & Zhou Yu, 2018) (see Figure 106/107/108).



Figure 104: "Blue Bird"



Figure 105: "Drunkenness and Forgetfulness"



Figure 108: "Empress Wu Zetian"

Zhou Yi was born in Sichuan and received a comprehensive education and training in school, including the study of food science and food chemistry (Wu Yang, 2022). Combining traditional Chinese sugar sculpture techniques with modern fondant decorating craftsmanship, Zhou Yi has designed numerous exquisite works of art through continuous exploration. In terms of specific figurine designs, he pursues delicacy and intricate beauty, with each element presented in meticulous detail and lifelike realism. Zhou Yi's focus on the sculptural design of fondant dolls is to "capture their essence", aiming to infuse each creation with a sense of life (Qiu Jianghua, 2018). The "Sugar King" Zhou Yi once said, "Ingredients themselves do not have life. Only when they are transformed into something concrete and infused with soul can they exhibit that kind of brilliance. I imagine myself as a magician, casting spells on the ingredients to make them captivate and mesmerize others (Shen Liming, 2018)". Zhou Yi's design of fondant dolls is a combination of traditional Chinese ethnic dolls and innovative elements of the new era (Li Ruijuan, 2018). This fusion of innovation reflects the characteristics of societal development, and through this form, traditional Chinese culture can be promoted (Li Zhihui, 2018). It allows more people to become familiar with and love traditional culture. Whether it is in terms of the artistic design of fondant cakes or the inheritance and development of our traditional culture, the concept of ethnic doll culture can serve as a new paradigm to be learned from and promoted (Ruo Sheng, 2018).

## Chapter 3: Research Process and Methods

### The Consumer Psychology of Modern Dolls and the Inheritance of Ethnic Doll Culture

#### 3.1 Analysis of the Doll Consumer Market Survey

##### 3.1.1 Purpose of the Survey

The survey in this thesis focuses on the consumer psychology of modern dolls, primarily in the context of doll and cake consumption markets.

With the continuous expansion of the doll market, the ethnic doll industry has faced both opportunities and challenges. The diverse range of doll designs and the competitive market environment have had a certain impact on the inheritance and development of ethnic doll culture.

Furthermore, from the perspective of the cake consumption market, cakes have become an indispensable part of people's lives, especially in Western countries where cakes have evolved into a necessity. Whether for important festivals or as a daily indulgence, people's demand for cakes continues to rise, particularly as their material wealth increases. Consumers now have higher expectations for the taste and design of cakes. Fondant cakes, which are created through the art of fondant decoration, are known for their exquisite appearance and unique design. They attract consumers who seek personalization and uniqueness. These consumers hope to express their deep love or surprise others through these unique cakes (Jiusheng, 2017). Those who purchase fondant art cakes often do so to celebrate special occasions or commemorate important moments. Fondant art cakes have become essential desserts for celebrating birthdays, weddings, anniversaries, graduations, and other significant events. The artistry of fondant decoration enhances the visual appeal, creativity, delicacy, and aesthetic quality of the cakes, satisfying consumers' pursuit of quality (Liu Yufang, 2015). Those who purchase fondant cakes hope to

showcase their unique taste and distinct appreciation style, demonstrating their individuality and exceptional taste to others. As an innovative form of artistic cakes, fondant cakes have gained popularity among consumers due to their diverse and unique designs and excellent taste. More and more people are paying attention to fondant cakes. One of the advantages of fondant cakes is their three-dimensional design, with various doll characters gradually appearing in the process of fondant cake shaping and design (Zhang Jie, 2015) .

Based on the current development status of the doll and cake consumption markets, innovation is the mainstream trend. Conducting market research to gain a deep understanding of consumer needs and preferences can help businesses better meet the basic demands of doll consumption and provide references for the design and inheritance of ethnic dolls in the modern market. By carefully designing the appearance of ethnic dolls, it is possible to attract consumer interest and enhance the attractiveness of the products. Establishing a competitive advantage in the market can promote the inheritance and continuous development of ethnic doll culture.

### **3.1.2 Analysis of Survey Samples**

The largest domestic doll forum, "Doll Forum," was selected for the survey. According to statistics, the number of registered members exceeds 10,000, and over 90% of the members have their own doll collections. Therefore, conducting a survey among these members is representative and allows for a clear analysis of the current market consumption status of dolls. A total of 300 participants were selected for the study through random sampling.

### **3.1.3 Survey Questionnaire Design and Distribution**

In order to conduct market research on the doll consumption market, a targeted questionnaire was designed to provide a foundation for the survey. The questionnaire can be divided into two parts. The first part focuses on the current consumption status of the doll market, while the

second part investigates user satisfaction and demand levels regarding dolls.

### 3.1.3.1 Questionnaire Design on Doll Market Consumption Situation

The results of the questionnaire design on the doll market consumption situation are shown (in Table 5):

*Table 5: Questionnaire on Doll Market Consumption*

Questions	Options
Gender	Male
	Female
Age distribution	Under 18 years old
	19-22 years old
	23-28 years old
	29-35 years old
	36 years old and above
Interest and consumption history of dolls	Less than 6 months
	6 months to 1 year
	1 year to 2 years
	2 years to 3 years
	3 years and above
Preferred Types of Dolls	Articulated dolls
	Non-articulated dolls
	Role-playing dolls
	DIY dolls
Preferred Doll Brands	Blythe
	Pullip
	1/3BJD
	1/4BJD
	1/6BJD
	Barbie
	Kurhn
	Others
Preference for Doll Clothing	Wedding Dresses/Formal Attire
	Lolita Style Dressing
	Animal Costumes
	Punk Rock Style
	Everyday Makeup
	Cosplay Costumes
	Ethnic Clothing
Baby Clothing	



	Fashion Street Style
Preferred Hair Color for Dolls	Dark Color Series
	Gold
	Bright Colors
	Metallic Colors
	Ombre/Multi-color
Preferred Hairstyles	Long Hair
	Short Hair
Preferred Ways of Playing with Dolls	Changing outfits for dolls
	Creating clothing for dolls
	DIY modifications for beauty and other purposes
	Playing house
	Taking photos with dolls
	Interacting with dolls in a friendly manner
	Collecting and appreciating dolls
Consumption Patterns for Purchasing Dolls and Accessories	Other activities
	Below 500 yuan
	500-1000 yuan
	1000-3000 yuan
	3000-5000 yuan
	5000-8000 yuan
	8000-10000 yuan
	10000-20000 yuan
	Above 20000 yuan
No upper limit	
Level of Family Support	Strongly support
	Generally, neither support nor oppose
	Slightly support, but without excessive interference
	Strongly oppose

By designing a questionnaire on the current status of the doll market, the doll market situation was analyzed. The questionnaire is divided into 11 sections. The first section is gender; the second section is age distribution; the third section is the time spent on doll consumption; the fourth section is preferred doll types; the fifth section is the choice of doll brands; the sixth section is preferences for doll clothing; the seventh section is doll hair color; the eighth section is doll hairstyles; the ninth section is preferred doll play styles; the tenth section is doll and accessory

consumption patterns; and the eleventh section is the level of support from family members. Each of these eleven sections has been analyzed in detail, with in-depth investigations and careful categorization. The age distribution is divided into five detailed age groups; the time spent on doll consumption is divided into five time periods; doll types are divided into four categories; eight well-known doll brands are selected as case studies for analysis; preferences for doll clothing are divided into nine styles; doll hair color is divided into five color categories; doll play styles are divided into eight types; doll and accessory consumption patterns are divided into nine price levels; and the level of support from family members is divided into four directions. By designing the doll market questionnaire, we can obtain detailed information and in-depth insights from the consumer group, allowing us to better understand the depth and breadth of the doll consumption market's development.

### **(1) Validity Test of the Questionnaire**

In this study, experts will be invited to review the questionnaire to ensure that the questionnaire design is professionally recognized and meets the research requirements. The soul-searching of the data in the questionnaire will mainly analyze its effectiveness and reliability. In the data analysis of the survey questionnaire, the validity and reliability of the data have been analyzed through scale analysis. Relevant experts will be invited to evaluate the content and structure of the questionnaire. If the experts give high ratings, it is considered that the questionnaire has a high level of practicality. In order to ensure the credibility of the research results, we have invited experts with rich experience and profound academic accomplishments to participate. The specific details are shown in Table 6 and Table 7.

*Table 6: Basic Composition Statistics of Experts for Questionnaire Validity Assessment*

Job Title	Associate Professor	Professor	Total
Number of Persons	2	18	20

	Percentage		10%		90%		100%	
Table 7: Statistics of Questionnaire Validity Assessment Results								
Validity	Rationality Degree		Basically Rational		Irrational			
	Number	Percentage	Number	Percentage	Number	Percentage		
Overall Validity	18	90%	2	10%	0	0%		
Content Validity	18	90%	2	10%	0	0%		

Evaluate the overall validity and content validity of the questionnaire as part of this study (refer to Appendix 2: Questionnaire Design). The basic composition statistics of the experts are an important indicator for evaluating the validity of the questionnaire. The evaluation results are worth noting. Two associate professors account for 10% of the expert composition. According to the statistical data on the validity evaluation of the questionnaire, 90% of the respondents are professors, and there are a total of 20 professors and associate professors. A reasonable overall validity is achieved with 18 items accounting for 90% of the proportion. This means that 90% of the content is covered by these 18 items. The overall validity and content validity scores are both 10% for reasonable validity, while the scores for unreasonable overall validity and content validity are both zero.

Based on the analysis above, it can be concluded that the questionnaire design used in the study aligns well with the research objectives. This indicates that the designed questionnaire is suitable for use in this study. By using standardized data processing and applying discriminant analysis methods in statistics, the reliability and content of the questionnaire were repeatedly evaluated. Attention was also given to the composition and content of the questionnaire, removing inappropriate or ineffective items and adding meaningful items to form a definitive questionnaire.

## ( 2 ) Reliability Test of the Questionnaire

*Table 7: Statistical Table of Reliability Test after Questionnaire Retesting*

The number of participants in	The time interval between the two measurements	The correlation coefficient (r)	P-value

the retest				
Members of the doll forum	60	14	0.881	< 0.01

By retesting the survey questionnaire (see Table 8), we observed the results in the reliability test statistical table. A sample of 60 members of the personnel forum was selected for retesting, with a time interval of 14 days between the first and second measurements. The correlation coefficient ( $r$ ) was found to be 0.881, with a corresponding  $p$ -value of  $<0.01$ .

The reliability test in the validity assessment is used to evaluate the consistency of the questionnaire results and determine the stability of the questionnaire measurements. In our detailed analysis of the doll forum members, we conducted the test by conducting two surveys with a half-month interval. After the half-month period, a random sample of 20% of the members was selected. Finally, a correlation analysis was performed on the results of the two surveys. The results showed that the correlation coefficient ( $r$ ) was higher than 0.9, and the statistical significance level was less than 0.01. The high and statistically significant correlation coefficient indicates that the questionnaire survey results are highly reliable and can be used for this study.

### 3.1.3.2 Questionnaire Design for Doll Consumption Satisfaction and Demand Survey

*Table 8: Statistical Table of Doll Consumer Satisfaction Questionnaire*

	Very Satisfied	Satisfied	Neutral	Very Dissatisfied	Dissatisfied
Styling Characteristics of Dolls					
Diversity of Functions in Dolls					
Artistic Value of Dolls					
Ethnicity of Dolls					
Cultural Value of Dolls					
Market Value of Dolls					
Innovativeness of Dolls					
Collectible Value of Dolls					
Richness in Types of Dolls					
Materials of the Dolls					

*Table 9: Statistical Table of Doll Consumer Demand Questionnaire*

	Highly Needed	Quite Needed	Neutral	Not Quite Needed	Not Needed at All
Styling Characteristics of Dolls					
Diversity of Functions in Dolls					
Artistic Value of Dolls					
Ethnicity of Dolls					
Cultural Value of Dolls					
Market Value of Dolls					
Innovativeness of Dolls					
Collectible Value of Dolls					
Richness in Types of Dolls					
Materials of the Dolls					

This study utilizes the Doll Consumer Satisfaction Survey Questionnaire and the Doll Consumer Demand Survey Questionnaire (refer to Table 9/10) to conduct statistical research on 10 directions, including the appearance characteristics, multifunctional attributes, artistic value, folk attributes, cultural symbolism, market demand, innovative design, collectible value, diversity of types, and materials used in dolls. Based on the results of the Doll Consumer Satisfaction Survey Questionnaire, satisfaction levels can be categorized into five levels. Additionally, the data analysis of the Doll Consumer Demand Survey Questionnaire can be divided into five levels based on demand. This clear and concise table presents the issues that need to be investigated, allowing respondents to choose their preferred inclination and express their thoughts on the aspects they require.

### **(1) Reliability Analysis**

Reliability analysis was initially named by American psychologist and educator Lee J. Cronbach in 1951. Reliability specifically refers to the degree of trustworthiness. In this study, the reliability of doll forum members' satisfaction and demand for doll consumption was validated using Cronbach's coefficient alpha. This is a common measurement technique for reliability analysis, and the coefficient of internal consistency is also referred to as the reliability coefficient. It was originally widely used to assess the reliability of psychological or educational tests and

established a model for identifying measurement errors. The Chinese name for Cronbach's  $\alpha$  coefficient is Kèlǎngbāhā xìshù. The current common practice is to calculate the split-half reliability coefficient for each item on the scale using the grouping method and take the average. This reliability measurement method is also considered a highly reliable standard.

Reliability analysis can be conducted using Cronbach's alpha score:

$$\text{Reliability coefficient } \alpha = (k/(k-1)) * (1 - (\sum Si^2)/ST^2)$$

(K represents the total number of items in the scale,  $Si^2$  represents the variance of scores on the i-th item for all participants, and  $ST^2$  represents the variance of the total scores obtained by all participants.)

This formula was proposed by Cronbach and does not require the items in the test to be scored on a 0.1 scale. It can handle any scoring method and addresses some challenges encountered when calculating the internal consistency coefficient of a test.

*Table 10: Cronbach's Alpha Coefficient Internal Consistency Statistical Table*

Cronbach's alpha	Internal Consistency
$\alpha \geq 0.9$	Excellent
$0.7 \leq \alpha < 0.9$	Good
$0.6 \leq \alpha < 0.7$	Acceptable
$0.5 \leq \alpha < 0.6$	Weak
$\alpha < 0.5$	Unacceptable

Detailed analysis of internal consistency using reliability coefficients (see Table 11):

When the coefficient  $\alpha$  is  $\geq 0.9$ , it is considered excellent; when the coefficient  $\alpha$  is  $0.7 \leq \alpha < 0.9$ , it is considered good; when the coefficient  $\alpha$  is  $0.6 \leq \alpha < 0.7$ , it is considered acceptable; when the coefficient  $\alpha$  is  $0.5 \leq \alpha < 0.6$ , it is considered weak; when the coefficient  $\alpha$  is  $\alpha < 0.5$ , it is considered unacceptable.

If a scale contains N items and the average inter-item correlation is

denoted as  $r$ , then the standardized  $\alpha$  coefficient for this scale is  $\alpha = nr/[(n-1)r+1]$ . Typically, Cronbach  $\alpha$  coefficient ranges from 0 to 1. When  $\alpha < 0.6$ , the internal reliability is low; when  $\alpha$  is between 0.7 and 0.8, the internal reliability is moderate; when  $\alpha$  is between 0.8 and 0.9, the stability is high.

As the number of scale items increases, the Cronbach's  $\alpha$  coefficient tends to improve. It is not appropriate to artificially manipulate the  $\alpha$  coefficient. The summation of items should be considered when measuring a set of similar characteristics or conducting parallel tests. The formula for calculating  $\alpha$  is:  $\alpha = [K/(K-1)] [1 - (\sum S^2_i)/(S^2_x)]$ . Cronbach's  $\alpha$  coefficient is an indicator of the degree of correlation within a scale. This evaluation method is applicable to assessing the reliability of measuring attitudes and opinions in survey questionnaires. Reliability analysis aims to measure the reliability and stability of scale items when measured repeatedly (particularly suitable for attitude scales). It evaluates the stability and precision of quantitative data.

First, check the Cronbach's  $\alpha$  coefficient. If  $\alpha > 0.8$ , it indicates good internal consistency of the data. If the coefficient  $\alpha$  falls between 0.7 and 0.8, it suggests reliability and indicates that the data is reasonably trustworthy. If the coefficient falls between 0.6 and 0.7, it suggests acceptable reliability. However, if the coefficient is less than 0.6, it indicates poor reliability.

Secondly, if the total correlation coefficient for a particular item is less than 0.3, it indicates a weak relationship with the overall scale and the item should be removed from the data.

Thirdly, if the removal of an item leads to a significant improvement in the Cronbach's  $\alpha$  coefficient, it might be necessary to reconsider excluding that item and conduct the analysis again.

Lastly, summarize the results of the analysis.

*Table 11: Doll Consumer Satisfaction Questionnaire Cronbach Reliability Analysis*

Name	CITC	Cronbach's $\alpha$ coefficient after item deletion	Cronbach's $\alpha$ coefficient
------	------	---	---------------------------------

Styling Characteristics of Dolls	0.728	0.916	
Diversity of Functions in Dolls	0.852	0.915	
Artistic Value of Dolls	0.877	0.922	
Ethnicity of Dolls	0.728	0.916	
Cultural Value of Dolls	0.806	0.921	0.923
Market Value of Dolls	0.834	0.911	
Innovativeness of Dolls	0.746	0.918	
Collectible Value of Dolls	0.851	0.913	
Richness in Types of Dolls	0.949	0.907	
Materials of the Dolls	0.576	0.919	

Based on the Cronbach's reliability analysis of the doll consumption satisfaction questionnaire (see Table 12), it was found that out of the 10 dimensions analyzed, the overall item-total correlation after adjusting for the doll's design features was 0.728. The deleted item's  $\alpha$  coefficient was 0.916, the corrected item-total correlation (CITC) for the doll's multifunctionality was 0.852, the deleted item's  $\alpha$  coefficient was 0.915, the overall correlation of the doll's artistic value was 0.877, the deleted item's  $\alpha$  coefficient was 0.922, the overall correlation of the doll's ethnic characteristics was 0.728, the deleted item's  $\alpha$  coefficient was 0.916, the corrected item-total correlation (CITC) for the doll's cultural value was 0.806, the deleted item's  $\alpha$  coefficient was 0.921, the corrected item-total correlation (CITC) for the doll's market value was 0.834, the deleted item's  $\alpha$  coefficient was 0.911, the corrected item-total correlation (CITC) for the doll's innovation was 0.746, the deleted item's  $\alpha$  coefficient was 0.918, the corrected item-total correlation (CITC) for the doll's collectible value was 0.851, the deleted item's  $\alpha$  coefficient was 0.913, the corrected item-total correlation (CITC) for the doll's variety of types was 0.949, and the deleted item's  $\alpha$  coefficient was 0.907. The overall correlation of the doll's material characteristics after



adjustment was 0.576, and the deleted item's  $\alpha$  coefficient was 0.919. From the data in the table, it can be seen that for the deleted items, each item had an  $\alpha$  coefficient of 0.923 for doll forum members' satisfaction questionnaire, indicating high stability and all coefficients were lower than the Cronbach's  $\alpha$  coefficient.

According to the Cronbach's reliability analysis table of the doll consumption satisfaction questionnaire, all items scored above 0.7, indicating high reliability and strong association. Based on the above information, the reliability indicators of the research data exceeded 0.9, indicating that the data is suitable for the study.

*Table 12: Doll Consumer Demand Questionnaire Cronbach Reliability Analysis*

Name	CITC	Cronbach's $\alpha$ coefficient after item deletion	Cronbach $\alpha$ coefficient
Styling Characteristics of Dolls	0.768	0.914	0.934
Diversity of Functions in Dolls	0.812	0.916	
Artistic Value of Dolls	0.586	0.920	
Ethnicity of Dolls	0.768	0.914	
Cultural Value of Dolls	0.551	0.918	
Market Value of Dolls	0.595	0.919	
Innovativeness of Dolls	0.581	0.918	
Collectible Value of Dolls	0.605	0.919	
Richness in Types of Dolls	0.929	0.911	
Materials of the Dolls	0.555	0.918	

Based on the Cronbach reliability analysis of the doll consumption demand questionnaire (see Table 13), the 10 dimensions listed for the doll consumption demand questionnaire Cronbach reliability analysis are as follows: the total correlation of the doll's stylistic characteristics correction items (CITC) is 0.768, with a deleted  $\alpha$  coefficient of 0.914; the total correlation of the integration and adjustment of the doll's multiple functions (CITC) is 0.812, with a deleted  $\alpha$  coefficient of 0.916; the total correlation of the doll's artistic value correction items (CITC) is 0.586, with a deleted  $\alpha$

coefficient of 0.920; the total correlation of the doll's ethnic characteristics correction items (CITC) is 0.768, with a deleted  $\alpha$  coefficient of 0.914; the total correlation of the doll's cultural value correction items (CITC) is 0.551, with a deleted  $\alpha$  coefficient of 0.918; the total correlation of the doll's market value correction items (CITC) is 0.595, with a deleted  $\alpha$  coefficient of 0.919; the total correlation of the doll's innovation correction items (CITC) is 0.581, with a deleted  $\alpha$  coefficient of 0.918; the total correlation of the doll's collectible value correction items (CITC) is 0.605, with a deleted  $\alpha$  coefficient of 0.919; the total correlation of the doll's variety of types correction items (CITC) is 0.929, with a deleted  $\alpha$  coefficient of 0.911; the total correlation of the doll's material correction items (CITC) is 0.555, with a deleted  $\alpha$  coefficient of 0.918. From the data in the table, it can be seen that the doll forum members' survey on the doll consumption demand questionnaire performs excellently in terms of credibility, with a reliability coefficient of 0.934, far exceeding the standard value of 0.9. The CITC values for each analysis item are all higher than 0.5, indicating strong correlation among them and reliable reliability. These results indicate that the questionnaire has high data reliability suitable for research analysis, and also indicate high data reliability.

## **( 2 ) KMO and Bartlett's Sphericity Test**

KMO and Bartlett's sphericity tests are used to evaluate the presence of correlations among various variables and determine if factor analysis is appropriate for exploring this relationship. If the KMO test and Bartlett's sphericity test show significant correlations, factor analysis can be considered. If we fail to reject the null hypothesis, indicating that the variables are inherently independent, factor analysis may not be suitable. Therefore, the KMO and Bartlett's sphericity tests are crucial in determining the feasibility of factor analysis.

The KMO test is used to assess the interrelatedness and independence among variables. A KMO statistic value close to 1 indicates a strong relationship between variables and minimal influence on each other, suggesting a good fit for factor analysis. A KMO value  $> 0.7$  is considered feasible for analysis, while a KMO

value  $< 0.5$  is suitable for further analysis. A KMO value below 0.5 suggests a complex underlying structure in the sample data, indicating the need for alternative analysis methods and possibly a reconsideration of the research design. The sphericity test is used to examine whether the covariance matrix of variables is an identity matrix. When the p-value in SPSS is less than 0.05, it indicates that there is correlation between variables, and the data distribution shape appears to be non-spherical, meaning the variables are not independent of each other. In such cases, factor analysis may not be favorable.

*Table 13: KMO Test and Bartlett Sphericity Test for Scale*

	KMO test	Bartlett's test of sphericity		
		Approximate chi-square	df	P-value
Questionnaire on Doll Consumption Satisfaction among Members of the Doll Forum	0.845	6344.101	8	0.000
Questionnaire on Doll Consumption Demand among Members of the Doll Forum	0.876	5421.233	8	0.000

According to the KMO test results from the questionnaire on doll consumption satisfaction among members of the doll forum (see Table 14), the test value is 0.845. There is a correlation between variables, but the correlation is low and skewed. The approximate chi-square value from the sphericity test is 6344.101, with 8 df and a significance level P of 0.000. This indicates that there is correlation present and factor analysis may not be suitable. Caution should be exercised during factor analysis as the data's correlation may affect the interpretation of the results.

The KMO test value for the questionnaire on doll consumption demand among members of the doll forum is 0.876. According to the Bartlett's test, the approximate chi-square value is 5421.233, with 8 degrees of freedom and a significance level P of 0.000. The data is not spherical in shape, indicating that there is correlation between variables. Therefore, factor analysis is needed.

Validity research is used to analyze whether the research items are reasonable. In the analysis of the questionnaire results on doll consumption satisfaction among members of the doll forum and the questionnaire on

doll consumption demand among members of the doll forum, the validity of the scales was verified using KMO and Bartlett tests. The KMO values were found to be 0.845 and 0.876, respectively. These values are close to 1, indicating that the indicators of the scales are reasonably set. Additionally, the significance level of the Bartlett's test was 0.000 for both questionnaires. This demonstrates that the validity of both questionnaires is relatively high and suitable for this research.

### 3.1.3.3 Distribution and Collection of Questionnaires

*Table 14: Distribution and Collection of Questionnaires*

	Number of questionnaires distributed	Number of questionnaires collected	Response rate	Number of valid questionnaires	Validity rate
Doll Market Consumption Survey	300	300	100%	265	88.3%
Satisfaction Survey of Doll Forum Members in Relation to Doll Consumption	300	300	100%	265	88.3%
Demand Survey of Doll Forum Members in Relation to Doll Consumption	300	300	100%	265	88.3%

Questionnaires on doll market consumption, doll forum members' satisfaction with doll consumption (see Table 15), and doll forum members' demand for doll consumption (as shown in the table) have been distributed and collected. This table covers three different types of questionnaires, with 300 questionnaires distributed for each survey. A total of 300 questionnaires were collected, of which 265 were deemed valid, resulting in an effective response rate of 88.3%. The analysis of the final survey results will primarily focus on the 265 valid samples that were selected.

### 3.1.4 Analysis of Survey Results

#### 3.1.4.1 Analysis of Doll Market Consumption Survey Results

Table 15: Statistical Table of Doll Market Consumption Survey Results

Items	Classification	Person number	Percentage
Gender	Male	58	21.89%
	Female	207	78.11%
Age distribution	Under 18 years old	31	11.70%
	19-22 years old	74	27.92%
	23-28 years old	125	47.17%
	29-35 years old	26	9.81%
	36 years old and above	9	3.40%
History of paying attention to and consuming dolls	Less than six months	67	25.28%
	Six months to one year	88	33.21%
	One year to two years	51	19.25%
	Two years to three years	38	14.34%
	Three years and above	21	7.92%
Preferred Doll Types	Poseable dolls	114	43.02%
	Non-poseable dolls	45	16.98%
	Playhouse dolls	35	13.21%
	DIY dolls	71	26.79%
	Blythe	69	26.04%
Selected Doll Brands	Pullip	52	19.62%
	1/3BJD	11	4.15%
	1/4BJD	15	5.66%
	1/6BJD	17	6.42%
	Barbie	35	13.21%
	Kurhn ( made in China )	26	9.81%
	Others	40	15.09%
	Wedding dresses/formal attire	15	5.66%
Preferred Doll Clothing Styles	Lolita style dressing	43	16.23%
	Animal costumes	22	8.30%
	Punk rock outfits	46	17.36%
	Everyday makeup	37	13.96%
	Cosplay costumes	15	5.66%
	Ethnic clothing	26	9.81%
	Baby clothing	10	3.77%
	Fashion street style	51	19.25%
Preferred Doll Hair Colors	Dark color palette	141	53.21%
	Gold color	62	23.40%
	Bright colors	11	4.15%
	Metallic color palette	23	8.68%

	Ombre/multi-color dyeing	28	10.57%
Preferred Doll Hairstyles	Long hair	215	81.13%
	Short hair	50	18.87%
	Dressing up dolls	71	26.79%
	Creating outfits for dolls	63	23.77%
	DIY makeovers and beauty transformations	19	7.17%
Preferred Ways to Play with Dolls	Playing house	17	6.42%
	Taking photos with dolls	57	21.51%
	Interacting with dolls in a friendly manner	17	6.42%
	Collecting and admiring dolls	19	7.17%
	Other	2	0.75%
Consumer Spending on Dolls and Accessories	Below 500 Yuan	0	0.00%
	500-1000 Yuan	2	0.75%
	1000-3000 Yuan	64	24.15%
	3000-5000 Yuan	25	9.43%
	5000-8000 Yuan	34	12.83%
	8000-10000 Yuan	21	7.92%
	10000-20000 Yuan	49	18.49%
	Above 20000 Yuan	34	12.83%
Level of Family Support	No upper limit	36	13.58%
	Strong support	53	20.00%
	Neutral	116	43.77%
	Limited support	96	36.23%
	Strong opposition	0	0.00%

Through a questionnaire survey on doll forum members' gender (see Table 16), it was found that among the selected valid survey samples, there were 58 male respondents, accounting for 21.89%, and 207 female respondents, accounting for 78.11%. From the survey results of the gender ratio, it can be concluded that the main consumer group for doll consumption is females, and there is a significant difference in the male-female ratio. Therefore, doll design and marketing can primarily target females while also exploring opportunities to tap into the male market for broader market development.

According to the statistical data on the age distribution of doll forum members, there are 31 members under the age of 18, accounting for

1.7%. Members aged 19-22 account for 74, representing 27.92% of the total. There are 125 members aged 23-28, accounting for 47.17%. Members aged 29-35 amount to 26, representing 9.81%. Members aged 36 and above account for 9, representing 3.4%. Based on the age distribution of doll forum members, the majority of members participating in doll discussions are concentrated in the age group of 23-28, followed by the age group of 19-22. The members' age distribution indicates a younger demographic with a certain level of financial capacity, which lays a foundation for doll consumption. Additionally, members aged 36 and above also occupy a certain proportion, indicating that doll enthusiasts encompass a large proportion of the younger age group, but other age groups also make up a significant percentage. Therefore, the doll consumer group has a wide range of age groups and a broad consumer base.

According to the survey on doll forum members' interest and consumption history, it was found that: 67 members, accounting for 25.28%, have had an interest and consumption history of less than half a year. 88 members, accounting for 33.21%, have had an interest and consumption history between half a year and 1 year. 51 members, accounting for 19.25%, have had an interest and consumption history between 1-2 years. 38 members, accounting for 14.34%, have had an interest and consumption history between 2-3 years. 21 members, accounting for 7.92%, have had an interest and consumption history of 3 years or more. From the perspective of members' interest and consumption duration, it is generally relatively short, with the majority of members having a history of less than 1 year. Compared to other countries, although China's ethnic dolls have a long history of development, the market consumption of dolls in China is still in the early stages of development. Therefore, domestic consumers have a relatively shorter duration of interest and consumption in dolls. However, the growing number of doll forum members in recent years and the special attention paid to dolls by the public indicate a promising market for doll toys.

According to the differences in their appearance characteristics, doll

toys can be classified into various types. In general, doll toys can be categorized into different categories, and doll questionnaires have a rich variety of styling characteristics. Through a survey of doll forum members' preferences for doll types, it was found that 114 members, accounting for 43.02%, prefer poseable dolls. 45 members, accounting for 16.98%, prefer non-poseable dolls. 35 members, accounting for 13.21%, prefer dollhouse dolls. 71 members, accounting for 26.79%, prefer DIY dolls. From the survey sample's preferences for doll types, it can be seen that poseable dolls and DIY dolls are highly favored by the consumer group, while non-poseable dolls have relatively lower popularity. This is because non-poseable dolls have relatively fixed appearances and are mainly valued for their collectible and ornamental value, with limited functionality. Therefore, they are not as popular as poseable dolls and DIY dolls, which offer more diverse features and functions. The survey results on the preferences for doll types in the modern doll consumer market indicate a certain requirement for the functionality and variety of styling characteristics of dolls.

There are many different doll brands available both domestically and internationally, offering a wide variety of options. Due to the vast number of brands, only a few with significant influence and high popularity were selected as the basis for the research. According to the statistical results of the survey conducted on the research samples, Blythe brand was chosen by 69 people, accounting for 26.04% of the total; Pullip brand was chosen by 52 people, accounting for 19.62%; 1/3 BJD, 1/4 BJD, and 1/6 BJD brands were chosen by 11, 15, and 17 people respectively, accounting for 4.15%, 5.66%, and 6.42% respectively; Barbie brand was chosen by 35 people, accounting for 13.21%; the domestic brand Kurhn was chosen by 26 people, accounting for 9.81%; and 40 people chose other well-known brands, accounting for 15.09%. Blythe had the highest recognition, with the brand being established in 1972. Its main feature is the ability to change the eye color and direction through a string at the back of the head, allowing for four different eye variations. It also offers a range of accessories, such as colorful wigs, various clothes, and different styles of handbags. Blythe initially faced challenges in the market due to its avant-



garde and fashionable appearance, which did not meet the market demands at the time, resulting in a temporary halt in production. However, it gradually gained popularity starting from 2000, with its fashionable design becoming a market leader. Pullip, on the other hand, had a lower selection rate compared to Blythe, ranking second. Pullip is a product of the Japanese company Junplanning, and its distinctive feature is the design of over 20 joints throughout the body, allowing for various poses. The eyes can be controlled to move left and right, open, and close through a button at the back of the head. While Pullip's overall design is similar to Blythe, it is not simply a imitation of Blythe, as the two have different characteristics - Blythe has a more childlike and playful appearance, while Pullip has a more youthful image. Barbie, as a well-established doll brand, has always maintained a certain market share and is also a popular choice among doll brands. BJD (Ball Jointed Dolls) have a spherical joint structure, allowing for a wider range of dynamic movements. The SD dolls introduced by the Japanese company Volks are popular representatives of BJD dolls. The body parts of these dolls can be freely replaced, allowing players to customize their dolls according to their preferences, making each SD doll unique. The only drawback is that BJD dolls tend to be more expensive, which to some extent affects the choices of enthusiasts.

Compared to many foreign doll brands, our domestic doll brand Kurhn has a relatively low market share advantage. The design style of Ke Er, originated from the image of Chinese girls, embodies Chinese characteristics. With the advantage of high quality and low price, Kurhn has occupied a certain market share. The successful marketing experience of Kurhn reflects the opening of the market for Chinese-style dolls, providing valuable reference experience for the design and promotion of more ethnic brand dolls.

Market research shows that clothing is an important factor in attracting consumer attention. We have obtained valuable insights. The number of people choosing wedding dresses/formal wear accounts for 5.66%, with 15 people; the number of people choosing Lolita clothing accounts for 16.23%, with 43 people; the number of people choosing

animal-themed costumes accounts for 8.3%, with 22 people; the number of people choosing punk rock costumes accounts for 17.36%, with 46 people; the number of people choosing everyday makeup costumes accounts for 13.96%, with 37 people; the number of people choosing cosplay costumes accounts for 5.66%, with 15 people; the number of people choosing ethnic costumes accounts for 9.81%, with 26 people; the number of people choosing baby costumes accounts for 3.77%, with 10 people; and the number of people choosing fashionable street style costumes accounts for 19.25%, with 51 people. From the survey results of doll members' preferences for doll costumes, players' preferences are relatively diverse. Overall, punk rock costumes, fashionable street style, and Lolita-style costumes are more popular, indicating that modern doll consumers value fashion elements. Compared to clothing with fashion elements, players have a lower proportion of choosing ethnic costumes. By closely integrating with contemporary trends, ethnic dolls have great potential for showing the development of style in the era (He Shumei, 2020) .

According to a survey conducted among members of the doll forum regarding their preferences for doll hair color and hairstyle, it was found that 215 people, accounting for 81.13%, prefer long hair. 50 people, accounting for 18.87%, prefer short hair. As for hair color, 141 people, accounting for 53.21%, prefer dark colors. 62 people, accounting for 23.4%, prefer gold hair color. 11 people, accounting for 4.15%, prefer bright hair colors. 23 people, accounting for 8.66%, prefer metallic hair colors. 28 people, accounting for 10.57%, prefer highlighted/multicolored hair. From the preferences of players regarding doll hair color and hairstyle, it can be observed that dolls with long hairstyles in dark colors are more favored by consumers. Long hair allows players to easily change the hairstyle according to their preferences, and visually, dark long hair aligns more with the general aesthetic. It also enhances the visual effect when it comes to clothing and accessories coordination.

Based on the analysis of the survey results among members of the doll forum regarding their preferences for doll playstyles, it was found that 71 people, accounting for 26.79%, enjoy dressing up their dolls. 63 people,

accounting for 23.77%, enjoy making clothes for their dolls. 19 people, accounting for 7.17%, enjoy beautifying or DIY modifying their dolls. 17 people, accounting for 6.42%, have a strong interest in playing dollhouse games. 57 people, accounting for 21.51%, enjoy taking photos with their dolls. 17 people, accounting for 6.42%, prefer interacting with their dolls as friends and viewing them as listeners. 19 people, accounting for 7.17%, enjoy collecting and admiring dolls. 2 people, accounting for 0.75%, prefer other forms of playstyles. From the preferences of the surveyed sample regarding doll playstyles, it can be observed that players have a preference for DIY and display-oriented playstyles. The unique appearance of dolls is also an important factor that attracts them.

From the consumption patterns of doll forum members in purchasing dolls and accessories, it can be observed that 0 people, accounting for 0%, spend less than 500 yuan. 2 people, accounting for 0.75%, spend between 500-1000 yuan. 64 people, accounting for 24.15%, spend between 1000-3000 yuan. 25 people, accounting for 9.43%, spend between 3000-5000 yuan. 34 people, accounting for 12.83%, spend between 5000-8000 yuan. 21 people, accounting for 7.92%, spend between 8000-10000 yuan. 49 people, accounting for 18.49%, spend between 10000-20000 yuan. 34 people, accounting for 12.83%, spend more than 20000 yuan. 36 people, accounting for 13.58%, have an unspecified upper limit of expenditure. From the members' consumption patterns, it can be seen that players have a relatively high level of financial investment in dolls. This indicates that doll design has a significant economic value and there is a considerable market potential for the design and promotion of ethnic dolls.

According to the survey results on the level of support from doll forum members' families, 53 members expressed that their families strongly support their purchase and collection of dolls, accounting for 20% of the respondents. 116 members stated that their families' support level is generally neutral, neither supporting nor opposing, making up the highest proportion at 36.23%. Additionally, 96 members mentioned that although

their families are not very supportive, they do not interfere excessively, accounting for 36.23% of the respondents. Furthermore, there were no families who strongly opposed players' expenditure on dolls. Overall, it can be concluded that family interference in doll expenditure is minimal, indicating a favorable outlook for the doll consumption market.

### 3.1.4.2 Analysis of Satisfaction and Demand of Doll Forum Members in Relation to Doll Consumption

#### (1) Descriptive Statistics of the Survey Results on Satisfaction and Demand of Modern Doll Consumption

*Table 16: Statistical Table of Doll Consumer Satisfaction Questionnaire*

	Very Satisfied		Satisfied		Neutral		Dissatisfied		Very Dissatisfied	
Styling Characteristics of Dolls	57	21.51%	108	40.75%	66	24.91%	23	8.68%	11	4.15%
Diversity of Functions in Dolls	32	12.08%	59	22.26%	112	42.26%	34	12.83%	28	10.57%
Artistic Value of Dolls	29	10.94%	48	18.11%	124	46.79%	35	13.21%	29	10.94%
Ethnicity of Dolls	11	4.15%	28	10.57%	108	40.75%	61	23.02%	57	21.51%
Cultural Value of Dolls	15	5.66%	31	11.70%	88	33.21%	75	28.03%	56	21.13%
Market Value of Dolls	38	14.34%	42	15.85%	94	35.47%	57	21.51%	34	12.83%
Innovativeness of Dolls	9	3.40%	33	12.45%	127	47.92%	55	20.75%	41	15.47%
Collectible Value of Dolls	45	16.98%	57	21.51%	127	47.92%	21	7.91%	15	5.66%
Richness in Types of Dolls	18	6.79%	26	9.81%	101	38.11%	65	24.53%	55	20.75%
Materials of the Dolls	35	13.21%	43	16.23%	115	43.40%	44	16.60%	28	10.57%

Based on the descriptive statistical analysis of the survey results on satisfaction and demand of modern doll consumption, it is found that a

descriptive study refers to the collection of data through standardized tests or comprehensive surveys, including the results of field research. The data collection and analysis are conducted using a five-level evaluation criterion of user satisfaction. Comparative analysis is then performed based on this foundation, utilizing descriptive statistical analysis to create charts and tables that visually compare the data and provide statistical descriptions and analysis, including trends, distributions, proportions, and numbers of respondents. Analyzing the survey data presented in the above table on the satisfaction of doll consumption among the research sample, it is found that 57 individuals, accounting for 21.51%, are very satisfied with the characteristics of doll designs. Additionally, 108 individuals, accounting for 40.75%, are comparatively satisfied, while 66 individuals, accounting for 24.91%, have a general level of satisfaction. On the other hand, 23 individuals, accounting for 8.68%, are comparatively dissatisfied with the current characteristics of doll designs, and 11 individuals, accounting for 4.15%, are very dissatisfied. Regarding the evaluation of doll consumption based on its diverse functionalities, 32 individuals, accounting for 12.08%, express a high level of satisfaction, while 59 individuals, accounting for 22.26%, hold a comparatively satisfied attitude. Furthermore, 112 individuals, accounting for 42.26%, have a relatively average level of satisfaction. On the other hand, 34 individuals, accounting for 12.83%, are comparatively dissatisfied with the diverse functionalities of dolls, and 28 individuals, accounting for 10.57%, are very dissatisfied. This group of members expresses that the limited functionalities of dolls have influenced their purchasing intentions.

Based on the evaluation of the artistic value of dolls as a rating criterion, the results show that 28 individuals, accounting for 10.57%, are very satisfied, while 48 individuals, accounting for 18.11%, express satisfaction. Additionally, 124 individuals, accounting for 46.79%, have a moderate level of satisfaction. On the other hand, 35 individuals, accounting for 13.21%, are comparatively dissatisfied with the evaluation of the artistic value of dolls, and 29 individuals, accounting for 10.94%, are very dissatisfied. Using the ethnic characteristics of dolls as an evaluation basis, the results indicate that 57 individuals, accounting for 21.51%, are very

satisfied, while 28 individuals, accounting for 10.57%, express comparative satisfaction. Furthermore, 108 individuals, accounting for 40.75%, have a moderate level of satisfaction. The evaluation shows that 61 individuals, accounting for 23.02%, are comparatively dissatisfied, and 57 individuals, accounting for 21.51%, are very dissatisfied. In terms of the evaluation of the cultural value of dolls by members, 15 individuals, accounting for 5.66%, are very satisfied, while 31 individuals, accounting for 11.7%, express comparative satisfaction. Additionally, 88 individuals, accounting for 33.21%, have a moderate level of satisfaction. On the other hand, 75 individuals, accounting for 28.03%, are comparatively dissatisfied, and 56 individuals, accounting for 21.13%, are very dissatisfied. Observing the evaluation of the doll market by members, 38 individuals, accounting for 14.34%, are very satisfied, while 42 individuals, accounting for 15.85%, express comparative satisfaction. Furthermore, 94 individuals, accounting for 65.47%, have a moderate level of satisfaction. On the other hand, 57 individuals, accounting for 21.51%, are comparatively dissatisfied, and 34 individuals, accounting for 12.83%, are very dissatisfied. Using the innovativeness of dolls as a satisfaction survey indicator, 9 individuals, accounting for 3.4%, express being very satisfied, while 33 individuals, accounting for 12.45%, are comparatively satisfied. Additionally, 127 individuals, accounting for 47.92%, have a moderate level of satisfaction. On the other hand, 55 individuals, accounting for 20.75%, are comparatively dissatisfied, and 41 individuals, accounting for 15.47%, are very dissatisfied. Regarding the survey on the value of doll collecting by members, it can be seen that 45 members, accounting for 16.98%, are very satisfied, while 57 individuals, accounting for 21.51%, express comparative satisfaction. Furthermore, 127 individuals, accounting for 47.92%, have a moderate level of satisfaction. On the other hand, 21 individuals, accounting for 7.91%, are comparatively dissatisfied, and 15 individuals, accounting for 5.66%, are very dissatisfied.

According to the survey on the satisfaction of members with the variety of doll types, it is found that 6.79% (18 people) are very satisfied with the current doll types, 9.81% (26 people) are relatively satisfied, 38.11%

(101 people) have a general level of satisfaction, 24.53% (65 people) are relatively dissatisfied, and 20.75% (55 people) are very dissatisfied. The materials used for doll making are diverse. In the field of technology, there is a wide variety of synthetic materials, and 13.21% (35 people) are satisfied with the materials. 16.23% (43 people) are relatively satisfied, 43.4% (115 people) have a general level of satisfaction, 16.6% (44 people) are relatively dissatisfied, and 10.57% (28 people) are very dissatisfied. The analysis shows that the satisfaction of doll forum members with doll consumption is mainly at a general level. In the next step, a more accurate assessment of the basic situation of doll market consumption will be conducted by using the fuzzy comprehensive evaluation method.

*Table 17: Statistical Table of Doll Consumer Demand Questionnaire*

	Very necessary		Comparatively necessary		Neutral		Comparatively unnecessary		Not necessary at all	
Styling Characteristics of Dolls	84	31.70%	158	59.62%	23	8.68%	0	0%	0	0%
Diversity of Functions in Dolls	133	50.19%	113	42.64%	19	7.17%	0	0%	0	0%
Artistic Value of Dolls	91	34.34%	139	52.45%	21	7.92%	11	4.15%	3	1.13%
Ethnicity of Dolls	102	38.49%	97	36.60%	37	13.96%	24	9.06%	5	1.89%
Cultural Value of Dolls	114	43.02%	63	23.77%	45	16.98%	32	12.08%	11	4.15%
Market Value of Dolls	88	33.21%	76	28.68%	52	19.62%	35	13.21%	14	5.28%
Innovativeness of Dolls	125	41.17%	119	44.91%	21	7.92%	0	0%	0	0%
Collectible Value of Dolls	75	28.30%	136	51.32%	54	20.38%	0	0%	0	0%
Richness in Types of Dolls	104	39.25%	144	54.34%	17	6.42%	0	0%	0	0%
Materials of the Dolls	67	25.28%	169	63.77%	29	10.94%	0	0%	0	0%

Members of the doll forum participate in discussions on doll-related

topics (see Table 18) and engage in consumption of dolls and related items primarily driven by subjective motivations. Therefore, consumers' consumption of dolls also reflects various demands. Through a survey of doll consumption demands among the selected doll forum research samples, it is found that in terms of the demand for doll styling characteristics, 31.7% (84 people) express a strong need, 58.62% (158 people) express a relatively high need, 8.68% (23 people) have a moderate level of demand, and there are no respondents who indicate low or no need for doll styling characteristics. From the perspective of the demand for the diverse functions of dolls, among the research samples, 50.19% (133 people) express a strong need, 42.64% (113 people) express a relatively high need, and only 7.17% (19 people) have a moderate level of demand. Similarly, there are no respondents indicating low or no need for the diverse functions of dolls. This indicates a significant demand for the diverse functions of dolls among the research samples. In terms of the demand for the artistic value of dolls, 34.34% (91 people) express a strong need, 52.45% (139 people) express a relatively high need, 7.92% (21 people) have a moderate level of demand, 4.15% (11 people) express a relatively low need, and 1.13% (3 people) express no need for the artistic value of dolls. Compared to other aspects, consumers' demand for the artistic value, ethnic identity, cultural value, and market value of dolls is relatively weak, but it still represents a significant demand among the majority of consumers.

In terms of the demand for the ethnic identity of dolls, 38.49% (102 people) express a strong need, 36.6% (97 people) express a relatively high need, 13.96% (37 people) have a moderate level of demand, 9.06% (24 people) express a relatively low need, and 1.89% (5 people) express no need for the ethnic identity of dolls. Doll cultural value refers to the embodiment of outstanding cultural characteristics such as folk customs. In the survey on the demand for the cultural value of dolls, 43.02% (114 people) express a strong need, 23.77% (63 people) express a relatively high need, 16.98% (45 people) have a moderate level of demand, 12.08% (32 people) express a relatively low need, and 4.15% (11 people) express no need for the cultural value of dolls. In the survey on the demand for the market value of dolls, 33.21% (88 people)



express a strong need, 28.68% (76 people) express a relatively high need, 19.62% (52 people) have a moderate level of demand, 13.21% (35 people) express a relatively low need, and 5.28% (14 people) express no need for the market value of dolls. This is also a major requirement for the development of the modern doll market, as catering to consumers' preference for innovation is crucial.

According to a survey on the innovative demand of doll forum members, it is found that for doll innovation, 41.17% (125 people) express a strong need, 44.91% (119 people) express a relatively high need, 7.92% (21 people) have a moderate level of demand, and there are no respondents who express a relatively low or no need for doll innovation. This indicates consumers' demand for doll innovation. In terms of the demand for the value, variety, and materials of dolls, consumers also show a high level of demand. There are no respondents who express a relatively low or no need for these aspects. Among them, the highest demand is for the variety of doll types, with 39.25% (104 people) expressing a strong need, 54.34% (144 people) expressing a relatively high need, and 6.42% (17 people) having a moderate level of demand. The demand for doll value and material is similar. For the demand for doll value, 28.30% (75 people) express a strong need, while for the demand for doll material, 25.28% (67 people) express a strong need. However, in the dimension of strong need, the demand for doll material is higher than the demand for doll value. 51.32% (136 people) express a relatively high need for doll value, while 63.77% (169 people) express a relatively high need for doll material. In terms of the moderate level of demand, 20.38% (54 people) have a moderate level of demand for doll value, and 10.94% (29 people) have a moderate level of demand for doll material.

From the above survey results, it can be seen that doll forum members have a high demand for the aesthetic features, versatility, innovation, collectible value, variety of types, and materials of dolls. However, there is a relatively low demand for the artistic value, ethnic characteristics, cultural value, and market value. The lack of artistic and cultural development

in the current doll market affects consumers' personal purchasing motivations. Market orientation influences consumer demand and aesthetics. This indirectly indicates that there is potential for the development of modern doll design in these areas, in order to tap into a wider market and achieve greater market development opportunities.

## ( 2 ) Determining the Weight of Modern Doll Consumer Demand - Analytic Hierarchy Process (AHP)

The Analytic Hierarchy Process (AHP) is a method that breaks down complex multi-objective problems into an organic and systematic decision-making process. It involves decomposing all objectives into sub-objectives and then ranking them according to multiple criteria.

The process of ranking is done through the determination of importance levels using the AHP:

1 ) Establishing a hierarchy structure model involves categorizing elements of different levels based on their relationships, in order to evaluate decision goals, factors, and options. This hierarchical structure relationship is visually represented through a diagram.

2 ) When creating the evaluation criteria matrix, the consistency matrix method can be used to compare the relationships between various indicators, thus more accurately assessing the weight relationships between different levels. This method helps avoid directly evaluating all elements together and is particularly useful when faced with qualitative results that are difficult to accept.

3 ) The judgment matrix, where  $a_{ij}$  represents the importance comparison result between element  $i$  and  $j$ , has the following properties:  $a_{ij}=1/a_{ji}$

In hierarchical ranking, consistency testing ensures that we correctly understand the eigenvectors. Conducting consistency testing helps evaluate the level of consistency among the elements in the judgment matrix and standardizes the eigenvectors to ensure values are on the same scale. This process involves pairwise comparisons to ensure reliability and consistency,

which are crucial.

In this thesis, the Analytic Hierarchy Process (AHP) was used to determine the weights of evaluation indicators for the consumption demand of modern dolls. A decision matrix was formulated to compare the strengths and weaknesses between each hierarchical indicator. Experts were asked to assess the importance of two indicators using a scale from 1 to 9, establishing an evaluation matrix for each indicator based on the assigned values according to the scale. This allows for a simple description of the relative importance levels.

*Table 18: Meaning Table of Relative Importance Scale for Matrix Indicators*

Scale	Definition	Connotation
1	Equally important	Both indicators are equally important for the attribute
3	Slightly important	Indicator i is slightly more important than indicator j
5	Significantly important	Indicator i is significantly more important than indicator j
7	Strongly important	Indicator i is strongly more important than indicator j
9	Extremely important	Indicator i is extremely more important than indicator j
2,4,6,8	Midpoint of adjacent scales	Scale representing the midpoint between adjacent scales
The reciprocal of the scale above	Inverse ratio	If the scale of indicator i to indicator j is K, then the scale of indicator j to indicator i is 1/K.

Based on the matrix table provided (see Table 19), we can infer the degree of influence of each indicator in the decision-making process. A scale of 1 indicates equal importance, while a scale of 3 represents slightly more importance, indicating that indicator i is slightly more important than indicator j. A scale of 5 can be defined as significantly more important, meaning that indicator i is significantly more important than indicator j and has a significant impact. In the evaluation, the importance of indicator i is noticeably higher than indicator j. A scale of 9 can be defined as absolutely important, indicating that indicator i is

absolutely more important than indicator  $j$ . Scales 2, 4, 6, and 8 can be defined as the average values between adjacent scales, expressing the degree between two adjacent scales. These scales have an inverse definition, which means that if indicator  $i$  has a scale value of  $K$  relative to indicator  $j$ , then indicator  $j$  has a scale value of the reciprocal of  $K$  relative to indicator  $i$ , which is  $1/K$ .

To obtain the maximum eigenvalue and its corresponding eigenvector, consistency in matrix pairing is checked. Through consistency testing, it can be demonstrated that the ranking vector calculated using the eigenvalue method is reasonable. After processing the eigenvectors, the weight vectors for each item are calculated. If the evaluation does not meet the standards, adjustments need to be made to the judgment matrix.

Table 19: AHP Data Statistical Table 1

	Styling Characteristics of Dolls	Diversity of Functions in Dolls	Artistic Value of Dolls	Ethnicity of Dolls	Cultural Value of Dolls	Market Value of Dolls	Innovativeness of Dolls	Collectible Value of Dolls	Richness in Types of Dolls	Richness in Types of Dolls
Styling Characteristics of Dolls	1.000	0.333	3.000	5.000	5.000	3.000	0.200	3.000	1.000	3.000
Diversity of Functions in Dolls	3.000	1.000	5.000	7.000	5.000	7.000	0.333	7.000	3.000	5.000
Artistic Value of Dolls	0.333	0.200	1.000	1.000	3.000	0.333	0.200	1.000	0.333	3.000
Ethnicity of Dolls	0.200	0.143	1.000	1.000	1.000	0.200	0.143	0.333	0.333	0.333
Cultural Value of Dolls	0.200	0.200	0.333	1.000	1.000	0.333	0.200	0.333	0.200	3.000
Market Value of Dolls	0.333	0.143	3.000	5.000	3.000	1.000	0.333	1.000	0.333	5.000
Innovative	5.000	3.000	5.000	7.000	5.000	3.000	1.000	7.000	1.000	7.000

	Styling Characteristics of Dolls	Diversity of Functions in Dolls	Artistic Value of Dolls	Ethnicity of Dolls	Cultural Value of Dolls	Market Value of Dolls	Innovation of Dolls	Collectible Value of Dolls	Richness in Types of Dolls	Richness in Types of Dolls
ness of Dolls										
Collectible Value of Dolls	0.333	0.143	1.000	3.000	3.000	1.000	0.143	1.000	0.200	5.000
Richness in Types of Dolls	1.000	0.333	3.000	3.000	5.000	3.000	1.000	5.000	1.000	7.000
Richness in Types of Dolls	0.333	0.200	0.333	3.000	0.333	0.200	0.143	0.200	0.143	1.000

The level of consistency in the judgment matrix determines the applicability of the method for indicator selection (see Table 20).

The consistency index (CI) is calculated using the formula:  $CI = (\text{maximum eigenvalue} - n) / (n-1)$ . When  $CI = 0$ , it indicates complete consistency. When CI approaches 0, it indicates a higher level of consistency, reaching satisfaction. The larger the CI, the more severe the inconsistency.

In the Analytic Hierarchy Process (AHP) for the original data, the following criteria should be followed:

1. In the judgment matrix, the values on the lower right diagonal are 1, representing the consistency of each element compared to itself.
2. The values in the upper right and lower left diagonals are reciprocally symmetric.
3. The relative importance increases with the increase in numerical values.

*Table 20: AHP Data Statistical Table 2*

Items	Eigenvector	Weight	Maximum eigenvalue	CI value
Styling Characteristics of Dolls	1.111	11.109%	11.289	0.143
Diversity of Functions in Dolls	2.259	22.587%		

Items	Eigenvector	Weight	Maximum eigenvalue	CI value
Artistic Value of Dolls	0.462	4.619%		
Ethnicity of Dolls	0.261	2.606%		
Cultural Value of Dolls	0.314	3.138%		
Market Value of Dolls	0.773	7.731%		
Innovativeness of Dolls	2.537	25.366%		
Collectible Value of Dolls	0.560	5.601%		
Richness in Types of Dolls	1.451	14.508%		
Materials of the Dolls	0.273	2.734%		

To conduct the Analytic Hierarchy Process (AHP) study on doll materials for the 10 indicators mentioned above (see Table 21), we need to construct 10 judgment matrices (using the multiplication method).

The resulting eigenvector is:

(1.111,2.259,0.462,0.261,0.314,0.773,2.537,0.560,1.451,0.273) ,

The total weight values for the 10 indicators are as follows:

11.109%,22.587%,4.619%,2.606%,3.138%,7.731%,25.366%,5.601%,14.508%,2.734%.

By using the eigenvector analysis method, we can determine that the maximum eigenvalue is 11.289. Subsequently, based on the maximum eigenvalue, we calculate the consistency index (CI) value, which is 0.143 **【CI=(maximum eigenvalue-n)/(n-1)】**. The CI value is used to assess the consistency of the data:

The multiplication method is a test method used to evaluate the consistency of pairwise comparisons :

1. Calculate the product  $M_i$  of each row elements in matrix A using the standard formula:

$$M_i = \prod_{j=1}^n a_{ij}, \quad i = 1, 2, \dots, n$$

2. Calculate the  $n^{\text{th}}$  root of  $M_i$ , namely  $\bar{W}_i$ , using the formula:

$$\bar{W}_i = \sqrt[n]{M_i}$$

3. Normalize the vector  $\bar{W}_i = [\bar{W}_1, \bar{W}_2, \dots, \bar{W}_n]^T$ , using the formula:

$$W = \frac{\bar{W}_i}{\sum_{j=1}^n \bar{W}_j}, \quad i = 1, 2, \dots, n$$

The derived  $W_i = [W_1, W_2, \dots, W_n]^T$  is the target eigenvalue.

4. The largest eigenvalue of the matrix  $\lambda_{\max}$ , is calculated as below:

$$\lambda_{\max} = \frac{1}{n} \sum_{i=1}^n \frac{(AW)_i}{W_i}$$

Where,  $(AW)_i$  represents the  $i^{\text{th}}$  element of vector  $AW$ .

5. It is determined that the matrix may not necessarily satisfy consistency. On the basis of ensuring consistency, when ensuring consistency, the Consistency Index (CI) is calculated using the formula:

$$CI = \frac{\lambda_{\max} - n}{n - 1}$$

6. CR is a ratio used to assess random consistency, which is calculated in the formula:

$$CR = \frac{CI}{RI} < 0.1$$

When dealing with multi-level judgment matrices, the analysis is conducted by calculating the average random consistency index (RI) value, based on fixed values provided by Professor T. L. Saaty. Table 22 displays the average random consistency index for 1 to 30 level matrices, where the elements on the diagonal are 1 and the inverse elements are multiplied together. The consistency index is used to assess the reliability of the judgment matrices. A consistency ratio (CR) smaller than 0.1 indicates good consistency, while a CR greater than 0.1 requires a reevaluation of the values.

*Table 21: Random Index (RI) Values for Consistency Test*

( RI=RI values;N=N order )

n	3	4	5	6	7	8	9	10	11	12	13	14	15	16
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n	3	4	5	6	7	8	9	10	11	12	13	14	15	16
RI	0.52	0.89	1.12	1.26	1.36	1.41	1.46	1.49	1.52	1.54	1.56	1.58	1.59	1.5943
n	17	18	19	20	21	22	23	24	25	26	27	28	29	30
RI	1.6064	1.6133	1.6207	1.6292	1.6358	1.6403	1.6462	1.6497	1.6556	1.6587	1.6631	1.6670	1.6693	1.6724

The RI values corresponding to a scale of 1 to 30 can be clearly seen in the table (see Table 22):

0.52、0.89、1.12、1.26、1.36、1.41、1.46、1.49、1.52、1.54、1.56、1.58、1.59、1.5943、1.6064、1.6133、1.6207、1.6292、1.6358、1.6403、1.6462、1.6497、1.6556、1.6587、1.6631、1.6670、1.6693、1.6724。

Calculation of weights using AHP requires comparison and ranking to ensure logical consistency. In conducting consistency checks, the reasonableness of the comparison results needs to be evaluated. This study includes 10 evaluation matrices, with RI (Random Index) value of 1.490. The reference values for RI can be found in the table above.

*Table 22: Summary of Consistency Test Results*

Maximum eigenvalue	CI	RI	CR	Consistency test results
11.289	0.143	1.490	0.096	Pass

AHP requires comparing and calculating weights for various factors to validate the reliability and effectiveness of weight calculation results (see Table 23). The formula for calculating the Consistency Index (CI) is  $CI = (\text{maximum eigenvalue} - n) / (n-1)$ , and the Consistency Ratio (CR) is used to evaluate the level of consistency in the judgment matrix. If the CR value is small, the matrix data is consistent. If the CR value is less than 0.1, the consistency test is passed. If the CR value is greater than 0.1, further analysis is needed. After calculating the 10th order judgment matrix, the obtained consistency index (CI) value is 0.143. According to literature, the 10th order Random Index (RI) is 1.490. The consistency ratio (CR) is 0.096, which is less than 0.1. Therefore, it can be concluded that the weights are consistent.

Through AHP analysis and calculation, the final weights for the levels of demand for modern human dolls consumption are determined as shown in the



following table (see Table 24):

*Table 23: Statistical Table of Weight for Modern Doll Consumer Demand*

Items	Weight
Styling Characteristics of Dolls	11.109%
Diversity of Functions in Dolls	22.587%
Artistic Value of Dolls	4.619%
Ethnicity of Dolls	2.606%
Cultural Value of Dolls	3.138%
Market Value of Dolls	7.731%
Innovativeness of Dolls	25.366%
Collectible Value of Dolls	5.601%
Richness in Types of Dolls	14.508%
Materials of the Dolls	2.734%

According to the statistical table of weight values shown in the above figure for the consumer demand for modern dolls, the weight values are as follows: 11.109% for the doll's design features, 22.587% for its multifunctionality, 4.619% for its artistic value, 2.606% for its cultural value, 3.138% for its market value, 7.731% for its innovation, 25.366% for its collectible value, 5.601% for the diversity of doll types, and 2.734% for the doll's materials. From the overall analysis of these weight values, it is clear that the higher the weight value, the more important the factor. In the Analytic Hierarchy Process, a higher weight value indicates greater importance of the factor. The numerical values reflect the relative importance of different factors in the overall evaluation.

Based on the above weight values, it can be seen that factors such as innovation, diversity, design features, and multifunctionality are relatively more important compared to other factors. Therefore, more attention should be given to these factors when developing and operating in the market. On the other hand, factors such as the doll's ethnic characteristics, artistic value, cultural value, market value, collectible value, and materials are relatively less important.

### **( 3 ) Fuzzy Comprehensive Evaluation Analysis of Consumer Satisfaction with Modern Doll Consumption—Fuzzy Comprehensive Evaluation Method**

Using fuzzy mathematics theory to transform qualitative evaluation into quantitative evaluation, Professor L.A. Zadeh proposed this theory, which is widely applied in solving non-quantitative problems such as consumer satisfaction with dolls. This evaluation method provides clear results and strong systematic characteristics, and it can effectively handle those difficult-to-quantify fuzzy problems.

The steps involved in using the fuzzy comprehensive evaluation method to assess satisfaction with purchases are as follows:

(1) The construction of evaluation sub-criteria is the foundation of fuzzy comprehensive evaluation and directly affects the accuracy.

(2) The weight vector is obtained through the Analytic Hierarchy Process (AHP) construction.

(3) The membership matrix is constructed based on suitable membership functions.

(4) The membership matrix and weight vector are combined, and the synthesized results are analyzed simultaneously.

### 1 ) Establishment of Evaluation Sub-criteria

*Table 24: Subset Table for Evaluation of Modern Doll Consumer Satisfaction*

Level 1 evaluation subset	Level 2 evaluation subset
U1j={Doll toys }	U11={Styling Characteristics of Dolls}
	U12={Diversity of Functions in Dolls}
	U13={Artistic Value of Dolls}
	U14={Ethnicity of Dolls}
	U15={Cultural Value of Dolls}
	U16={Market Value of Dolls}
	U17={Innovativeness of Dolls}
	U18={Collectible Value of Dolls}
	U19={Richness in Types of Dolls}
	U110={Materials of the Dolls}

As shown in Table 25, the evaluation sub-criteria for assessing consumer satisfaction with modern dolls can be divided into primary and

secondary sub-criteria. The primary sub-criteria include  $U1j=\{\text{doll toys}\}$ , while the secondary sub-criteria include  $U11=\{\text{styling characteristics of dolls}\}$ ,  $U12=\{\text{diverse functionalities of dolls}\}$ ,  $U13=\{\text{artistic value of dolls}\}$ ,  $U14=\{\text{ethnicity of dolls}\}$ ,  $U15=\{\text{cultural value of dolls}\}$ ,  $U16=\{\text{market value of dolls}\}$ ,  $U17=\{\text{innovativeness of dolls}\}$ ,  $U18=\{\text{collectible value of dolls}\}$ ,  $U19=\{\text{diversity of doll types}\}$ , and  $U110=\{\text{material of dolls}\}$ .

Consumer satisfaction with modern dolls is a comprehensive set containing various aspects. Using  $Uij$  to represent each evaluation sub-criteria, where  $i$  represents different subsystems and  $j$  represents the  $j$ -level indicators within each subsystem, the constructed matrix is shown in the above table. Doll toys serve as the main subject of modern consumerism and the main focus of satisfaction evaluation. Based on different evaluation dimensions, satisfaction evaluation can be conducted from multiple perspectives, including doll styling characteristics, diverse functionalities, artistic value, ethnicity, cultural value, market value, innovativeness, collectible value, diversity, and material.

## 2 ) Evaluation Grade Criteria Set

In order to facilitate quantitative analysis, the satisfaction evaluation results of modern doll consumption are assigned using the Likert five-point scoring method. The satisfaction of modern doll consumption for each hierarchical evaluation criterion is assigned as follows: "Very Satisfied" is assigned a value of 5, "Satisfied" is assigned a value of 4, "Neutral" is assigned a value of 3, "Dissatisfied" is assigned a value of 2, and "Very Dissatisfied" is assigned a value of 1.

## 3 ) Constructing a Fuzzy Evaluation Membership Matrix

### ①Weights of each hierarchical criterion (see Table 26)

*Table 25: Weight Table for Indicators at Each Level*

Code	Evaluation subset	Weight
U11	Styling Characteristics of Dolls	11.109%
U12	Diversity of Functions in Dolls	22.587%
U13	Artistic Value of Dolls	4.619%

U14	Ethnicity of Dolls	2.606%
U15	Cultural Value of Dolls	3.138%
U16	Market Value of Dolls	7.731%
U17	Innovativeness of Dolls	25.366%
U18	Collectible Value of Dolls	5.601%
U19	Richness in Types of Dolls	14.508%
U110	Materials of the Dolls	2.734%

AHP Calculation Results: U11 Weight = 11.109%; U12 Weight = 22.587%; U13 Weight = 4.619%; U14 Weight = 2.606%; U15 Weight = 3.138%; U16 Weight = 7.731%; U17 Weight = 25.366%; U18 Weight = 5.601%; U19 Weight = 14.508%; U110 Weight = 2.734%. Among these weights, the ones that are relatively high are: innovation of dolls, diverse functionalities of dolls, richness of doll types, and distinctive characteristics of dolls. These four evaluation subsets should be given special consideration as they lay the foundation for the comprehensive fuzzy evaluation of satisfaction in modern doll consumption.

② Results of the criterion level scoring (see Table 27)

*Table 26: Construction Table of Matrix for Indicator Layer Score Results*

Indicator items	Weight	Very Satisfied	Satisfied	Neutral	Dissatisfied	Very Dissatisfied
Styling Characteristics of Dolls	11.109%	0.22	0.41	0.25	0.09	0.04
Diversity of Functions in Dolls	22.587%	0.12	0.22	0.42	0.13	0.11
Artistic Value of Dolls	4.619%	0.11	0.18	0.47	0.13	0.11
Ethnicity of Dolls	2.606%	0.04	0.11	0.41	0.23	0.22
Cultural Value of Dolls	3.138%	0.06	0.12	0.33	0.28	0.21
Market Value of Dolls	7.731%	0.14	0.16	0.35	0.22	0.13
Innovativeness of Dolls	25.366%	0.03	0.12	0.48	0.21	0.15
Collectible Value of Dolls	5.601%	0.17	0.22	0.48	0.08	0.06
Richness in Types of Dolls	14.508%	0.07	0.10	0.38	0.25	0.21
Materials of the Dolls	2.734%	0.13	0.16	0.43	0.17	0.11

The evaluation of the six aspects mentioned above provides a comprehensive understanding of customer feedback. It can be observed

that the following criteria have relatively high weights: distinctive characteristics of dolls, with satisfaction levels of very satisfied at 0.12, satisfied at 0.22, neutral at 0.42, dissatisfied at 0.13, and very dissatisfied at 0.11; innovative features of dolls, with satisfaction levels of very satisfied at 0.03, satisfied at 0.12, neutral at 0.48, dissatisfied at 0.21, and very dissatisfied at 0.15; richness of doll types, with satisfaction levels of very satisfied at 0.07, satisfied at 0.10, neutral at 0.38, dissatisfied at 0.25, and very dissatisfied at 0.21. Based on the above data, it is evident that these criteria are highly important: distinctive characteristics, diverse functionalities, innovation, and richness.

According to the satisfaction survey results from doll forum members and the determined weights of hierarchical criteria, the data from the table will be used to establish the criterion layer using a membership matrix, followed by further in-depth fuzzy comprehensive evaluation analysis using SPSS AU.

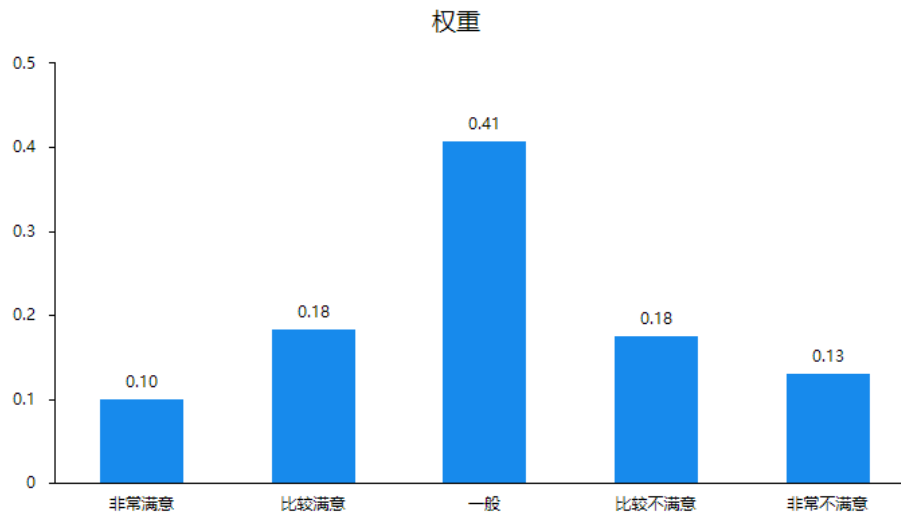
③ Analysis of the results of fuzzy comprehensive evaluation membership degree calculation (see Table 28)

*Table 27: Statistical Table of Membership Degree Calculation Results*

	Very Satisfied	Satisfied	Neutral	Dissatisfied	Very Dissatisfied
Membership degree	0.101	0.184	0.408	0.176	0.132
Membership degree normalization【weight】	0.101	0.184	0.408	0.176	0.132

From the above table, it can be seen that a fuzzy comprehensive evaluation is conducted for 10 criteria (since the sample size is 10) and 5 linguistic evaluation sets, using the  $M(., +)$  operator for the study. Firstly, an importance evaluation matrix  $R$  is generated by establishing the criterion weight and reweighting matrix  $A$ , resulting in a  $10 \times 5$  matrix. The 5 linguistic evaluation levels correspond to: very satisfied 0.101, satisfied 0.184, neutral 0.408, dissatisfied 0.176, and very dissatisfied 0.132. Based on the above table, we can determine these 5 linguistic evaluation levels. The highest weight is for the "neutral" evaluation level, which is 0.408. Therefore, the final comprehensive evaluation result is determined as "neutral" according

to the maximum membership degree principle.



*Figure 106: Fuzzy Membership of Modern Doll Consumer Satisfaction Evaluation Results*

From the above analysis (see Figure 100), it can be observed that the weight for very satisfied is 0.10, satisfied is 0.18, neutral is 0.41, dissatisfied is 0.18, and very dissatisfied is 0.13. The bar chart indicates that the satisfaction level of modern doll consumption is at a neutral level, with some individuals having lower satisfaction levels. This suggests that there is still significant room for improvement in modern doll design. In order to enhance the satisfaction of modern individuals with dolls and promote better development of the doll market, it is necessary to conduct a more detailed and comprehensive analysis of the demands of modern individuals in doll consumption and strive to design doll works that are more in line with market development and public aesthetics.

4) Analysis of pain points in modern doll consumption satisfaction

① Evaluation results of various level indicators in the evaluation system of modern doll consumption satisfaction (see Table 29)

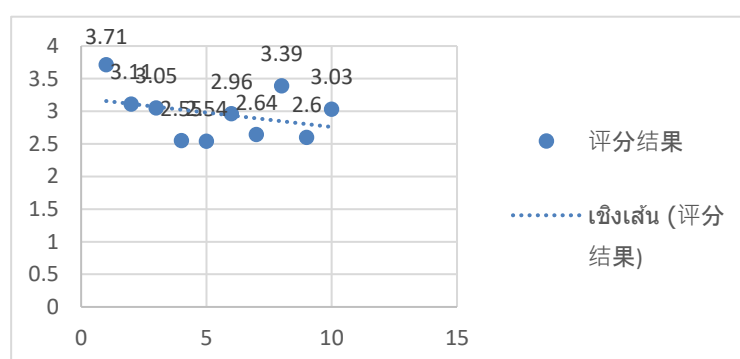
*Table 28: Statistical Table of Modern Doll Consumer Satisfaction Rating Results*

Indicator items	Grading results	Ranking
Styling Characteristics of Dolls	3.71	1
Diversity of Functions in Dolls	3.11	3
Artistic Value of Dolls	3.05	4
Ethnicity of Dolls	2.55	9
Cultural Value of Dolls	2.54	10
Market Value of Dolls	2.96	6
Innovativeness of Dolls	2.64	7
Collectible Value of Dolls	3.39	2
Richness in Types of Dolls	2.6	8
Materials of the Dolls	3.03	5

From the statistical table of evaluation results for modern doll consumption satisfaction, it can be observed that the indicators can be ranked based on the evaluation results as follows:

1. Score for the doll's styling characteristics: 3.71;
2. Score for the doll's collectible value: 3.39;
3. Score for the doll's multifunctionality: 3.11;
4. Score for the doll's artistic value: 3.05;
5. Score for the doll's material: 3.03;
6. Score for the doll's market value: 2.96;
7. Score for the doll's innovation: 2.64;
8. Score for the diversity of doll types: 2.6;
9. Score for the doll's ethnicity: 2.55;
10. Score for the doll's cultural value: 2.54;

The higher the ranking, the higher the market satisfaction.



*Figure 107: Conceptual Diagram of Modern Doll Consumer Satisfaction Rating Results*

When the evaluation results of modern doll consumption satisfaction are presented in the diagram (see Figure 101), it can be observed that the overall data falls within the range of 2.54 to 3.71. The comprehensive evaluation analysis method was used to calculate the results, as shown in the above structure statistics. The overall satisfaction level of modern doll consumption is at a stage of differentiation. Modern doll consumption shows lower satisfaction levels in terms of the diversity of doll types, innovation of dolls, doll ethnicity, and doll cultural value. Except for doll styling characteristics, satisfaction levels in other indicators have not reached the expected level. From this, it can be inferred that the doll styling in the current market to some extent meets the demands of contemporary consumers.

② Analysis of the four-quadrant chart for evaluation indicators (see Table 30)

*Table 29: Statistical Table of Importance and Satisfaction of Evaluation Indicators at the Indicator Layer*

Indicator layer C	No.	Demand degree	Satisfaction degree
Styling Characteristics of Dolls	C11	11.109	3.71
Diversity of Functions in Dolls	C12	22.587	3.11
Artistic Value of Dolls	C13	4.619	3.05
Ethnicity of Dolls	C14	2.606	2.55
Cultural Value of Dolls	C15	3.138	2.54
Market Value of Dolls	C16	7.731	2.96
Innovativeness of Dolls	C17	25.366	2.64
Collectible Value of Dolls	C18	5.601	3.39
Richness in Types of Dolls	C19	14.508	2.6
Materials of the Dolls	C110	2.734	3.03

In order to have a more accurate understanding of the key issues regarding modern doll consumption satisfaction, the satisfaction rating criteria are as follows: C11=3.71; C12=3.11; C13=3.05; C14=2.55; C15=2.54; C16=2.96; C17=2.64; C18=3.39; C19=2.6; C110=3.03. The demand intensity based on the Analytic Hierarchy Process (AHP) is as follows: C11=11.109; C12=22.587; C13=4.619; C14=2.606; C15=3.138; C16=7.731; C17=25.366; C18=5.601; C19=14.508; C110=2.734. This ultimately forms the statistical



table of the importance and satisfaction of doll consumption by modern consumers.

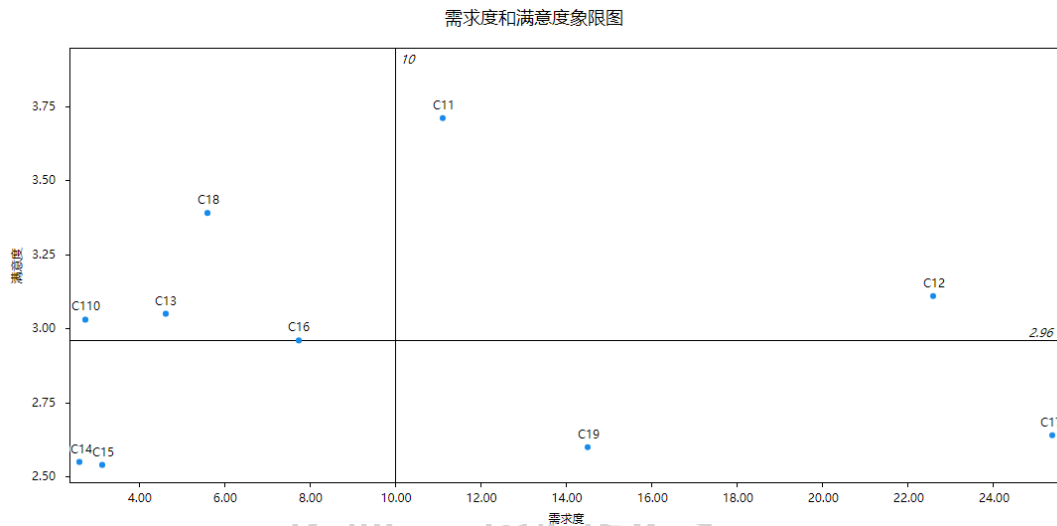


Figure 108: Quadrant Diagram of Modern Doll Consumer Satisfaction and Demand

According to the IPA analysis method (see Figure 102), the situation can be divided into four different categories: performing well, needing improvement, needing enhancement, and urgently needing improvement. The satisfaction and importance of modern doll consumption by consumers are analyzed and presented in the quadrant chart mentioned above. From the chart, it can be observed that there is a need for significant improvements in the ethnic identity, cultural value, innovation, and diversity of modern doll designs. Enhancing modern doll designs in these areas will better meet the current market development demands.

### 3.2 Consumer Psychology of Modern Doll Consumption

Based on the summary analysis of the survey results mentioned earlier, we can generally reflect the basic psychology of modern doll consumption. The primary consumer group for dolls is predominantly female, which is closely related to the characteristics and functions of doll toys. Looking at the popular doll brands in the international market, whether it is the style of young girls or baby dolls, they all conform to the aesthetic preferences of female consumers. Therefore, female consumers have become the dominant force in the doll market. However, it is

important to pay great attention to the development of the male consumer group in modern doll design and promotion. Consumers are becoming younger and have a certain economic strength, providing a solid foundation for doll sales. In terms of consumer preferences, there is a significant demand for poseable dolls, with a preference for avant-garde designs and dolls with dark-colored long hair. In terms of playability, individuals prefer personalized designs that satisfy their basic needs for purchasing dolls. There is a greater preference for foreign brands due to the lack of promotion and inadequate efforts in promoting high-quality doll brands in China. Overall, the doll consumption market has great potential, providing a certain market space for the design and development of ethnic doll models.

From the comprehensive analysis of the basic situation, satisfaction, and demand of modern doll consumption, it is clear that the psychological preference for doll consumption, the degree of affection and support for ethnic dolls, is far behind the international fashion brands. This undoubtedly raises a warning for the design of ethnic doll models. As society continues to develop and progress, the rapid development of trends has driven the evolution of public thinking and aesthetic concepts. The combination of ethnic doll design and fashion is the core of aesthetic trends in today's society, showcasing innovation and diversification. Despite the huge doll market, ethnic dolls have not been able to occupy a market share. Although China is a major toy producer, it lacks a place for ethnic dolls in the doll market. The development and design capabilities of traditional Chinese dolls are relatively weak, and innovation is insufficient. The excellent cultural resources of ethnic groups have not been fully tapped into, and the combination of ethnic doll design and fashion elements is relatively outdated, resulting in ethnic dolls failing to meet the aesthetic standards of modern people. In fierce market competition, ethnic dolls have gradually lost a large market share. The integration of innovative designs with contemporary elements is the main approach to tap into the market potential. Traditional doll toys are mostly for appreciation and meeting specific needs, but to a certain extent, they also consider consumer demands. However, in the competition with internationally renowned brands, there is limited space for market development. The development of diverse

functionalities for dolls is also a basic requirement for modern doll consumption. Therefore, the design and inheritance of ethnic doll models in China can explore new market areas by incorporating them into the design of edible materials, such as fondant cakes, to discover new market opportunities for ethnic dolls and strengthen their historical value.

### **3.3 Cultural Inheritance of Ethnic Dolls**

#### **3.3.1 Limitations of Ethnic Dolls**

There are still many challenges and issues in the cultural inheritance of ethnic dolls. Ethnic doll culture is an important national treasure that carries the rich and excellent cultural heritage of China. In terms of the development of modern doll toys in our country, ethnic dolls are the pioneers of innovative design. In the fierce market competition, the embodiment of ethnic identity in dolls is undoubtedly a unique and innovative ethnic material. From the current state of ethnic doll inheritance, there are still many problems (Ding Chao, 2019). Especially from the investigation of the consumption status of modern dolls mentioned in the previous text, it is found that due to the inability to meet the basic consumption psychology of contemporary consumers, the traditional inheritance of folk dolls exhibits certain specific limitations. Specifically, these limitations are reflected in the following aspects.

First, limitations in terms of design. Modern doll consumers prefer a fashionable style with elements of fashion. Although there is some support for ethnic styles, they do not have a competitive advantage compared to other design styles in the market. The main reason for this is that traditional fashion elements are not adequately reflected in ethnic dolls, which does not meet modern aesthetic standards. In addition, some ethnic dolls are disconnected from the realities of modern life and do not align with the characteristics of modern consumers, which hinders the inheritance of ethnic doll culture.

Second, limitations in terms of materials. Traditional folk doll craftsmanship has evolved over time. In the production process, people often

use raw materials such as bamboo, wood, clay, flour, and cotton. Although these dolls have unique shapes and a strong ethnic artistic atmosphere, their functionality and versatility are limited. Surveys have shown that modern doll consumers have high demands for the diversity and functionality of dolls, and the use of natural materials has become one of the obstacles to the inheritance of ethnic dolls.

Third, limitations in terms of personalization and transformability. According to the latest research, there is a growing trend in doll purchases. Contemporary society prefers dolls with personalized characteristics. People not only enjoy playing with dolls but also like to personalize them. However, traditional ethnic dolls have fixed character designs and cannot meet the modern demand for personalization. This poses some limitations on the inheritance of traditional dolls.

### **3.3.2 The Necessity of Ethnic Doll Inheritance**

Ethnic dolls are valuable cultural heritage in the history of inheritance, carrying a rich ethnic cultural heritage and holding significant importance in cultural inheritance. To a certain extent, they can reflect the historical development of our country. People's art is an important support for the development of Chinese culture and has practical, aesthetic, and educational functions in specific historical and cultural environments. As a tangible manifestation of excellent culture, ethnic dolls can inspire a sense of national pride and patriotism among the Chinese people. The existence of Ancient Western Region ethnic dolls is based on the rich diversity of Ancient Western Region culture. At the same time, they present a unique artistic style and aesthetic characteristics. In the context of cultural inheritance, the inheritance of ethnic dolls, represented by Ancient Western Region ethnic dolls, is highly necessary.

Although China occupies a dominant position in the toy manufacturing industry, in the market economy, we primarily play the role of toy producers, relying on the advantage of cheap labor. A large number of imported toys occupy the toy market in our country and become the main

choice for consumers. As for ethnic dolls in China, their production mostly relies on pure manual craftsmanship, which results in longer production time and lower profits. Moreover, with the aging of skilled artisans, the production of some ethnic dolls is on the verge of extinction. Although young people have received education on ethnic folk culture since childhood, their awareness of cultural heritage inheritance is insufficient in this rapidly changing information age. Due to limited exposure in daily life, ethnic dolls are often considered as a high-end art form. Many factors contribute to the insufficient production process and overall promotion of ethnic dolls, resulting in the lack of competitiveness of traditional ethnic dolls in the market. The inheritance of ethnic dolls is not only a cultural inheritance issue but also closely related to national development. The dominance of excellent culture in global cultural exchanges and the manifestation of comprehensive national strength in the market economy environment are indicators of obtaining economic advantages. Preserving the precious wealth of inheriting traditional ethnic culture requires the concerted efforts and dedication of every generation.

### **3.3.3 Insights for Ethnic Doll Design**

From the survey on the basic consumption of modern dolls, it is evident that modern doll consumption is deeply influenced by Western culture. The preference for doll brands and their images is mainly focused on the styling characteristics of Europe, America, and Japan. Foreign doll brands have had a significant impact on the design and promotion of doll brands in our country. In order to cater to the needs and preferences of consumers, the design of our dolls has gradually been influenced by Western design concepts. Many domestic doll design works currently lack unique styles in terms of styling, functionality, and concept. Blindly imitating the styling of dolls from other countries has resulted in a lack of innovation in our doll design. Moreover, compared to the mature production techniques abroad, the imitated doll styling from our country is not favored by consumers. As a result, the sales of our dolls have been declining, and our market share has been shrinking. Innovative development is the key to

gaining market advantage for our doll toys. The borrowing of successful styling experiences from Western countries does not mean blindly copying, but rather integrating our own national characteristics on the basis of borrowing. By creating attractive popular elements, we can attract more consumers and expand our market share.

From the current situation of the doll market in our country, domestic doll brands are almost non-existent. The most successful domestic doll brand, Kurhn, only manages to gain a limited market share despite fierce competition. The intense competition from foreign doll brands has become a bottleneck for the development of ethnic doll design in our country. In order to gain an advantage in the market competition, it is necessary to develop new markets through the design and development of ethnic dolls and achieve the cross-industry inheritance of ethnic dolls. The value of ethnic culture lies in the distinct cultures of different ethnic groups and the exchange and fusion of multiple cultures, which have created unique and diverse ethnic styles. This is the advantage of ancient Western Region ethnic doll creation. Ethnic culture is a precious cultural heritage of China, which has both spiritual and material aspects. As descendants of the Chinese nation, inheriting ethnic culture is an inherent mission. In the field of ethnic doll design, designers should deeply explore ethnic culture and design ethnic dolls with originality, cultural significance, and uniqueness, so as to demonstrate competitive advantages compared to foreign doll brands. China has a strong and rich ethnic culture, which is a significant advantage in ethnic doll design. The achievements of various ethnic doll designs throughout history can also provide inspiration for modern ethnic doll design.

It is not advisable to simply imitate Western design concepts, but that does not mean we should completely abandon them either. With the increasing cultural and economic exchange in the world, while developing the domestic market for ethnic dolls, we should also pay attention to the development of the international market and establish a significant influence internationally. The creators of ethnic dolls must recognize that current social culture and individual traditions are inseparable. The cultural evolution of modern society cannot be separated from the foundation of ethnic traditional culture. Therefore, for the

design of ethnic dolls, it is necessary to integrate with modern design and aesthetics. Only through deep integration can we change the monotonous form of ethnic doll modeling and design new types of ethnic dolls, allowing them to shine in the field of international art and design.

The rich cultural resources of ethnic dolls in China have been shaped by thousands of years of historical heritage and have a profound influence on the design of traditional ethnic dolls. They are deeply rooted in the production and life of the working people, reflecting the laboring people's singing and praise of a happy life and their deep inner love. With the accumulation of history, it has gradually formed a rich artistic and cultural heritage. In the context of overall technological development in today's society, there have been significant changes in life that require adaptation to new realities. However, ancient culture still deeply shapes people's thoughts, values, and thinking patterns. Although there is a fascination and pursuit of high-tech toys and diverse dolls, traditional ethnic dolls are not completely negated. It is just that some designs of ethnic dolls are distant from modern life, so some people consider ethnic dolls as high-value artworks and feel disconnected from themselves, resulting in a lack of attention. Currently, some ethnic doll works are still active in people's lives, such as sugar dolls and dough sculptures, which appear in festive activities and are well-known to the public. This also indicates that there is a certain audience for the promotion and design of ethnic dolls. The satisfaction and demand for modern doll consumption also provide inspiration for ethnic doll design. Although there are certain differences in the design of form, clothing, and the functionality of the base body, the overall style is quite similar. In the toy market, the design of ethnic dolls is facing the issue of gradually saturated market, especially under the competition of mature doll brands abroad. The market development prospects for ethnic dolls are relatively narrow. To address such issues, in addition to focusing on exploring ethnic cultural elements for modern innovative design, attention should also be paid to exploring new industry markets and target customer groups, in order to broaden the market space for the development of ethnic dolls and promote the modernization and expansion of ethnic doll design, which plays a positive role in the inheritance of Chinese ethnic culture.

### **3.4 Brand Marketing of Chinese Ethnic Doll**

#### **3.4.1 Brand Image Building for Chinese Ethnic Dolls**

Ethnic doll brands play a crucial role in product identification and serve as a powerful weapon in product competition. Consumers integrate product elements into conceptual features, thereby constructing brand images. The brand image of ethnic products can be divided into two parts: tangible and intangible. The tangible part refers to the external image and functional performance of the brand. The brand image is influenced by three factors: the product itself, the product supplier, and the consumers. These three factors interact with each other and collectively shape the brand image.

The brand image of ethnic doll brands is considered to be the most valuable asset in business operations. In the tide of social development, shaping a good brand image is seen as a means to achieve business goals and a strategic advantage in the market. Ethnic doll brands in China have recognized the importance of the overall brand image in brand development. It plays a crucial role in the overall strategy of the brand.

"Shaping a representative brand image in China is closely related to the CIS (Corporate Identity System) strategy, which is an effective strategy in contemporary times. The creation and maintenance of a brand image is of utmost importance, as the uniqueness of a product forms an associated group in people's minds". This statement indicates the significant role of ethnic brands in the core of the social market. The core strength of ethnic brands in the market and their overall wealth influence in society. In the development of contemporary society, the shaping of brand image has already taken the lead in various factors, with product forms and diversified management systems. In many countries, the brand image of ethnic brands is the most valuable asset in business development. Protecting the image of an ethnic brand is considered the goal of the entire market operation and is a core strategic link to gaining competitive advantages. Traditional Chinese ethnic brands have recognized the critical role of the overall corporate image in brand building. The CIS strategy is a core strategy for shaping the excellent



brand image of China.

Chinese domestic doll brands have a unique Chinese ethnic style, which is loved by domestic and foreign consumers. Chinese ethnic dolls are becoming more independent and outstanding. They achieve success in the fiercely competitive market through their own advantages and have a certain market share and influence in the international market. From the perspective of the international market environment, world brands account for less than 3% of the market, while brand economy occupies 40% of the market share and 50% of the sales, achieving excellent results. The economy has become the norm for market development. Although China has shown strong performance in toy production, there are relatively few original and exported doll toy brands. Currently, brands such as Yuxi, Kurhn, and Xingyue are relatively well-known, but their brand value is limited in the domestic market. The existence of these brands has not brought much brand value, which highlights the need to pay attention to the shaping and development of Chinese ethnic doll brand images.

CIS, the abbreviation for "corporate identity system", is a professional corporate branding identification scheme. This identification system is a business method to improve the national image of a brand. The main focus of this method is to transform the first visual image of the national brand and add new elements to attract more attention from consumers, thereby achieving higher sales volume. The brand's concept is its spirit and soul. Once the brand is determined, it is necessary to convey the information to the public and allow the general public to recognize the brand through this information. By understanding this information, consumers can establish a positive image deep in their hearts.

Philip Kotler is a renowned marketing expert. Brand building is based on the comprehensive use of elements such as name, terminology, logo, symbols, and patterns. To establish a national brand image, it is necessary to adjust according to consumer needs and find unique characteristics that differentiate it from competitors, allowing the brand to have a clear

positioning and attract more customers by enhancing their desire to purchase the brand from within.

The relationship between the domestic market and the international market is very good. Since China's entry into the WTO, it has provided a favorable market environment for the development of national brands. Against this backdrop, the cultural inheritance of ancient Western Region doll art design, whether in the food industry, toy industry, or handicraft industry, should pay attention to shaping the image of national brands. From the perspective of producers, it is important to explore the distinctive cultural characteristics of the ancient Western Region and combine them with modern trends to create doll art design works with iconic features, thus establishing a national brand image with brand value. From the market perspective, the works of ancient Western Region doll art design contribute to the construction and orderly development of national brands, laying a solid market foundation. From the government perspective, it emphasizes the importance of promoting the shaping of national brand image and the inheritance of outstanding traditional culture. At the societal level, it can guide consumers to develop enthusiasm for consuming national brands, cultivate respect and admiration for outstanding traditional ethnic cultures, and lay a mass foundation for the inheritance of art.

The design of fondant dolls is a successful case of cross-industry integration in the development of ethnic dolls. Taking this as a starting point, the cultural inheritance of ancient Western Region doll art design can be approached from the perspective of craft innovation. By designing new types of dolls with distinctive ancient Western Region ethnic characteristics, a brand image with unique ethnic features can be established, allowing it to stand out in the market competition. Furthermore, cross-industry integration with industries such as animation, gaming, film, and food can be pursued, opening up a broader space for the cultural inheritance of ancient Western Region doll art design. Through the participation of diverse inheritors, more effective cultural inheritance can be achieved.

### **3.4.2 Promotion of Chinese Ethnic Doll Brands in the Market**

The promotion of ancient Western region doll art and design culture inheritance is essential in order to attract more inheritors. After creating doll works with ancient Western region ethnic elements as the theme and shaping a distinctive ethnic brand image, it is crucial to establish market-oriented promotion as the foundation for the development of the ethnic brand. The overall goals of brand promotion may vary in different market periods, and there will be significant differences in details. When promoting the brand, the focus is usually on the functional purposes of ancient Western region dolls and the promotion of ethnic cultural inheritance. During the brand's rise, the emphasis is on showcasing the unique characteristics of ancient Western region dolls. In the case of fondant ancient Western region dolls, the significant features that are highlighted include ethnic characteristics and their edible nature, which serve as key points for promotion. During the brand's growth period, continuous innovation and development in terms of functionality, design, and highlighting distinctive features are crucial for the construction of the brand image in ancient Western region doll art and design. For example, in the design of doll toys, integrating innovative elements of the time enriches the form and functionality. In the design of fondant dolls, a more diverse range of ethnic doll forms can be developed by blending ethnic and modern elements, resulting in novel design works that promote innovative market promotion and contribute to the inheritance and development of ancient Western region doll art and design culture. During the brand's maturity period, the development of more industries and culture can be driven by ancient Western region doll art and design, and the impact brought to consumers by the ethnic brand of ancient Western region dolls becomes the focus of market promotion.

With the rapid modernization process in China and the widespread use of social media, the living environment and time of the mass consumer group have become fragmented. There are significant differences between individual consumers and group characteristics, especially among young consumers who prefer to purchase fashionable brands that cater to their personalized needs. The popularity of popular culture products indicates

people's attention to Chinese traditional culture and the importance they place on consumer brands. Through the trend of ethnic style consumption, ethnic brands convey important cultural values to consumers. By pursuing the trend of ethnic style consumption, national brands help inspire some consumers' reverence for Chinese traditional culture. The rise of national trend has also brought significant changes to consumer concepts and behaviors. With the enhancement of information fragmentation, digitization, and personalization trends, consumers are paying more attention to the effectiveness of their purchases. The promotion of brand products is now carried out through social media, and young consumers, who have purchasing power, play a crucial role in spreading the message through social media platforms.

National trend products have unique characteristics, and consumers tend to purchase these products on new e-commerce platforms such as "Du" and Xiaohongshu applications. These products are usually first exposed on social media, for example, by inviting celebrities to be spokespersons and promoting them extensively on Weibo, attracting the attention of national trend fans. National trend brands identify aspects that consumers love. There is a pursuit and being pursued relationship between consumers and the national trend products they love, similar to the interaction between fans and celebrities. Such purchasing behavior not only represents the recognition of brand identity and culture but also reflects the recognition of local culture and identity, bringing spiritual satisfaction to consumers. The consumption of domestic products is becoming an emerging trend in the subculture field and has become the focus of the consumer market. The concept of domestic product consumption demonstrated on social media indicates that consumers tend to favor local brands, which are closely associated with their preference for trendy culture.

National trend consumers share common values, preferences, and purchasing behaviors, forming a close consumer community. In the context of social media, the national trend consumer community plays a driving role through the dissemination function of social media. Traditional modes of communication have been changed by social media, and their lifestyles and

social patterns have been profoundly influenced. These influences are not limited to communication but have far-reaching impacts on people's lives at present.

Social media plays an important role in the consumer domain, and its popularity has led to a shift towards online shopping for consumers. By utilizing social media platforms to promote community sharing, national trend products exhibit remarkable charm and influence, influencing consumers to varying degrees through recommendations on these applications. In national trend consumption, we can observe the convergence and integration of the "two-step flow" theory and Roger's "multi-step diffusion" theory, which means that information is transmitted through multiple channels, from opinion leaders to a broader consumer base. With the sharing and dissemination on platforms like Moments and Weibo, national trend products demonstrate significant attractiveness and influence. Emerging social applications such as Douyin and Kuaishou are increasingly playing a role in people's daily lives.

To gain insights into consumer social behavior characteristics, it is necessary to conduct in-depth consumer analysis. Identifying consumers' actual needs crucially relies on conducting thorough needs surveys and satisfying their expectations based on their physical and psychological needs. Creating a consumer data storage system allows for timely access to information on consumer demand changes, and adjustments can be made to brand management based on consumer opinions and feedback, thereby enhancing profitability by adjusting marketing strategies and market communications.

### **3.4.3 Chinese Ethnic Doll Brands, Integrated Marketing Strategy**

Integrated marketing, also known as holistic marketing, is a marketing planning approach that provides one-stop services for brand promotion. It starts with market scanning to understand the basic needs of the target consumer group, laying the foundation for subsequent design. This includes determining the brand's positioning in the market, setting appropriate pricing strategies, and developing specific marketing activities to promote the brand. In summary, a comprehensive marketing strategy encompasses six aspects:

branding, naming, design, positioning, pricing, and marketing, which are all based on consumer psychological analysis.

#### **3.4.3.1 Chinese Ethnic Doll Brands, Brand Strategy**

The cultural inheritance of doll artistic design in the ancient Western region should emphasize the construction of ethnic brands. Based on a comprehensive market investigation and research on the needs of target consumer groups, it is essential to establish a brand strategy with ethnic characteristics and cultural inheritance traits. This will help the brand to form a unique position in the fiercely competitive market and lay the foundation for the development of targeted plans in the future. Regardless of the field of doll artistic design, the development of brand strategy should be guided by the market, aiming to build an influential brand image. By promoting the cultural heritage of doll artistic design in the ancient Western region as an ethnic brand, it can establish its own brand influence and lay the foundation for the inheritance of doll artistic culture in the ancient Western region.

The brand strategy of dolls in the ancient Western region is a necessary condition for the rapid development of this brand. The strategic positioning of the doll brand is to display the brand culture in the cooperation of brand strategy and strategic management, accurately grasp the target audience, and improve the brand recognition by fully demonstrating the close connection between the product and the brand culture, thereby fundamentally changing the market position. Only the brand with a successful strategy has the possibility of continuous sales growth in the sales market, the possibility of accumulating brand sales, and the possibility of capital formation at the company level.

Some forward-thinking enterprises are actively using brand strategy to gain a significant competitive advantage and help their teams grow continuously, ensuring the long-term development of the brand. In today's society, with rapid information dissemination, competitors can easily imitate a company's products, technologies, and management strategies. Once a distinctive brand is established, it can fundamentally change the company's

position in the market, possessing unique value and irreplicable characteristics. A brand represents the deep-seated cognition and emotional experience of consumers, which are not easily replicable. The key point of brand strategy lies in effectively influencing the degree to which consumers perceive this issue. By deeply understanding consumers' intrinsic needs, purchase motivations, industry background, and the brand image of competitors, the brand positioning can be comprehensively improved to achieve brand objectives. By establishing a solid brand identity system, a profound impact can be left in the minds of consumers, guiding the company's various value activities through the use of the brand identity system.

The six aspects of brand strategy are:

(1) Brand decision-making: Determine the characteristics and attributes of the brand. Different brand management strategies represent the team's choice of different development directions, and different industries require the implementation of customized measures.

(2) Brand model selection: Brand architecture is the focus when formulating brand strategy. Diversification and unification have their unique advantages and disadvantages in different industries, and the applicability and timeliness of the brand model will be influenced by different industries.

(3) Brand identity definition: The connotation of the brand is the core of brand strategy. It includes the brand's concept, behavior, and symbols, which standardize the connotation of the brand's ideas, behaviors, and appearance, in order to create a unique impression and recognition of the brand in the minds of consumers.

(4) Brand extension planning: Determine the scope of the brand's development direction. By clearly defining the fields and industries that the brand is suitable to enter in the future, and taking measures to avoid extension risks and dilution, the brand value can be realized. This helps to ensure consistency and stability of the brand during the expansion process, thereby enhancing the brand's awareness and reputation.

(5) Brand management planning: The organizational structure plays a protective and management role in brand building. After confirming the brand's development path, formulate the brand's future vision and determine the goals for each development stage, while ensuring that the performance of each stage can be evaluated according to the set standards.

(6) Brand vision: Determine the current market value of the brand, its future development prospects, and the core beliefs and principles upheld by the brand.

### **3.4.3.2 Naming Strategy for Chinese Ethnic Doll Brands**

The main purpose of naming an ethnic brand is to serve marketing. In addition to considering the actual characteristics of the product, naming also needs to take into account the positioning of the product, target market, and other factors comprehensively. When naming the Ancient Western Region doll artistic design products, it is necessary to first consider the characteristics of the dolls, then meet the basic needs of consumers, and finally reflect the fundamental demands of cultural inheritance in Ancient Western Region doll artistic design. The name should serve as a synonym for product promotion and cultural inheritance.

### **3.4.3.3 Design Strategy for Chinese Ethnic Doll Brands**

Designing a doll brand is an effective visual communication method. Visual perception is one of the most direct ways in the sensory system to perceive the information conveyed by the outside world. The intuitive appearance of Ancient Western Region doll artistic design helps gain public recognition for the brand. In the fiercely competitive business environment, companies are no longer just competing with products, but also competing with brands. Currently, most brand designs are insufficient, resulting in a lack of clear product image. Therefore, in the design process of Ancient Western Region dolls, it is important to establish brand characteristics that can clearly differentiate from other brands and convey the promotional concept of the product itself. This creates a tangible



medium to inherit the cultural heritage of Ancient Western Region doll artistic design.

#### **3.4.3.4 Positioning Strategy for Chinese Ethnic Doll Brand**

The positioning strategy for Chinese ethnic doll brands refers to the strategy for developing the positioning points of ethnic brands. Brand positioning and product positioning have different concepts and roles. Brand positioning can position the brand at a more macro level, including the core values, image, and market positioning of the brand. Product positioning, on the other hand, focuses more on the positioning and competitive advantages of individual products in the market. However, it is important to note that brand positioning is derived from products but is not limited to products.

For the positioning of Ancient Western Region doll artistic design ethnic brands, it is important to first clarify the main purpose of the ethnic brand and then define the main goals of the ethnic brand establishment. The inheritance of ethnic culture should be integrated into the positioning of ethnic brands, so that the design and promotion of subsequent Ancient Western Region doll products revolve around the positioning of ethnic brands. This will promote and inherit ethnic doll culture through tangible Ancient Western Region doll artistic design.

#### **3.4.3.5 Pricing Strategy for Chinese Ethnic Doll Brands**

Pricing can influence consumer demand and choices, and it also reflects the value of brand products. A strong product image can have a positive impact and add value to the product. Therefore, for the construction and pricing of Ancient Western Region doll artistic design ethnic brands, a "high-quality, high-price" strategy can be adopted. The primary task is to ensure product quality and build a good brand image. By providing excellent shopping experiences, the company can increase its value and achieve higher profits.

Currently, in the design and sales of ethnic dolls in China, there is

a certain gap in terms of innovative design and quality compared to well-known brands, as companies often pursue low prices. Despite the huge development potential of the domestic ethnic doll market, the company's market share in this market is relatively small. Adhering to the brand positioning of cultural inheritance, Ancient Western Region doll artistic design prices its products based on the pursuit of higher quality design outcomes, positioning itself as a superior product and showcasing its artistic value.

Taking fondant dolls as an example, the market price ranges from 30,000 to 50,000 yuan. The value of the dolls is directly proportional to their pricing. Therefore, fondant dolls not only serve as products for sale but also participate in competitions and exhibitions as works of art, successfully promoting cultural inheritance both domestically and internationally.

#### **3.4.3.6 Marketing Strategy for Chinese Ethnic Doll Brands**

Marketing is an important strategy for brand promotion, and it can be divided into differentiation marketing, experiential marketing, and personalized marketing based on different marketing strategies.

Differentiation marketing focuses on analyzing the market environment and exploring the innovative and advantageous aspects of the brand to gain market recognition. It can be further divided into positioning differentiation and implementing differentiation and personalization strategies at multiple levels. For the marketing strategy formulation of ethnic brands in the field of ancient Western region doll artistic design, it is important to emphasize the development of ethnic characteristics and utilize them as a competitive advantage for brand development, ultimately achieving a win-win situation.

Experiential marketing, as another aspect, is a dynamic marketing model that uses a series of promotional methods to go beyond the limitations of commercial promotion and reflects the inclusiveness and fun of marketing. Taking the successful experience of sugar master Zhou Yi as an example, he has dedicated years of research to the creation of fondant dolls and has developed his

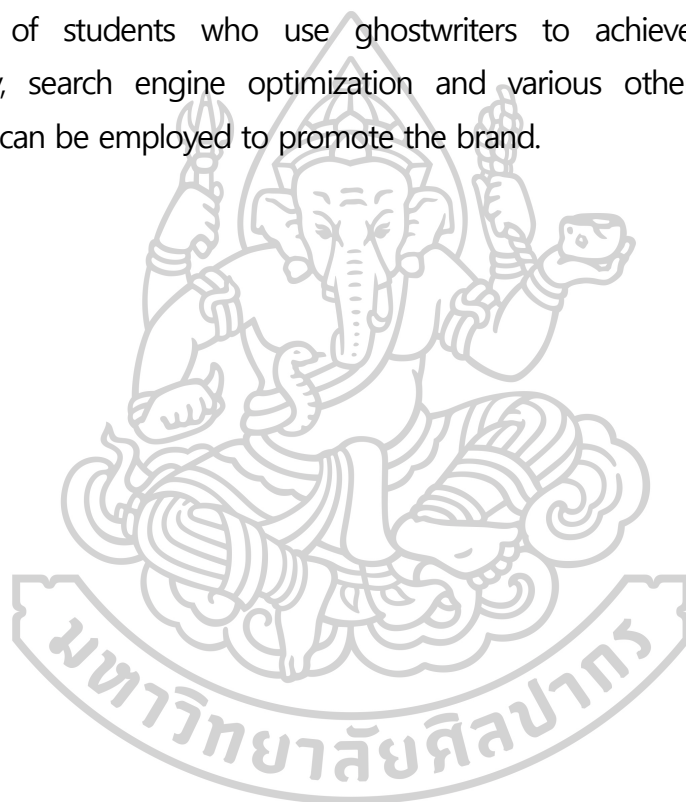
own unique brand. Through participating in and exhibiting at international fondant cake competitions, Zhou Yi quickly gained recognition and popularity. His works have been loved and recognized by the public. The cultural inheritance of ancient Western region doll artistic design can also learn from this marketing model. By participating in various competitions and exhibitions with high-quality ancient Western region doll artistic organizations, attention from the public can be gained in a way that breaks free from commercial promotion. Through subtle influence, cultural inheritance can be achieved.

Lastly, in terms of personalized marketing strategies, it is important to affirm the consumer's role. In the context of brand construction for ancient Western region doll artistic design, after a product is sold, additional services can be provided to consumers. For example, providing design prototypes and the sources of design inspiration can generate a strong interest in ethnic culture among consumers, thus laying a richer mass foundation for the cultural inheritance of ancient Western region doll artistic design.

### **3.5 Chinese Ethnic Doll Brand, Digital Marketing**

Digital marketing for Chinese ethnic doll brands is a product of technological development in the modern era. It primarily utilizes digital technologies on the internet, such as mobile applications, display advertising, and any other form of digital media, to market products and services. The emphasis on innovation in today's market also calls for innovative strategies in the marketing models of Ancient Western Region doll artistic design brands. Market research shows that the consumer base for dolls is becoming younger, and the target audience for digital marketing, which primarily consists of young people, aligns well with the main consumer group. This provides a solid foundation for marketing Ancient Western Region doll artistic design brands. The attention garnered by Zhou Yi's various awards in international competitions, as well as his promotion of his work on platforms like Bilibili and Weibo, has attracted a large number of fans and has led to the true international dissemination of ethnic dolls designed by him. The marketing of Ancient Western Region doll artistic design brands can learn from this successful model. By utilizing online media to promote

brand products, brand awareness and exposure can be enhanced, and effective dissemination and inheritance of Ancient Western Region doll artistic design culture can be achieved. The strategies for digital marketing of Ancient Western Region doll artistic design brands can include interactive advertising derived from advertising campaigns. In the field of public relations, strategic planning is crucial, and local PR companies often have a stronger advantage. The "internet faction" can engage in digital marketing through early internet influencers, while the "water army faction" is commonly seen in the digital marketing field and is usually composed of students who use ghostwriters to achieve marketing goals. Additionally, search engine optimization and various other digital marketing techniques can be employed to promote the brand.



## **Chapter 4: Research Findings**

### **The Overall Process of Creative Design**

#### **Ancient Western Region Doll Artistic Design and Aesthetics**

##### **4.1 Design Principles**

###### **4.1.1 Principle of Humanistic Features**

Ancient Western Region ethnic dolls are the product of the development of ethnic history and culture. While reflecting their practical value and enjoyment, they also embody rich humanistic and emotional values. The embodiment and inheritance of these values also have a positive impact on contemporary real life. The richness of ethnic culture and the embodiment of humanistic emotions provide a broad inspiration space for the design of ancient Western Region fondant dolls, and the wonderful folk culture lays the foundation for the design of ancient Western Region fondant dolls.

When designing and creating ancient Western Region fondant dolls, we should first have a deep understanding, examination, and skillful application of traditional ethnic and folk cultures. The embodiment of humanistic features in ancient Western Region fondant dolls is mainly reflected in their appearance. Visual perception is the most direct way for the public to come into contact with ancient Western Region fondant dolls, and the characteristics and attributes of the products are presented to the public in the most intuitive way. Therefore, designers of ancient Western Region fondant dolls should follow the principle of humanistic features, explore and develop the unique characteristics, patterns, and styling features of ancient Western Region culture, and apply them to the design of ancient Western Region fondant dolls, so that they can visually embody the traditional humanistic features of the ancient Western Region ethnic group.

Currently, there are many successful cases in the market where ethnic folk elements are combined with doll design, providing valuable references for the sculptural design of ancient Western Region fondant dolls.

###### **4.1.2 Principle of Innovation**

Repetitive artistic styles can lead to aesthetic fatigue and contribute to market saturation, which is not conducive to the preservation and development of ethnic dolls. Therefore, for the design of ancient Western Region dolls, it is important to follow the principle of innovation, showcasing innovative thinking in various aspects such as form and concept.

China has a long and rich tradition of ethnic doll cultural heritage and development, with a series of mature craftsmanship techniques passed down through history. The production techniques used by many folk craftsmen in doll making are worth learning and inheriting. However, due to the traditional artistic value and the labor-intensive nature of the creative process, ethnic dolls have become somewhat detached from the fast-paced modern lifestyle and aesthetic trends. Therefore, only by truly creating dolls that can deeply resonate with people's innermost being can we obtain the fundamental driving force for inheritance.

The principle of innovation in the design of ancient Western Region dolls is mainly reflected in material innovation, form innovation, and the industrial field of raw material production. Firstly, in terms of materials, it is popular to use fondant materials for doll design, which meets the taste of modern people. Secondly, in terms of form, we explore the ancient Western Region culture and the mythological stories derived from it. Based on the character images recorded in ancient texts, we combine the imaginative and innovative abilities of the creators to shape the overall form of the ancient Western Region dolls.

In terms of production and processing industries, the design of ancient Western Region dolls has been shifted from art, toys, and other fields to the food industry. This brings them closer to the modern lifestyle and creates new opportunities for industry innovation. It also facilitates the integration of multiple fields, opening up new markets for the inheritance of ancient Western Region dolls.

## **4.2 Design Concept**

### **4.2.1 Source of Inspiration**

"Art originates from life, but transcends it. To create and possess something of artistic value brings more joy to life, preventing it from being reduced to mere dust". Mr. Zhou Yi's pursuit of doll art and his efforts in inheriting excellent traditional Chinese culture have sparked people's attention to the inheritance and promotion of ethnic doll culture in the new era. In the process of designing fondant models, Mr. Zhou draws inspiration mainly from image design, domestically produced animated films, and our country's rich mythological stories. These serve as the main sources of creative inspiration. Traditional Chinese intangible cultural heritage is the primary source of inspiration in his creations, incorporating traditional Chinese elements, the second dimension, and popular IPs, in line with the aesthetic trends of the new era and the preferences of contemporary young people. Using fondant as the main material for manufacturing has attracted a large number of followers and enthusiasts. Whether it is the promotion of ethnic culture or the innovation of ethnic dolls, Mr. Zhou is undoubtedly a successful case and exemplar in our country.

From the current international perspective, there is a lack of representation of Chinese elements in the design of fondant cakes. Fondant cake design itself is an innovative cake design technique, and the integration of Chinese elements is a breakthrough in the artistic design of fondant cakes. Mr. Zhou Yi has already taken a successful first step by incorporating ethnic cultural characteristics into sugar art design, which has inspired and influenced me. Furthermore, through surveys on the current status and satisfaction of modern doll consumption, it has been revealed that modern people pursue innovation and fashionable elements in dolls. This poses challenges to the development and inheritance of ethnic dolls in our country. Based on this, I am even more determined in my ideas for innovative designs of ancient Western Region dolls.

### **4.2.2 Literature Review and Preliminary Determination of Subject Matter**

The ancient Western Region of China has long been influenced and

integrated by the cultures of multiple ethnic groups. Through a process of mutual competition and integration, a rich and diverse ethnic culture with unique characteristics has gradually taken shape in the ancient Western Region. The author has consulted a large number of ancient text and image collections, gaining an understanding of the excellent ethnic cultures of the ancient Western Region, and has conducted in-depth exploration of the myths and legends that have been passed down to the present day. By studying the ancient literature and mythological stories of the ancient Western Region, many beautiful and moving maiden stories have been depicted. The charm of the written words has inspired the author to envision vivid images of these young women, and the initial ideas of using the latest fondant techniques to present their images have begun to take shape.

#### **4.2.3 Feasibility of Fondant Doll Design for the Ancient Western Region**

In the current market, modern consumers tend to seek innovative and fashionable elements in dolls. The homogeneity of doll types and functions in the contemporary toy market presents an opportunity for functional innovation and overall doll design. Incorporating the unique cultural characteristics of the ancient Western Region into fondant doll design can not only meet the avant-garde consumption needs of modern consumers but also contribute to the development and inheritance of ethnic dolls. The advanced consumption demands of modern consumers have propelled the fondant dolls of the ancient Western Region to the forefront of the mainstream trend in the development of ethnic dolls. This has laid the foundation for the design of these doll forms.

In terms of the new materials used in the design of fondant dolls for the ancient Western Region, the reason why young people are fond of them is because of their fresh and sweet taste and their ease of preservation. Fondant primarily consists of powdered sugar, gelatin, glycerin, food coloring, and cornstarch as the main ingredients. It also includes auxiliary materials such as vegetable shortening, powdered gelatin, cream of tartar, peppermint essence, and rose essence. Gelatin powder helps the powdered sugar to



solidify and increase elasticity, while glycerin adjusts the texture of the powdered sugar, increasing its softness and pliability. Food coloring is used to dye the fondant, enhancing the aesthetic appeal of the sculpted figures. Cornstarch is also added to increase the thickness and elasticity of the fondant. Due to the soft texture of the raw materials and their excellent plasticity, fondant cakes and other handmade crafts have certain advantages in shaping the details of the character. The author has been studying the production process and innovative techniques for creating new works in this field for many years and is proficient in the entire process of conceptualizing, designing, and producing fondant dolls until the final product. Creating a work that is approximately 100 centimeters in size takes 2 to 3 months, which depends to a certain extent on the efficiency, experience, and complexity of the design of the creator. It is not uncommon for the production cycle of handmade crafts such as fondant cakes to be long, as these works usually require careful design, handcrafting, and multiple processing steps, including drying and decoration. Despite the longer production cycle, handmade crafts such as fondant cakes have unique charm, exquisite craftsmanship, and ornamental value, which still have a certain market demand. The cost-effectiveness depends on individual needs and values. For those who love fondant cake art and value personalized customization, a beautiful handmade craft may be considered priceless, while for the average consumer, they may find it relatively expensive. The judgment of cost-effectiveness is subjective, and personal economic strength and appreciation value should be taken into consideration when making a choice.

The target audience for purchasing such works may include the following groups:

First, collectors who appreciate handicrafts. This group of people usually purchases fondant cakes and other handicrafts as collectibles, appreciating their unique artistic value and craftsmanship.

Second, individuals celebrating special occasions. Some people may purchase fondant cakes as gifts or decorations for birthdays, weddings, and other special occasions, expressing blessings and commemorations.

Third, DIY or craft enthusiasts. This group of people may purchase fondant cakes and other handicrafts as reference or learning materials to enhance their own crafting skills. The main reasons for purchase are to appreciate the unique artistic value and craftsmanship, as well as the need for gifts or decorations. The overall logic behind the purchase is based on the love and appreciation for fondant cakes and other handicrafts, as well as the celebration and commemoration of special occasions.

During the research on fondant doll design in the ancient Western Region, many non-professional individuals in the market may have misunderstandings about this field. However, as I delve deeper into the study of this new material, I find myself increasingly fond of it. While researching the feasibility of creating fondant dolls, several questions have been raised by people:

#### Misconception 1: Not edible

The biggest misconception about fondant, as a new material for making artworks, is that it is not edible. For example, if the material selection and the proper use of adhesives are not explained and clarified during the production process, misunderstandings can arise. Edible glue is used as an adhesive in artworks made from fondant. In works created with this new material, the glue is prepared by mixing tylose powder and water in different proportions (usually 50:1 or 70:1) depending on the brand.

Another issue is regarding the accessories used in the artworks. Accessories are essential in creating floral arrangements within the scenes of the works, and the choice of floral wire material is crucial. Designers abroad often use wire wrapped in capsules to make floral arrangements, but this material is not commonly available in China. For cost considerations, some designers choose to use paper-wrapped wire, which has not shown any signs of rusting after long-term storage. However, such products are not suitable for use with food. Currently, there is a kind of wire-made floral arrangement available in the market, wrapped in plastic, which provides a reasonable solution to this problem.

Some inexperienced designers tend to place flowers one by one when arranging them, which not only lacks a sense of overall design but may also damage the surface of the cake, affecting the comfortable eating experience. Mastering the technique of flower arrangement can enhance the texture of the bouquet and be suitable for the production process of the new material. The method of binding the floral branches together before inserting them into the cake is recommended. In our subsequent design steps, we will demonstrate in detail the flower arrangement techniques and layout color schemes for commonly used floral designs. There is no need to worry about not being able to match different flower types.

Misconception 2: Works made with new materials are too expensive.

Currently, the new materials used by designers in the market are generally priced higher than other commonly used materials. However, the high price is mainly due to the craftsmanship involved. The pricing of works made with these new materials is not solely based on size, like other types of works. Instead, it is determined by the difficulty of the production process, the amount of time required, and the rarity of materials. Therefore, each work made with these new materials by designers incorporates design elements. As each element has different craftsmanship requirements and consumes different time and materials, the prices may vary.

Taking the example of works made with these new materials, the entire production process requires designers to have a strong foundation in the craftsmanship and design concepts of using these new materials. In traditional cake design, only mastering the basic production process is needed to complete the work, which is significantly different from the new cake design.

Misconception 3: Works made with new materials by designers are not tasty.

In people's perception, works made with new materials are often considered very sweet and may have a slightly sandy texture. However, in

reality, these works have a texture that is closer to melting in the mouth, similar to the texture of White Rabbit milk candies. The main reason for the difference in texture is that the specifications and quality of edible materials produced by different manufacturers in the market vary greatly in the process of making works with these new materials. The sandy texture mostly comes from the heavy graininess of the raw materials. For the works we are making, we use fine Korean sand sugar as the raw material, which has a delicate texture and easily melts, resulting in a refined texture for the finished products.

When designers use these new materials to make works, they mostly use pound cake as the base. Pound cake has a dense texture that provides good support, but its texture is not as delicate and soft as commonly used materials. For example, it is similar to the difference between regular rice cakes and sticky rice cakes.

But how should we enjoy works made with these new materials to fully appreciate their taste? The proper way to enjoy works made with these new materials is to remove the fondant, reveal the pound cake, cut it into small pieces, and savor the buttery flavor and solid texture. Pairing it with a beverage enhances the overall experience. This is the correct way to appreciate works made with these new materials by designers.

Misconception 4: The process of making works with these new materials by designers is too complicated.

There is a saying that nothing is difficult if you put your heart into it. In fact, the process of making works with these new materials by designers, like many other professional skills, has its own systematic theories and techniques.

By accumulating experience through practical operations, you will find that these new materials are very versatile and can incorporate various skills. You can apply your experience in manual work to create works with these new materials, involving fields such as sculpture, architecture, fine arts, fashion design, floral arrangement, and more. Learning to make works with these new materials not only allows you to master the techniques specific to this field but also enables you to acquire skills from various industries. Works made with these

new materials by designers are a synthesis of different art forms, known as mixed media art, which allows you to accumulate materials and explore unlimited creativity.

To address the common misconceptions mentioned above, I will demonstrate the details of the works in a clear and simple manner, explaining what these new materials are, their characteristics, texture, and how to appreciate them. I will also provide guidance on how to make works with these new materials in different shapes, how to choose the overall support structure, and how to ensure the safe delivery and display of the works. My aim is to enhance everyone's understanding of works made with these new materials by designers, expand their imagination, and eliminate misconceptions by adhering to high standards and specifications. Firstly, in terms of material selection, it is important to personally taste the texture of works made with these new materials. For coloring, specialized edible food coloring should be used. To improve professional skills, it is necessary to observe the surrounding environment and have a good understanding of the materials being used.

### **4.3 Elements of Overall Styling and Design in Works**

Determining the design elements is the foundation of the ancient Western Region fondant doll styling. In general, the design elements of the ancient Western Region fondant doll can be categorized into three aspects: physical features, clothing features, and prop features. By focusing on these three aspects as the main design modules, the goal is to create innovative fondant doll works that are aesthetically pleasing, culturally significant, and promote ethnic heritage.

The ancient Western Region in Northwestern China has a rich history along the Silk Road and is home to various ethnic minorities, embodying diverse and abundant traditional cultures. The permanent ethnic minorities in the Western Region have different customs and clothing habits. Each traditional ceremony reflects the customs and social connections of different ethnic groups. Amidst the magnificent mountains and rivers of the Western Region, the local residents display unique

hospitality to their guests with great warmth. The ethnic minorities living in the grassland nomadic areas show exceptional warmth and courtesy towards others. When reuniting after a long time apart, people show extraordinary enthusiasm and express their affection through hugs, which is an important ritual in the local etiquette culture. The ethnic minorities in the Western Region are known for their warm hospitality. There is a saying that when the sun sets, asking guests to leave would make them feel unwelcome and lacking in respect. Regardless of whether the guests are acquainted or not, they should be treated with warm and thoughtful hospitality.

#### **4.3.1 Costume Features of Character Design**

In terms of clothing, the ethnic characters in the ancient Western Regions had a wide variety of decorative items. Men often wore long robes, trousers, and headscarves or turbans. Women, on the other hand, wore long robes, dresses, and headscarves or veils. The costumes often featured bright colors and intricate patterns, showcasing ethnic culture and regional characteristics. The hollowed-out decorations and designs in the costumes of the Western Regions played an important role in the history of Xinjiang's clothing. The use of these decorative elements added a unique style and personality to the costumes. For example, decorations were added to the collar, cuffs, and waist, creating eye-catching designs that made the costumes more prominent and appealing. The exquisite designs and elaborate patterns showcased the unique concepts and expressions of ethnic minorities in decorative arts. These hollowed-out decorations may have originated from local folk traditions or religious beliefs, or they may have been influenced by other cultures. Throughout history, the clothing designs in the Western Regions gradually shaped a distinctive style, showcasing the unique aesthetic views and lifestyles of ethnic minorities. The various ethnic groups in the ancient Western Regions demonstrated a rich variety of colors in their clothing. Deep red represented passion, light red represented gentleness, sapphire blue represented nobility and elegance, blue represented tranquility, jade green represented vitality, and citrus orange represented joy. The use of these colors in costume

design showcased the distinctive cultural traditions and aesthetic concepts of each ethnic group. The Uyghur ethnic group, for example, often incorporated red and green as the main elements in their clothing, representing auspiciousness and vibrancy. Blue and white dominated the costumes of the Kazakh ethnic group, symbolizing the sky and purity. The color characteristics and historical origins of clothing in the ancient Western Regions can be traced back to the period of the ancient Silk Road.

The Silk Road connected the East and West, promoting cultural integration. The ancient western region attracted the fusion of clothing cultures from Central Asia and the Middle East along the Silk Road, shaping unique clothing styles and color features. With the passage of time, the clothing styles and color palettes of the ancient western region gradually formed and have continued to the present day, becoming an indispensable part of the local ethnic culture. Overall, the clothing colors and historical origins of the ethnic people in the ancient western region reflect the rich and diverse cultural traditions and historical roots of the local area, showcasing the inheritance and development of ancient Silk Road culture in the region. These clothing colors and regional characteristics also demonstrate the diversity and uniqueness of the various ethnic cultures in the ancient western region. Clothing is a key factor in reflecting the distinctive characteristics and artistic aesthetic style of the ancient western region's fondant doll design, which embodies the ancient western region's ethnic culture and showcases the images of mythical characters. The flowing sleeves and light veils vividly display the characteristics of ancient style. Modern aesthetics have a preference for retro styles, and Hanfu (traditional Chinese clothing) is highly favored among young people. Some young people dress up as ancient-style characters through cosplay. The design of clothing for ancient western region fondant dolls combines the characteristics of traditional ethnic styles with the aesthetics of contemporary two-dimensional and anime character designs, creating a clothing style that is both ancient and fashionable.

In the western region, different ethnic groups have unique clothing styles and lifestyles. Most people wear gauzy skirts, and women like to

accessorize with earrings, necklaces, bracelets, rings, and other jewelry to enhance their charm. They also wear headscarves to add to their allure. The climate in the western region is also very distinctive. This saying reflects the typical climate characteristics of the region, where people need to wear fur coats to keep warm in the morning and switch to lightweight gauzy clothes in the noon. They also enjoy watermelons by the fireplace indoors. Therefore, in the ancient western region, women mostly wear flowing gauzy clothes in their daily lives. On holidays or important occasions, they wear colorful gauzy clothes, paired with exquisite jewelry. Long hair that reaches the waist is considered beautiful, and occasionally, they would braid long and thin twists. In the gentle breeze, their black hair and colorful gauzy clothes gently flutter. In the scorching heat of midday in the peak of summer, the sun shines fiercely on the red rocks. Waves of heat rise, and red smoke fills the sky, as if a raging fire is running and burning. In the Tang Dynasty, the great frontier poet Cen Shen wrote a poem: "Volcanoes stand tall in the wide pavilion, in May, autumn clouds densely cover the volcano." The desolate scenery of the Fire Mountain contrasts sharply with the graceful curves of the valleys. Clear streams often flow at the bottom, forming a strip of oasis shaded by trees. The bald peaks in the ancient western region have their own beauty, and the oases have their elegance. The girls in colorful clothes have their gracefulness. In the desolate bald peaks, the sudden appearance of exotic and beautiful oasis scenery is enchanting. The various natural beauties blend together, leaving endless space for imagination. The scenery is pleasant, just like the breathtaking landscapes in the paintings of the western region.

#### **4.3.2 Character Design, Props, and Surrounding Scene Atmosphere**

In terms of jewelry and hair accessories, the ethnic minorities in the ancient western region have a variety of styles that exhibit strong ethnic characteristics. For example, the earrings commonly worn by Uyghur women are often round or intricately designed, with elegant curves and unique patterns, reflecting the influence of ancient Silk Road culture (Cui Mingfang, 2022). In addition, some hair accessories attract attention with their unique designs and sparkling decorations. The inspiration for these



accessories may come from the local natural environment, traditional customs, and the influence of foreign cultures. The time period covered by these designs may range from the ancient Silk Road era to the present.

From the perspective of accessories and behavior, in addition to jewelry, the ethnic people in the ancient western region also enjoy wearing various accessories on their bodies, such as belts, shoulder bags, and scarves. These accessories not only serve practical functions but also serve as decorations to showcase personal taste and social status (Chen Ge, 2022). The behavior and demeanor of the ethnic people in the ancient western region also reflect their unique cultural characteristics. They are usually warm and hospitable, enjoy singing and dancing, value family and social relationships, and inherit a long-standing ethnic cultural tradition (Wang Qian, He Yang, & Gao Dandan, 2023). The behavioral characteristics of the people in the ancient western region also demonstrate the influence of ancient Silk Road civilization on people. The ancient Silk Road played a significant role, where trade and civilizations from various regions converged and merged. The ancient western region was a crucial hub on the Silk Road, where various cultures and trade interacted and absorbed influences from Central Asia, Western Asia, and other regions, resulting in the formation of unique customs and characteristics. The residents of the ancient western region are known for their warm hospitality, love for singing and dancing, and emphasis on family and community relationships, all of which reflect the influence of ancient Silk Road culture (Shi Shanshan, 2022).

In terms of the characteristics of ancient Western Region dances, the movements are distinct and full of strength and rhythm. Common movements in dance performances include spinning, jumping, turning, and swinging, which showcase the unique folk customs and regional characteristics. Each ethnic group has its own distinctive dance movements. For example, Uighur dances often involve swinging of the arms and rotation of the body, while Kazakh dances focus on jumping steps and waving of the arms (Pan Xuan, 2021). The main characteristics of dance

movements in the ancient Western Region are as follows: Firstly, a balance between strength and elegance. The dance movements in the ancient Western Region often have a strong sense of power, demonstrating the dancers' magnanimity and passion. At the same time, the dance movements emphasize the graceful lines and smooth curves of the body, showcasing the dancers' flexibility and agility. Secondly, arm and hand movements. The uniqueness of arm and hand movements in ancient Western Region dances lies in their extraordinary richness and variety. Dance movements often include swaying, spinning, and flipping techniques, creating unique decorative effects and strong expressiveness. Thirdly, footwork and body movements. The footwork in dances from the ancient Western Region is usually light and rhythmic, often accompanied by jumping and spinning movements, showcasing the dancers' agility and nimbleness. Swinging and rotating of the body are also common movements in ancient Western Region dances, expressing the dancers' emotions and inner world. Lastly, dance postures and gestures. The dance postures and gestures in ancient Western Region dances are very graceful, often giving a sense of nobility and elegance that attracts the attention of the audience, showcasing the dancers' unique charm and captivating allure. The dance movements in the ancient Western Region reflect the local ethnic cultures and traditions in both traditional and daily life. They showcase the rich ethnic customs and captivating artistic appeal. These characteristics not only reflect the diverse ethnic cultures in the ancient Western Region but also demonstrate the traditions and evolution of the ancient Silk Road culture in this region. The ancient Western Region was a key hub on the Silk Road and absorbed influences from dance cultures in Central Asia and West Asia. Over time, the unique style and distinctive characteristics of dances in the ancient Western Region have been established and passed down, becoming an indispensable and essential part of the local ethnic culture. Props are important elements that express the characteristics of character design and enhance the overall atmosphere. In myths and legends, the characters often have different tools or spirit pets representing certain meanings, which make the character design more

complete and mysterious. Therefore, in the design of fondant dolls in Xinjiang, a crescent moon, a pair of wings, and a jade rabbit have been added to the doll design, making the overall design more complete.

### 4.3.3 Character Design of Physical Features

The ancient Western Region of China has a vast and diverse landscape, with a variety of ethnic groups residing there. As a result, the physical features of women in the ancient Western Region also exhibit a wide range of diversity. In general, the physical features of women in the ancient Western Region can be summarized as follows: Women of different ethnic groups in the ancient Western Region display a variety of skin tones (Wang Kang, 2019). Generally speaking, Uyghur and Kazakh women tend to have delicate and refined complexions, while Kyrgyz and Tajik women often have deeper and richer skin tones. The eyes of women in the ancient Western Region are mostly oval-shaped, and the eye color varies by ethnicity, with some having deep and bright eyes, and others having dark brown or black eyes. Typically, the eyebrows of women in the ancient Western Region are thick, naturally arched, and convey a strong sense of exotic charm. The noses of women in the ancient Western Region often have a high-bridged, European-like feature, although some ethnic groups have women with relatively low and flat nasal bridges. The lips of women in the ancient Western Region are generally not overly full, but some do possess sensual, plump lips. The hairstyles of women in the ancient Western Region are diverse, with some wearing their hair long and tied up, and others braiding their hair, reflecting the traditional customs and aesthetic concepts of different ethnic groups. Overall, the physical features of women in the ancient Western Region are diverse, reflecting the region's multicultural characteristics and showcasing the rich ethnic styles and regional characteristics (Cui Mingfang, 2013).

The design inspiration for the fondant dolls of the ancient Western Regions originates from the image of young women in the mythological and legendary stories of the ancient Western Regions. Based on a thorough review of a large amount of traditional cultural materials and mythological and

legendary stories of the ancient Western Regions, and by drawing on the author's imagination and referring to the images of young women of the ethnic groups in the ancient Western Regions featured in films and television works, the appearance of the fondant dolls of the ancient Western Regions has been conceived and shaped ( Jin Ge , 2018 ) . The design of the fondant dolls of the ancient Western Regions should follow the principle of innovation, and also take into account the basic needs of modern doll consumers. The appearance design of the fondant dolls of the ancient Western Regions can be summarized as "young women", "long dark hair", "flowing white clothes", "ethnic style", and "a combination of oasis and bare hills in the region" ( Song Ruijiang , 2017 ) . The facial makeup is designed in a delicate manner, and the hairstyle and hair accessories reflect the ethnic style, while incorporating elements of animation and comics to achieve a fusion of ethnic and modern features ( Zhang Fan , 2013 ) .

The ethnic style of the ancient Western Regions is a mixture of East Asian and European bloodlines, with an overall appearance that leans more towards East Asian beauty. They have high and straight noses, large and watery eyes, and relatively deep eye sockets compared to Asians. The female figures are slender and tall, with delicate and fair skin that gives them a radiant and watery appearance, which is unique to the Western Regions when compared to East Asians. The minority ethnic groups in the ancient Western Regions are a result of the mixture of various ethnic groups such as the Uighur people, the indigenous Indo-European people of the Western Regions, early Han Chinese immigrants, Mongol conquerors, and Turkic people. In the ancient Western Regions, the indigenous Indo-European residents can be traced back more than 3,000 years ago when they settled in the Tarim Basin and the Turpan Basin from Eastern Europe and Iran. The characteristics of the current ethnic groups in the Western Regions can be attributed to them.

The Xinjiang region, with its core in present-day Xinjiang, is known for its outstanding people and numerous beautiful women. Xinjiang is renowned for its abundance of beautiful women, who have high and delicate noses and slender, long eyelashes, giving them a distinct exotic charm.

Xinjiang's beautiful women are highly regarded in terms of appearance in China and are irreplaceable with their unique and distinctive qualities. Walking on the streets of Xinjiang always gives one the feeling of being in a foreign land. Regardless of makeup and filters, the more three-dimensional a person's facial features are, the more attractive they appear, which falls within the realm of aesthetics. Those who specialize in studying the ethnic groups of the Western Regions will find that there are significant differences between their appearance and that of the Han Chinese. In ancient Chinese aesthetics, the people of the Western Regions were not considered particularly beautiful; instead, they were seen as rather peculiar. However, in modern aesthetics, large eyes, high noses, and fair skin are sought after by many. They are considered to meet the standards of modern beauty, and many people consider girls with such features as their preferred type. Modern people place more emphasis on the three-dimensionality and aesthetic beauty of appearances, while there is a significant difference in the fundamental ideology between ancient and modern Chinese aesthetics.

On the fondant doll design of ancient western regions of China, in the entire work, the props used in the fondant doll design of the ancient Western Regions of China are important elements to express the characteristics of the character's shape and set the overall atmosphere of the shape. In the myths and legends, the shaping of those fictional characters usually have different functional and shaped accessories, or represent a certain symbolic pet. Therefore, in the fondant doll design of the ancient Western Regions, the core is the scene of the doll being intoxicated in the process of dancing, with the jewelry that makes a "thump thump" sound and the crystal-clear decorations as the basis for creating the atmosphere. The exaggerated movements and confident and cheerful expressions highlight the character's personality. The graceful and slender figure is the highlight of the entire work. The overall shape of the work is divided into upper and lower structures, with the dynamic dance of the character as the main focus on the upper part, and the stage style with the characteristics of the Western Regions as the foundation on the lower part. The rigorous and complete upper and lower structure of the work makes the overall shape more full. The dance of the ancient Western Regions presents a rich and colorful action shape, perfectly demonstrating the traditional ethnic style, and

the entire work is full of exotic style and has a fairy-like exotic beauty.

#### **4.4 Design Positioning**

##### **4.4.1 Cultural Positioning**

Taking the diverse traditional culture of ancient Western Regions of China as the basis, the fondant doll design of the ancient Western Regions of China embodies the characteristics of ethnic culture. The dance of the ancient Western Regions integrates traditional ethnic cultural traditions with contemporary popular aesthetics, showcasing a unique artistic style and demonstration charm.

The ancient Western Regions of China were an important channel for the expansion of Chinese civilization to the west. The ancient Western Regions of China carried the function of communication and dissemination between Eastern and Western civilizations. Here, diverse cultures converge and various cultures coexist. The combination of these two cultures not only promoted the development of various ethnic cultures in the ancient Western Regions of China, but also showcased graceful dances and colorful traditional music. Here, girls can sing and dance in gorgeous and majestic attire, mostly in the form of dresses, accompanied by bright or pure headscarves. From ancient times to the present, girls of various ethnicities like to wear earrings, necklaces, bracelets, and rings to enhance their attractiveness. They usually tie a belt around their waist and match it with fashionable accessories that make a "thump thump" sound. This is something that is commonly enjoyed by the minority ethnic groups in the ancient Western Regions. However, due to the diversity of ethnicities and regions, these differences also exist accordingly. Girls of various ethnicities all like to wear long skirts, and during festivals, everyone wears long skirts to dance and sing.

In the leisurely afternoons of the ancient Western Regions of China, people like to wear long skirts and exquisite accessories while dancing on the grass. This allows us to feel the joyous atmosphere of life in Xinjiang. They relax themselves to the fullest and express their inner joy through dancing and singing, showcasing a unique smile in the distant ancient

Western Regions. The legendary poplar forest in the ancient Western Regions of China possesses an enduring beauty and legend that has lasted for thousands of years. The trees are closely connected, with leaves tightly pressed against each other, embodying the spirit of unity, perseverance, and resilience of the people in the ancient Western Regions, standing tall on the top of the desert. Watching the poplar forest resist drought, loneliness, and solitude evokes a sense of awe and admiration. The people of the ancient Western Regions, generation after generation, unite and strive here, rooting themselves in this land, building their homeland. This is the spirit of the poplar forest that embodies the charisma of the people of the ancient Western Regions.

In the ancient Western Regions of China, people have their own distinctive festivals. At that time, they dress in long skirts to convey happiness and joy, which deeply moved me. It is not just a physical touch, but also a spiritual shock. Love blooms like vibrant flowers in this land of ancient Western Regions. Hand in hand, heart to heart, we together protect its thriving growth.

The Western Regions have always been an area where multiple ethnic groups live together, forming a colorful cultural landscape. In terms of lifestyle, language, and other aspects, it reflects the unity, harmonious coexistence, and ethnic harmony. Looking at the beautiful and harmonious scenes of the ancient Western Regions, I personally feel the unique beauty of this region. Here, despite different beliefs and languages, there is no vast blue sky, but there are gently drifting white clouds; there is no boundless ocean, but there are tranquil and exquisite streams; there is no lush grassland, but there are lush green meadows.

Along the way, you will discover that the ancient Western Regions of China, with their love, show you their captivating charm. There is a force pulling you here, a voice calling for your arrival, waving at you, and smiling. Everyone here can sing and dance, and the promotion of ethnic dance culture has become integrated into daily life, constantly inheriting and

shining. Ethnic dance culture showcases the unique local customs and carries the rich and colorful intangible cultural heritage of China. These dances embody the various ethnic groups' aspirations for a better future, as China's economy rapidly grows and the living standards of the people improve. People increasingly value the dance culture of ethnic regions, and the inheritance of ethnic dance culture in daily life has made the ancient Western Regions even more dazzling. The love for the ancient Western Regions is loved by the people, bringing a sense of joy to both body and mind.

#### **4.4.2 Emotional Orientation**

As my mentor, Sugar King Zhou Yi, once said, "tell a good Chinese story to the world through food". The design of ancient western region fondant dolls in China is not only a pursuit of fondant art, but also a continuation of our national doll culture and excellent traditional Chinese culture.

The process of creating with this new material is sweet every second. I hope that everyone who reads my thesis can experience the same state of mind as I do during the production process. For me, creating these works is both a hobby and a way of learning, and the joy it brings is self-evident. By chance, I met my mentor, Sugar King Zhou Yi, and since then, I have been deeply immersed in the world of fondant. Over the years of learning new material production techniques from my mentor, this journey of life has been a reflection of both my growth and a sweet life. It involves dreams, laughter, pain, tears, and a way of life that I want to convey. If you also want to enter this sweet world, then start now. Every day of creation is the beginning of a happy life. Let's spend sweet moments together in this sweet world.

#### **4.5 Key Points of Designing Dolls**

一、 Details of doll head produ : ( see Figures 112 )

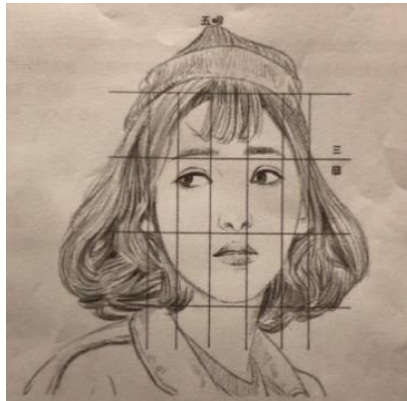
(1) Three sections: Divide the length of the head into three sections.

(2) Upper section: From the top of the forehead to the brow center.

Middle section: From the brow center to the tip of the nose. Lower section:



From the tip of the nose to the chin.



*Figure 109: Proportional Diagram of Facial Features of Characters*

(3) Five eyes: The width of the entire face is equivalent to the width of five eyes, from the front of the left ear to the front of the right ear. The distance between two eyes and the nose is equivalent to one eye width, and the distance from the eye corners to the front of the ear is also equivalent to one eye width.

(4) The eyes are positioned between the eyebrows and the nose to make the character appear younger.

(5) Large eyes can hide flaws.

(6) The upper eyelid is semi-circular, and the lower eyelid is cut horizontally two-thirds across the eye and then connected upward to the outer corner of the eye.

(7) Generally, the upper lip of a character is higher than the lower lip when viewed from the side.

(8) A longer chin is more aesthetically pleasing than a shorter chin.

(9) The mouth of a character is located in the lower section, about one-third of the way up from the chin. The lower lip is positioned in the middle of the lower section.

(10) The upper lip of a character is slightly higher than the lower lip.

(11) The height order of facial features from the side view: nose is highest, followed by mouth, chin, and forehead.

(12) A delicate lower lip looks good, a large mouth is sexy, and a thin mouth looks sharp.

(13) Double eyelids of Chinese people start from the inner corner of

the eyes.

(14) Double eyelids of foreigners start from the outer corner of the eyes.

(15) The color of the sclera should have added white pigment, otherwise it will appear transparent and not prominent.

(16) The pupil should be covered by the upper eyelid by one-fourth to avoid a particularly fierce look. On the contrary, for a fierce warrior character, fully exposed pupils can be used.

(17) Lowering the outer corner of the eye compared to the inner corner makes the character appear weak, while raising the outer corner creates a more enchanting or fierce look.

(18) If the eyebrows are raised, it gives a more intense expression. If they are flat, it gives a more moderate expression. If the front end is higher than the tail, it gives a weak and crying-like appearance.

(19) For elderly characters, add under-eye bags, crow's feet, and nasolabial folds.

(20) Men have wider chins, while women have narrower chins.

(21) Ear production process: 1. Paste and shape the seams. 2. Create the outer ear rim. 3. Use a small ball tool to press and shape the earlobe. 4. Use a medium-sized main tool to push and shape the inner ear rim backward.

二、Details of the Doll's Body Production: ( see Figures 113 )



*Figure 110: Proportional Diagram of Dynamic Body Features of Characters*

(1) Standing position: 7 heads tall; Sitting position: 5 heads tall; Lying position: 4 heads tall.

(2) The upper body is 4 and a half heads, and the lower body is the

full length of legs.

(3) The distance between the thighs and calves is half of the head length.

(4) When hands cover half of the face, it should be the same length as the full face.

(5) When feet cover half of the face, it should be the same length as the full face.

(6) For both men and women, the length from the shoulders to the bottom of the chest is equal to one head length.

(7) If clothes are to be worn, the areas covered by the clothes should be slightly smaller. For example, when making a skirt, the hip and waist areas do not need to follow the standard measurements, otherwise the finished product will become larger

### 三、 Details of the Application of Wire for the Doll's Body Skeleton :

- (1) The body generally uses 14-gauge wire.
- (2) The support for the skirt and ribbons generally uses 16-gauge wire.
- (3) The support for the hair uses 24-gauge wire.
- (4) The framework for jewelry and accessories uses 35-gauge wire.
- (5) Super fine ribbons use 30-gauge wire.

### 四、 Details of the Overall Layout Design of the Artwork:

- (1) Combination of density and spacing.
- (2) Stable center of gravity.
- (3) Simplification of complexity.

### 五、 Details of the Doll's Body Support Frame Dimensions : ( see Figures 114/115/116/117/118/119 )

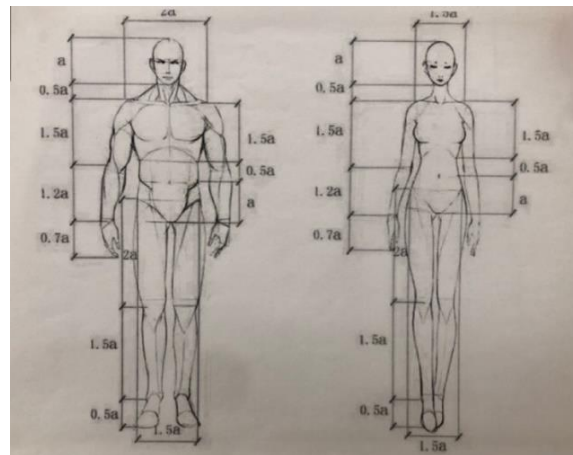


Figure 111: Proportional Diagram of Head Features of Dolls



Figure 112: Example Diagram of Eye Features of Characters from the Ancient Western Region



Figure 113: Example Diagram of Ear Features of Characters



Figure 117: Example Diagram of Eyebrow Shapes of Characters from the Ancient Western Region



Figure 118: Example Diagram of Eyebrow and Eye Shape Colors of Characters from the Ancient Western Region

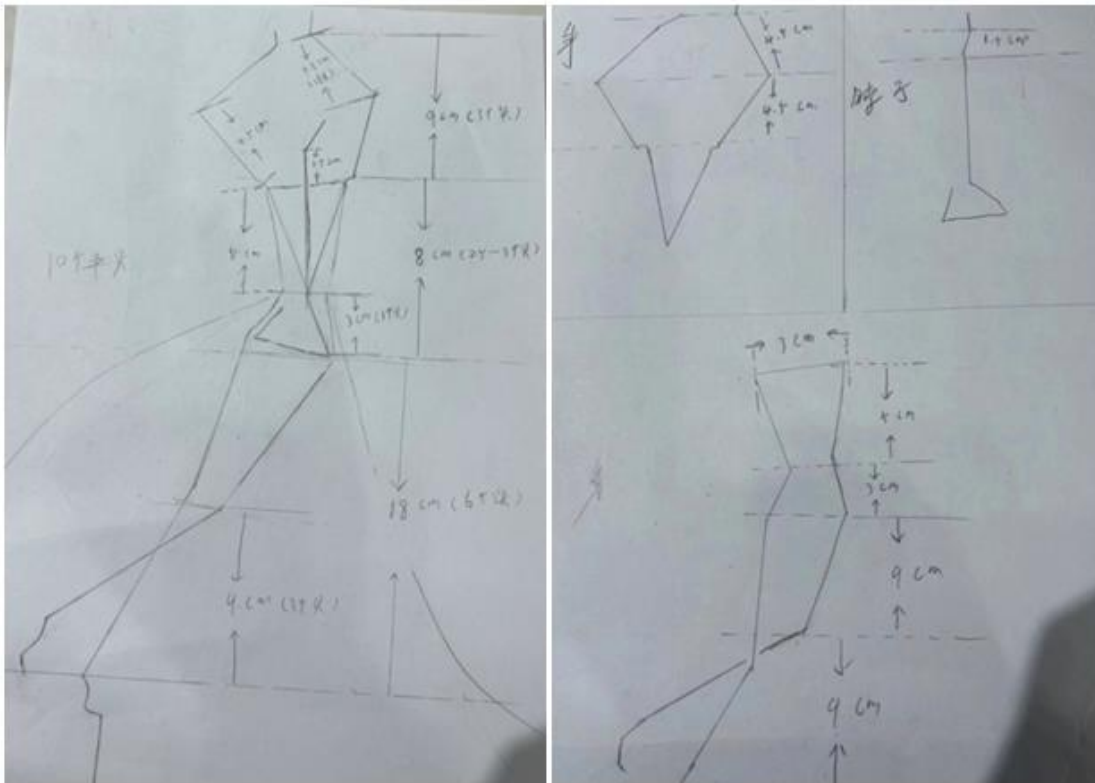
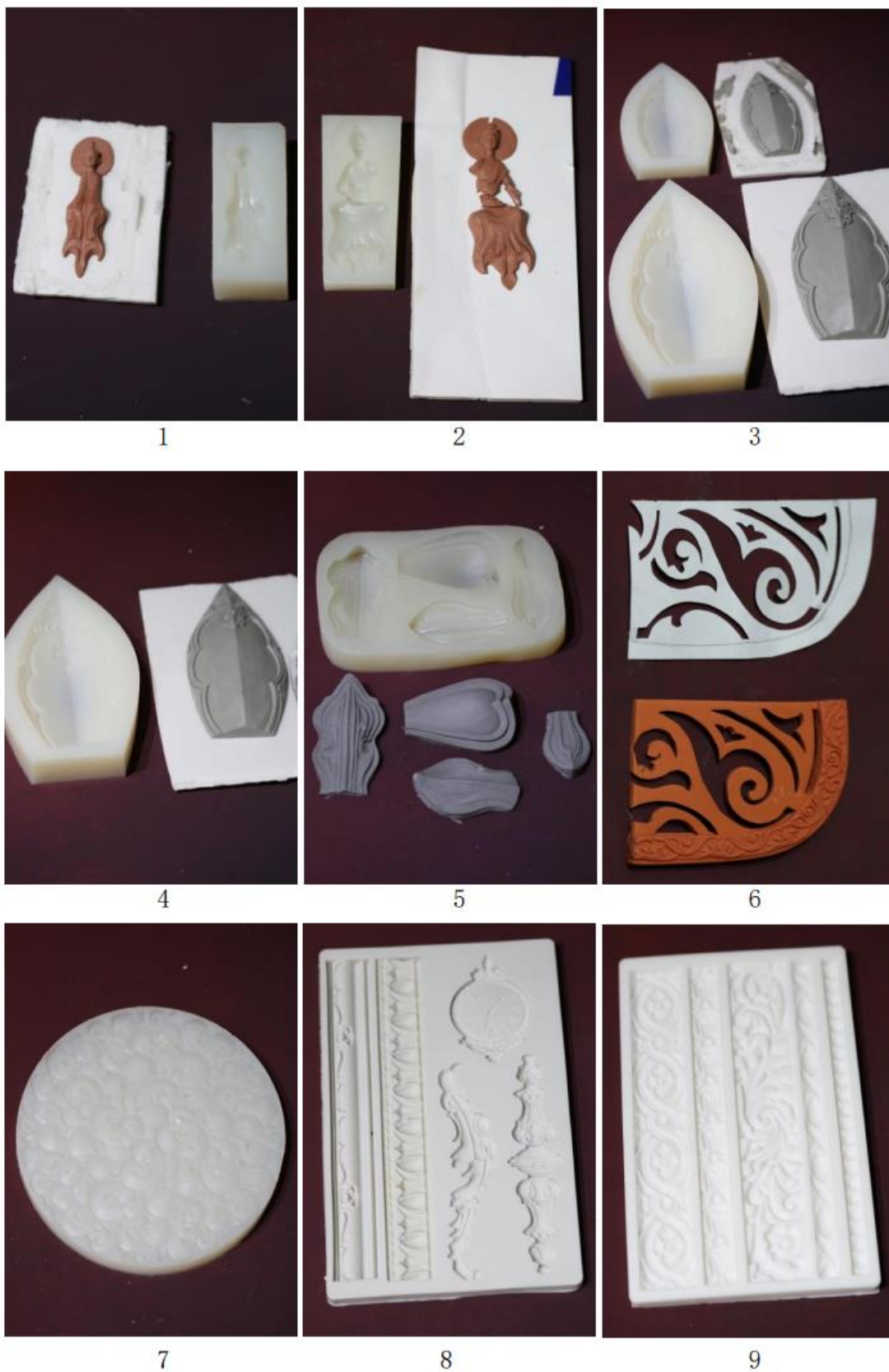


Figure 119: Example Diagram of Dimensions of Human Body Support Frame



六：Details of the Partial Mold and Tool Making in the Early Stage of Artwork Production：





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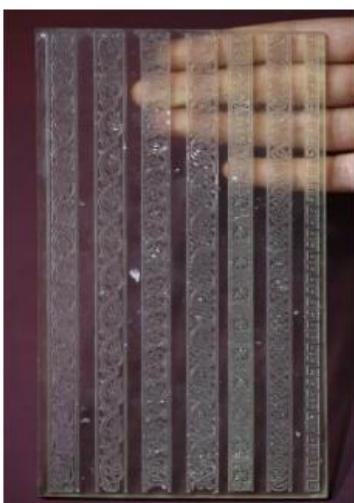
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*Figure 114: Diagram of Mold and Tool for Casting and Finishing*



## 4.6 Doll Works ( 1 ) Design Process

### 4.6.1 Details of doll head production







Figure 115: Doll Artwork 1 head ( 1-36 )

#### 4.6.2 Details of doll hair production





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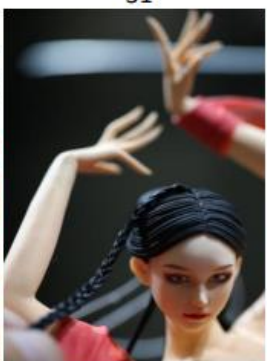
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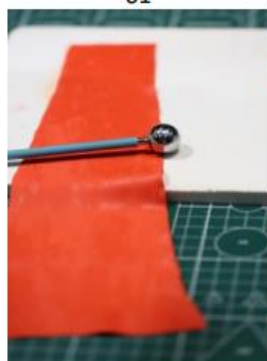
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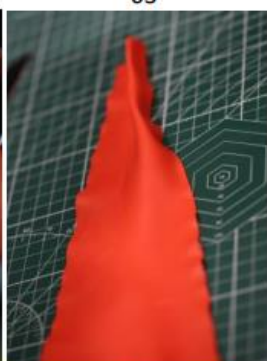
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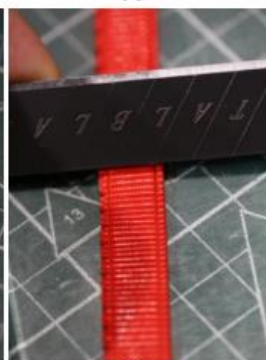
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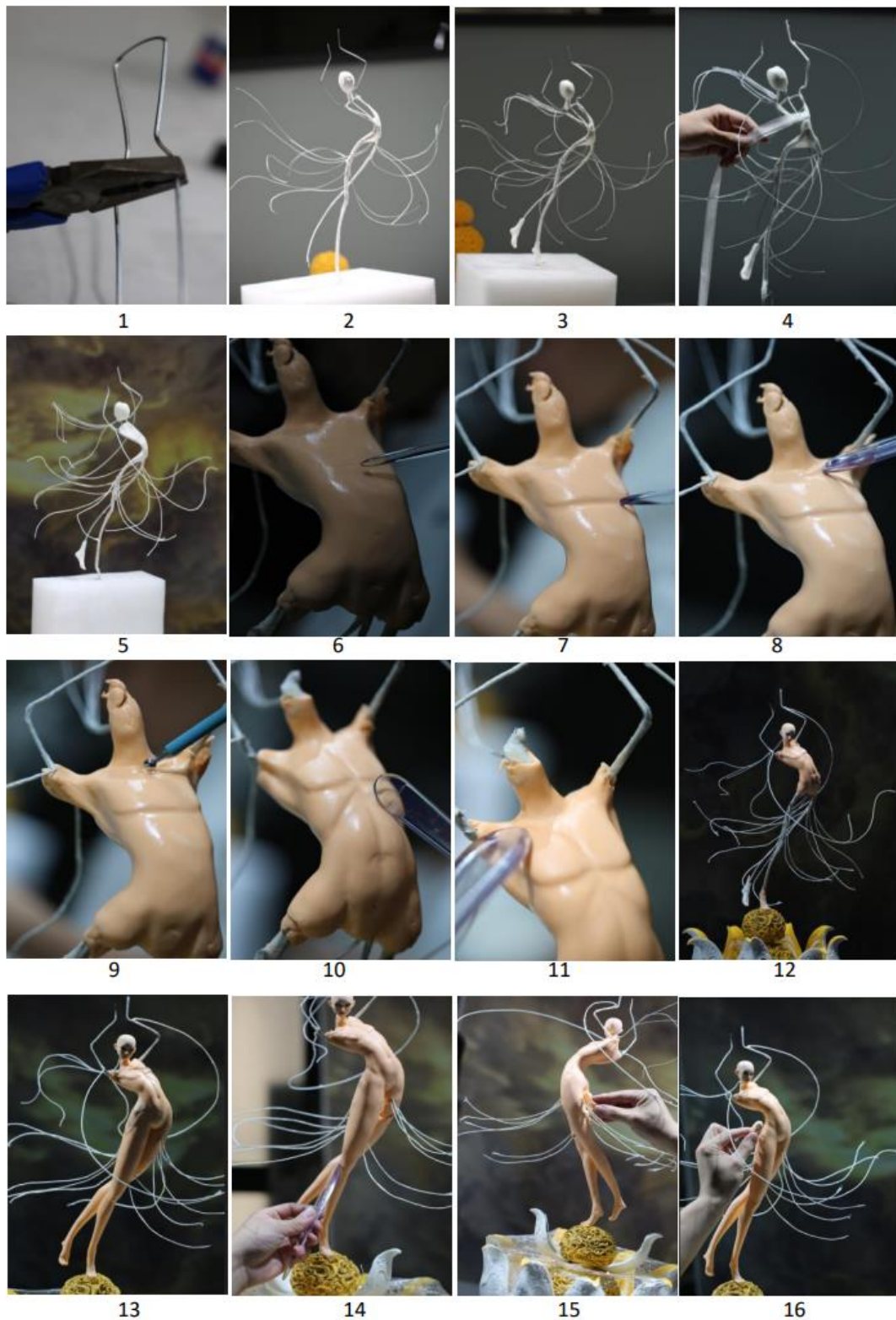
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Figure 116: Doll Artwork 1 hair ( 1-76 )

#### 4.6.3 Details of the Doll's Body Production





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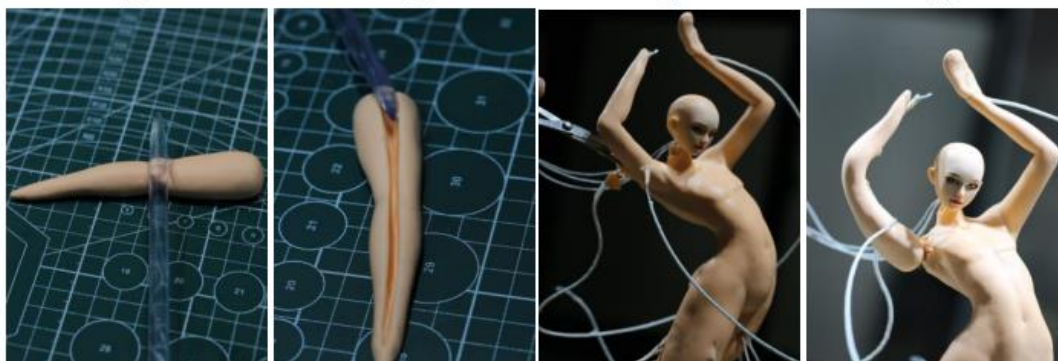


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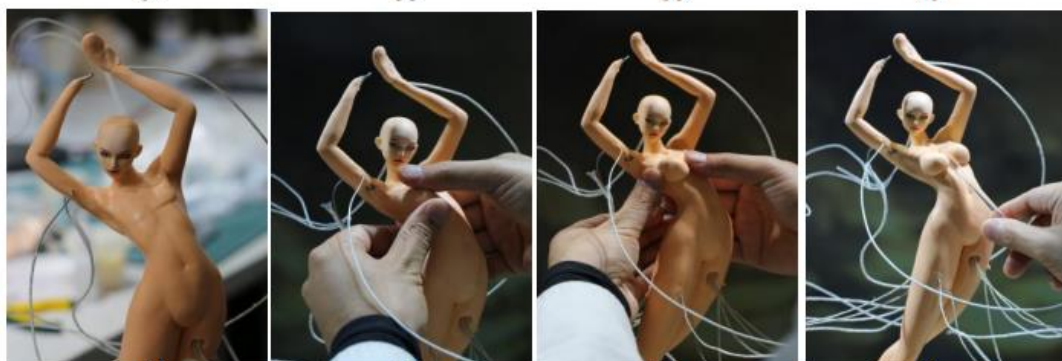


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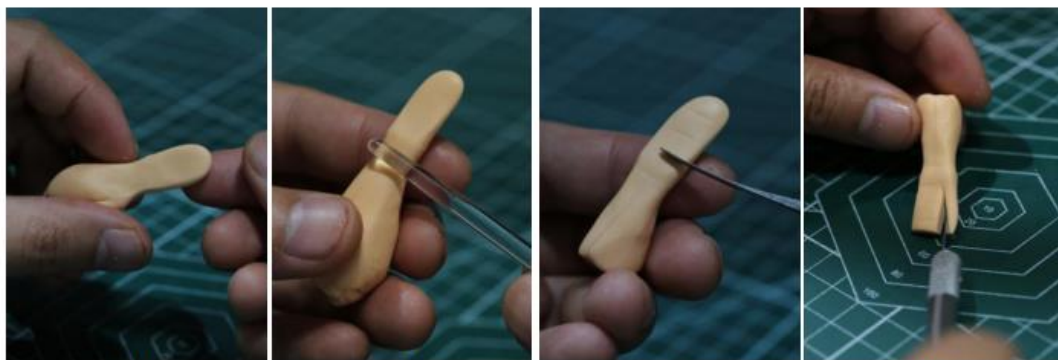
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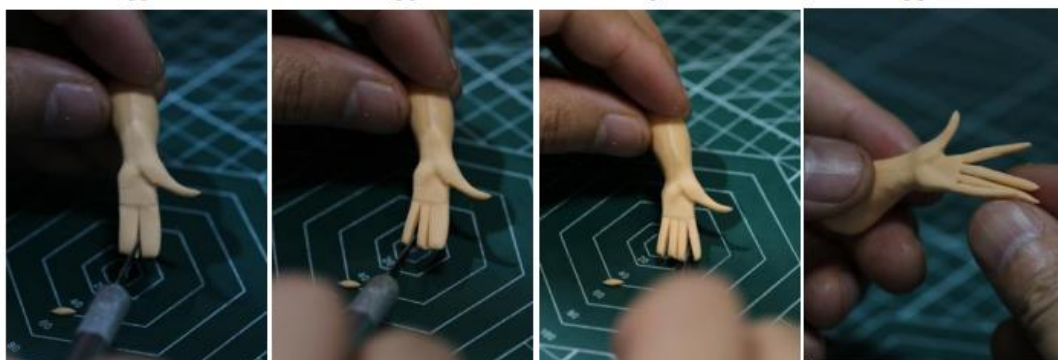


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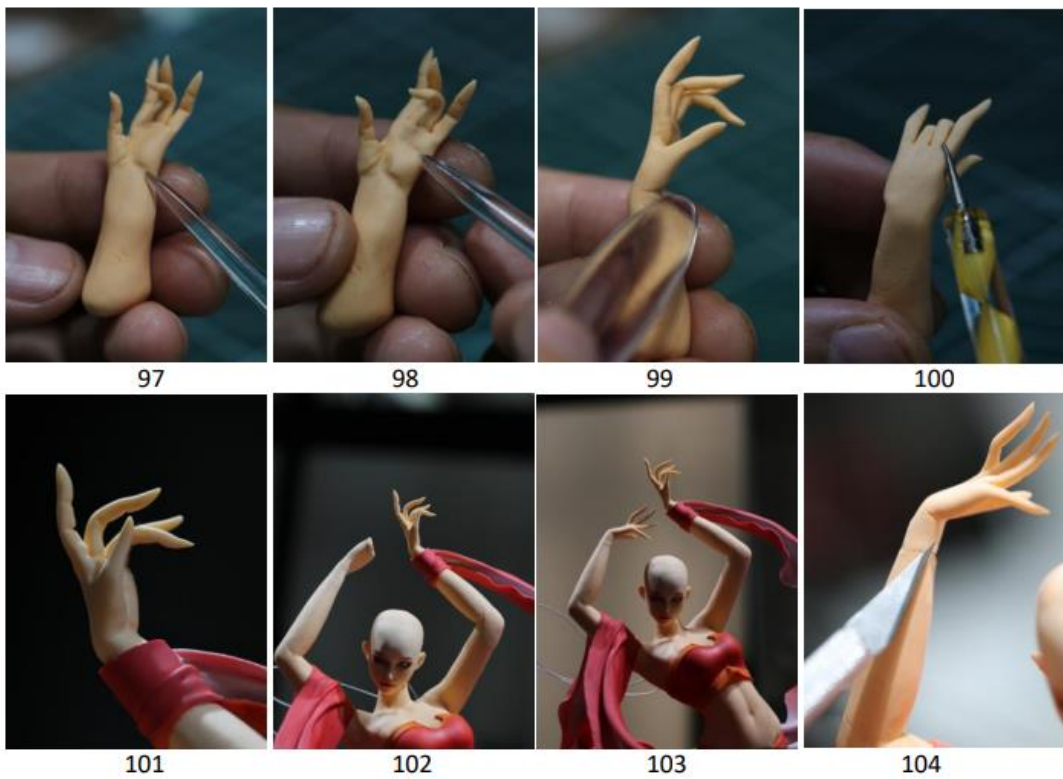
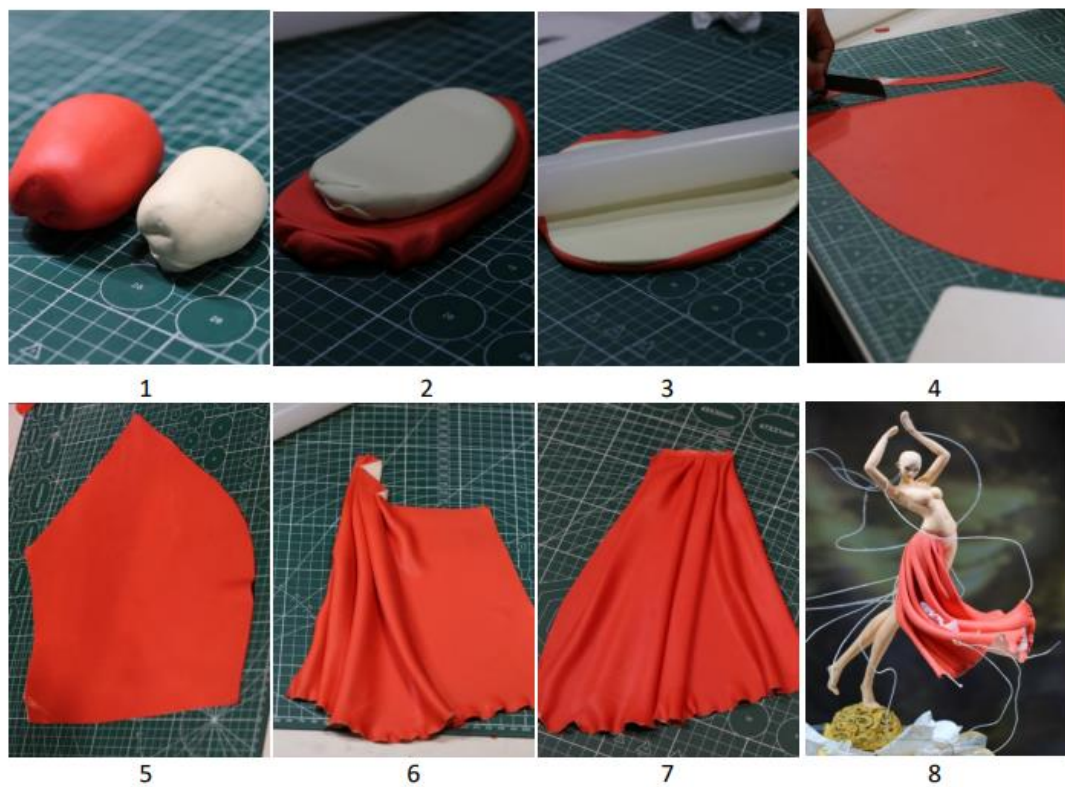


Figure 117: Doll Artwork 1 body ( 1-104 )

#### 4.6.4 Details of the Doll's Clothing and props Production









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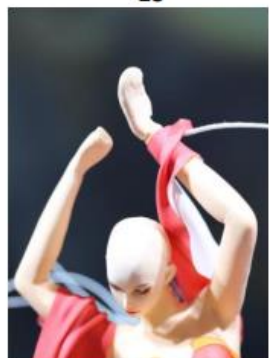
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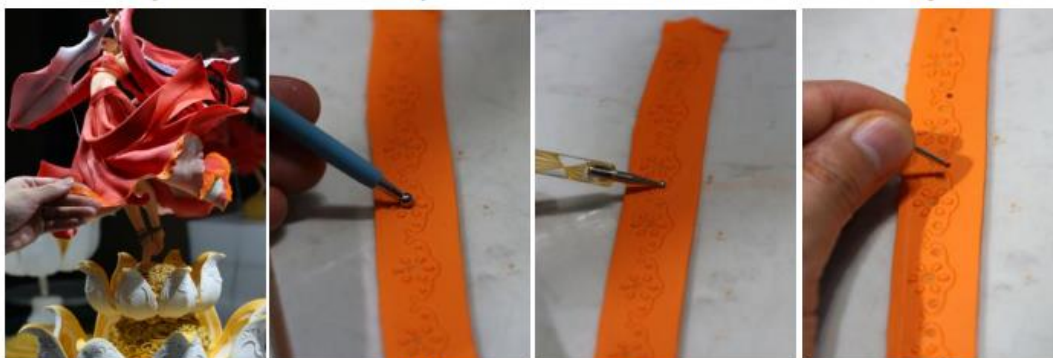


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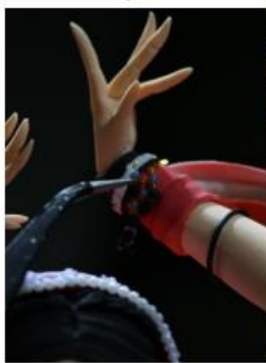
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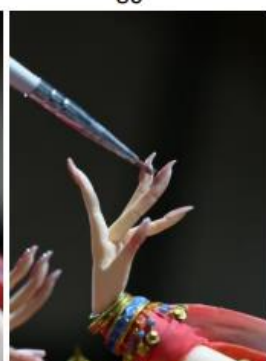
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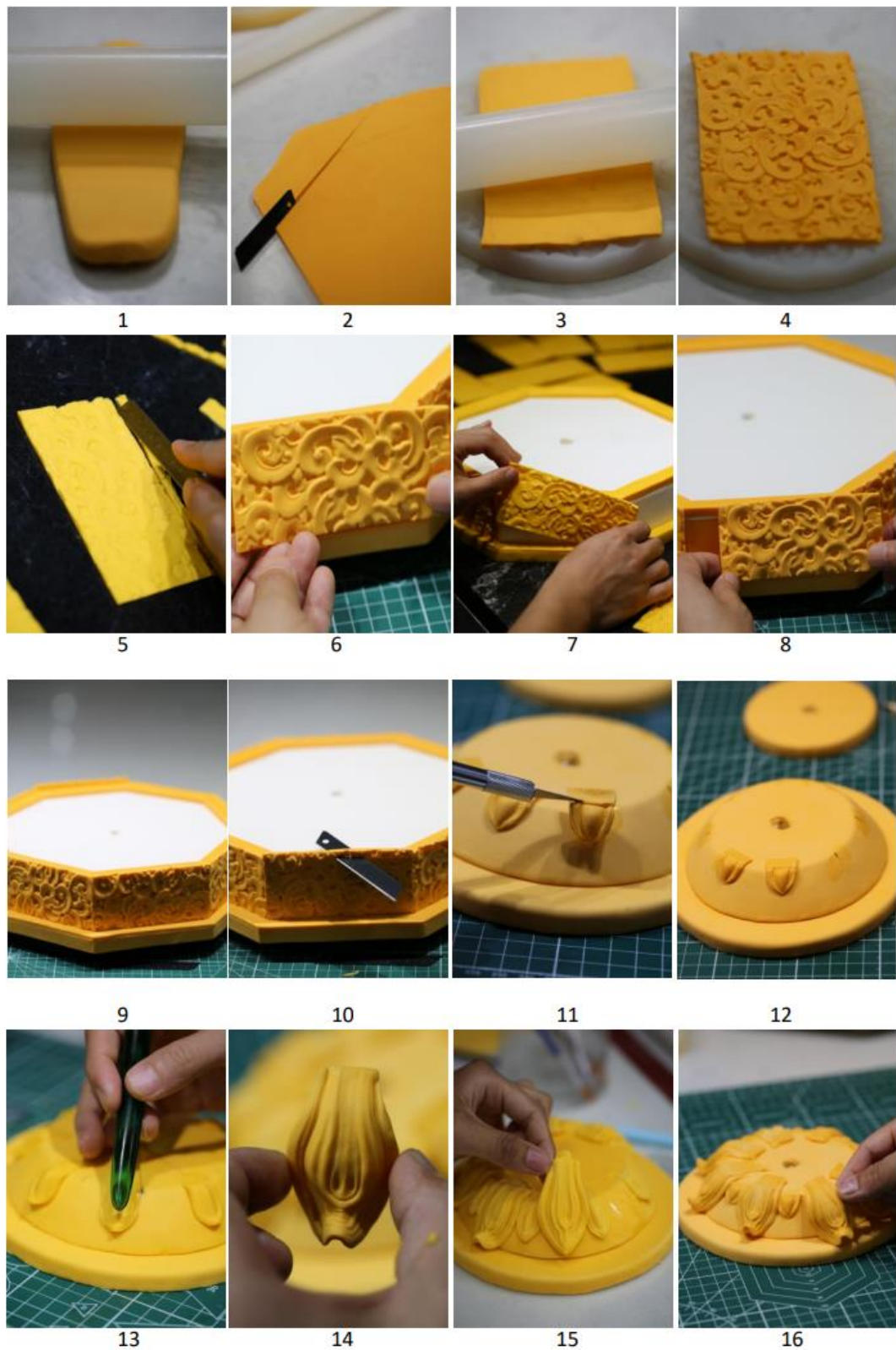
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Figure 118: Doll Artwork 1 Clothing and props ( 1-118

#### 4.6.5 Details of the Partial Mold and Tool Making in the Early Stage of Artwork Production







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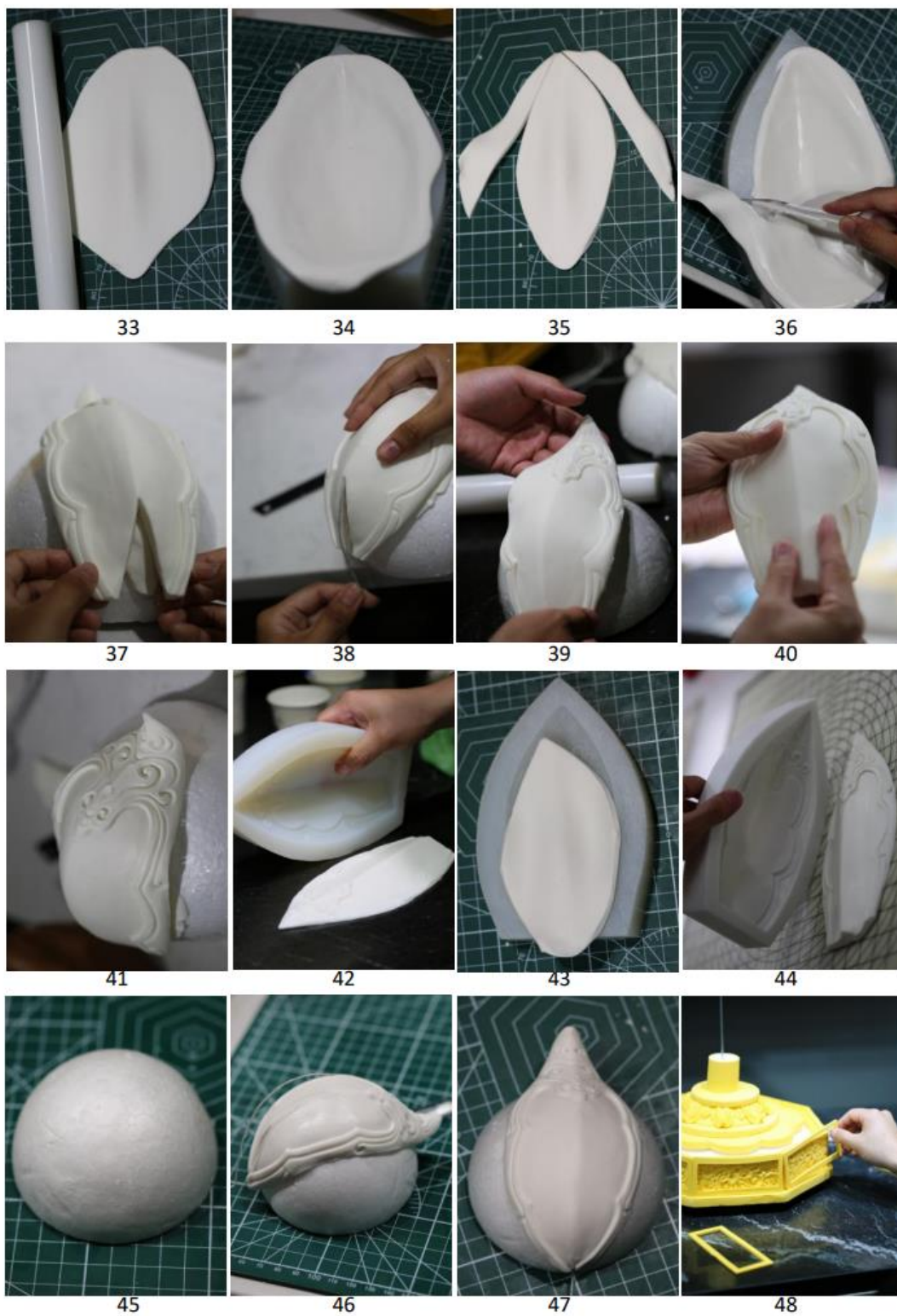


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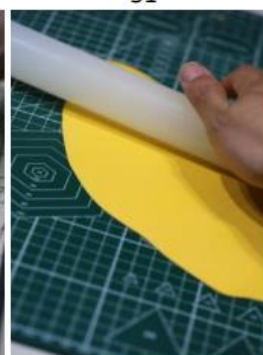
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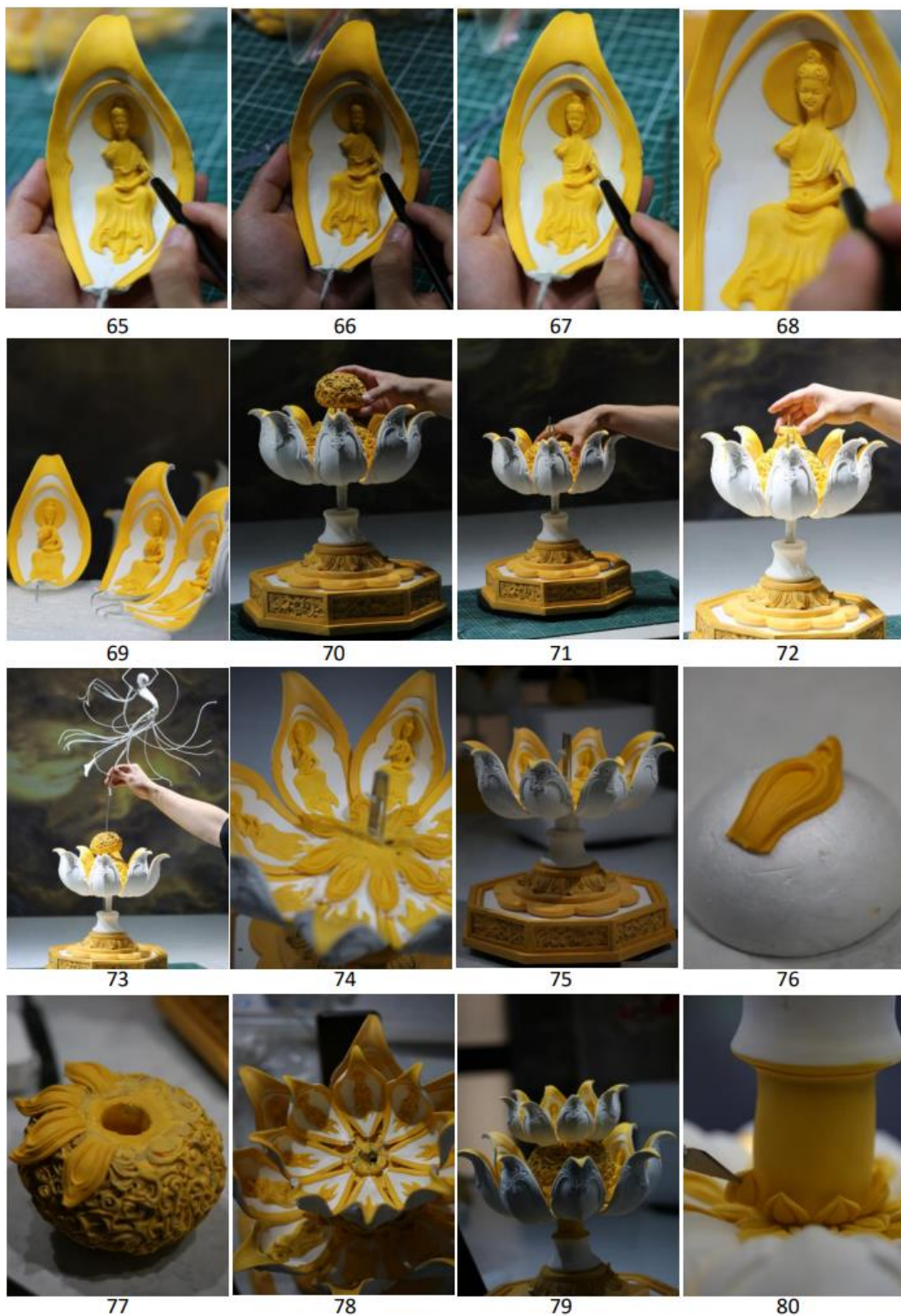
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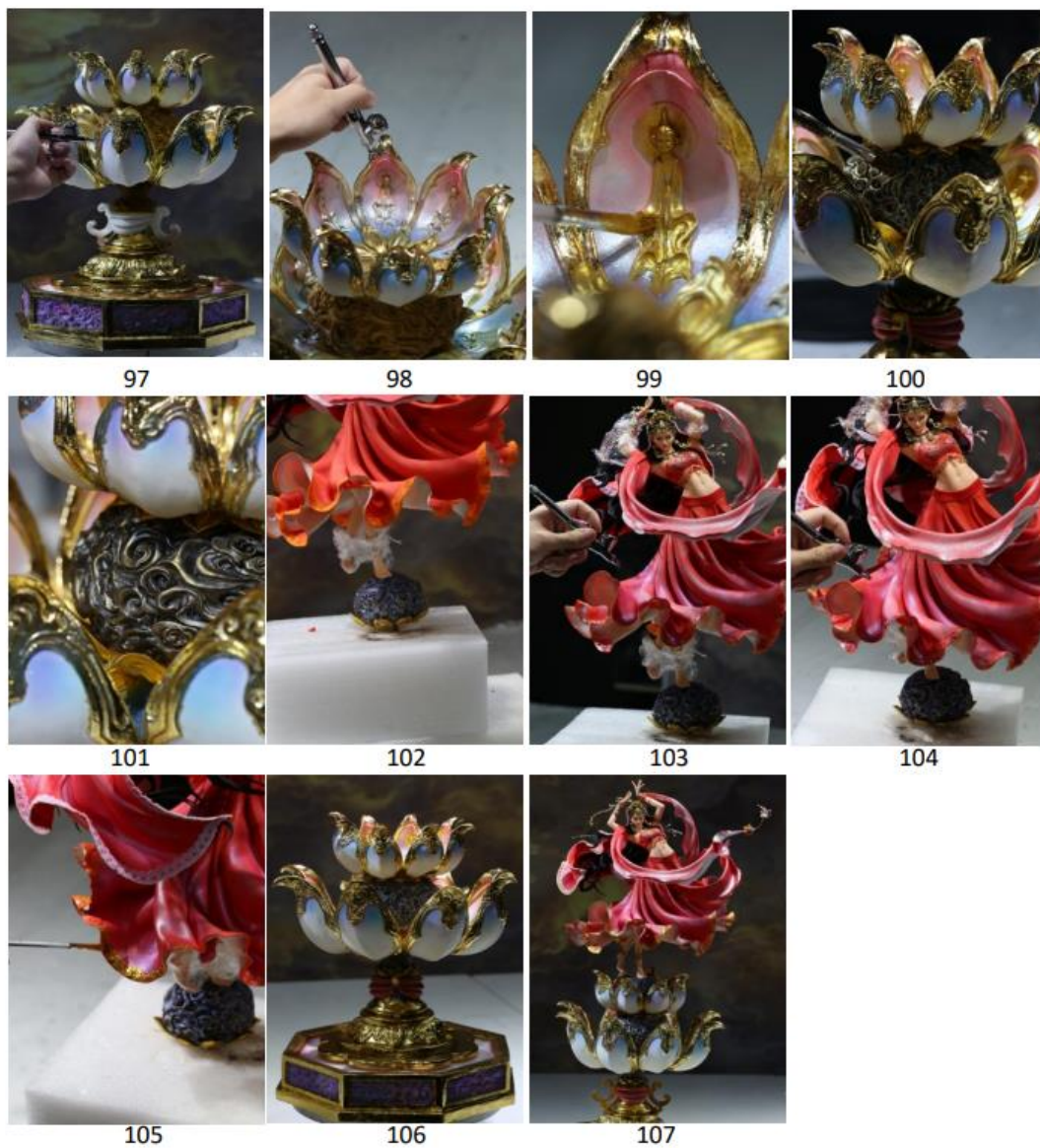
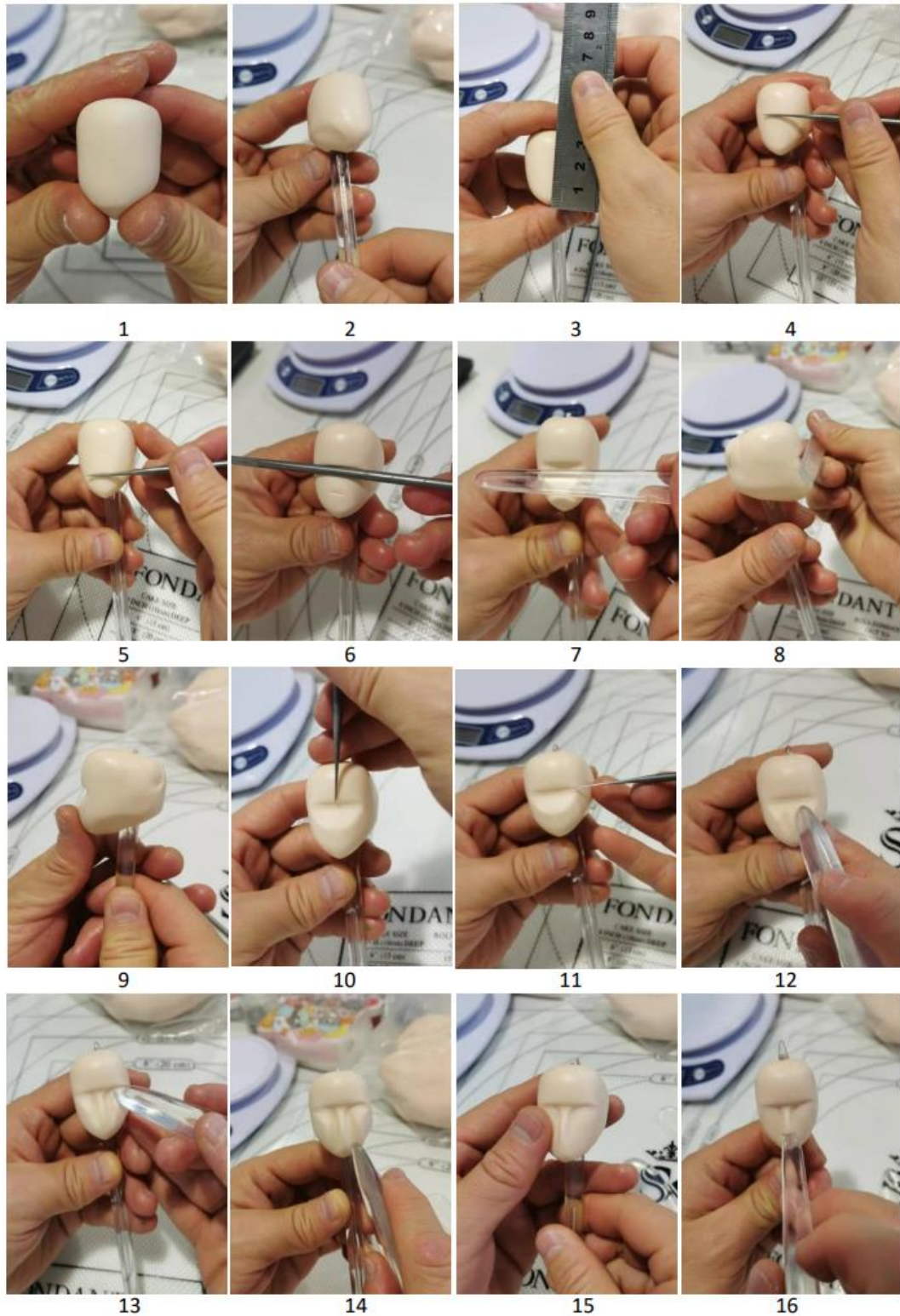
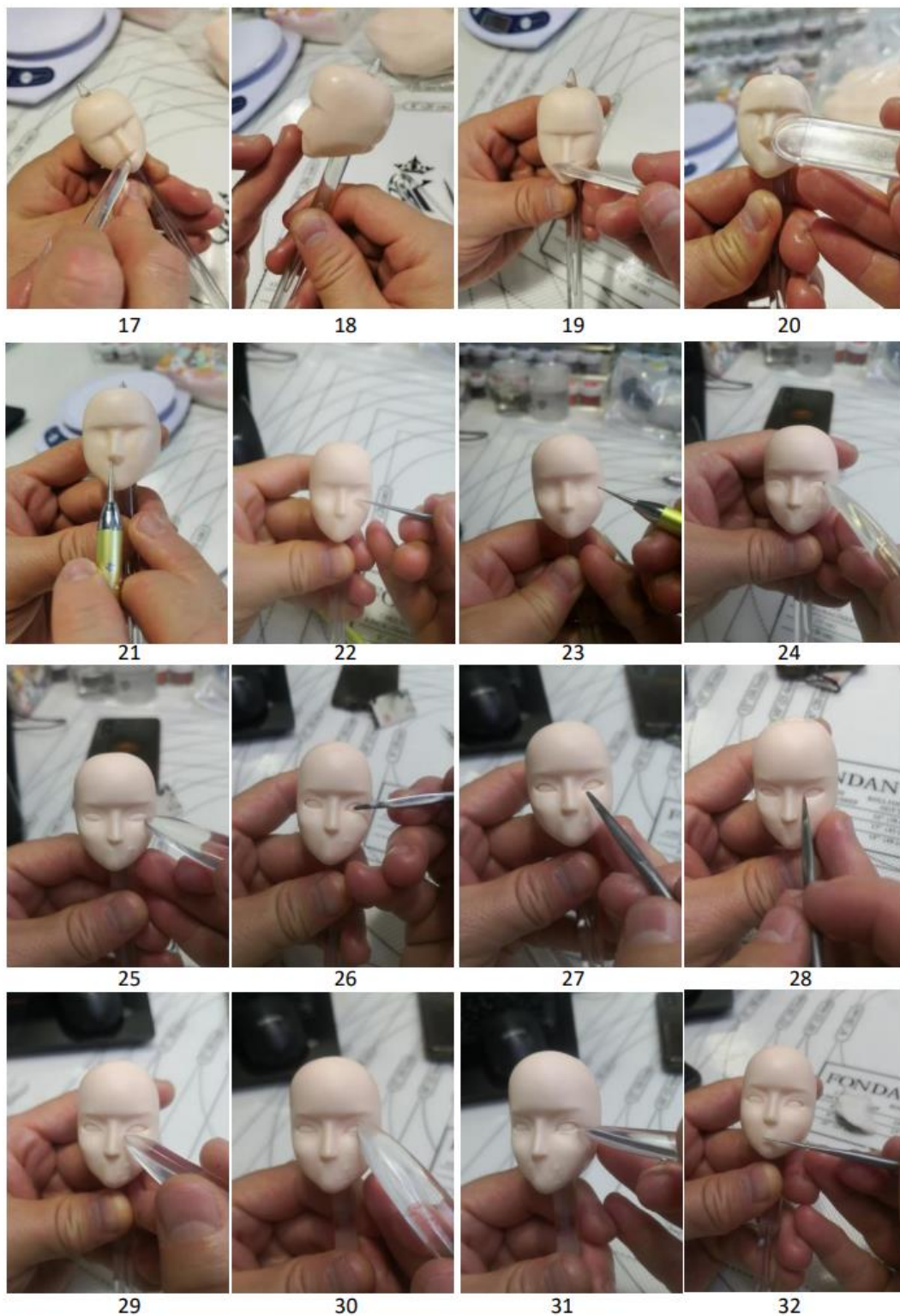


Figure 119: Doll Artwork 1 scene ( 1-107 )

## 4.7 Doll Works ( 2 ) Design Process

### 4.7.1 Details of doll head production









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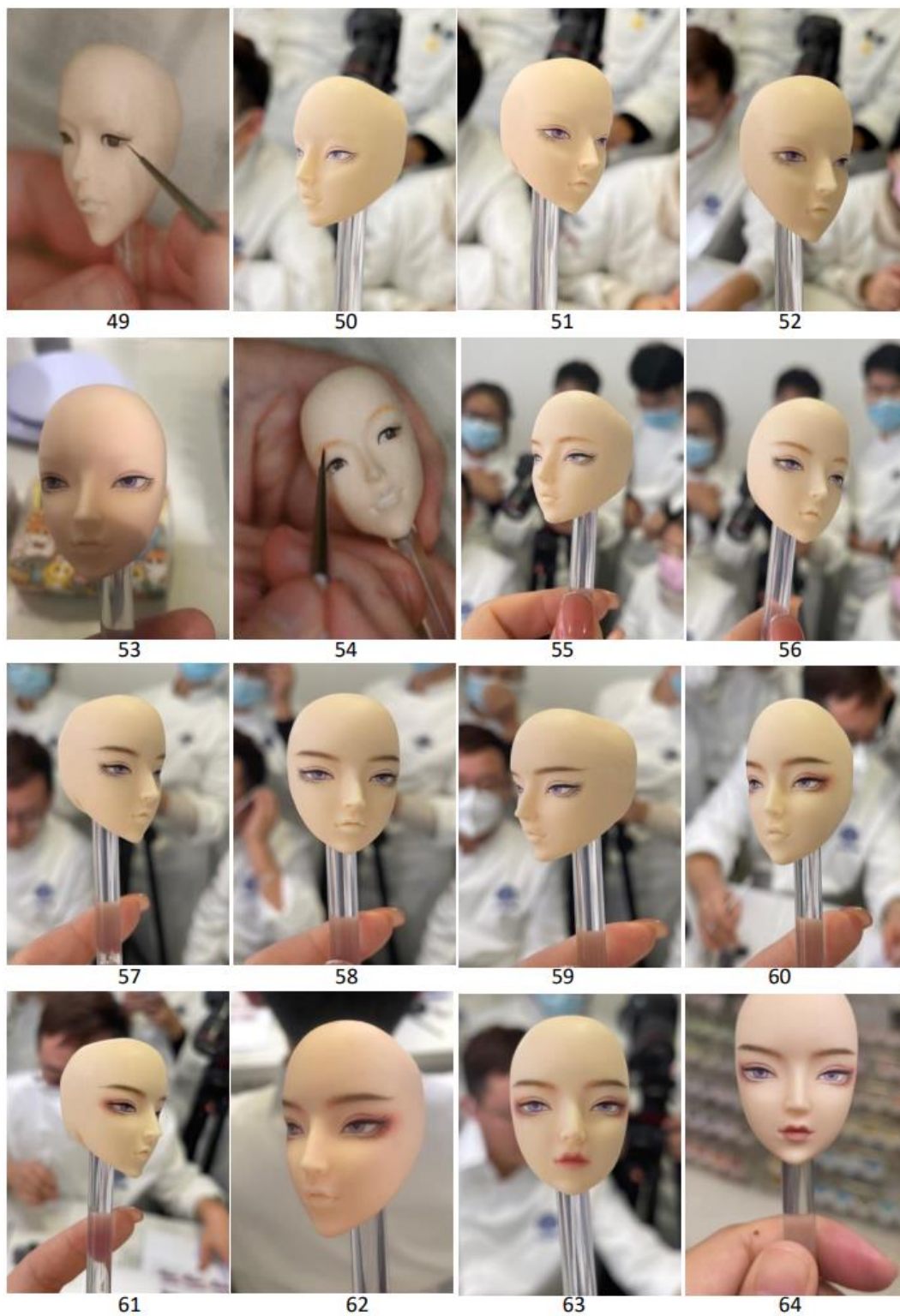


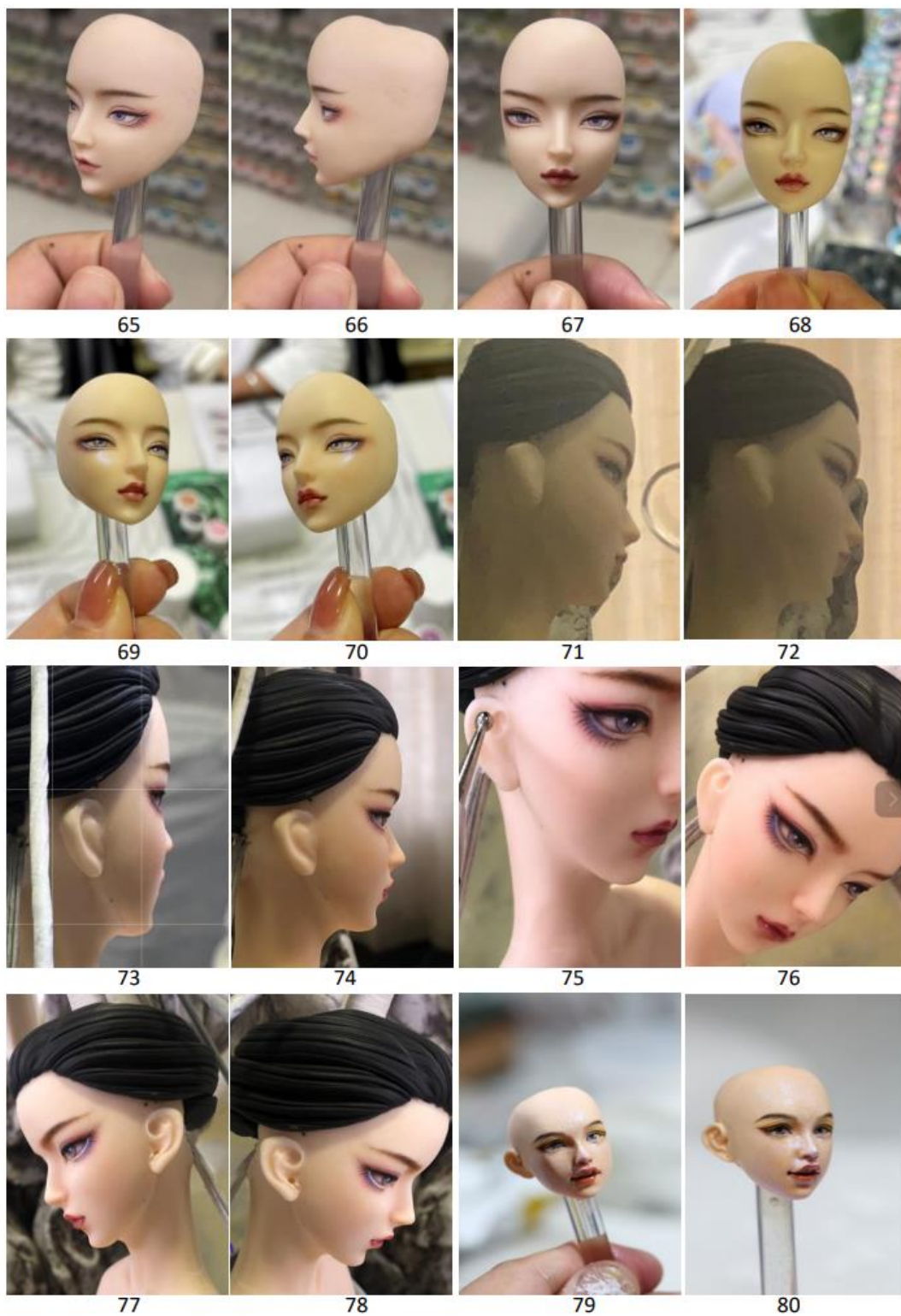
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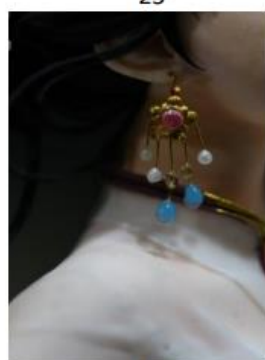
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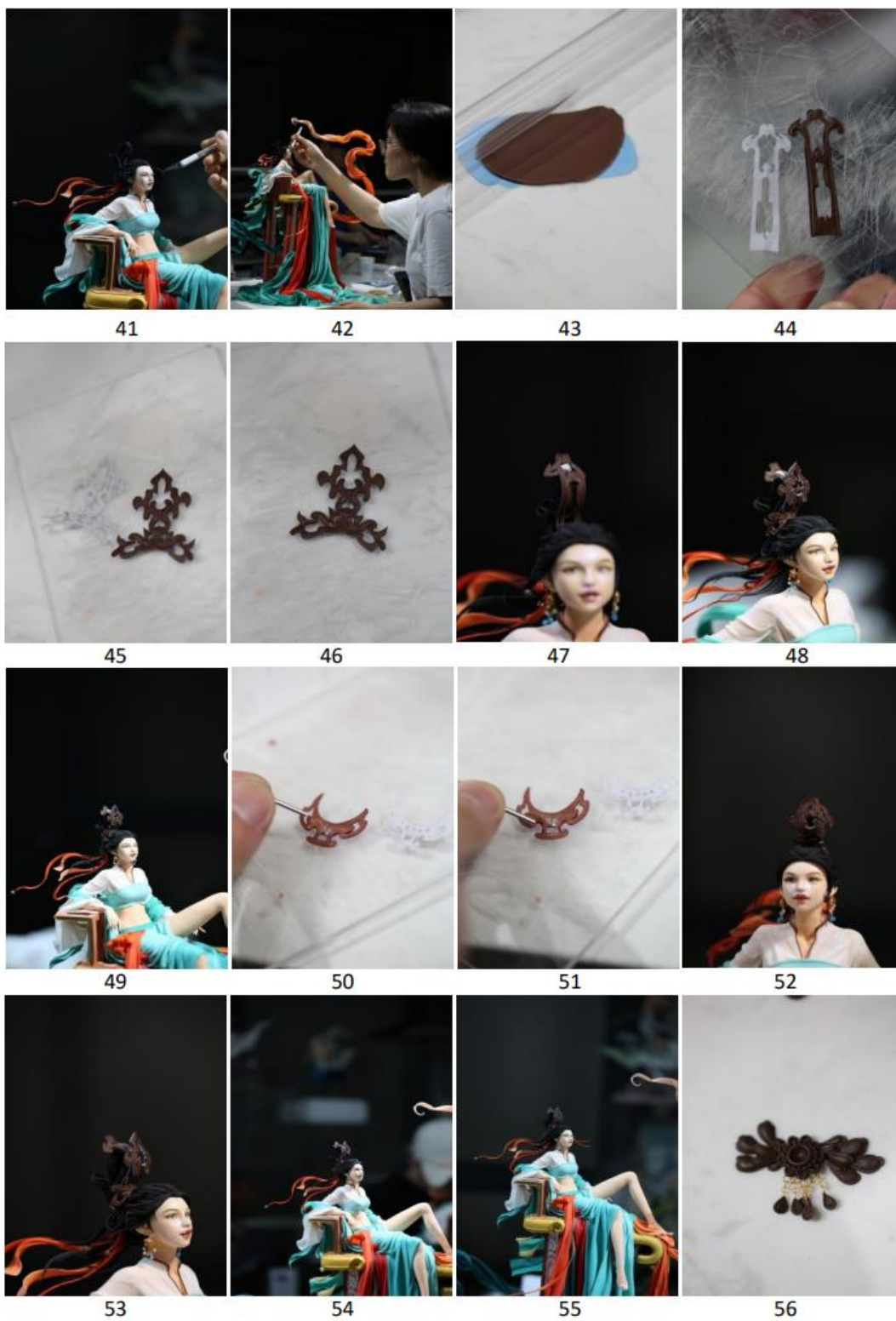
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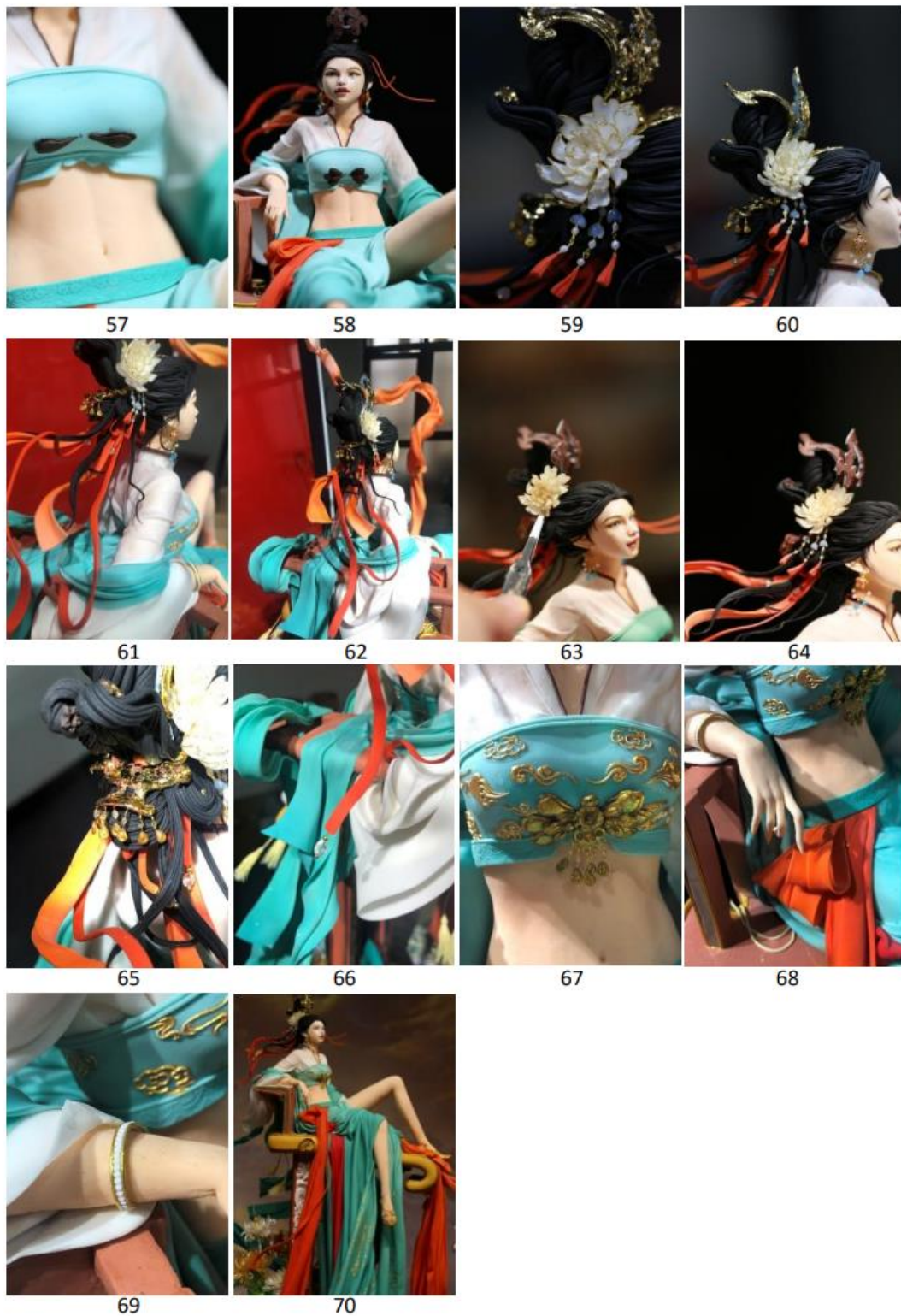


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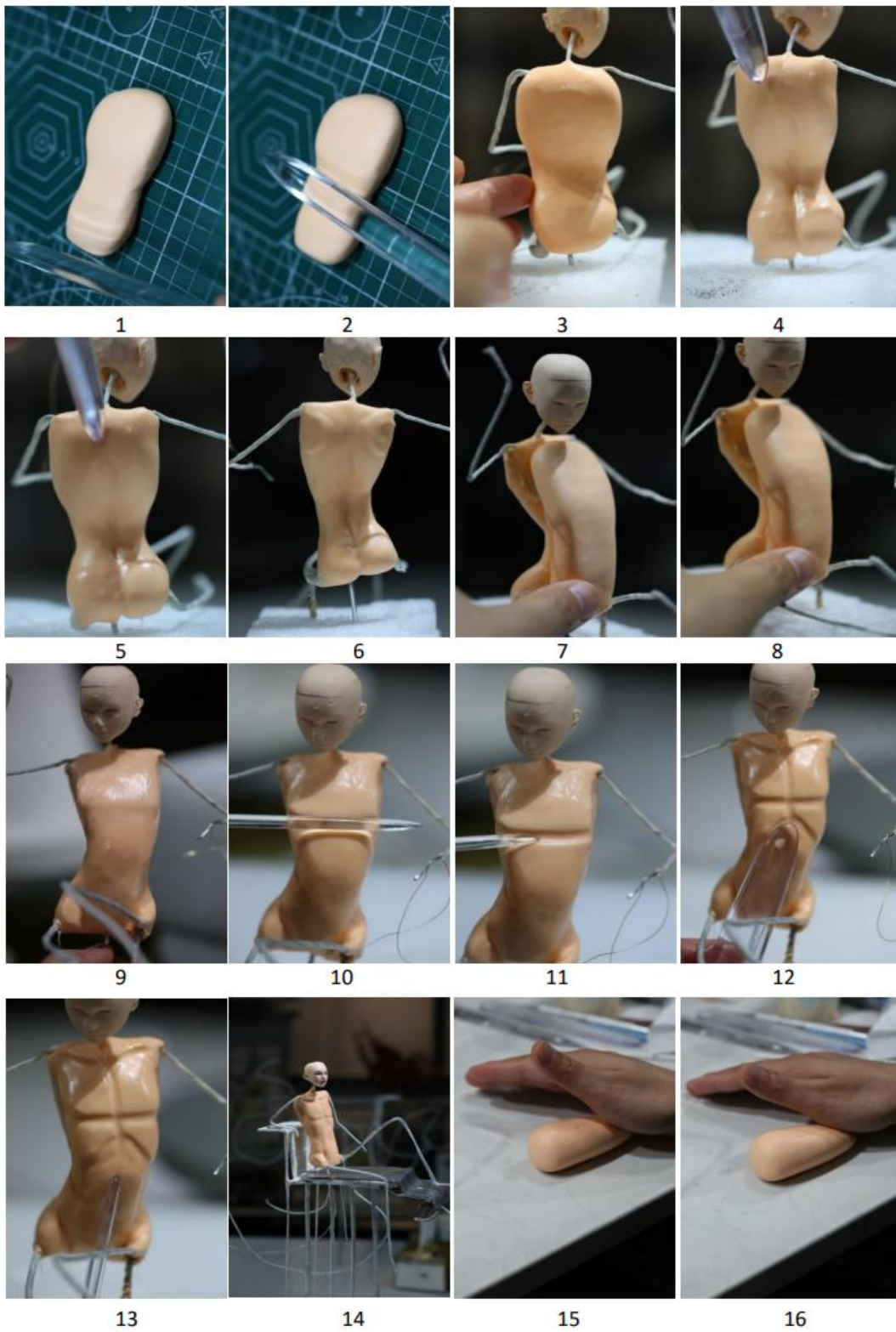
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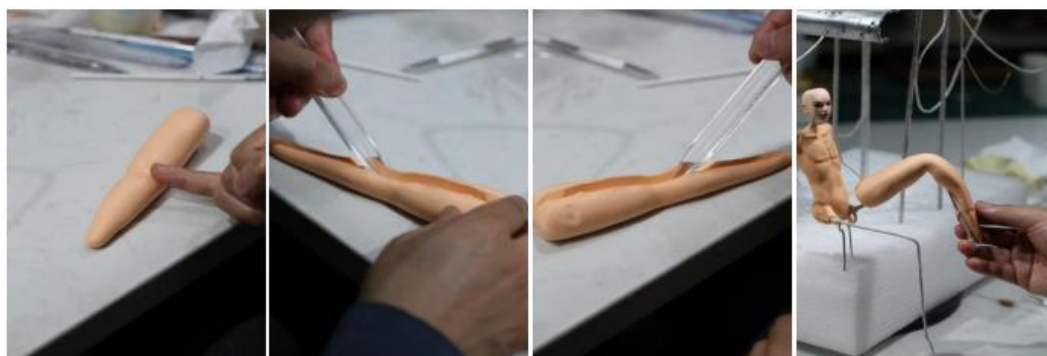




#### 4.7.3 Details of the Doll's Body Production





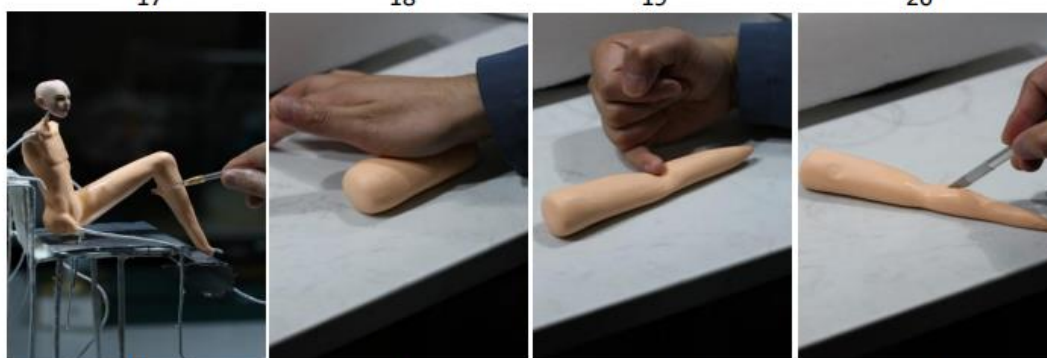


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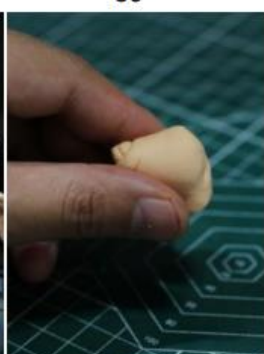
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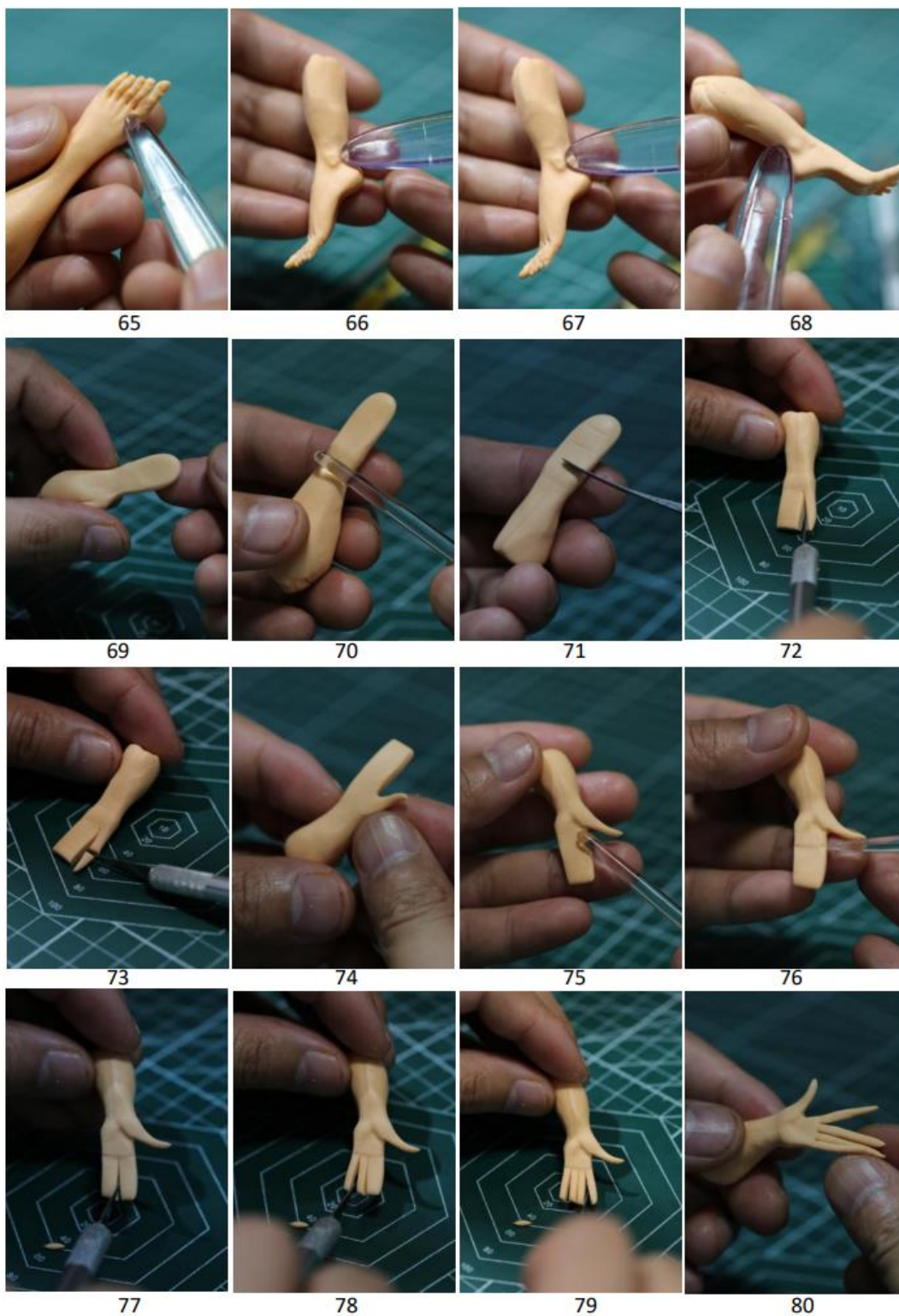


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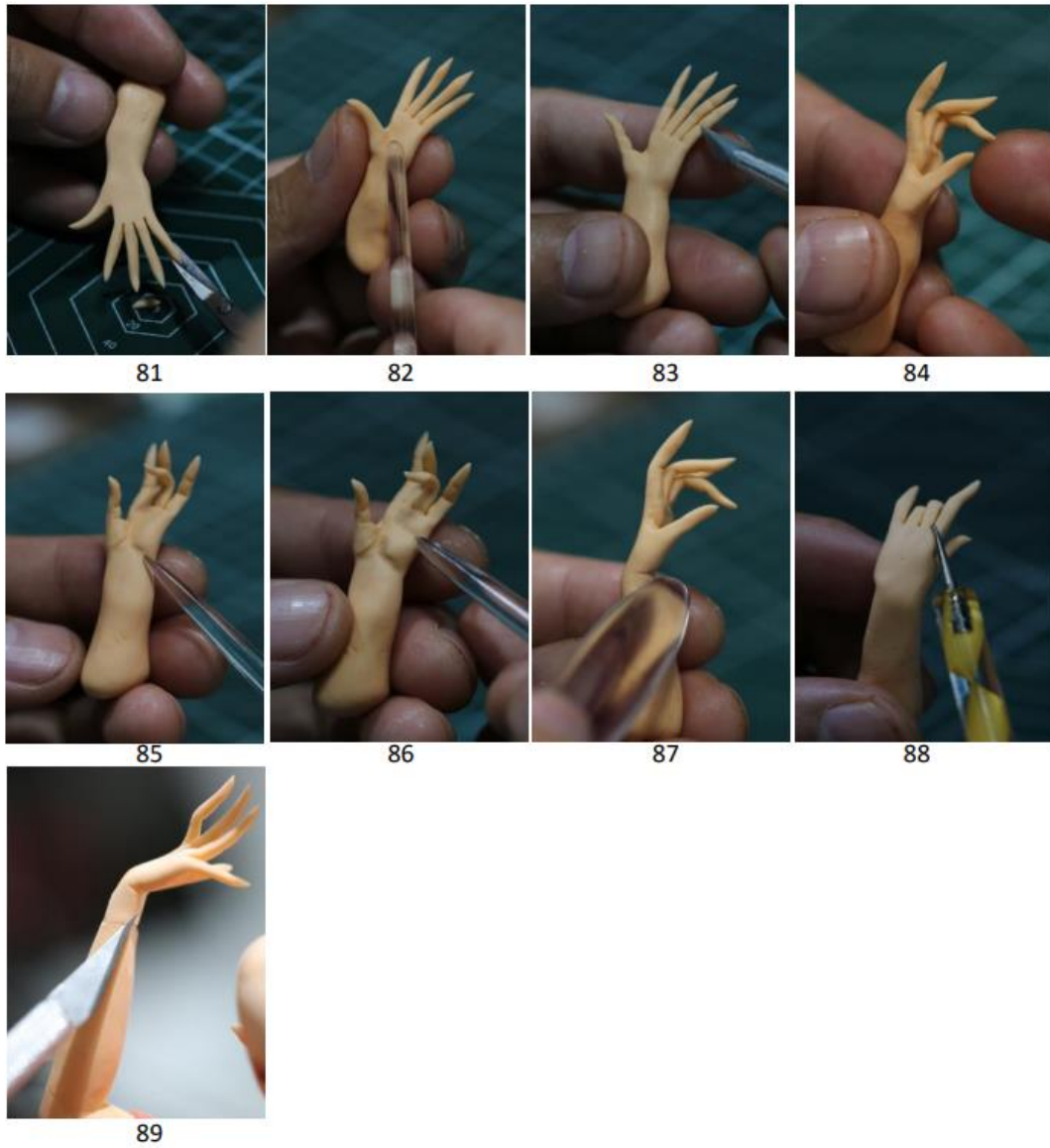
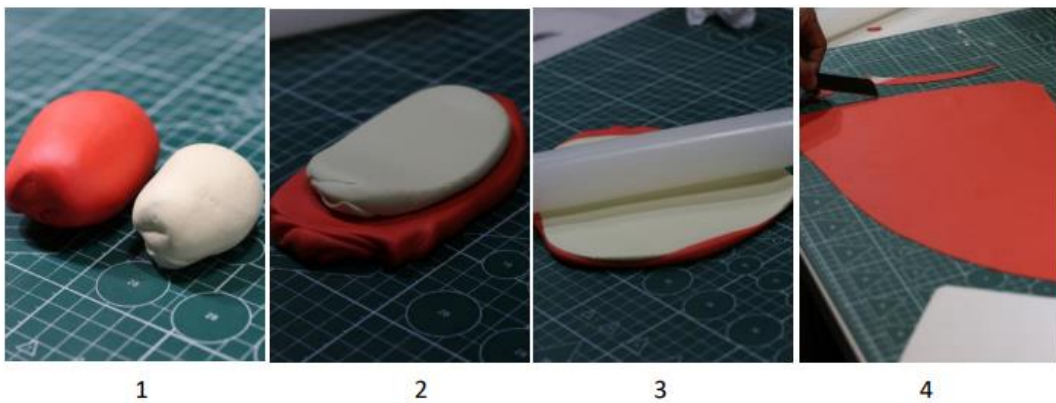
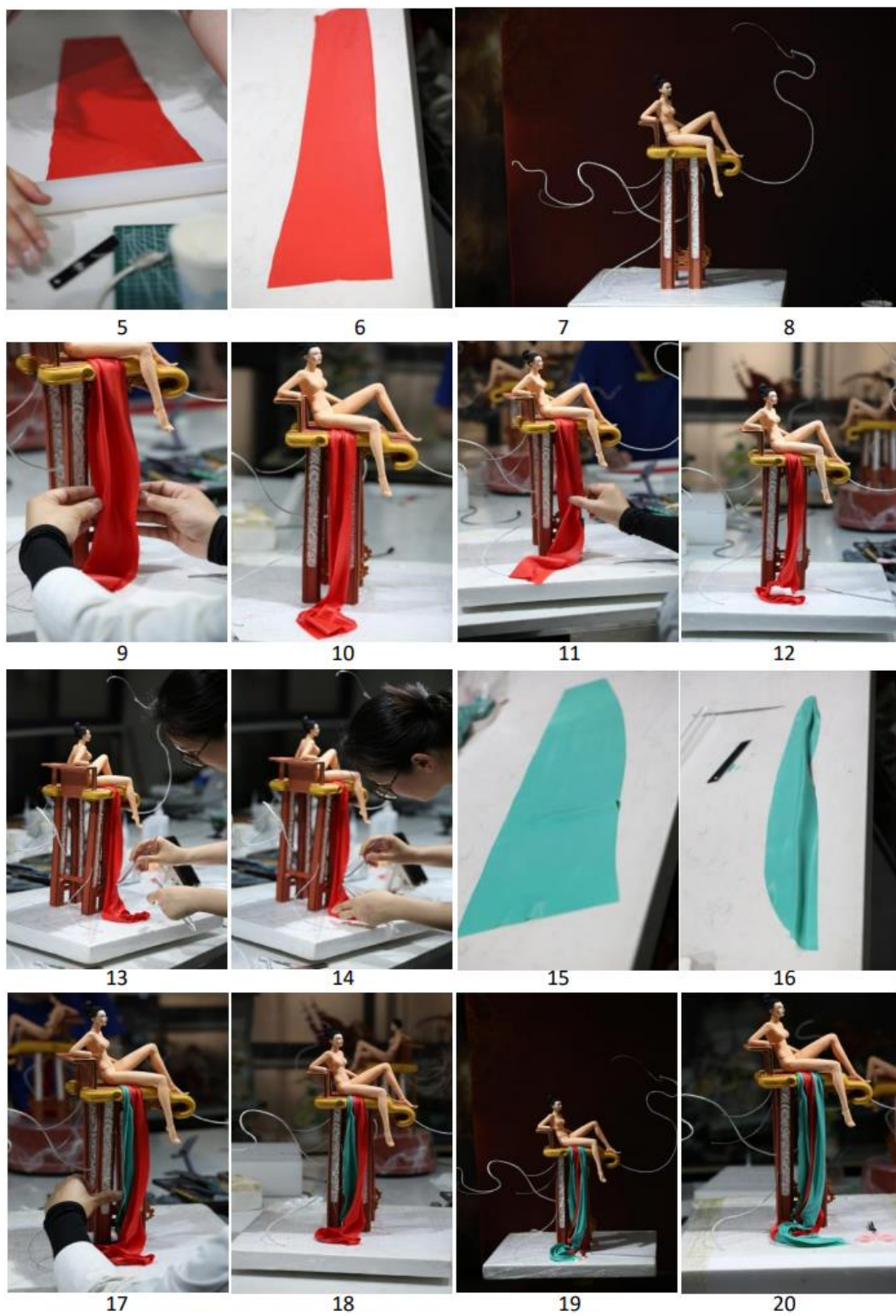


Figure 122: Doll Artwork 2 body ( 1-89 )

#### 4.7.4 Details of the Doll's Clothing and props Production







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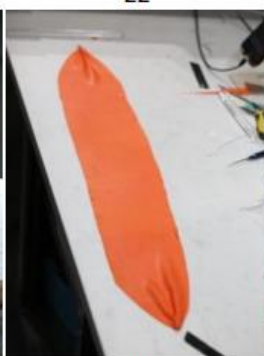
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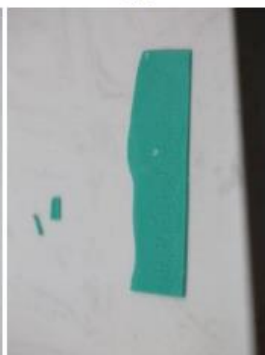
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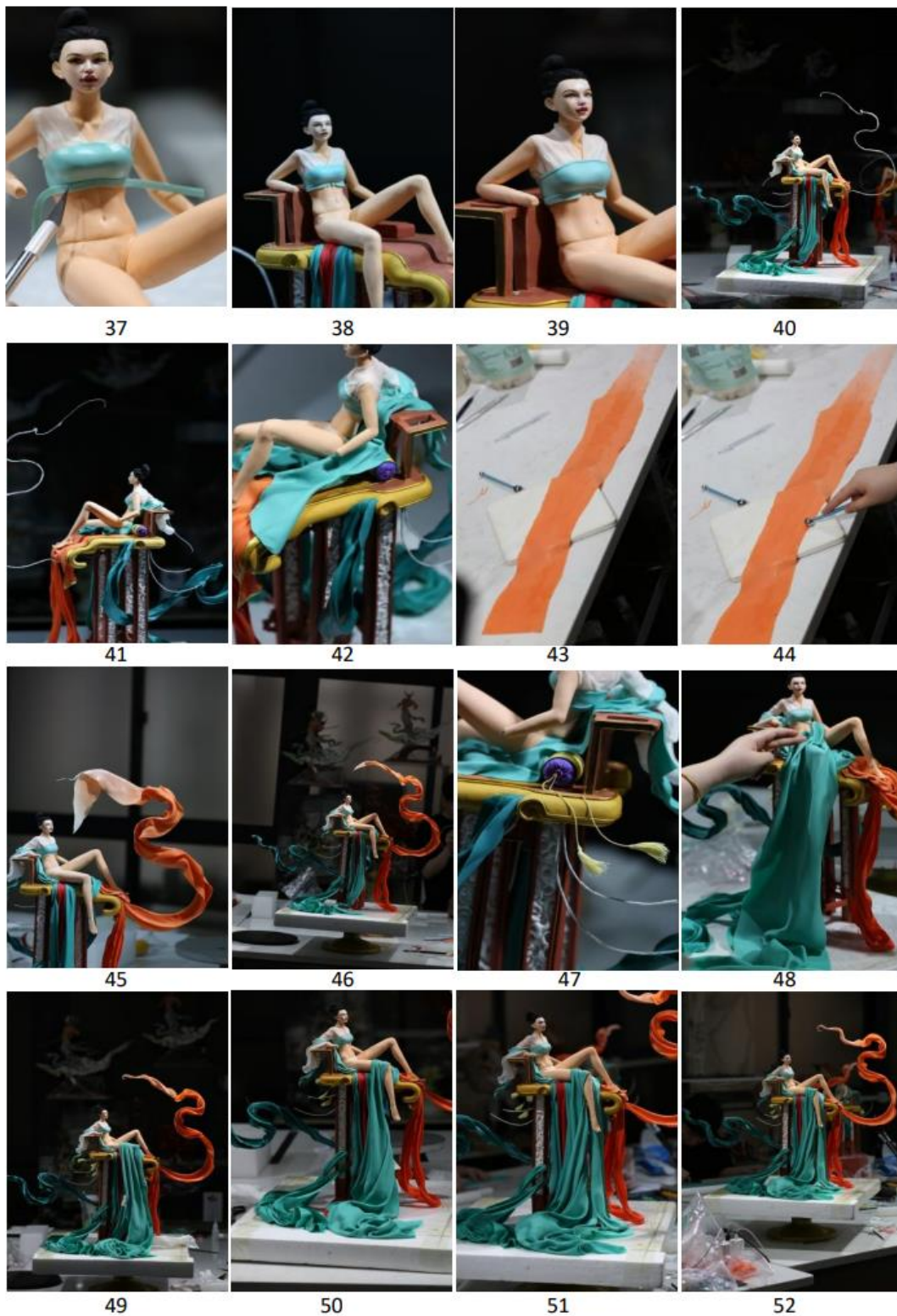


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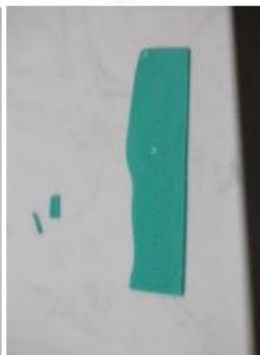
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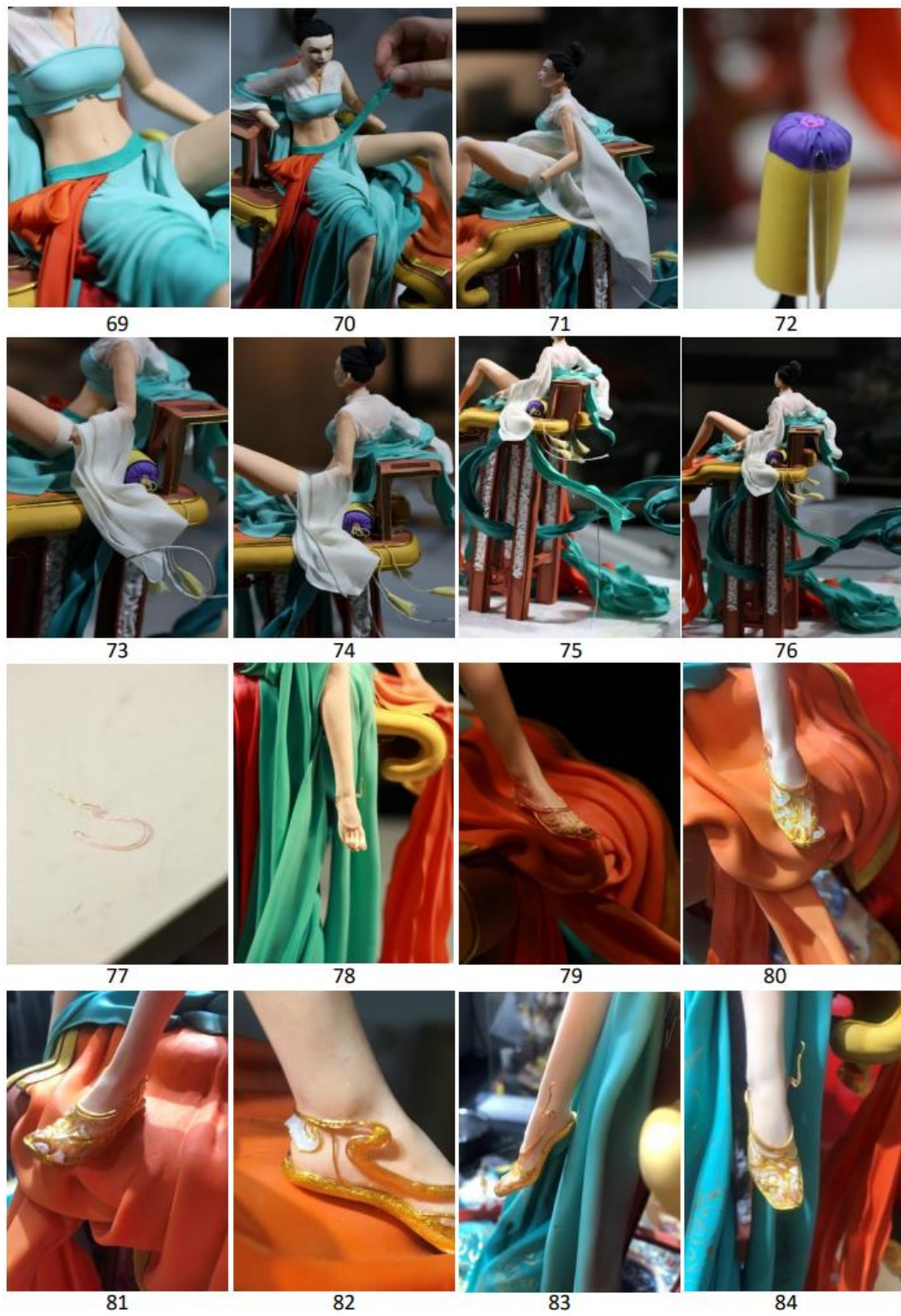
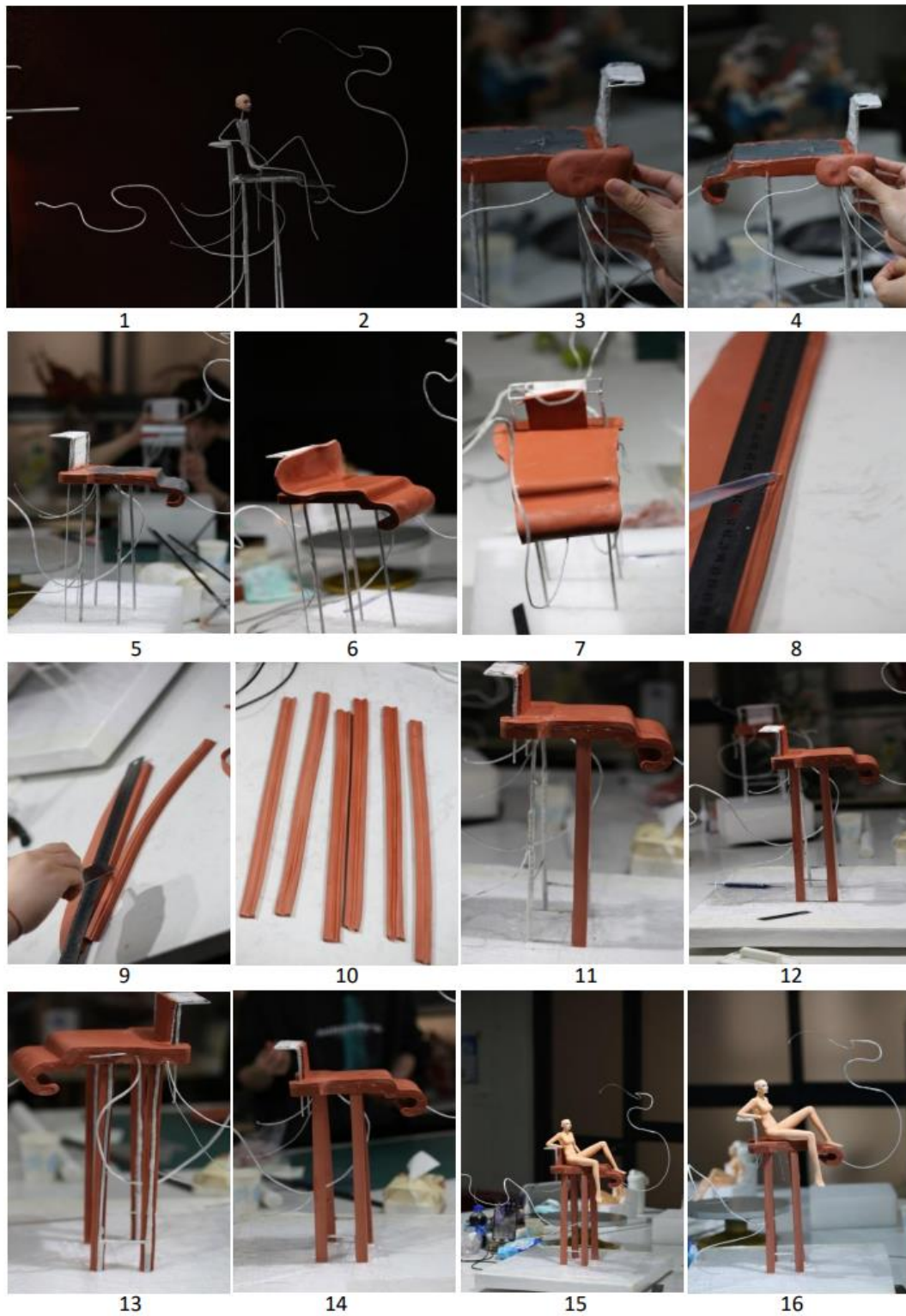


Figure 120: Doll Artwork 2 Clothing and props ( 1-84 )

#### 4.7.5 Details of the Partial Mold and Tool Making in the Early Stage of Artwork Production





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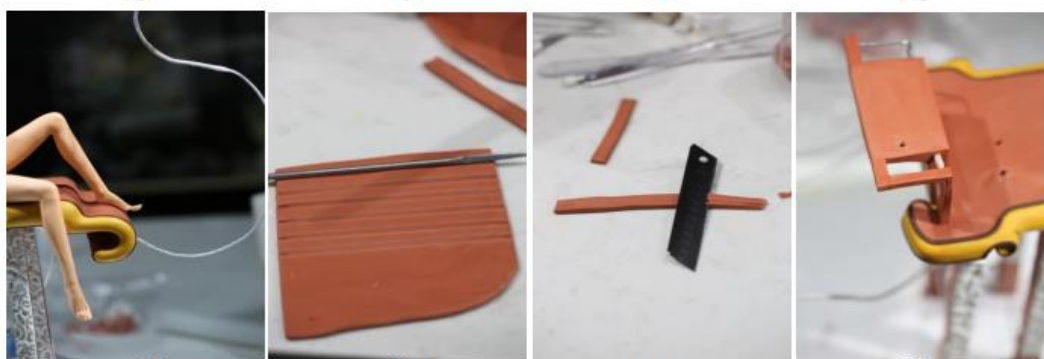


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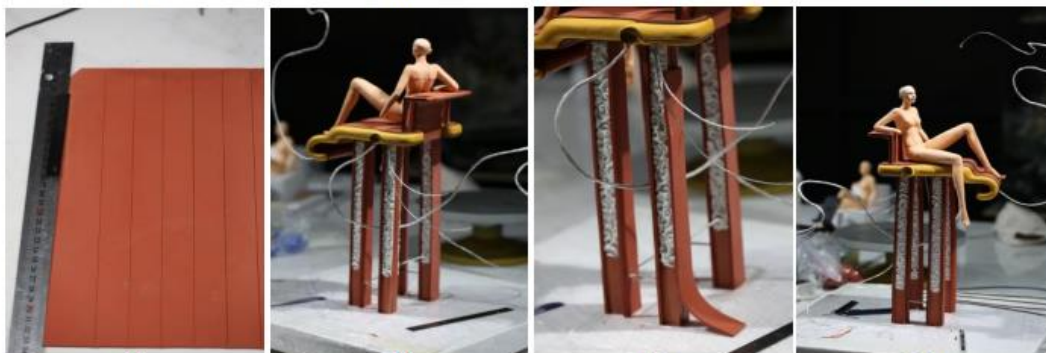


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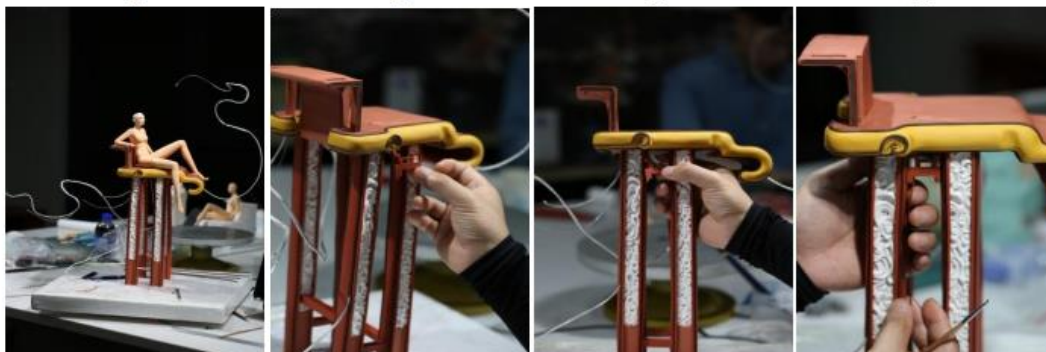


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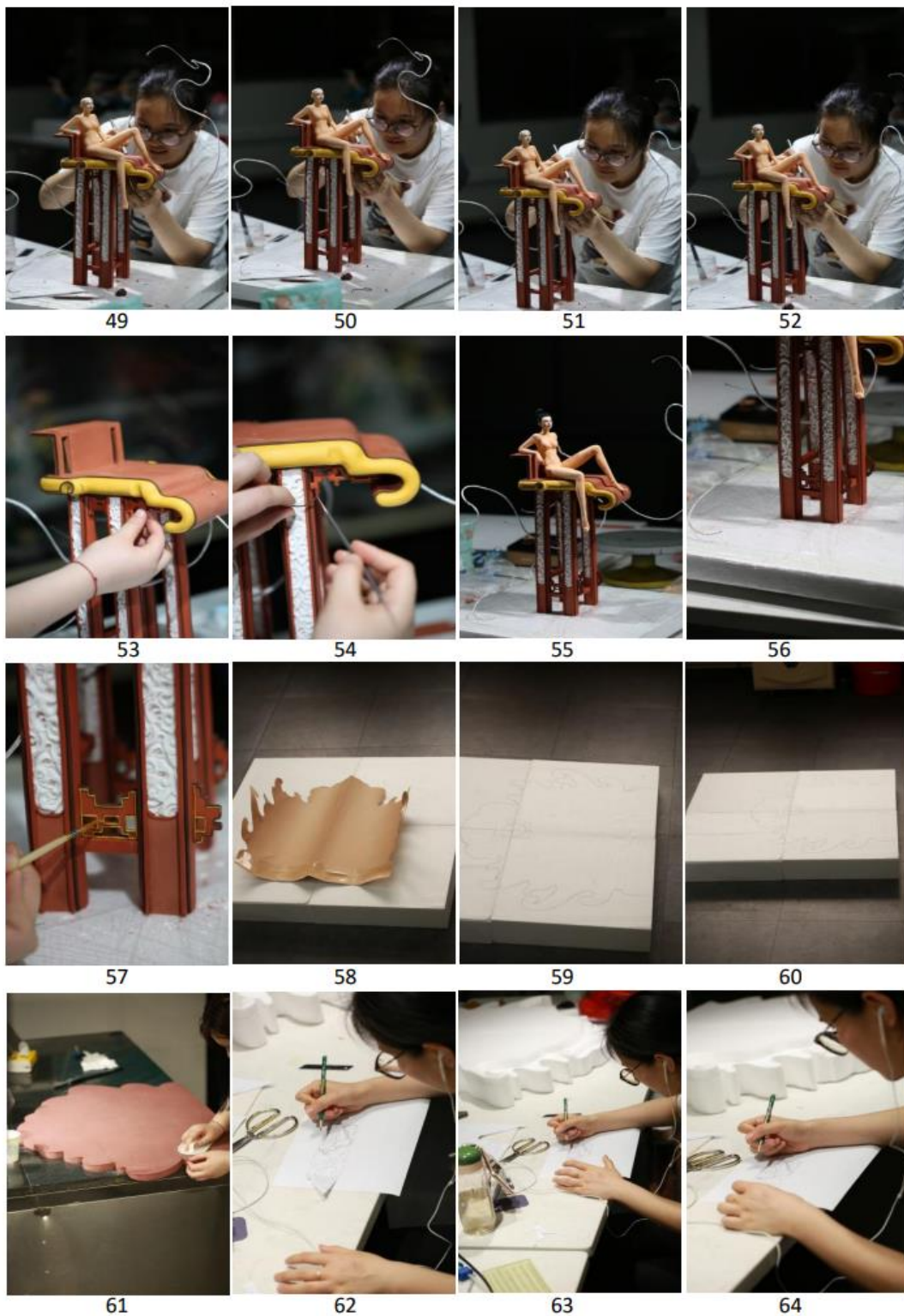


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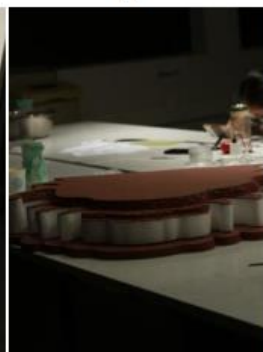
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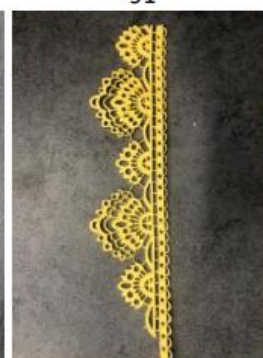
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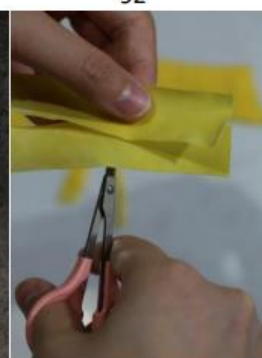
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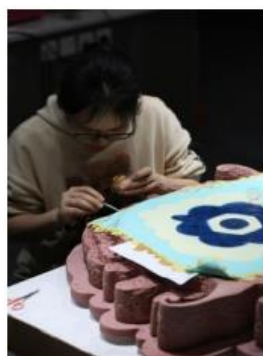
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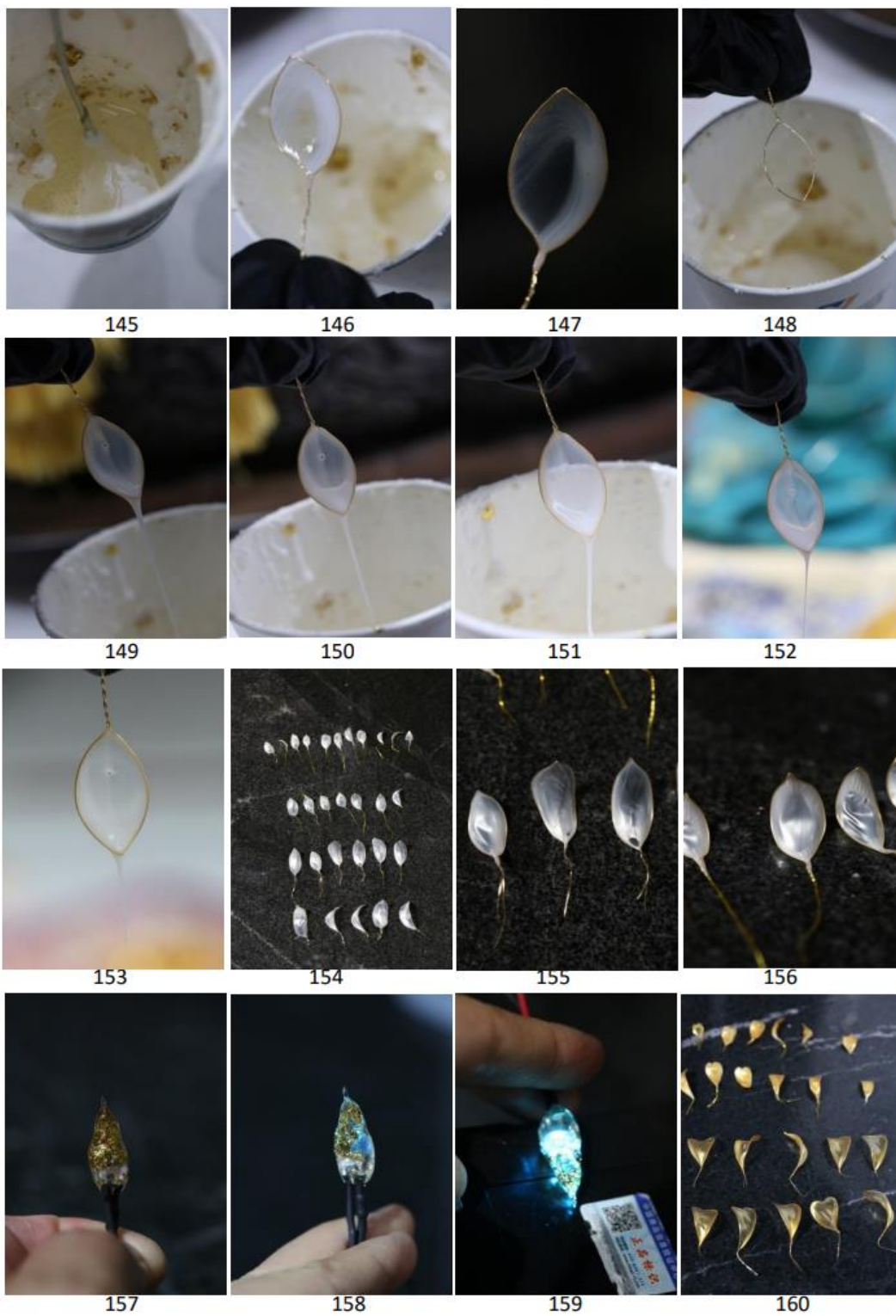
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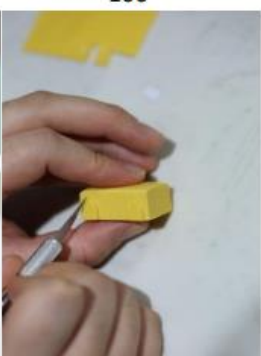
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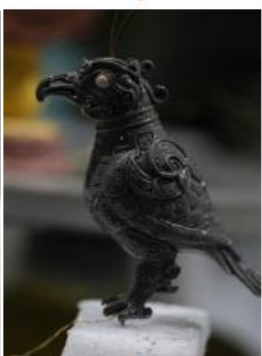
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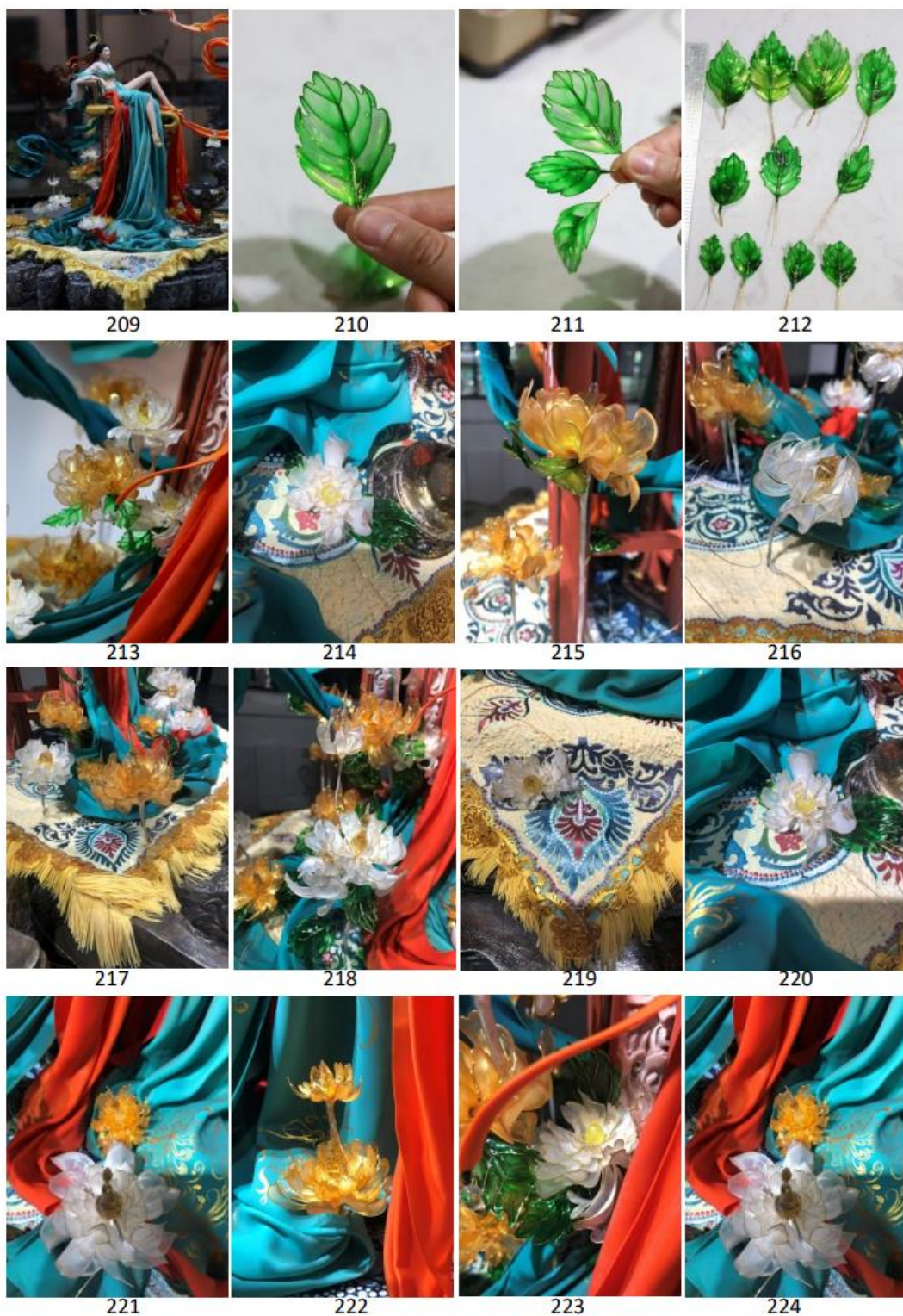
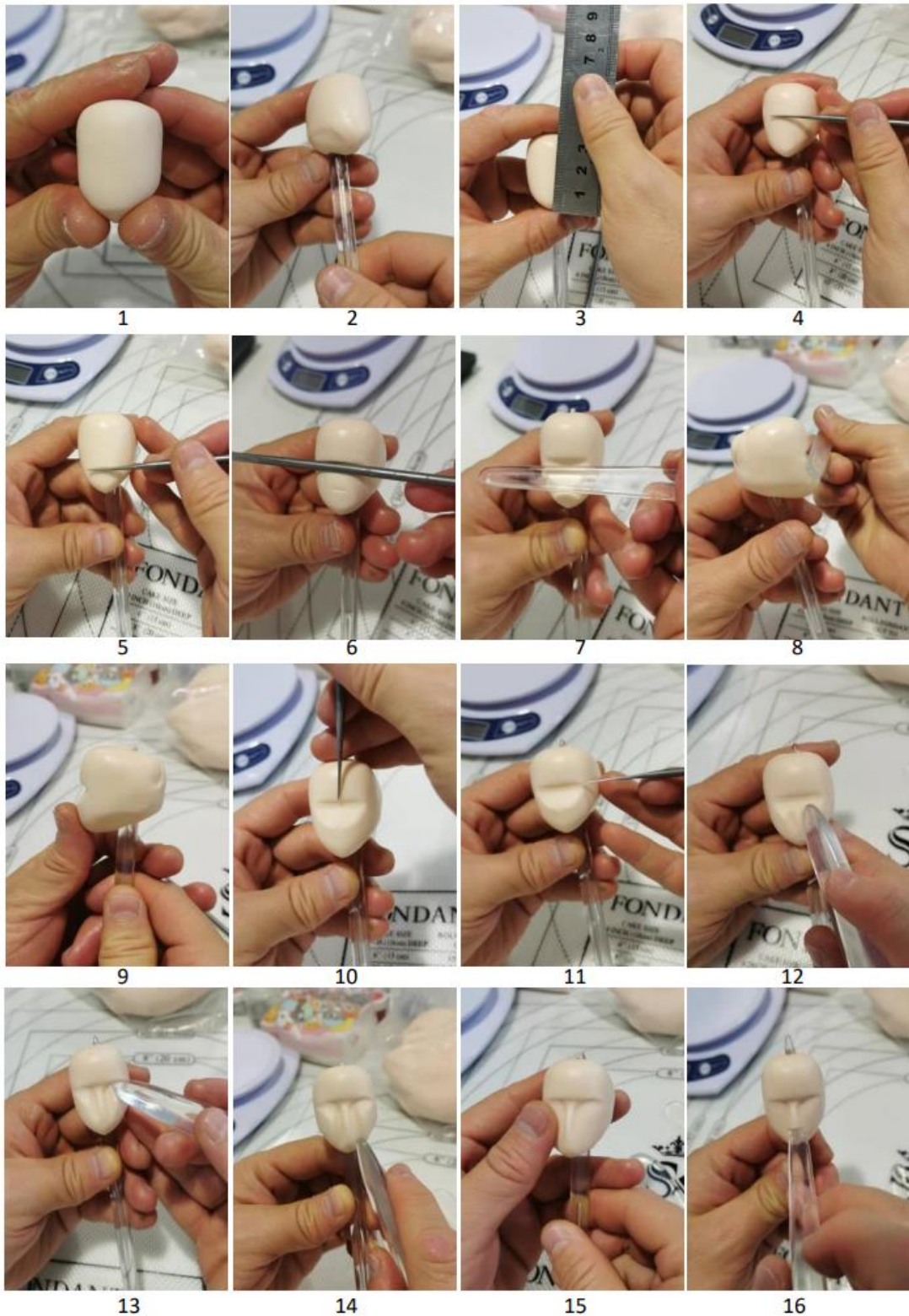
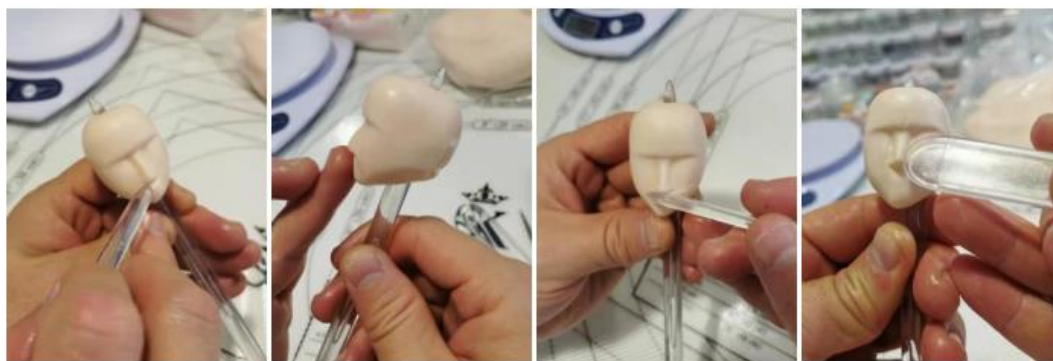


Figure 121: Doll Artwork 2 scene ( 1-224 )

## 4.8 Doll Works ( 3 ) Design Process

### 4.8.1 Details of doll head production





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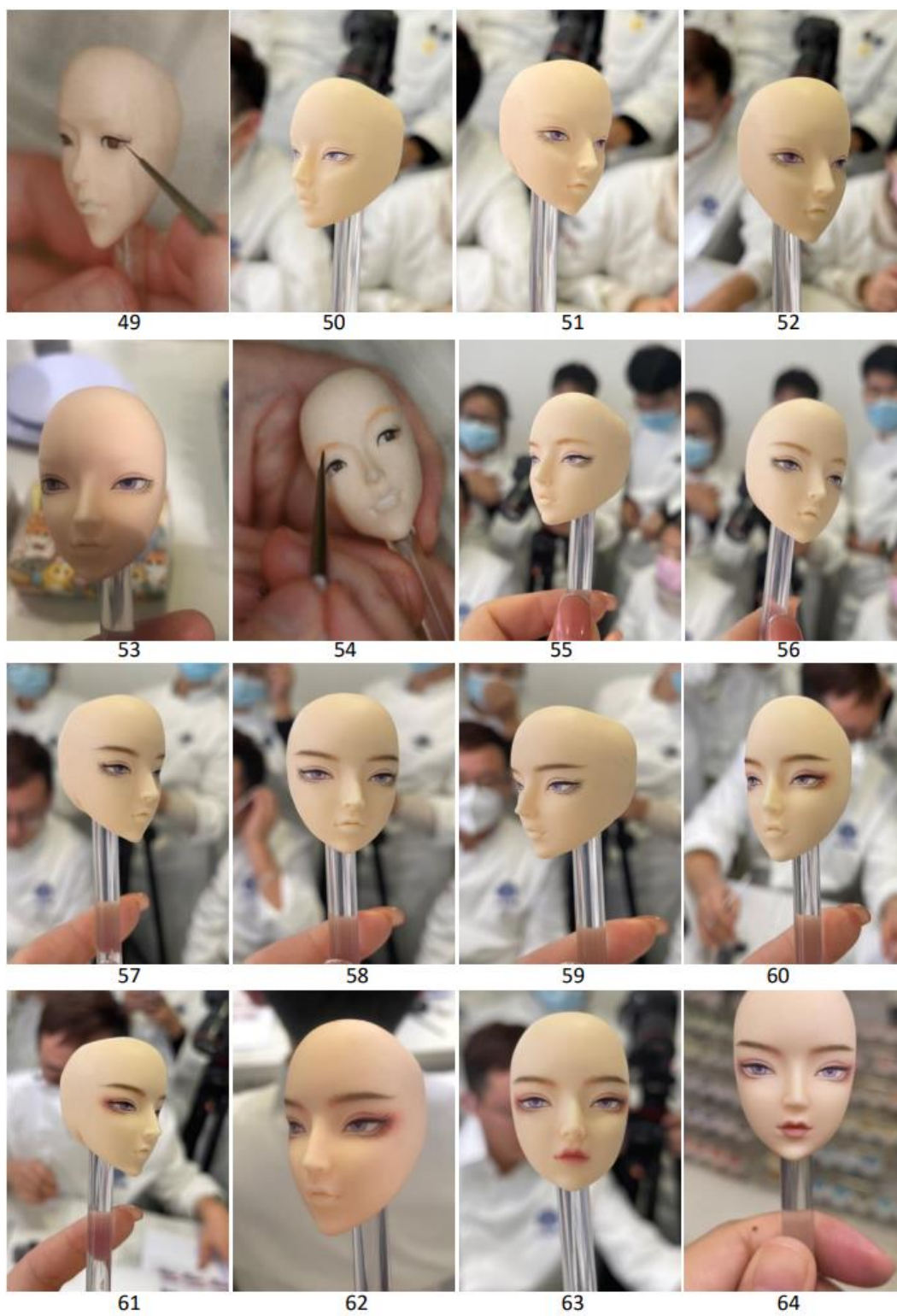


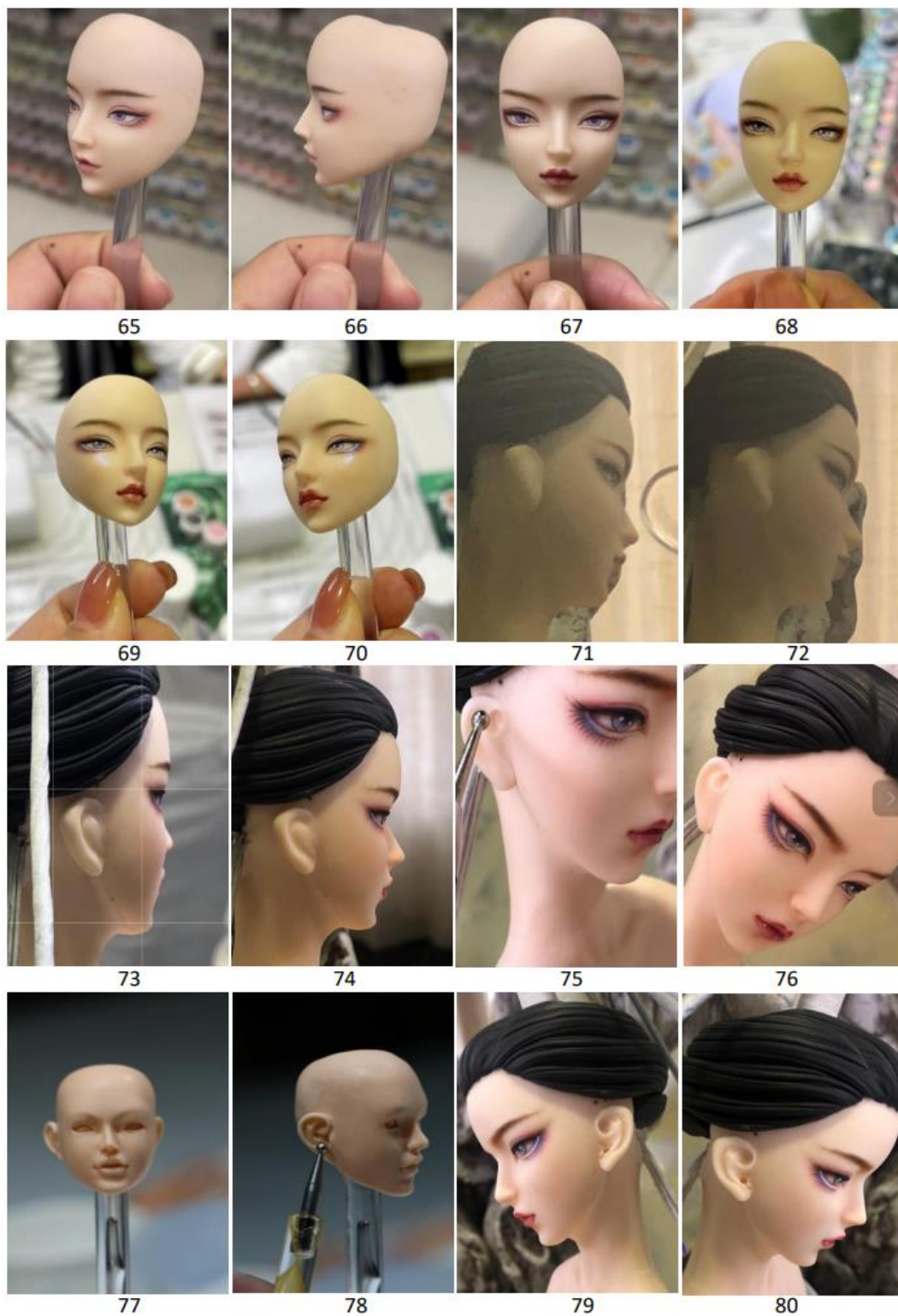
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4.8.2 Details of doll hair production



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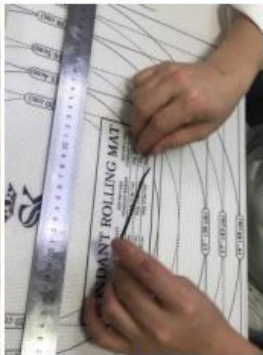
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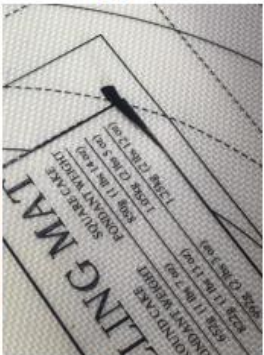
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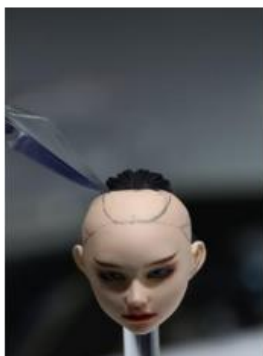
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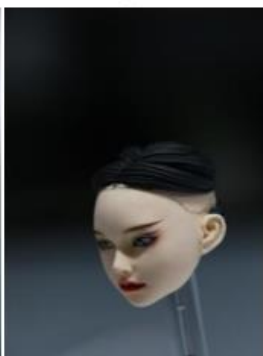
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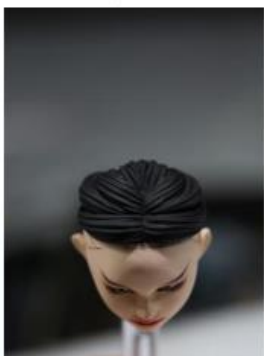
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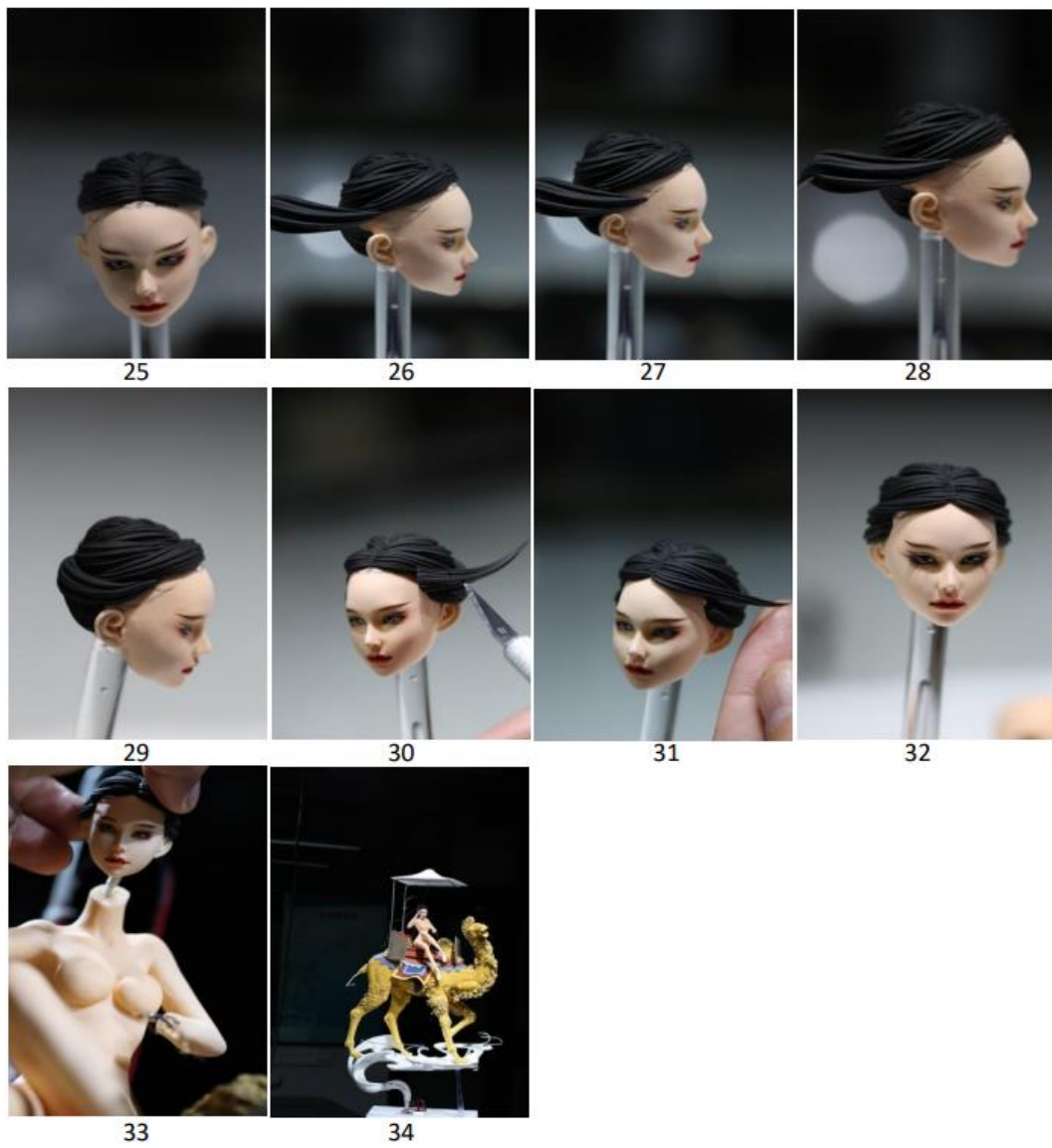
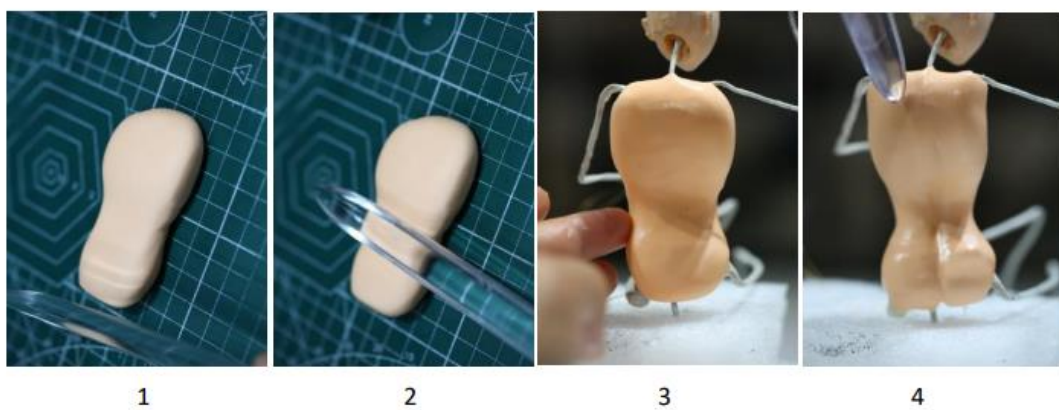
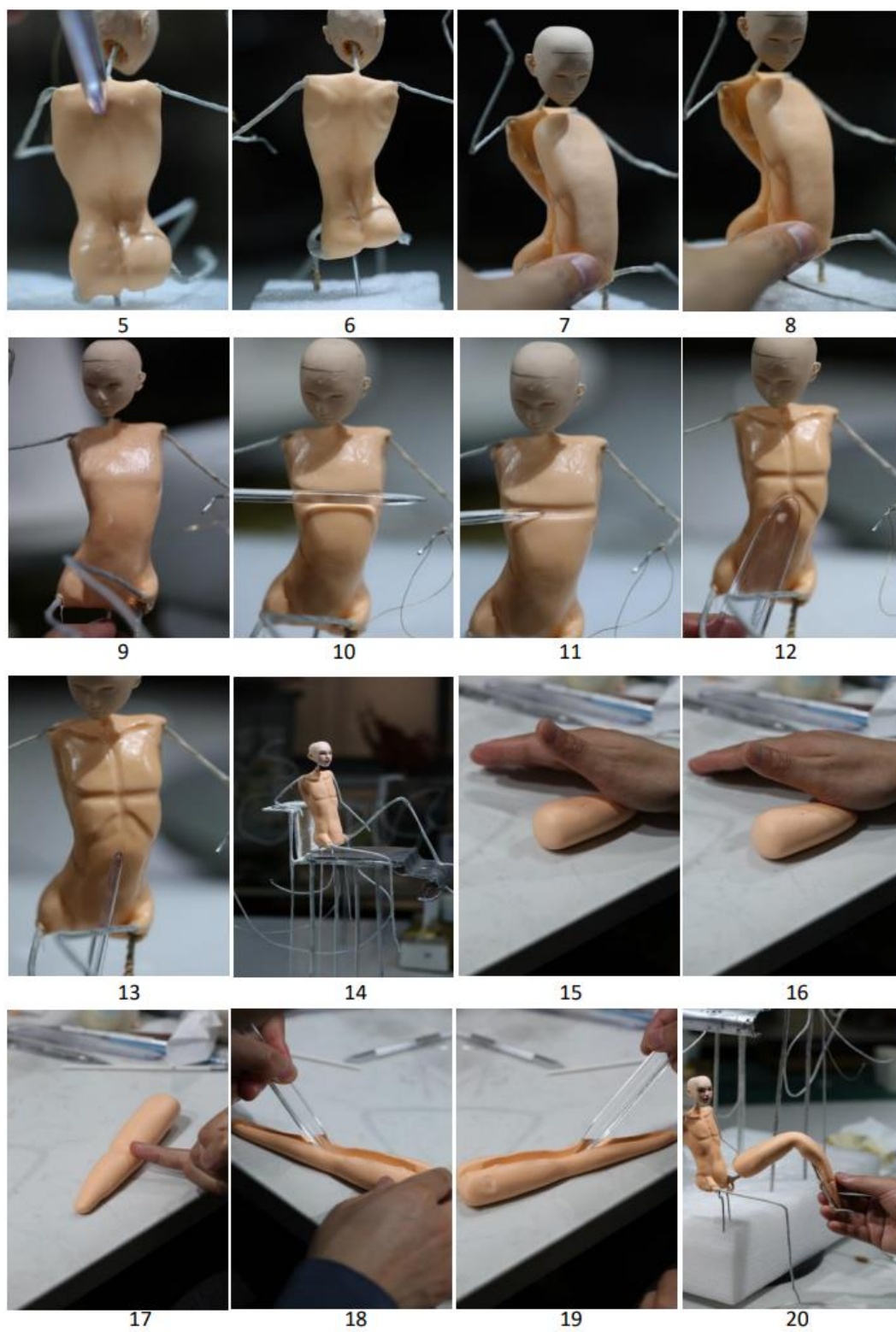


Figure 122: Doll Artwork 3 hair ( 1-34 )

#### 4.8.3 Details of the Doll's Body Production







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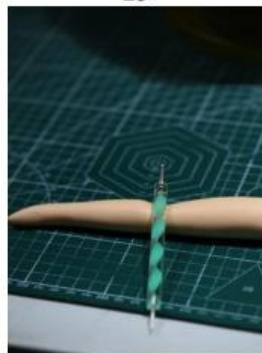
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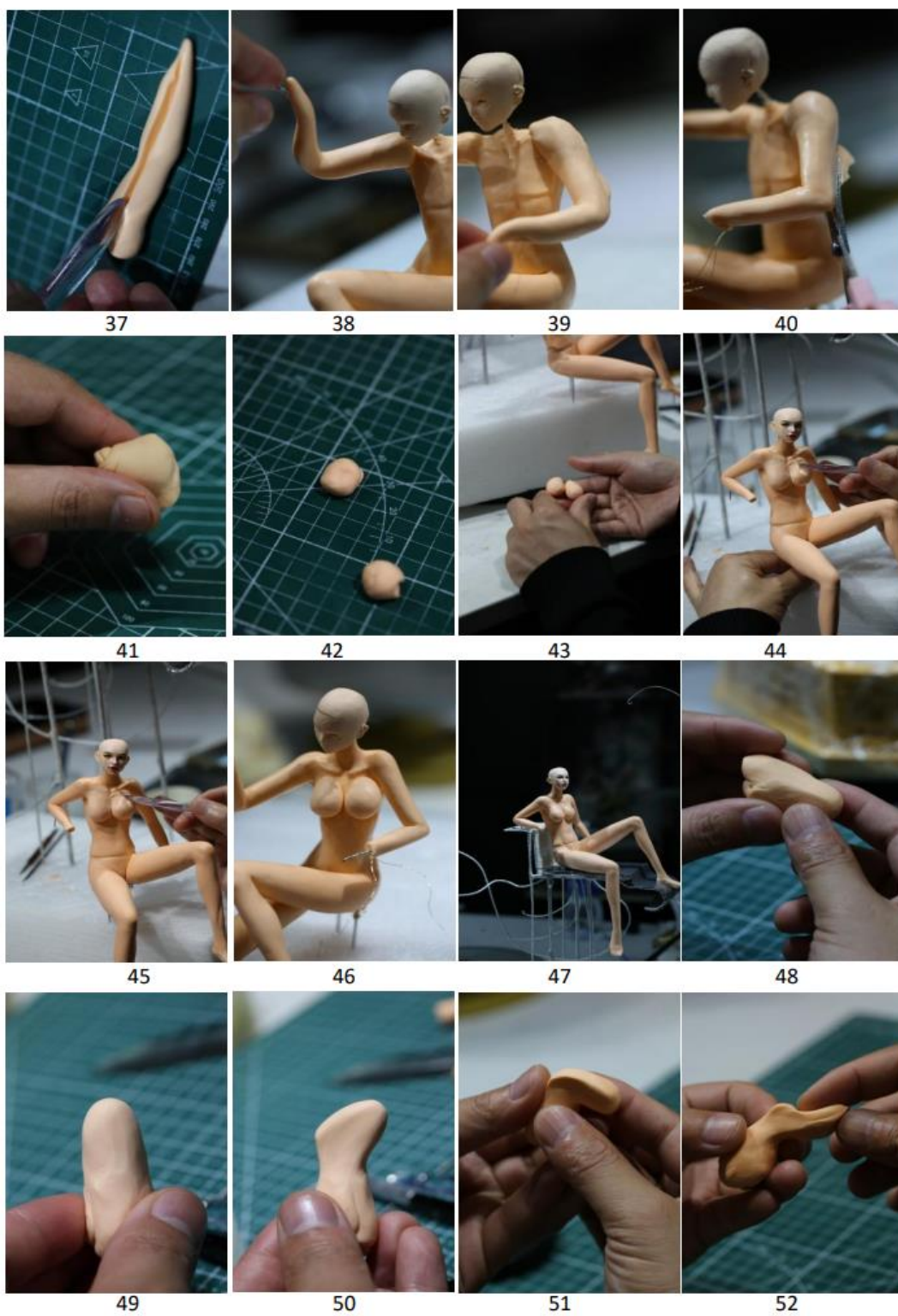
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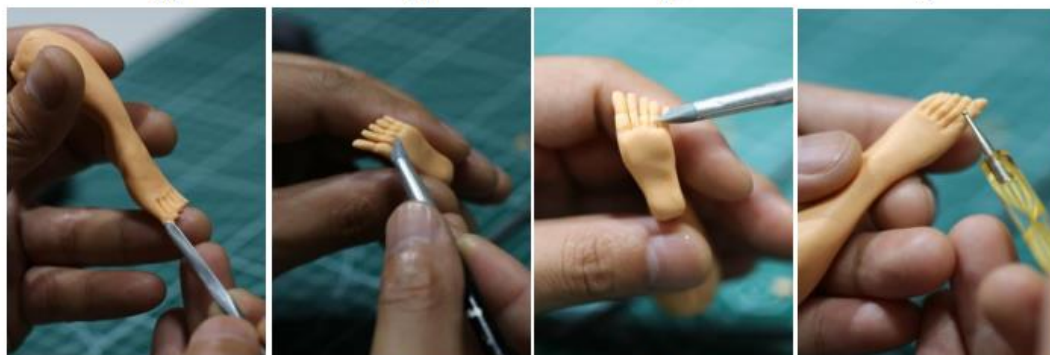


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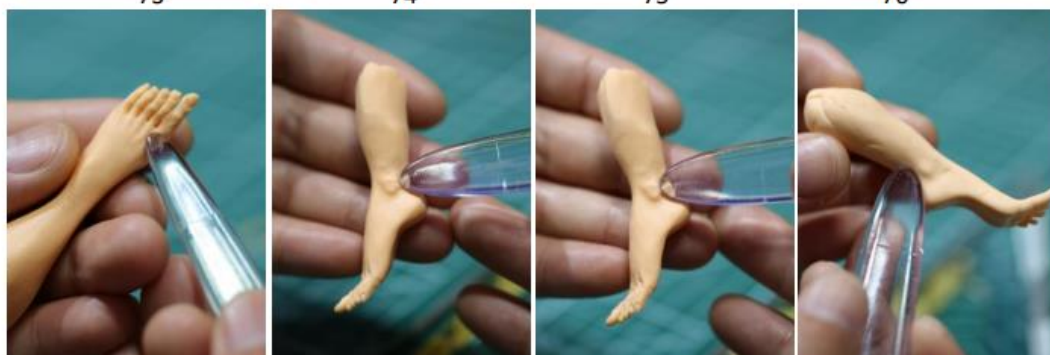


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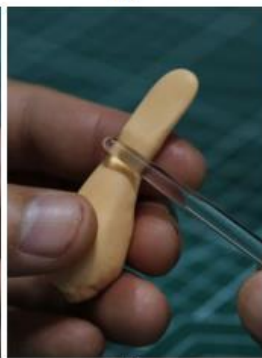
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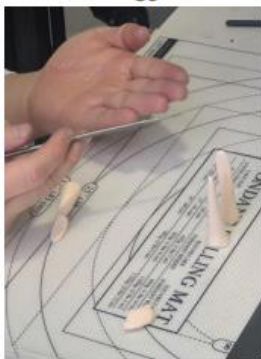
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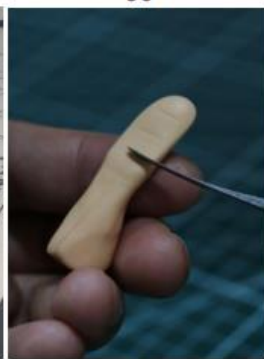
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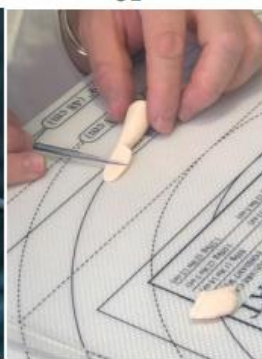
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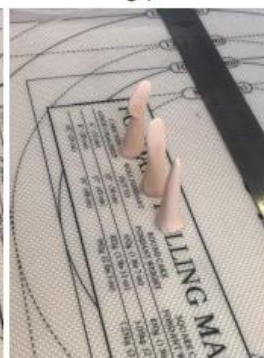
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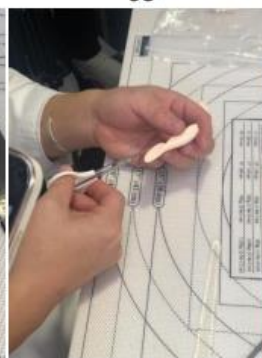
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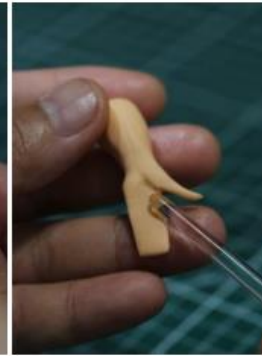
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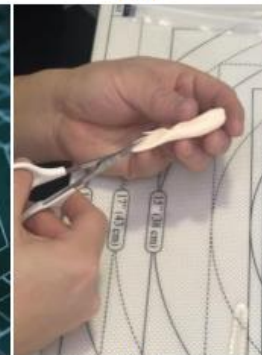
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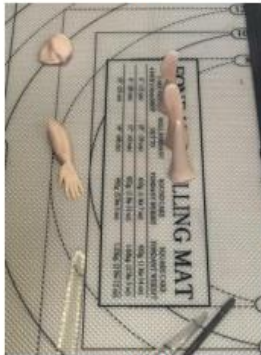
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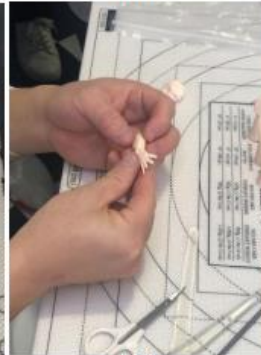
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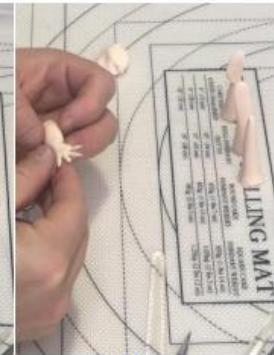
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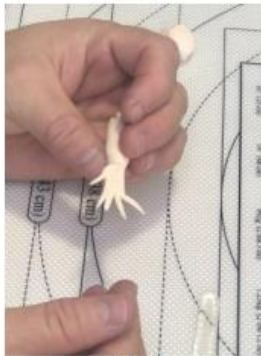
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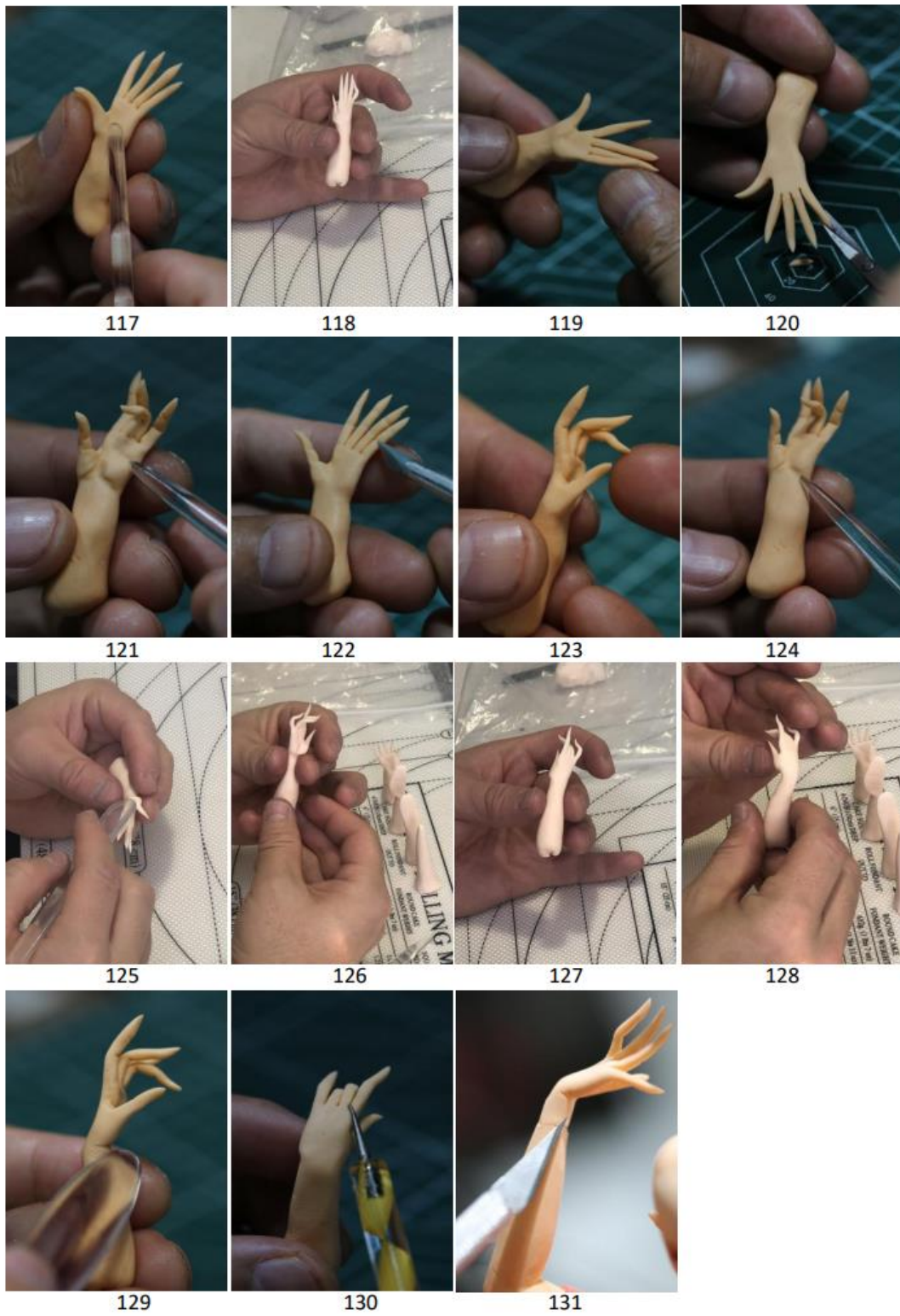


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#### 4.8.4 Details of the Doll's Clothing and props Production



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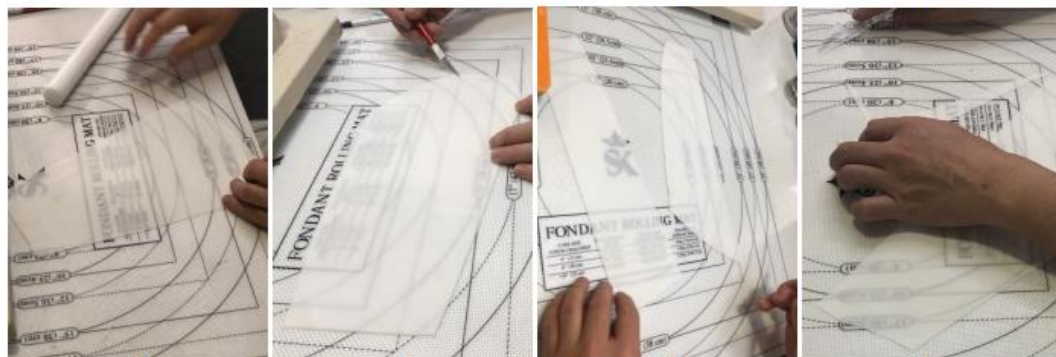


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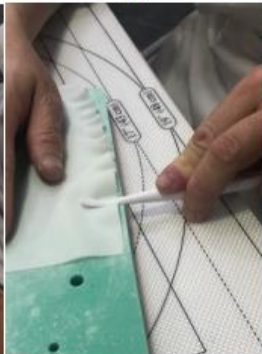
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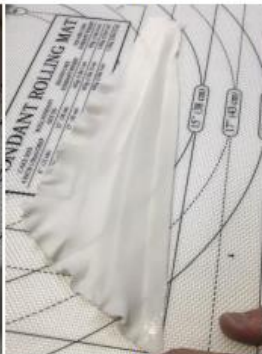
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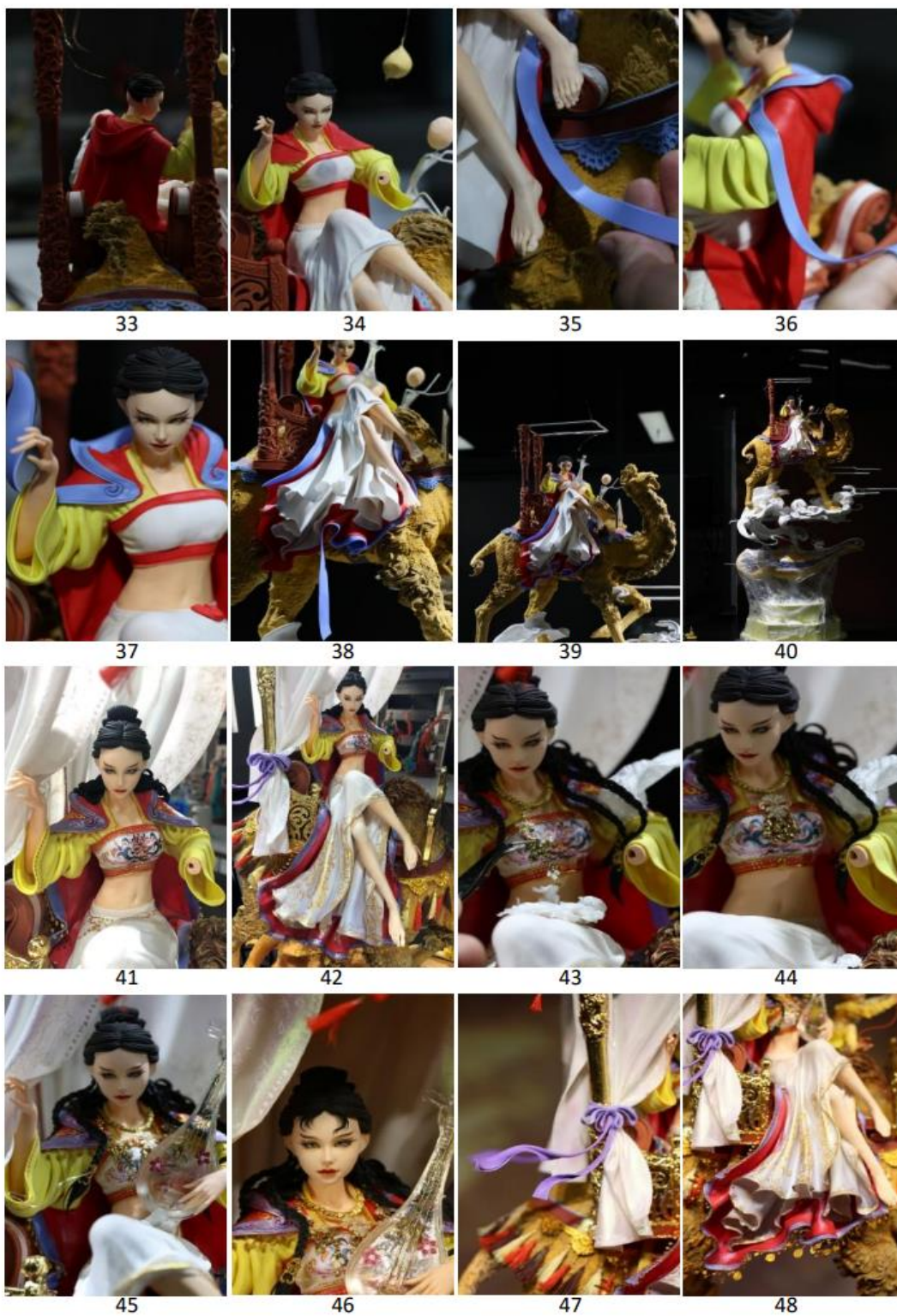
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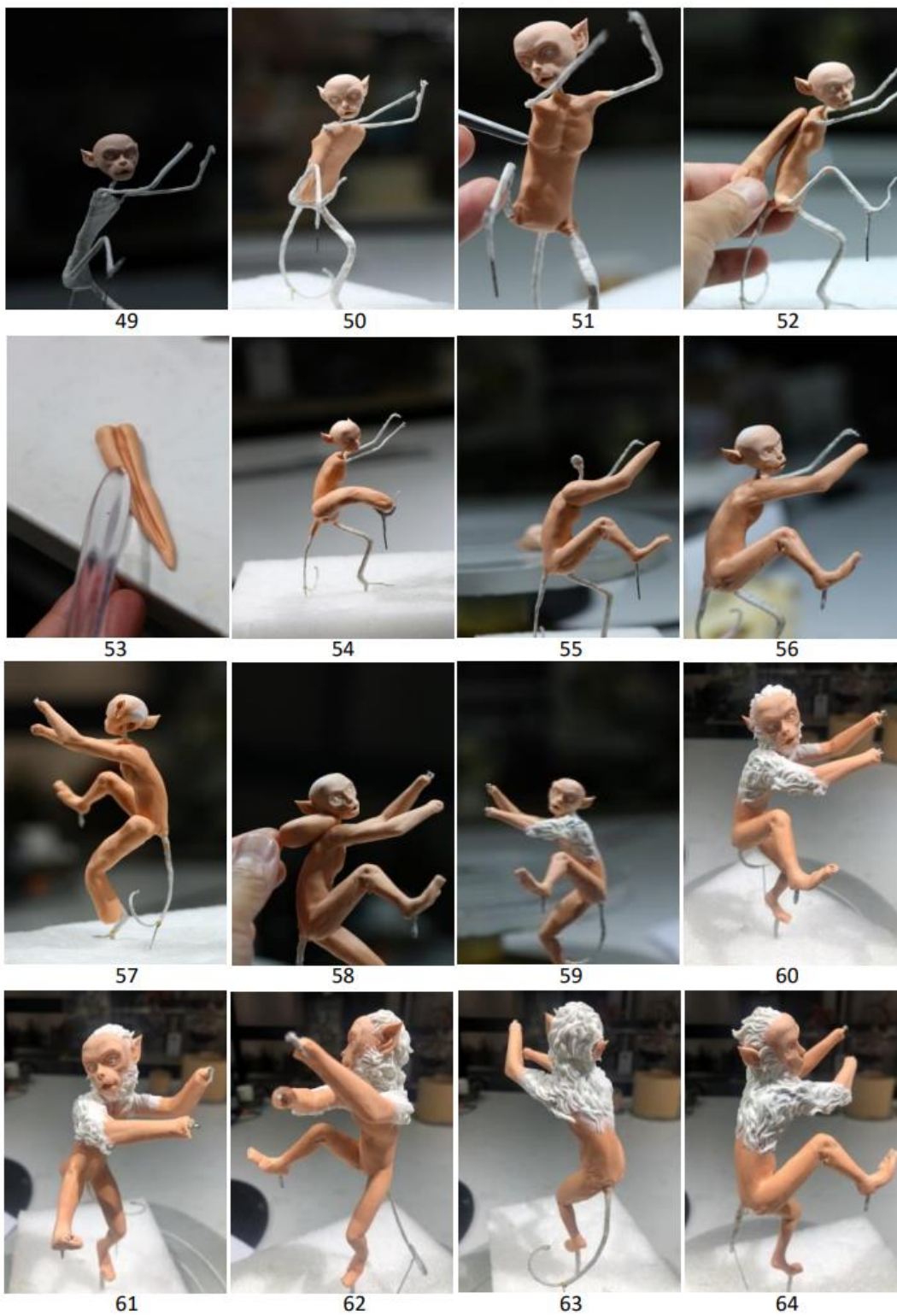


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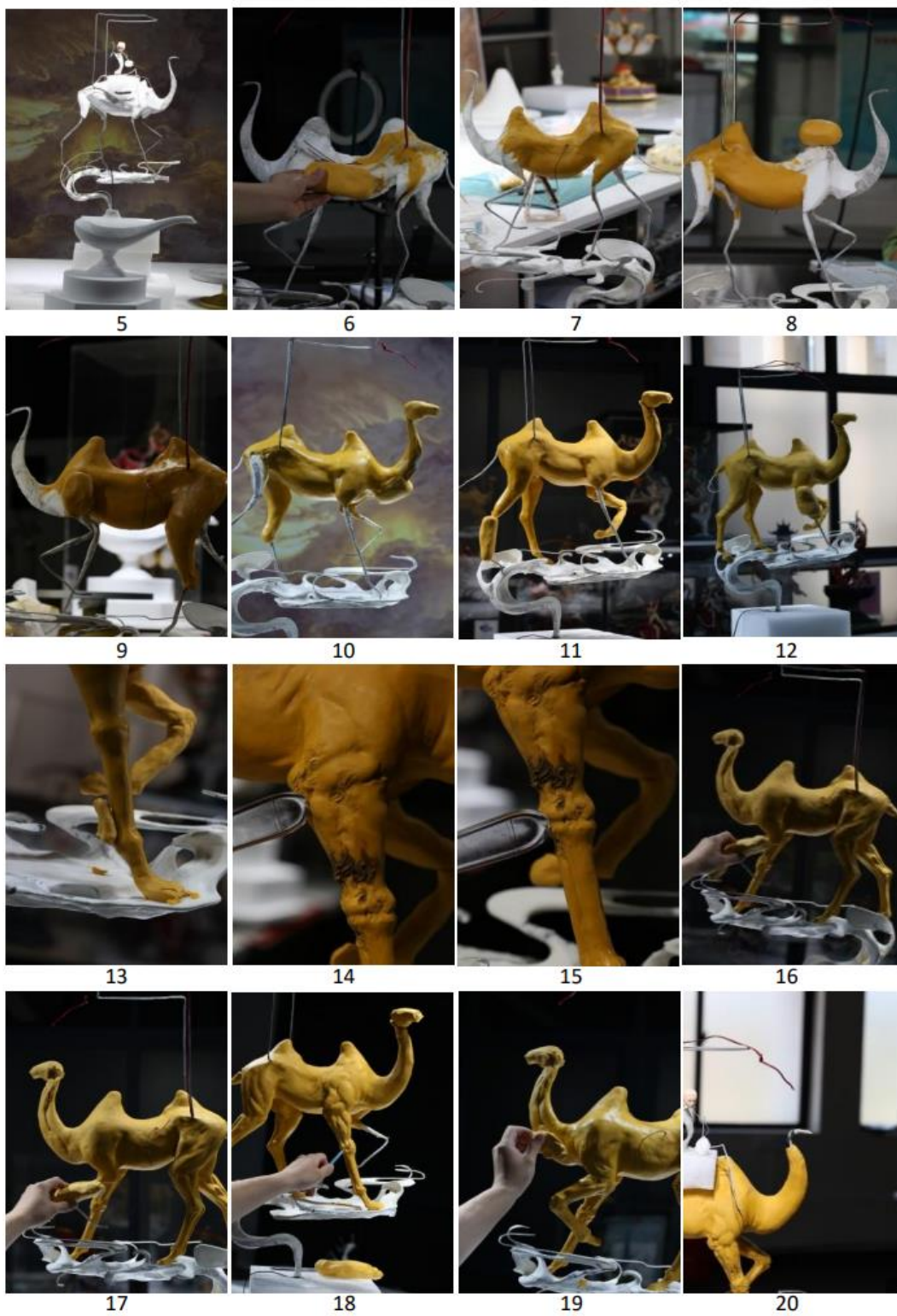
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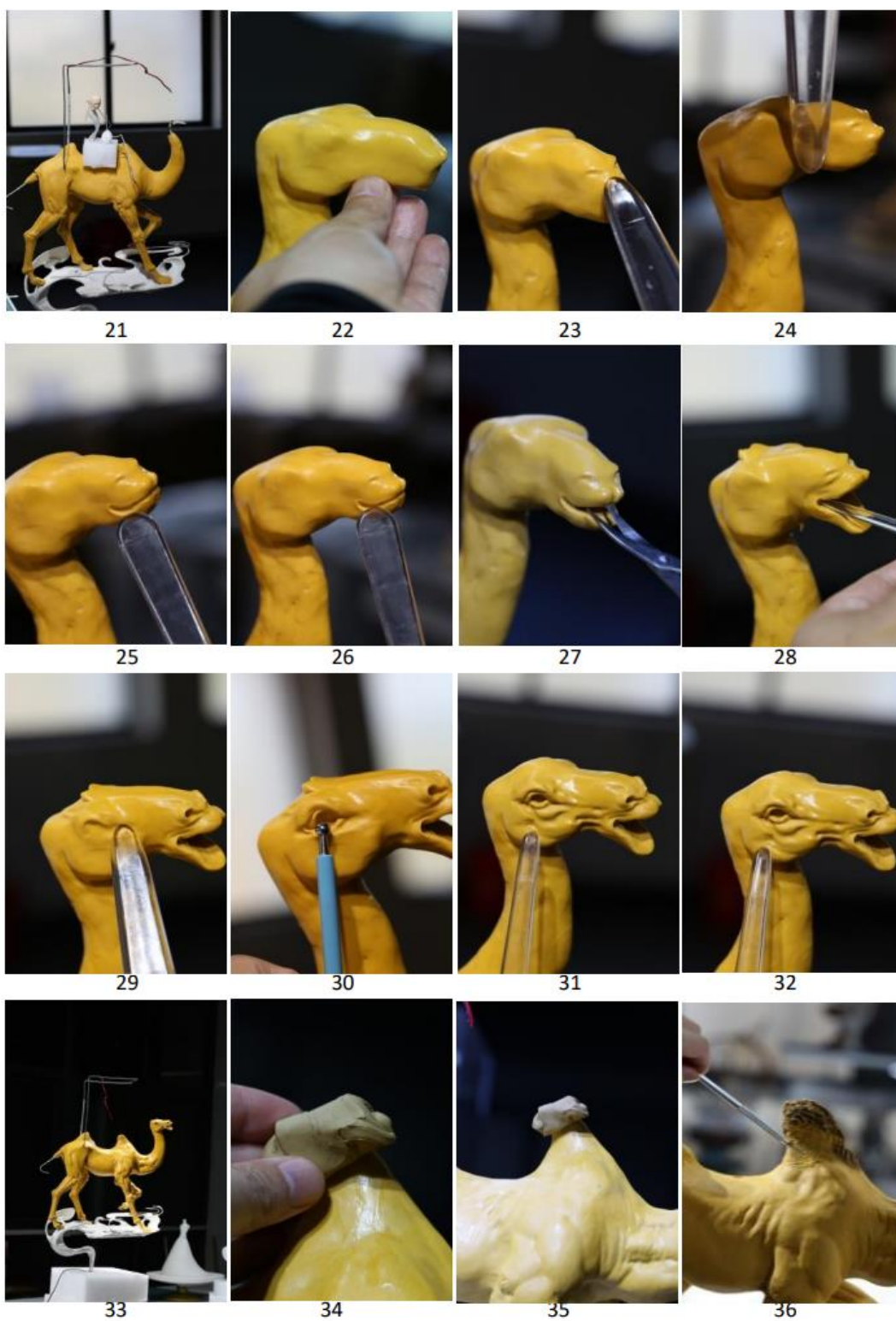
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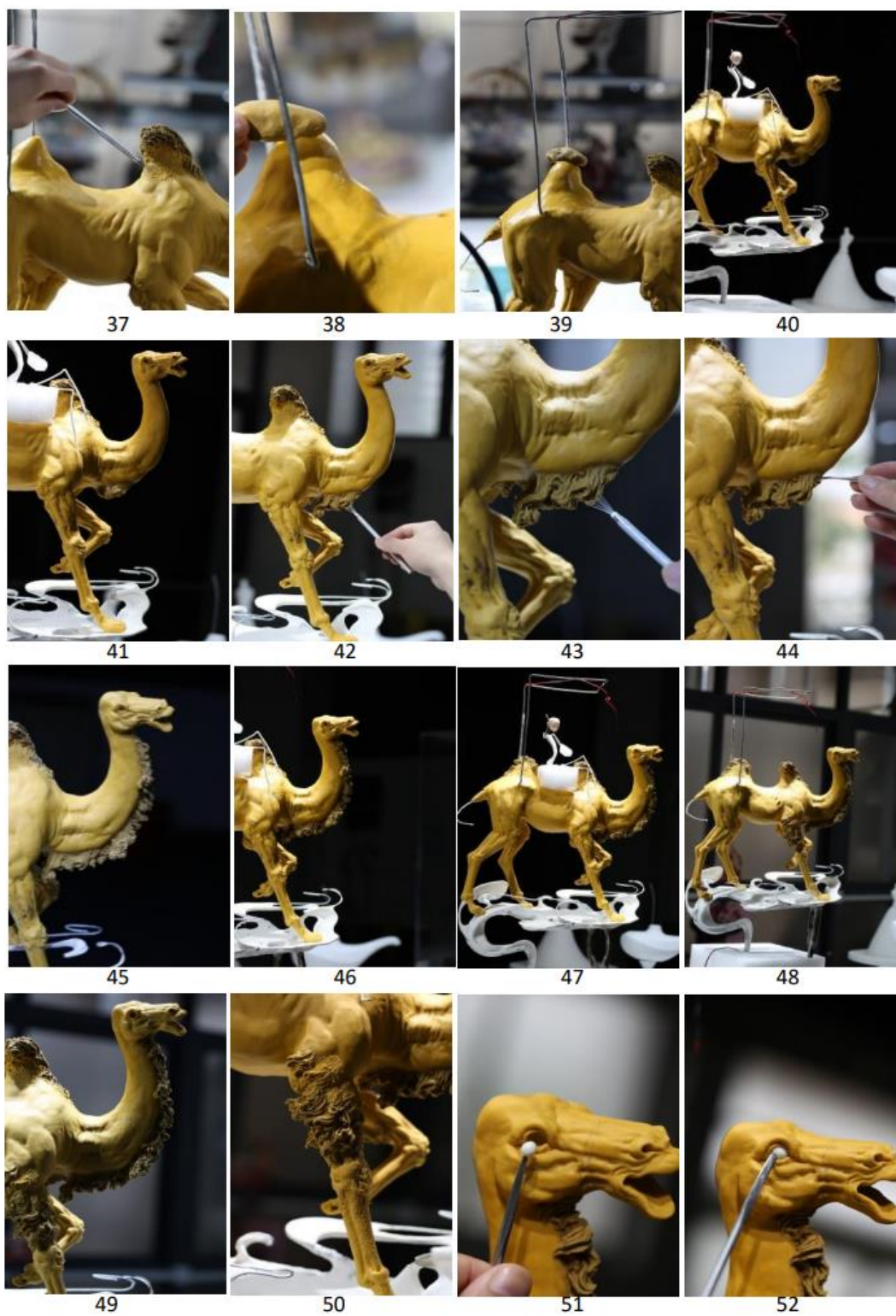


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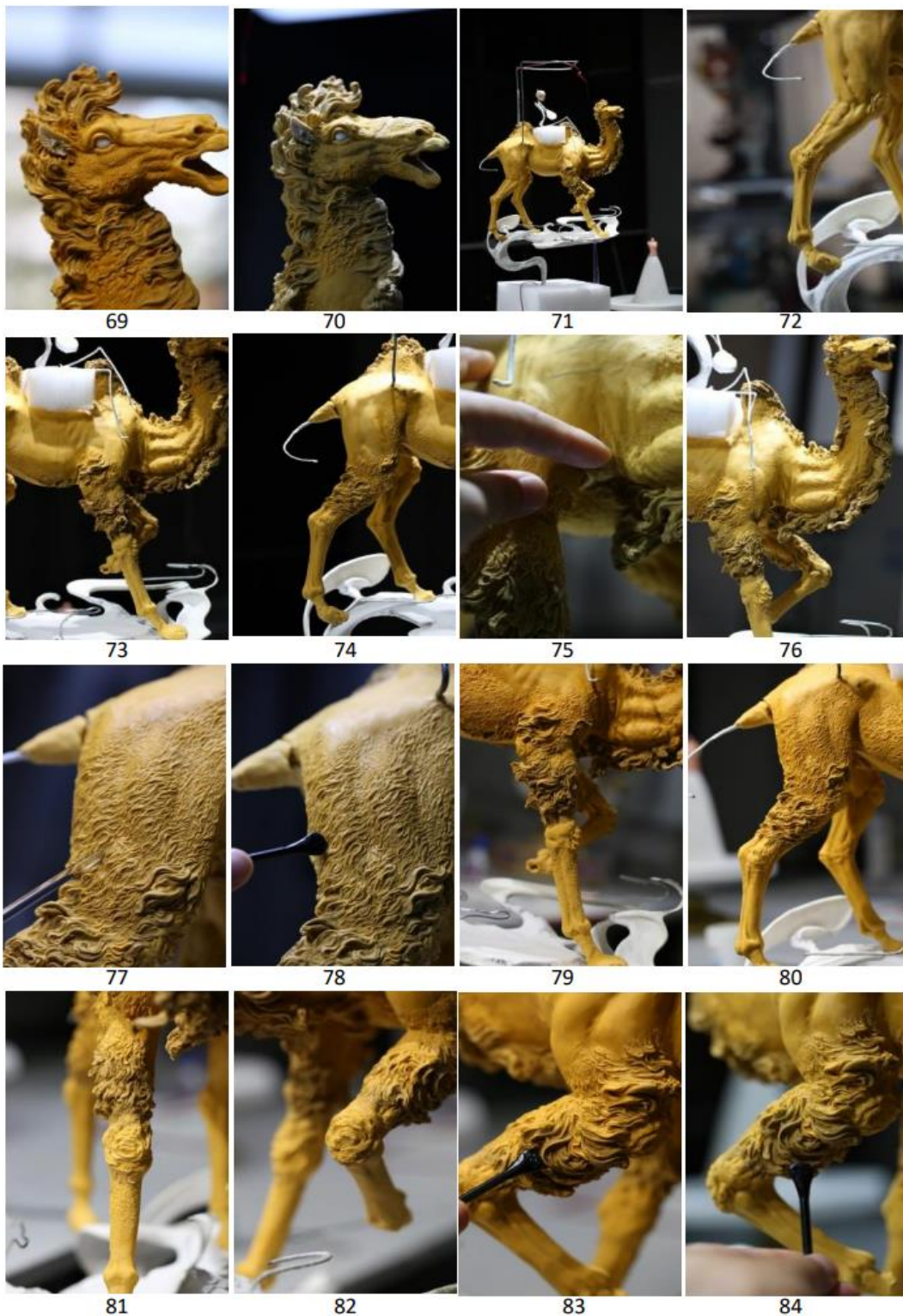
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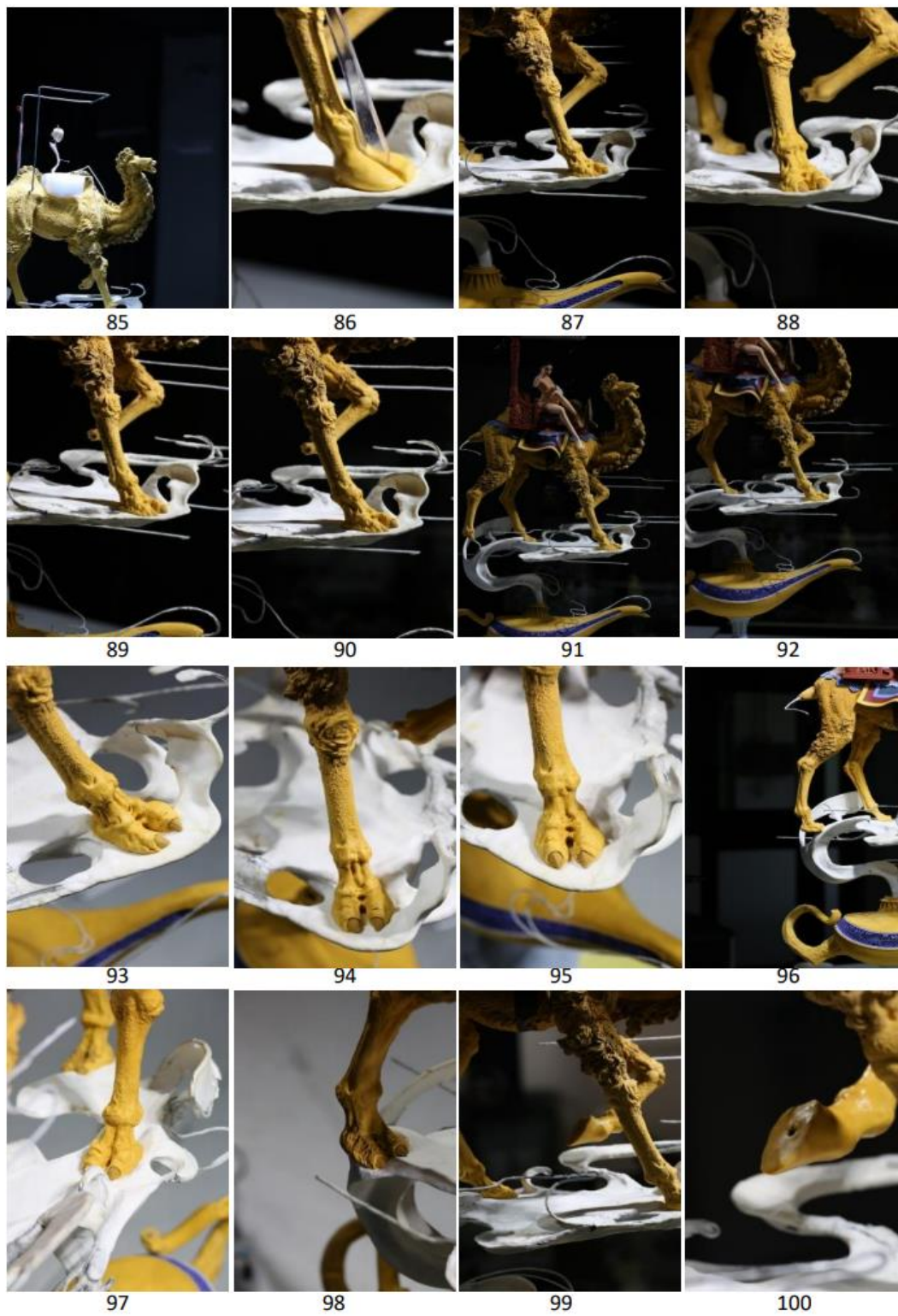


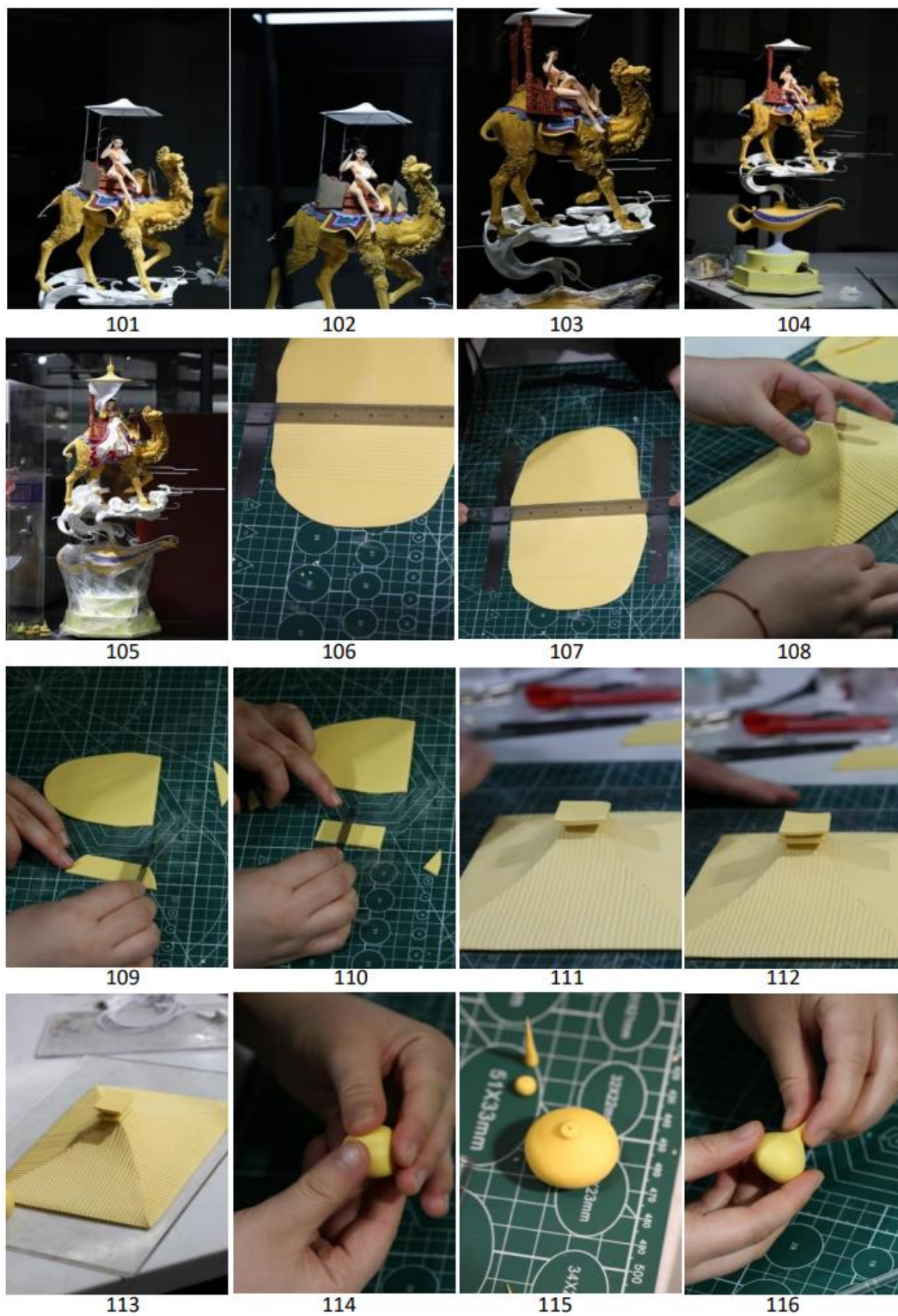
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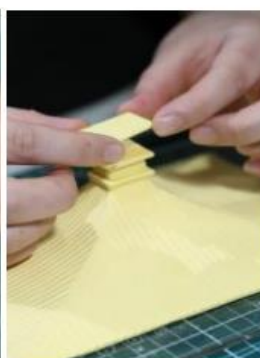




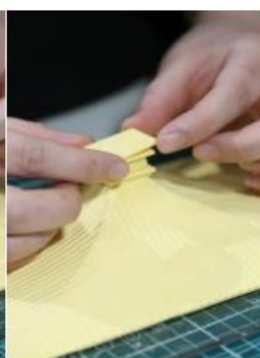
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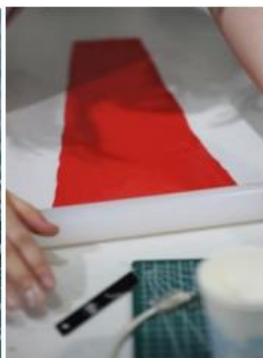
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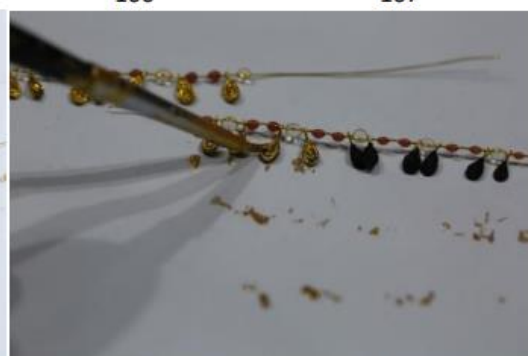
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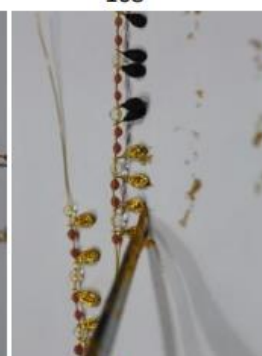
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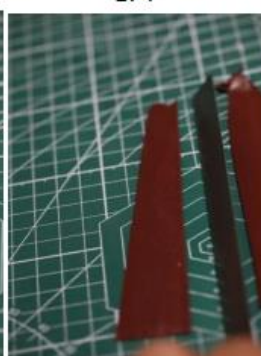
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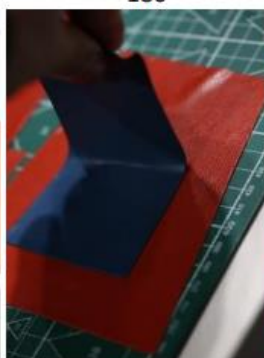
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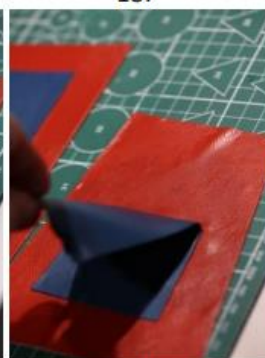
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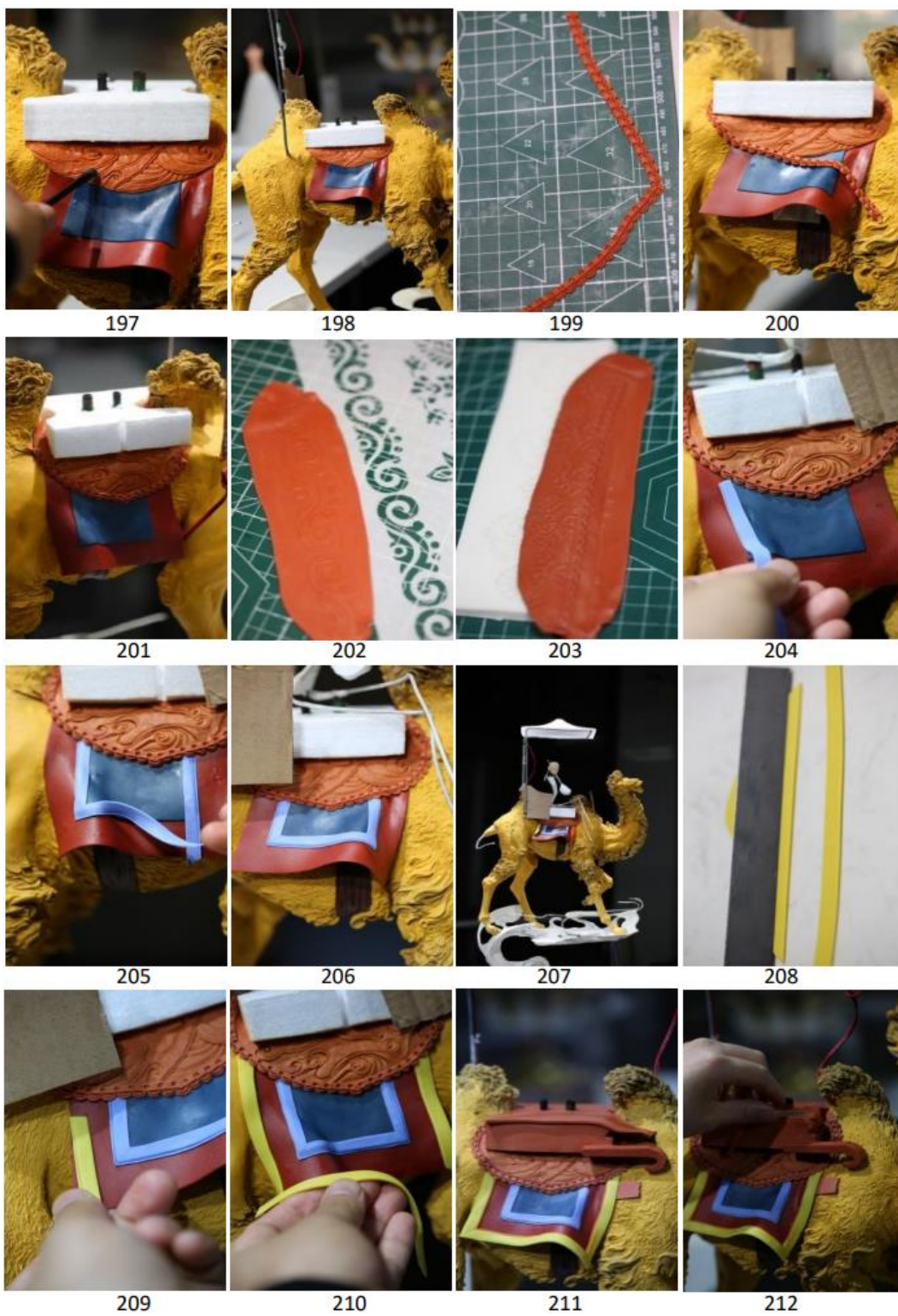
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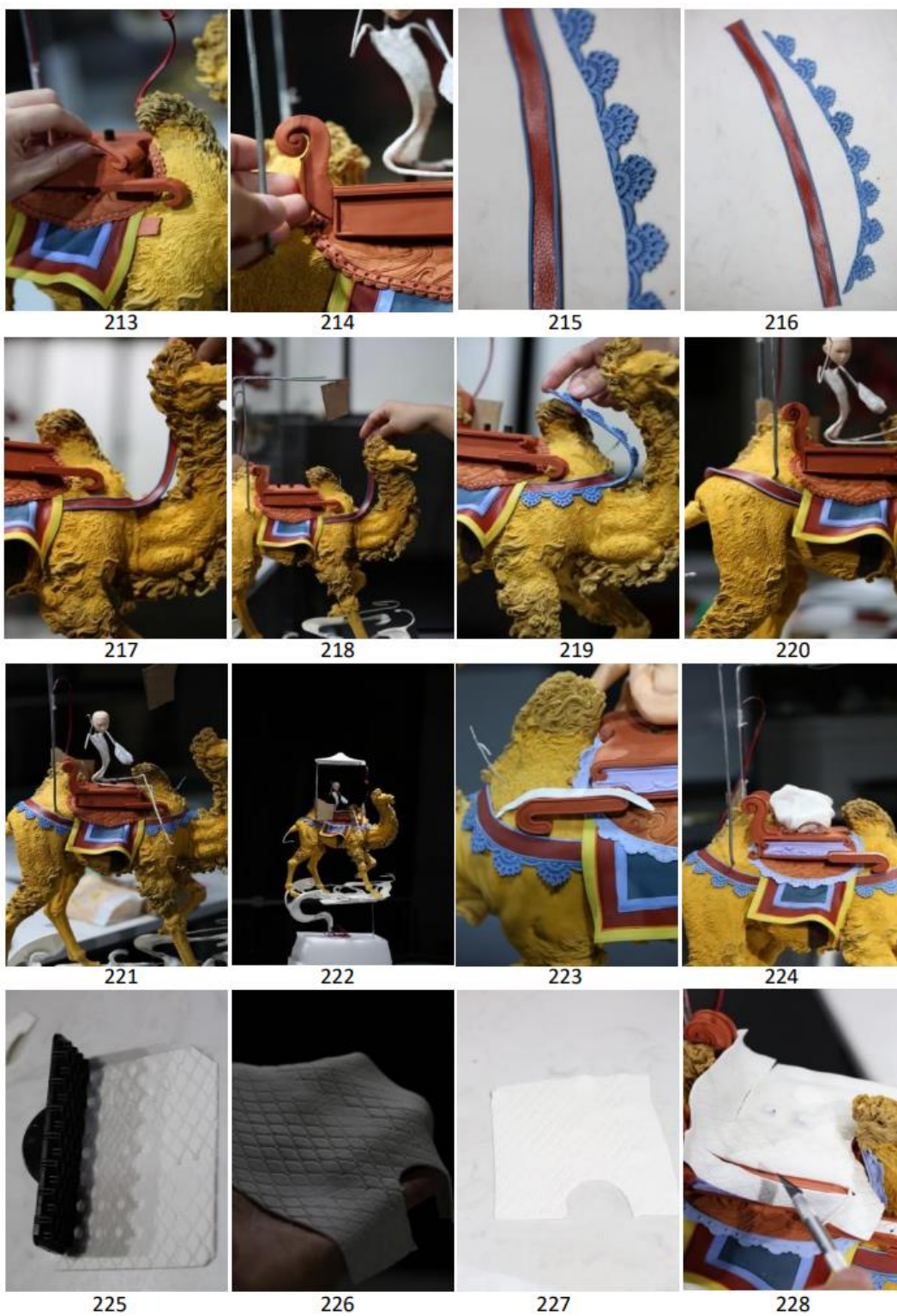


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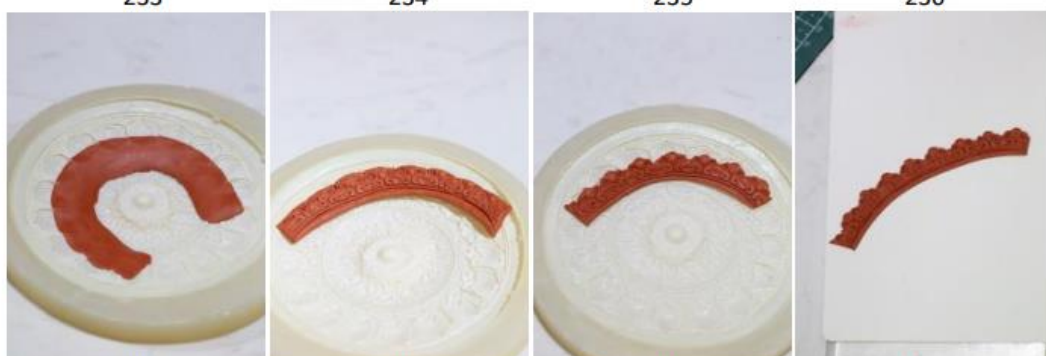


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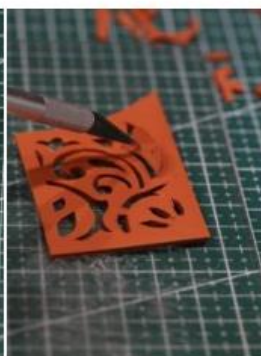
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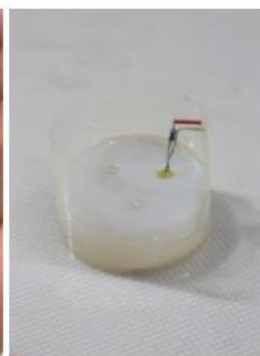
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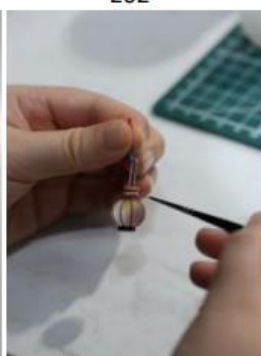
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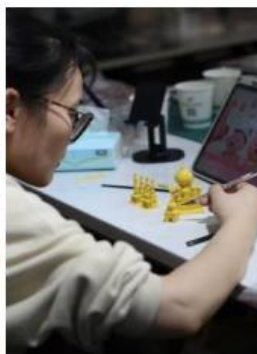




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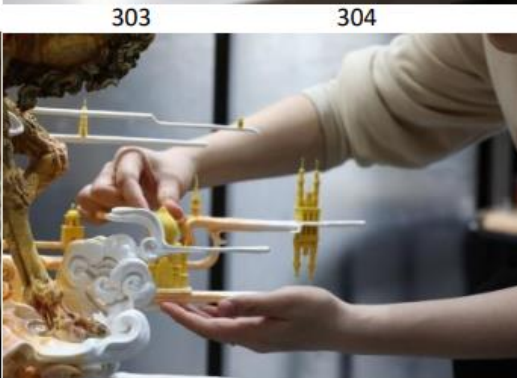
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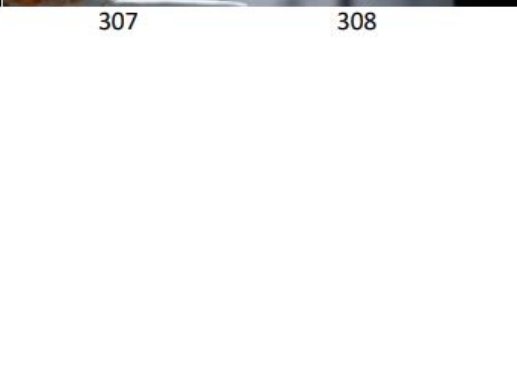
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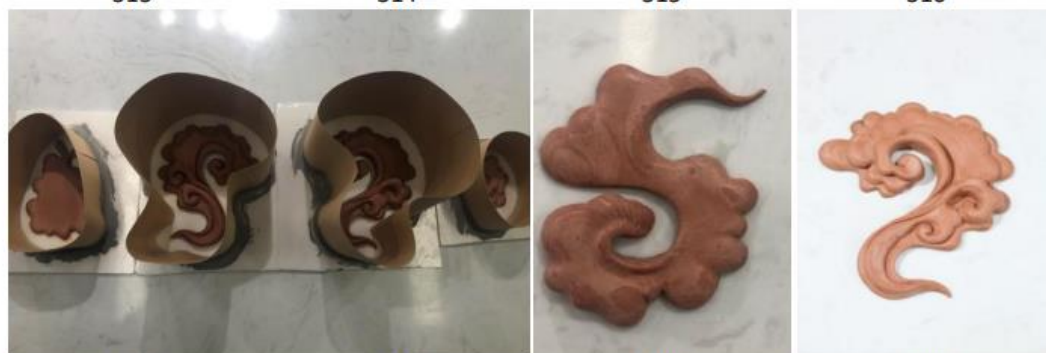


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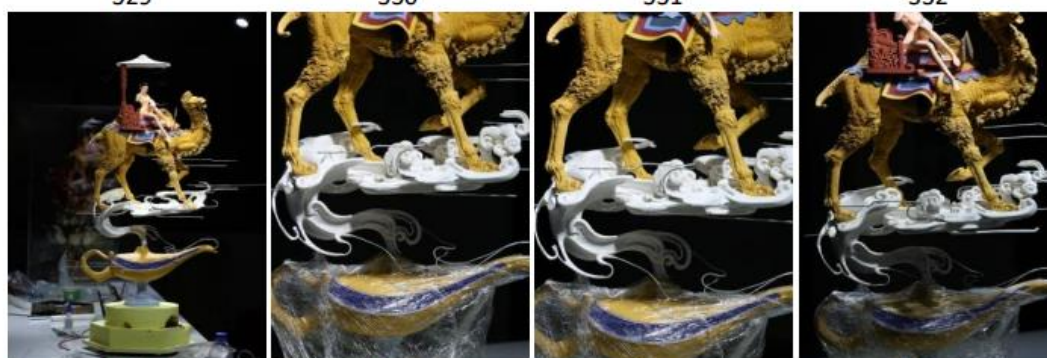


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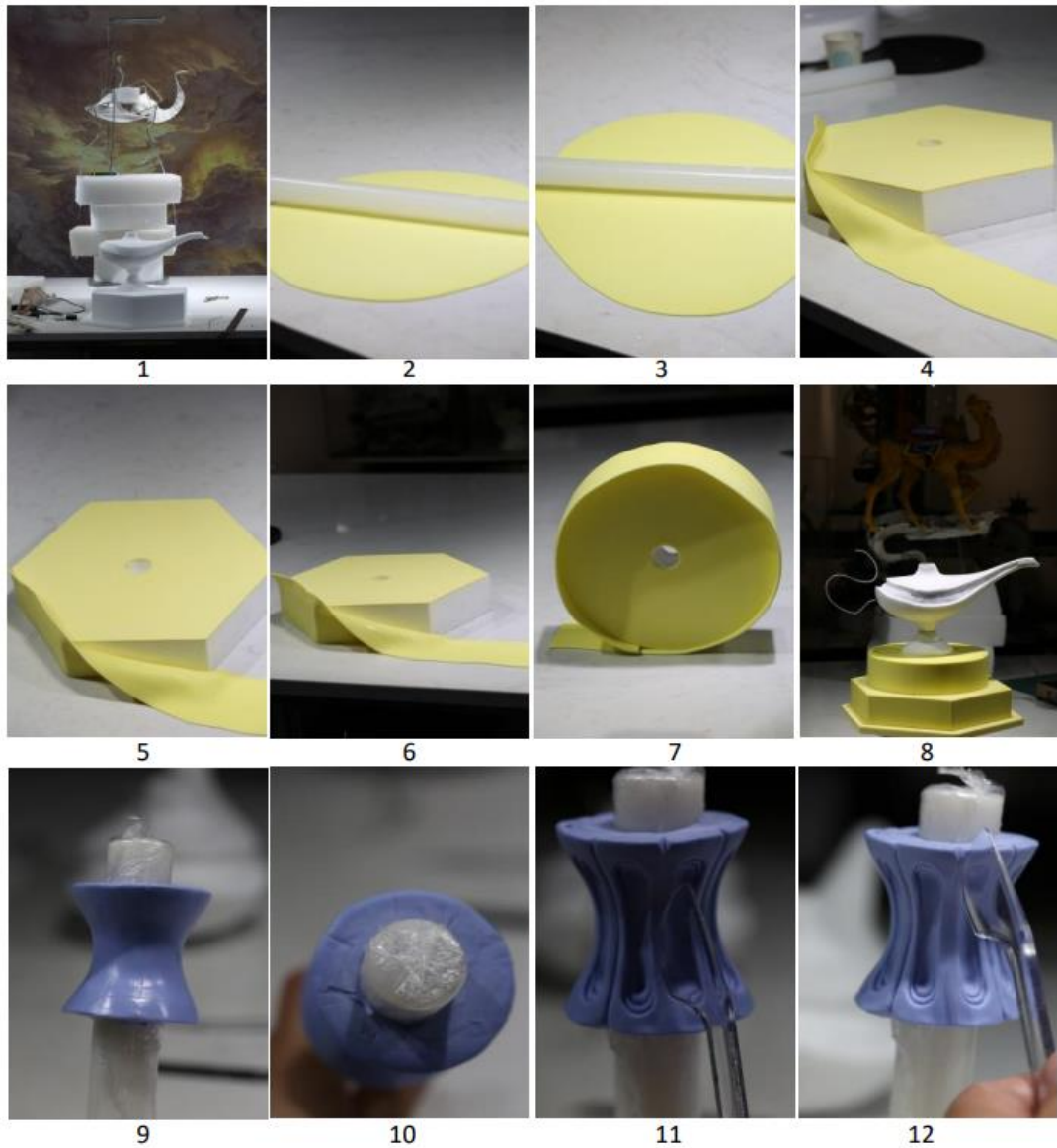
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#### 4.8.6 Details of doll Works plinth production



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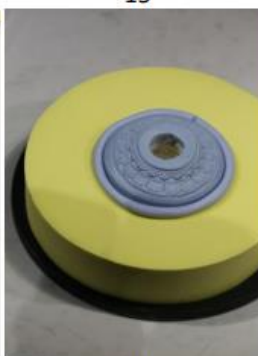
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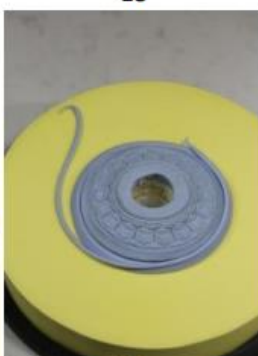
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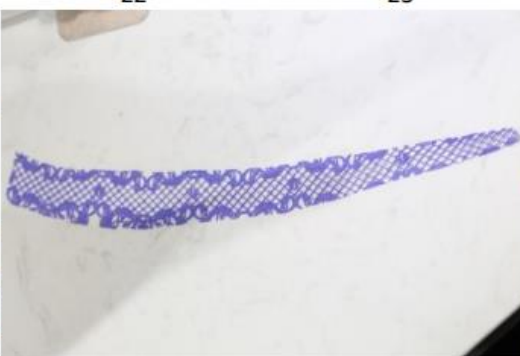
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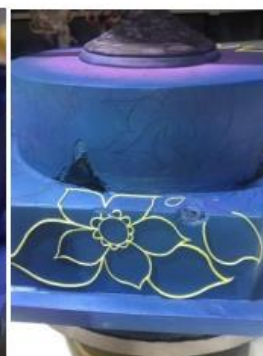
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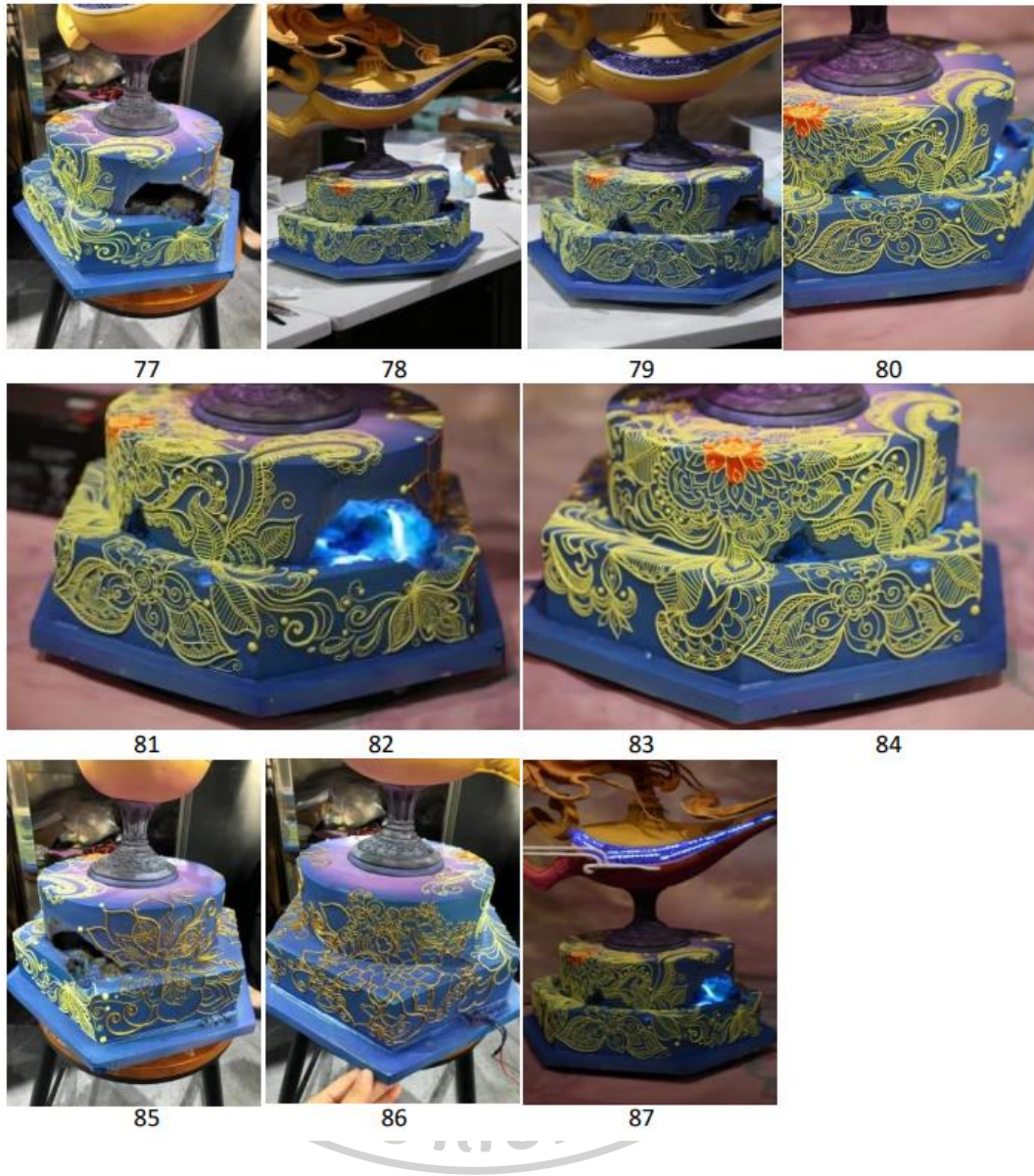


Figure 123: Doll Artwork 3 plinth ( 1-87 )

#### 4.9 Design achievement display



























## Chapter 5: Conclusions and Suggestions

### 5.1 Conclusions

This research has elaborated on the background of the creative work, organized the cultural development context of the ancient Western Regions of China, and the rich mythological stories and legends of the ancient Western Regions of China. Based on the research on the modern consumer demand and satisfaction for dolls, and by referencing the successful experience of Professor Zhou Yi, fondant designs of ethnic-style doll images from the ancient Western Regions of China were created. Finally, a cultural heritage strategy for doll art design in the ancient Western Regions of China, using the ethnic culture of the ancient Western Regions as an example, was proposed.

This research has adopted a variety of research methods, including literature review, questionnaire survey, hierarchical analysis, and interpretive phenomenological analysis. The following work has been completed based on the research objectives.

Objective 1: By reviewing relevant literature, tracing the historical development of ethnic doll art design, and based on the organization of ethnic culture and mythological stories of the ancient Western Regions of China, design Chinese ancient Western Regions dolls that have high aesthetic and artistic value.

Cultural exchange among countries has promoted the development of the global economy and contributed to the progress of the world. The strength of a country is reflected in the inheritance and development of its ethnic culture, which is an important aspect of national development. Art knows no boundaries. Although fondant cakes originated from the West, they have become a global trend. Fondant cake designs not only have edible and visual value but some high-end works also possess artistic value for collection. With the continuous expansion of the fondant

cake market, top-level fondant cake competitions have gained widespread attention. Integrating elements of ancient Western Regions ethnic culture into fondant cake design is an interesting creative idea. It can bring innovative elements, increase the attractiveness of the design, produce works with artistic value, and showcase unique historical charm and cultural connotations, thus gaining market value and further promoting the inheritance and development of traditional ethnic culture. Therefore, this thesis focuses on the aesthetic art of doll art design in the ancient Western Regions of China, based on the inspiration from the ethnic culture and fairy tales of the ancient Western Regions of China, to design fondant dolls that demonstrate the artistic beauty and rich and magnificent Chinese ethnic culture.

This research has extensively consulted and organized a large amount of information on the ethnic culture and mythological stories of the ancient Western Regions of China. The ancient Western Regions culture is rich and diverse, with inheritable value. The creation of ethnic dolls is mostly a product of folk culture and religious culture, with strong regional characteristics. The materials and forms of design are also diverse. The functional aspects of ethnic dolls also demonstrate complexity. The design consciousness of Chinese ancient Western Regions ethnic dolls is deeply rooted in ethnic culture, reflecting the artistic characteristics of mutual learning and inheritance. Therefore, although the design styles are diverse, the inheritance of traditional styles also reflects rich cultural connotations. Ethnic dolls have distinct regional characteristics and are artistic expressions created by creators based on life. They are the inheritance and development of tangible traditional cultural resources. The mythological stories of the ancient Western Regions of China are beautiful, and the beautiful images of fairies, goddesses, and spirits portrayed in the myths convey the artistic sense of beauty generated by the collision of diverse cultures in the ancient Western Regions of China. It is this sense of beauty that inspires the creation of Chinese ancient Western Regions dolls, and the dolls with diverse elements begin to take shape in the mind. The research also summarizes the development context of Chinese ancient Western Regions ethnic doll art design, understanding the historical background, artistic characteristics, materials, forms, and other aspects of ethnic doll creation. The key points of ethnic doll creation are clarified, with the design of fondant dolls inspired by three aspects: appearance,



costume, and props. With these three aspects as the main design modules, efforts are made to design fondant dolls of the ancient Western Regions of China that are innovative, meet the aesthetic preferences of the public, and have the function of ethnic cultural inheritance.

Objective 2: Based on market demand research, summarize the problems in the inheritance of ethnic doll culture and propose targeted cultural inheritance strategies for the artistic design of ancient western region dolls in China, providing theoretical references.

From the development status of the doll and cake consumption market, innovation is the mainstream trend. Conducting basic market research can not only grasp consumers' basic information but also meet their needs, thereby providing references for the inheritance design of ethnic dolls in the modern market. By optimizing the design of ethnic dolls, consumers' needs can be effectively met, thereby gaining competitive advantages in the market competition and realizing the inheritance and development of ethnic doll culture. Using questionnaire surveys and comprehensive evaluations to determine ambiguity, combined with other data processing methods to analyze the demand and satisfaction of modern doll consumption, understand the psychology of modern doll consumption, the level of love and support for ethnic dolls, compared with internationally renowned fashion brands, the design of ethnic dolls is obviously not attractive enough, which has attracted attention and vigilance to its design.

Innovation has become the theme of ethnic doll design. Although there are certain differences in the design of modern dolls in terms of shape, clothing, and body movement functions, the overall style is similar. In terms of the toy market, the design of ethnic dolls faces the problem of gradual saturation in the market, especially under the competition of mature doll brands abroad, the market development prospects of ethnic dolls are relatively narrow. From the investigation of the basic situation of modern doll consumption, it is found that modern doll consumption is deeply influenced by Western culture. The love for doll brands and images is mostly reflected in the characteristic styles of Europe, America, Japan, and other countries. Foreign doll

brands have had a huge impact on the design and promotion of our doll brands. In order to cater to the needs and preferences of consumers, the design of our dolls has also been gradually influenced by Western design concepts, imitating the internationally renowned doll brand styles. Therefore, from the current domestic doll design works, they mostly lack unique styles in terms of shape, function, and concept. Blindly imitating the styles of doll designs from other countries makes our doll designs lack innovation. Moreover, compared with mature production techniques abroad, the doll designs imitated in our country are not favored by consumers, resulting in a gradual decline in the sales of dolls in our country and a continuous decrease in market share. This is a major challenge. Domestic doll brands are minimal, and our country's relatively successful doll brand, Kurhn, although facing fierce market competition, has a very limited market share of ethnic dolls. Innovative development is the key to gaining market advantages for our country's doll toys. Drawing on successful experiences from Western countries does not mean blindly imitating, but should integrate popular elements to attract consumers, with ethnic characteristics as the highlight to expand market share.

The satisfaction and demand of modern doll consumption provide inspiration for ethnic doll design. Although there are certain differences in the design of modern dolls in terms of appearance, clothing, and functionality, the overall style is quite similar. In the toy market, the development prospects of ethnic dolls are relatively narrow, especially under the competition from mature international doll brands, which leads to a gradually saturated market. To better meet the needs of consumers, ethnic doll design should not only focus on exploring ethnic cultural elements and modern innovation planning but also prioritize the development of new industrial markets and attracting target customer groups. This will broaden the market space for the development and promotion of ethnic dolls and make positive contributions to the inheritance of our national culture.

Through methods such as questionnaire surveys and comprehensive evaluation of satisfaction ambiguity, the demands and satisfaction of modern doll consumption are analyzed. It is found that the love and support for ethnic

dolls among modern doll consumers are much lower compared to internationally renowned fashion brands. This undoubtedly sounds the alarm for the design of ethnic dolls. Innovation becomes the theme of ethnic doll design. Although there are certain differences in appearance, clothing, and design among modern dolls, such as the functionality of the base body, the overall style in toy design has similarities but also some minor differences. In the doll market, the development prospects of ethnic doll design are gradually saturated. Especially under the competition from mature international doll brands, the market prospects for ethnic dolls are relatively narrow. To better meet the needs of consumers, ethnic doll design should not only focus on exploring ethnic cultural elements and modern innovative designs but also pay attention to the exploration of new industrial markets and target customer groups. This will promote the expansion of the ethnic doll market, facilitate the modernization and promotion of ethnic dolls, and make positive contributions to the inheritance of Chinese culture.

Objective 3: Design fondant ancient-style dolls with elements of the ancient Western region of China, to promote the cultural heritage of the region through the art of fondant cake design.

Currently, there is a lack of representation of Chinese elements in international fondant cake designs. Fondant cake design itself is already innovative, and incorporating Chinese elements further enriches the artistic value of fondant cakes. Zhou Yi has taken a successful first step by incorporating ethnic cultural elements into fondant design, which has inspired me. Additionally, the pursuit of innovation and fashion in doll design by modern consumers presents challenges for the development and inheritance of our national dolls. In a market saturated with similar doll types and functions, functional innovation and unique styling have become the mainstream trend in the development of national dolls. The consumption demands of modern consumers provide a foundation for the design of fondant dolls with an ancient Western region theme. Given the current situation, it has strengthened my determination to pursue innovative designs for ancient-style Chinese dolls. The ancient Western region of China has a history of cultural interaction and

integration among multiple ethnic groups, resulting in the development of diverse Western region ethnic cultures through competition and compatibility. Through extensive research on ancient texts and mythology, I have gained an understanding of the excellent ancient Western region ethnic cultures and explored the mythical stories that have been passed down to this day. These stories depict numerous enchanting young girls, and the charm of the texts inspired me to envision their vivid images and explore the idea of showcasing them through fondant craftsmanship. Following the principles of cultural diversity and innovation, my approach is to use the rich traditional culture of the ancient Western region as the foundation for doll design, blending traditional elements with contemporary aesthetic trends to showcase the unique charm of ethnic cultures. The emotional positioning of the design is focused on the inheritance of national doll culture and China's outstanding traditional culture, stating that "the design of fondant dolls with ancient Western region elements is not only a pursuit of fondant art, but also a continuation of national doll culture and China's excellent traditional culture." I have designed fondant ancient-style dolls with elements of the ancient Western region, and provided a detailed process for each step of their creation. By showcasing the meticulous craftsmanship, the final result is a fondant doll with a distinctive ancient Western region ethnic style, providing innovative design ideas for the development and inheritance of national dolls.

## **5.2 Suggestions**

From the producer's perspective, exploring the cultural characteristics of the ancient Western Regions of China, combining modern trendy elements, forming iconic Chinese ancient Western Regions doll art design works, and constructing a national brand image with brand value. Establish a brand strategy development approach, construct an influential brand image, and promote the Chinese ancient Western Regions doll art design culture as a national brand, thereby forming its own brand influence and laying the foundation for the inheritance of Chinese ancient Western Regions doll art design culture.

From the market perspective, lay a good market environment for the

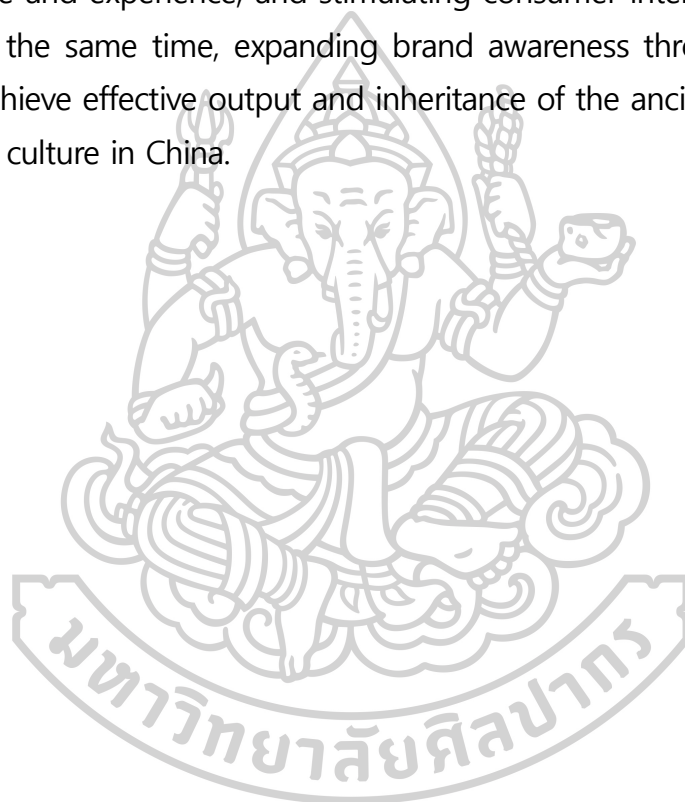
construction and orderly development of the national brand of Chinese ancient Western Regions doll art design works. Further promoting the brand to the market is the key foundation for its further development. The promotion of the national brand manifests differently in different stages; in the promotion stage, with the function of ancient Chinese Western Regions dolls as the core, the focus is on promoting the inheritance of national culture; in the brand growth stage, the distinctive features of Chinese ancient Western Regions dolls are the main focus, and the creation of Chinese ancient Western Regions fondant dolls, with their national characteristics and edible features, is the prominent feature for promotion; in the brand growth stage, the construction of the Chinese ancient Western Regions doll art design brand image requires continuous innovation in function, design and highlighting characteristics to promote product development and progress; in the brand maturity stage, the focus of market promotion is the influence of the Chinese ancient Western Regions doll art design national brand on consumers, driving the development of more industries and cultures.

From the government level, it is important to publicize the importance of national brand image building and the inheritance of excellent traditional culture, and to stimulate the enthusiasm of creators. Utilize the internet, media, and domestic competitions to fully promote Chinese ancient Western Regions doll art, so that the public can enhance their understanding and aesthetic cognition of Chinese ancient Western Regions doll art. Relevant teaching courses can be integrated into school education to cultivate a solid talent base for Chinese ancient Western Regions doll art.

From a societal perspective, guiding consumers to develop a sense of national brand identity and admiration for excellent traditional ethnic culture can build a broader mass base for the cultural inheritance of ancient Western region doll artistic design in China. National brands are characterized by Chinese culture and deeply rooted in the hearts of domestic and international consumers. Brands that showcase the "independent" traits of the Chinese nation have advantages in international market competition and can gain a place on the international stage. Local brands have established a favorable

image by meeting consumer needs, further promoting national brands, expanding the market development space for ancient Western region doll artistic design, and increasing their market influence.

From a marketing perspective, the development of marketing strategies for national brand promotion of ancient Western region doll artistic design in China should focus on the development of national brand characteristics. By integrating product design with traditional culture, creating a unique style and experience, and stimulating consumer interest, both sides can benefit. At the same time, expanding brand awareness through online media can also achieve effective output and inheritance of the ancient Western region doll artistic culture in China.



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## Appendix

### Appendix 1:

#### Exploring the Ancient Western Regions

From August 11 to September 26, 2004, the reporter visited two ancient states, Pulei and Qeshi, near the Tianshan Mountains, among the "Thirty-six States of the Ancient Western Regions", experiencing the vicissitudes of time and the vibrancy of the present. "The state of Pulei, the king ruled the western Shuyu Valley of the Tianshan Mountains. It was 8,360 li (4,180 km) away from Chang'an, had 325 households and 2,032 people, with 799 elite soldiers. There was one Marquis of Assisting the State, one Left and Right General, and one Left and Right Colonel." (From the "Biography of the State of Pulei" in the Book of Han) The state of Pulei was located in the eastern part of the ancient Western Regions, in the present-day Balikun County. It was a crucial battleground for the northern nomadic tribes to enter the ancient Western Regions. During the period of Xiongnu rule, the state of Pulei, with a population of 2,032, was mainly engaged in pastoral production. They were skilled in riding and archery and were brave and heroic in battle. Unwilling to endure the cruel oppression of the Xiongnu, they rose up in rebellion, nearly leading to the destruction of their state. In 60 BC, the Han dynasty army captured Gushi, dividing Qeshi into the Front and Rear states, and Pulei into the Front and Rear states, with the state of Pulei under the rule of the Han dynasty. During the Eastern Han dynasty, only the Front state of Pulei remained, later being merged into Gushi.

#### Footprint 1:

As soon as I entered Lanzhou Bay, I was quietly surrounded by a sea of yellow. The eternal wandering wind in the vast sky and earth seemed to hum an ancient ballad, recounting the changes of time and space. Standing on top of the Aobao, which dates back three thousand years, and looking at the things before me, I felt a sense of reality and distance. According to the "Book of Han", it is recorded that "the state of

Pulei, the king ruled the western Shuyu Valley of the Tianshan Mountains." The specific location of Shuyu Valley cannot be determined to this day, but based on some related information and the consensus of local knowledgeable individuals, it is believed to be in the southwest of the present-day Balikun County. Therefore, I continued southwest and arrived at Lanzhou Bay.

Lanzhou Bay is located 5 kilometers southwest of Balikun County, with the Barikun Mountain of the eastern section of the northern Tianshan Mountains to the south, and the fertile grasslands of Balikun to the north. It is said that a group of people from Lanzhou settled here after moving from the county, hence the name Lanzhou Bay.

In the 1970s, archaeologists of the ancient Western Regions discovered the site of Lanzhou Bay in Balikun. In 1984, the Institute of Archaeology of the Ancient Western Regions conducted the first excavation work at Lanzhou Bay, unearthing a large number of cultural relics, including stone tools, bronze objects, and pottery. After radiocarbon dating of carbonized wheat grains found inside the pottery by researchers from the regional cultural relics and archaeology institute, it is believed that this is a site where humans lived around 3000 years ago.

In 2002, Professor Wang Jianxin from Northwestern University led a ten-day archaeological excavation at Lanzhou Bay, along with students and professionals from the region. Within a range of 5 kilometers east to west and 3 kilometers north to south, a total of 11 groups of more than 100 architectural remains, over 200 ancient tombs, and more than 1,000 ancient rock paintings were discovered. According to research, human activity can be traced back to the Neolithic Age, around 6,000 years ago. The abundant cultural relics and the dating of these artifacts indicate that there was significant human activity in the area during the late Qin and early Han dynasties. Coupled with the unique geographical location of Lanzhou Bay, nestled between

mountains and facing the sea, experts speculate that during the Western Han period, around 2,500 years ago, the Pulei Sea covered an area of approximately 500 square kilometers on the Balikun grassland surrounded by mountains. At that time, there was likely a grassland in a strip shape between the southern coast of the sea and the Balikun Mountain, providing an ideal pasture for nomadic tribes. Considering the archaeological sites found in the coastal area, Lanzhou Bay was the most active place for human activity two to three thousand years ago, and one of the sites has been confirmed as the residence of the royal family of the Yuezhi, suggesting that the people of Pulei, who replaced the Yuezhi, had sufficient reasons to establish their capital here.

According to historical records, the original location where the Yuezhi people roamed was known as the "Dunhuang-Qilian region". The interpretation of "Qilian" has been a subject of debate among scholars, with some suggesting that it refers to the eastern Tianshan Mountains. Therefore, the original grazing area of the Yuezhi people was likely located in the Dunhuang region and the Hami-Balikun area traversed by the eastern Tianshan Mountains. During the late Qin and early Han dynasties, the Xiongnu, led by Modu Chanyu, defeated and expelled the Yuezhi people. They established a nomadic grassland state by the Pulei Sea, naming it "Pulei." In the Turkic language family today, "Pulei" means "water and grass". Throughout history and migrations, Pulei became the first important town on the northern route of the Silk Road to enter the ancient Western Regions. Today, several dozen households, descendants of Lanzhou, live here in peace and tranquility. I believe that history should be peaceful. Many years later, they will also become part of history, blending quietly with this yellow land.

### **Footprint 2:**

I believe that one of the main reasons why "Pulei" became a country back then was largely due to water. Because wherever there is water, it is full of vitality and life, especially for nomadic peoples whose survival principle is to follow the water and grass". To truly establish a country, it also means

having a relatively stable living environment, which requires a significant amount of water.

The "Pulei Sea", now known as Balikun Lake, had an area of 800 km<sup>2</sup> in ancient times. It later shrank to 500 km<sup>2</sup>, and by 1944, it was reduced to 140 km<sup>2</sup>. In 1984, it measured between 112 and 115 square kilometers, and now it is only a little over 70 square kilometers. The lake is rich in brine shrimp eggs (commonly known as "golden sand"), which are precious live bait for marine delicacies. The lake is located 17 kilometers north of the county town. If it weren't for the shrinkage of the lake, the county town today would still be surrounded by a vast expanse of water. But history is marvelous in this way, and the people of Pulei, who lived over 2,000 years ago, probably never imagined such changes.

There are many beautiful legends about Pulei Sea, and the most well-known one is as follows: A Han ethnic girl and a Kazakh youth named Pulei Hai joined forces to fight against the mountain demon that was destroying the lake. The girl was petrified under the sharp mountain, while the Kazakh youth held onto the mountain demon and sank to the bottom of the lake. They sacrificed their lives to bring peace and happiness to future generations. In memory of them, the multiple springs under the sharp mountain were named "Han Gu Spring", and the lake was called "Pulei Sea". There is a huge north-south sandbank in the lake, dividing it into the eastern and western parts. The eastern lake is sparkling blue, while the western lake is silver-white. Standing on the sharp mountain and looking out at Balikun Lake, the distant white seems like unfrozen ice at the foot of the Tianshan Mountains. Of course, these are legends that people have added colors to over time, but the beauty of the legends themselves has cast a fascinating veil over this barren stone mountain and endangered saltwater lake. Perhaps, one of the benefits of history is that it imparts a mysterious meaning to ordinary life, making it no longer mundane.

As I walked towards the lake, I realized that the seemingly vast Balikun grassland, with its lush green grass, was not actually flat. It was filled with meadows dotted with starry nebulae and marshes of varying depths, with numerous streams

running through them. The first 100 meters were relatively dry, allowing me to freely walk on the grass. However, as I went further, it became increasingly wet. Puddles of water were everywhere, and in order to keep my shoes dry and stay safe, I had to jump from one meadow to another. Fortunately, the distance between the meadows was not too far apart. With twists and turns, I gradually approached the lake. But as I got closer to the lake, I discovered that the area 15 meters away from the water was filled with unfathomable marshes. The marshes were covered with unknown plants, and numerous dried yellow hay soaked in the water, making the ground muddy and soft, preventing me from getting close to the water's surface. At this moment, I heard the sound of horses neighing in the wind. My spirit suddenly became trance-like, and the boundaries of time and space blurred. I believe that whether it was the ancient Pulei horses from three thousand years ago or the famous Balikun horses that spread across the world three thousand years later, the neighing came from the same throat. This is a part of animals that humans have never learned. Humans are always eager to achieve and often overlook the quiet and eternal aspects of things.

### **Footprint 3:**

Whether it is in Lanzhou Bay or along the entire Pulei coastline, there are scattered ancient rock paintings. Rock paintings are symbols carved by ancient humans on rocks to reflect human life, production, and warfare. They are primitive languages and writings recorded by humans on rocks. The ancient Pulei people left their real-life footprints on the rocks, recording what they saw and heard. In an era without written records or relatively weak awareness of writing, rock paintings served as a substitute for words, reflecting a glimpse of ancient human life.

The rock paintings in Barkun are scattered, mainly concentrated in three places: the Shirensi site, Dongheigou site, and Baqiangzi mountain top site. At dusk, walking among a pile of scattered rocks, under the ancient sky and clouds, with the distant west wind, one reminisces about the riders of the past, the deer playing in the mountains, and galloping on the grasslands. An impulse leads you involuntarily into these rock paintings. Carefully reading

each painting, imagining the stories they tell, it feels like finally opening a window. On one side of the window is me, and on the other side stands the ancient people who once lingered among these stones thousands of years ago. The general form of rock paintings mainly records a part of people's lives at that time, such as livestock and used tools. Most of them are simple individual patterns, such as ibex, goats, camels, horses, cows, wolves, dogs, snakes, and other animal patterns. There are also some patterns that resemble monsters, which experts have not been able to confirm. Another part is tool patterns closely related to people's lives at that time, such as wheels, bows and arrows, spears, and stones.

From simple individual records to gradually evolving into group records, from simple pattern records to richly detailed group patterns, this should be the timeline revealed by the unordered rock art group. The subtle changes between two styles of patterns tell us the development and changes of the people who once lived here. If the simple individual patterns belong to the earlier records of the Yuezhi people, then the few group patterns depict the true portrayal of life during the Pulei period that I have been searching for.

During the Pulei period, more wars required more physical supplies for the people. The best way to supplement physical strength at the time should have been to consume large amounts of meat. So they had to learn to hunt, from the pattern of holding stones to hunt, gradually developing to the pattern of using bows and arrows, from a single person hunting to several people hunting together. Until frequent hunting could no longer meet the needs of human development, people began to tame and raise the remaining prey, which led to the appearance of rock paintings of domesticated livestock, as well as shepherd paintings. With the development of productivity, manufacturing also emerged, so the appearance of wheel patterns proved that the Pulei people had entered the stage of using simple transportation tools at that time. Meanwhile, it also foreshadowed that large-scale wars for the sake of interests were not far away, and the Pulei Kingdom began to face a crisis.

## **Appendix 2:**

### Validity Evaluation of Expert Questionnaire

1. Does the questionnaire design align with the research objectives and questions, and can it effectively collect the required information?
2. Is the content of the questionnaire clear and easy to understand, or are there any ambiguous or leading questions?
3. Do the questions in the questionnaire comprehensively and accurately reflect the theme and content of the research?
4. Are the questions in the questionnaire too lengthy or repetitive, and do they need to be simplified or adjusted?
5. Is the structure of the questionnaire reasonable, with clear logical relationships between questions, and are there any instances of skipped or missed questions?
6. Are the language expressions in the questionnaire appropriate and in line with the cultural background and language habits of the respondents?
7. Are the options in the questionnaire diverse and comprehensive, covering possible responses from the respondents?
8. Are the survey subjects of the questionnaire appropriate and representative of the overall situation of the research population?
9. Has the questionnaire design considered privacy protection and data security issues?
10. Is the allotted time for completing the questionnaire reasonable, or is it too long or too short?
11. Does the overall design style of the questionnaire attract attention and stimulate the interest and engagement of the respondents?



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