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Doctoral Dissertation

Research on the Sustainable Inheritance and  
Application Expression of Cultural Element and  
Painting Language through Design Practice

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# Abstract

Globalization has led to the unification of commodities and design styles and the progress of human civilization requires cultural differences and diversity. Design requires a heterogeneous mixture of linguistics and culture and is a tool for visual communication. The charm of semantic is reflected mainly in the accuracy and unique way with which information is disseminated, and design semantic is a process of effectively communicating design information in design practice.

Modern design practices should reflect both the value of traditional culture and the needs of modern society. The aim of the research is based on the analysis of oriental traditional painting language and cultural elements, exploring the creative expressions of the translation of cultural language from one-dimensional to diversified design. In this research, we extract cultural language and symbols as the research objects. Explore the expression of traditional cultural language and symbols, and stimulate the development of the diversified design of traditional cultural items in practice. Focusing on rational development and adaptive reuse elements can prolong the life cycle of items, guide the cultural positioning of elements in the design process from the perspective of sustainable emotional inheritance, and arouse cultural vitality.

Based on the theory of Oriental semantics to showcase the possibility of redesigning and using cultural elements in creative design activities. Practical examples analyses are provided as to how to integrate cultural items into the creativity design model, which culminates in the transition from design elements into unified information with applicability value. The analysis and redesign of elements come from a series of design cases of the practical creative design model. For example, you can see it in the five-insect motifs used for the Dragon Boat Festival, which shows a way to integrate the image of seasonal insects into fashion design and lifestyle. The item's inheritance of culture activation can become an inspiration source for the designer during the creative practice process. The practicality and fashion of cultural elements realize the emotional interaction between people and traditional culture and promote inheritance.

Traditional paintings constitute a mostly two-dimensional medium, with flowing, intangible, and casual language features. In the field of creative design, research and explore the scalability of painting and find various forms suitable for development. It is a design expression language that conveys aesthetics and philosophical thoughts through media. The design practice obtains creative inspiration through direct contact between the water on the nib and the ink of different shades in the painting language. This quick and direct way of expression brings experience advantages to design activities. Concretely, we use ink as an extension tool for design language development, because it can provide great flexibility and plasticity. Through the exploration of the combination of multidimensional expressions of Oriental ink painting language and the design practice of fashion accessories, the languages of Oriental ink paintings are expanded to the multidimensional design form with fashion inheritance.

To demonstrate the process of creative thinking in design practice and to present the possibilities of water-ink art in a design product. The unique point of this case study is to extract and incorporate

traditional painting language and elements into the process and application of creative design. Under subjective control, the evolution of water and ink produced the contingency of ink color, familiar with the nature of water and ink to extract the design language, and then conduct the experiment. The originality of this research lies in analyzing the humanistic spirit embodied in the field of modern design from the perspective of painting language and exploring the ways and means of traditional semantics. Through the inductive method, data analysis method, and questionnaire survey method, the traditional painting language refinement is summarized into modern design creation service.

Based on the traditional cultural symbols, the theory of auspicious semantics in pattern decoration, and the practice of creative semantics of cultural symbols in apparel design, the Items Activation Inheritance (IAI) model was derived. This model derives from the empirical study of the interaction between traditional culture and art creative design; it focuses on the process of creative practice and design work and allows the sustainable development of recycling between culture, art, and creativity; it focuses on the problem of understanding tradition and interactive creativity is the redesigning of the inherited forms of traditional cultural and artistic ideas. The process of guiding practice consists of two stages: first, modern design works inherit the essence of ancient civilization; and second, innovation and development in the process of inheritance, the way of thinking that the harmony between humans and nature in Eastern culture is applied to modern design works to inherited and promoted.

Design products will drive the public's aesthetic orientation and play a role in cultural guidance. Practice the innovation of applying cultural elements to clothing and apparel design, and provide references for other visual communication research with realistic cases. To let the younger generations of designers participate in design practice activities, and the younger generation accepts the inheritance of consumption of design works that reflect cultural elements. The use of data analysis systems and models ensures innovation that supports design research. At the same time, it tries to provide a scientific judgment method that satisfies consumers' satisfaction with the image of clothing culture and provides contribution and value to the construction bring to knowledge science.

- Applying the elements of traditional culture to the new design theme, the subject carries the culture, and finds a new support for the traditional culture. Refining cultural language into design products, showing the practical possibility of ink elements in modern design.
- To expand the connotation of "inheritance" is to use modern people's concepts and methods to interpret design, develop traditional culture and the mental outlook of today's people, and turn it into a visual language of flowing walking.
- From the research of a single field to the diversified presentation of creative design, it has theoretical and applied research significance. In the later stage, it will produce richer application effects and promote the integration of tradition and creativity in people's daily lives.

**Keywords:**

Cultural Emotion, Experimental Ink, Items-Activation-Inheritance (IAI), Creative Fashion Design, Sustainable Inheritance

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# List of Publication and Presentation

## 1. Papers published in journals

- Bo Du, Yukari Nagai and Manqian Wang. Fashion Creative Practice Exploration Multi-dimensional Performance from Painting to Creative Design. *Kindai Management Review*, Vol. 7, No. 4, ISSN 2186-6961, pp. 54-66, 2019.
- Bo Du and Yukari Nagai. Sustainability of Cultural Semantics: A Case for Unlocking Fashion Design with Experimental Inks. *Trends in Textile Engineering & Fashion Technology (TTEFT)*. 7(2). pp. 839-841, 2022.

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- Bo Du, Yukari Nagai and Manqian Wang. Toward the Inheritance and Application of Cultural Symbols in Apparel Creativity Design: A Case Study Using Seasonal Insects. *The Thirteen International Conferences on Knowledge, Information and Creativity Support Systems (KICSS 2018)*, November 15-17, 2018. Pattaya, Thailand.
- Bo Du, Yukari Nagai and Manqian Wang. Toward the Application and Inheritance of Cultural Symbols in Creativity Design based on IAI model. *Smart Information / Smart Knowledge / Smart Material Workshop (SISKSM 2019)*, January 22-24, 2019. Pathum Thani, Thailand.
- Bo Du, Yukari Nagai, Eunyoung Kim, Takaya Yuizono and Manqian Wang. Acquiring Design Language: Creativity of Experimental Ink Semantics Conversion in Design Education. *The 21st International Conference on Engineering and Product Design Education (E&PDE 2019)*, September 12-13, 2019. Glasgow, United Kingdom.
- Bo Du, Yukari Nagai and Manqian Wang. Fashion Creative Practice Exploration Multi-dimensional Performance from Painting to Creative Design. *The First International Conference on Creativity and Innovation (ICCI 2018)*, September 10-12, 2018. Osaka, Japan. (Best Student Paper Award).

# Chapter 1

## Introduction

### 1.1 Research Background

Today's creative design practices don't simply involve the process of the creation of an item from scratch. With the rapid development of science and technology, commercialization and mass production has shaped the modern apparel industry; different clothing brands have entered the market environment and novel products surround consumers. The variety of products is extremely rich, emphasizing the pursuit of individuality, its appearance is charming, cute, and colorful. A design that attracts people's eyes can drive the sales of goods but buying it because of attraction, then becomes a useless idle display. This is also the burden that design brings to people. Some simply copy the design elements and only emphasize commercials, a large number of cultural treasures have been lost. In such an environment that the consumers are surrounded by novelty things, and various elements are adopted and standardized in the name of fashion. These elements are dead inside the design and turning into frivolous with no life in them.

The use of cultural elements is not only a simple raw material for the design process but also reflects the unique regional and cultural emotions. We propose to activate the diversity of cultural element design in specific regions and environments, increase the emotional experience of consumers' needs on apparel, and achieve the sustainable development of the inheritance and application of cultural fashion design based on emotions. Although some designers have realized the importance of cultural heritage, the inner spiritual connotation of traditional cultural elements urgently needs to be deepened and explored in creative practice (Yang, Bao and Shen, 2020).

The continuation and sustainable inheritance of culture require the investment of emotions and energy passed on intergenerationally. The evolution of apparel continues and follows history, and it also has the mission of inspiring and triggering inheritance, which is a part of sustainable development. Discovering and establishing elements with inherited characteristics require following the ethnic style created and shaped in the long-standing and excellent culture. It cannot be limited to the color and shape of the surface. Finding the cultural background that arouses the continuation and development of culture and design

inspires the inherent core value of the elements (Roland, 2018).

Embracing cultural elements in creative works has become the responsibility of the times for the development of design practice today. The creative design needs to inherit the spirit of traditional humanistic thinking. It contains the symbolic semantics of culture and is an artistic style with a profound national cultural foundation. To set up the new item with characteristics from the elements of culture, it is inevitable to inherit and sustainability develop the ethnic style created and shaped in the long-standing and excellent culture, which is the main point of design heritage. Some designers may be too eager to reuse familiar design features rather than explore problems and generate new design functions. Tracking the roots of creative design, the design process is not limited to the creation of a new object (McDonald, 2011). Contemporary creative designs focus on the inheritance of unsolved. We first learn the traditional cultural ideas and then use modern vision, ideas and attitudes to complete the creative design works.

This doctoral dissertation is based on cultural inheritance through a lot of practical research, focusing on the field of clothing and apparel. The use of cultural elements in clothing design requires that they have the visual identification characteristics of traditional elements to make the dissemination of cultural information clearer. Fashion design not only needs to have the visual identification characteristics of elements, but also the cultural connotation of the elements, and it should conform to the law of formal beauty generally recognized by consumers. In conveying cultural elements through clothing design, we need to choose the cultural elements suitable for the image of clothing, and use the popular form for re-design. Design cultural clothing design works recognized by consumers. Based on the above, we urgently need to provide guidance in creative design practice and find reasonable and effective ways to activate traditional cultural elements to revitalize them in our time.

## **1.2 Cultural Awareness of Design**

### **1.2.1 Cultural heritage**

Cultural heritage is the wealth left to mankind by history. From the aspect of existence, it is divided into the tangible cultural heritage and intangible cultural heritage. Cultural heritage is cultural relics with historical, artistic, and scientific value; intangible cultural heritage refers to a variety of traditional cultures that exist in intangible forms, are closely related to the lives of the masses, and have been passed down from generation to generation. Any nation will form a certain unique visual habit after a long process of survival and development, and pass it on from generation to generation. This is what we call the inheritance of cultural heritage (Figure 1).

The definition of cultural heritage is a prerequisite for the smooth development of cultural heritage design. The United Nations Educational, Scientific and Cultural Organization (UNESCO) has defined cultural heritage as “the totality of tradition-based creations of a cultural community, expressed by a group or individuals and recognized as reflecting the expectations of a community in so far as they reflect its cultural and social identity,” cultural heritage continues to evolve conceptually to reflect a more dynamic and holistic concept.



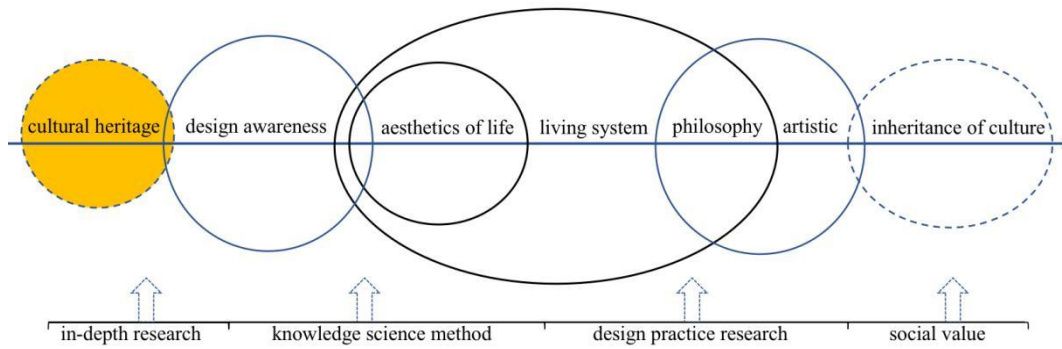


Figure 1. Sustainable design inheritance of cultural heritage

The meaning and function of cultural heritage:

- Cultural heritage is the crystallization of the wisdom of our ancestors. It intuitively reflects this important process of human social development. It has historical, social, technological, economic, and aesthetic values, and is indispensable material evidence for social development.
- Cultural heritage contains the unique spiritual value, way of thinking, and imagination of the nation. It embodies the vitality and creativity of the nation. Cultural heritage is the crystallization of a nation's wisdom and the treasure of the civilization of the whole humanity.
- Strengthening the protection of cultural heritage is an inevitable requirement for the construction of advanced culture, a scientific outlook on development, and harmonious society. Cultural heritage, as the historical relics of human nature and social activities, whether they were originally spiritual or material, reveals historical phenomena from different aspects and fields. It can reflect the ideological, moral, and scientific level of the ancient people, and their value and function are eternal.
- The modernization process of traditional culture needs to give practical value in daily life, which is a sustainable inheritance of aesthetic conception and artistic spiritualism.
- Cultural heritage can help people to absorb the nutrients of national spirit widely; Cultural relics play an irreplaceable role in inheriting cultural education; Cultural heritage plays an important role in foreign exchange and tourism development and protection.

### 1.2.2 The vitality of cultural heritage

Chinese culture displays characteristics of self-improvement, peace and tranquility, happiness in contentment, dedication, respect for etiquette, and so on. For the refinement of cultural studies, the spiritual heritage of culture lies in the words “harmony” and “combination.” Harmony means harmonious, peaceful, and balanced; combination means integration, cooperation, and consolidation. In Chapter 42 of Lao Tzu's Tao Te Ching, The Book of the Way, it is mentioned that the Tao produced One, One produced Two, and Two produced three. Three produced all things. It is Lao Tzu's theory of cosmogonies. In traditional Chinese culture, the emphasis is on “harmony between human and nature”, the recognition of the unity of man and nature, and the unification of the relationship between the natural world and the spiritual world. Humankind is a part of the natural world, and we obey the law of nature.

Heavenly principles and moral principles are consistent with natural laws, and life ideals are in harmony with nature.

A large number of artworks such as poetry, dance, drama, calligraphy, and folk crafts depicting the image and symbolic meaning of the elements have been left over from the past dynasties. Traditional cultural elements, the traditional graphic symbols of magpie, carp, dragon, and phoenix, are all traditional elements that represent auspiciousness and wealth, and they are often used by designers in the design process. In modern clothing, there are many designs about cultural expression. This is consumers' demand for traditional cultural clothing, and it also reflects consumers' affection for traditional cultural elements. From this, we can see that the vitality of traditional cultural elements is unlimited, which provides more choices for designers to use in fashion design (Figure 2).

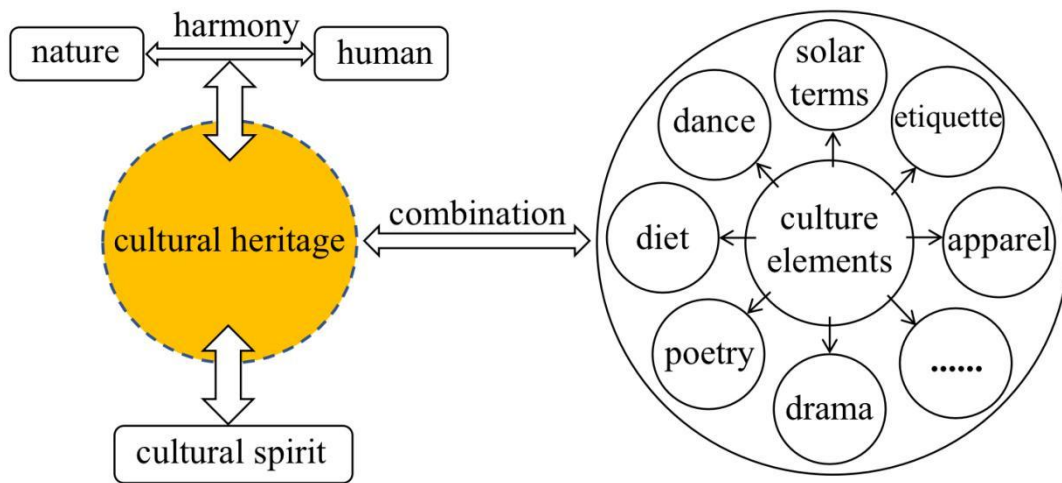


Figure 2. Interpret the richness of cultural heritage

For example, the cultural heritage of the Chinese zodiac has continued its vitality in different eras. The zodiac conveys culture through the image of animals, and there are also different forms of cultural inheritance in Asian countries. The origin of the Chinese zodiac is related to animal worship, and the totem dragon of Chinese culture is also among them. Each zodiac has rich legends and forms a conceptual system based on it, which has become an image philosophy in folk culture, such as the zodiac sign in marriage and the birth year. In modern times, more people regard the Chinese zodiac as the mascot of the Spring Festival and a symbol of cultural and entertainment activities.

### 1.2.3 The design demand for cultural products

The design originated in the field of human material civilization, it is a diverse and creative activity of human beings (Willem, 1991). Nagai emphasized that design works can convey culture, art, technology, and professionalism and are a medium of communication between designers and viewers (Nagai, 2015). Modern design should not only meet the needs of modern society but also reflect the value of traditional cultural heritage (Feng, 2006). At present, clothing research generally focuses on the implementation of research and development in the field of clothing intelligence and high technology and has made some progress. The constantly evolving science and technology in various fields and the

globalization of commodities led to the unification of design styles. The progress of human civilization requires respect for cultural differences, and we should reflect on the importance of cultural diversity inheritance in design practice (Bonvillain, 2000).

The growing spiritual and cultural needs of the people have promoted the sustainable development of the cultural consumption market. With the continuous improvement of the national quality and the continuous enhancement of cultural consciousness, the cultural consumption of the people will be higher in the interactive experience and exchange of cultural projects. Cultural consumption covers many fields, and cultural consumption innovation also requires cross-border integration in many fields.

It should not be ignored that design considers returning to the deep cultural heritage, namely the cultural symbolism and the attributes of expressing cultural emotions. Although some designers have realized the importance of cultural elements in design, they use them arbitrarily without consideration. Fast fashion and haute couture retailers, fashion trends have been repeatedly appropriating traditional cultural elements for years. The reason is that driven by commercial interests in copying elements, imitating surface symbols, and expressing too straightforwardly (Chan, 2015). Designers should understand the exact meaning of traditional culture and the inner spiritual elements before using them (Seo and Kniazeva, 2015).

The excavation of cultural connotation is the basis for improving the quality of cultural products and promoting cultural inheritance. It is the core appeal of consumer entities and the focus of supply entities. Cultural experience, daily plus culture plus experience, comprehensive use to effectively stimulate cultural experience consumption. Technology will provide support for the development of cultural consumption, create an immersive cultural atmosphere, spread and share in real time, and make positive contributions to cultural development.

To reshape the public's attention to cultural heritage and satisfy the public's emotional desire to purchase, contemporary fashion design requires designers to design through an effective visual process. Designers are required to fully understand the characteristics of traditional culture, analyze the similarities and differences between different national cultures, and then redesign based on the research results on the recognition of the style and form of traditional cultural elements (Rogers, Graham and Mayes, 2007). Leading the trend of fashion by design digging into the uniqueness of traditional cultural elements to meet people's cultural spirit needs.

### **1.2.4 Inheritance of cultural heritage**

Culture carries the wisdom of mankind and needs to be passed on in continuous development. With the improvement of living standards, the traditional costume's semantics can not meet the high demands of modern people's aesthetic feelings. Inheritance is not only the modern people's inheritance of traditional material and cultural forms, but also the creation of costumes belonging to this era, which will be passed down to future generations and will be influenced by traditional culture.

People inherit and carry forward the national culture, and get the national sense of belonging and cultural self-confidence. This inheritance and development is a kind of visual

memory and storage. No matter which nation or culture, inheritance is undoubtedly the most important. Inheritance is not only subjective acceptance, but also use, to meet the current fashion taste, accepted by people's emotions, and even loved by this period.

Table 1 presents data on the concentrated areas of cultural product experience. People choose more in cultural venues, such as museums, cultural centers, art galleries, libraries, and urban commercial and leisure areas. These places are the concentrated areas of culture and art, which provide orientation and direction for the design and research of cultural elements.

Table 1. Cultural consumption experience concentration consumer area

Concentrated Areas of Physical Cultural Consumption	Consumer
cultural venues (museums, cultural centers, art galleries, libraries)	<b>57.0%</b>
urban business district, leisure district	<b>60.0%</b>
comprehensive cultural service center	22.9%
tourist attractions	12.8%
other	0.2%

Cultural inheritance has become one of the important development research topic in design today. The form of inheritance is necessary for the culture to inherit, but also easily lets modern people accept it. To feed the modern aesthetic and needs, we need to keep traditional cultural elements essence and erase their dross. Now we see design works as a material carrier, to explore the inheritance way. Incorporating cultural elements into creative works, so that design works can convey and inherit the development of culture.

Contemporary young people have diverse aesthetics and self-confidence, and they show a strong interest in traditional costumes, classical musical instruments, traditional dances, and traditional food. The return of traditional culture not only creates an aesthetic but also conveys a positive signal that the younger generation is willing to integrate into the national culture and traditional culture, which is a way for them to express their cultural identity.

Actively exploring the possibilities of connecting young consumers to traditional culture. To let the younger generation accepts the inheritance of consumption of design works that reflect cultural elements. The research learns traditional cultural concepts and then uses the framework and vision, methods, and attitudes of knowledge disciplines to complete creative design works. Creative design products interact with consumers in the process of use by people and convey and inherit the spirit of traditional humanistic thinking in daily life.

To follow the ancient's great wisdom respect the rules of nature, through the substance form of inheritance concept to wake up the young generation to traditional culture attention. The design integrates classic cultural elements into daily life and integrates fashionable modern clothing with the lifestyle of the younger generation. As we draw out the designs, we explored youthfulness and minimalism as design language to balance out the traditions with the commercial demands of experiential consumption (Salehi, 2012). Through product design, the cultural heritage will continue to maintain vitality in the younger generation.

### 1.3 Research Motivation Statement

### 1.3.1 Research aim

Eastern culture understands the world in terms of relationships between things and people with respect for and fear of nature. This study aims to incorporate elements of Chinese traditional culture into the creative design process. In this study, we isolated cultural elements and language as the research object. Exploring the expression of cultural semantics in today's creative design practice, to showcase diverse design works. The development of this cultural semantic is the use of modern ideas and methods to infer design, making it a personal language and a cultural language.

Sustainable design has a lot of room for development in the cultural market, and the expectations of all fields for the development of culture are very optimistic. The demand for the cultural consumption market is strong, and the cultural and creative industries are also optimistic about the overall market prospects. Design to meet people's desire for cultural needs, develop cultural creativity and enrich innovative products to meet the diverse needs of the market. Design enhances cultural connotation and cultural self-confidence, and research focuses on enhancing cultural innovation and spirit. In the interactive practice between teaching and learning, interpreting the cultural item combined with education can expand design ideas and methods, and contributes to the formation of the semantic form of creative design.

The article presents a creative design model using the Items-Activation-Inheritance creativity method, combined with the inheritance form to effectively cycle the development of theory and practice, through improvement and adjustment in practice, explore the integration of cultural elements and modern design concepts, fashion innovation in design practice to enrich people's cultural life. From the multi-dimensional representation of culture to creative design, it has theoretical and applied research significance.

Let the design work become an intermediate medium for communication between the designer and the audience, truly conveying culture, art, technology, and professionalism. The design practice is based on reflecting the value of traditional culture and inheriting the semantics of culture while taking into account the actual needs of modern society. It also constitutes an agent which aids the inheritance and preservation of traditional culture, since such elements are often blended into modern themes, ideas, and attitudes during the design process. Design activates culture spirit, practice design that expands cultural language, and use and creates a new culture belonging to this era in life.

### 1.3.2 Research significance

Cultivating and exerting creativity to activate the sustainability of cultural elements has become a trend in design education (Nagai, Taura and Mukai, 2009). Creativity refers to the process to generate new ideas, discovering and creating new things and is the psychological quality necessary to complete some design practical activity (Brenda, 2019). It is a comprehensive ability unique to human beings composed of complex factors, which optimizes knowledge, intelligence, and outstanding character qualities, and helps the effective implementation of design practice (Taura, 2016). The 创造力 (creativity) of Chinese characters is the combined meaning of the three words. 创 generates new ideas and constantly

innovates. 造 is to discover and create new things. Manufacture, composition, construction. 力 means an ability unique to human beings and excellent personality quality (Beaty and Schacter, 2017). Creativity is the brain activity of the subject of thinking to deal with object information and consciousness. It is composed of complex and multi-factor comprehensive optimization of knowledge, intelligence, ability, and excellent character quality (Daniel and Laura, 2019). Creativity is an important key to producing innovation (Brown, 2009).

The implementation process of designing education is a kind of learning that cultivates students' creative ability through practical teaching interaction and communication (Ruppert-Stroescu and Hawley, 2014). When encountering uncertain and complex situations in design activities, creative design thinking is very important. It is not only an idea or way of thinking but also a booster to promote business development. It will be used in solving problems or initiating the creation process. In practical activities, such as solving real-world problems and situations that students may encounter, stimulating their curiosity and complex creativity, and encouraging higher-order thinking (Armstrong and LeHew, 2013; Zsoka, Szerenyi, Szechy et al., 2013).

Knowledge is constantly being updated and transformed, thus adding momentum to the practice of creativity (Journeaux and Mottram, 2016). Under the given design theme, creativity is the most effective way to improve design ability through participatory learning. Through creative thinking research and refining traditional cultural values, the design application of culture language is easy to resonate with, which can effectively expand the field of fashion culture. Cultivating and exerting creativity to convey the cultural spirit in today's design practice has become an effective way (Taura and Nagai, 2013).

## **1.4 The Scope of Research**

### **1.4.1 Elements of cultural symbols**

The culture continues to develop, and in different periods, unique achievements have been made in inheriting the labor wisdom of the predecessors. People do not live in a purely natural world but in a cultural world (Stager, 2016). Cultural symbols refer to the abstract embodiment of a unique cultural image that can represent the cultural characteristics of a region and a country and is an important carrier and form of expression of cultural connotation. It refers to signs with certain special connotations or special meanings, which are highly abstract and rich in connotations. Symbols use cultural elements as a medium to design and create various forms of cultural atmosphere. With culture, the natural environment in which people live becomes the social environment in which people live. In other words, only in the activities of creating culture can people become real people, and people can obtain real freedom.

The young generation is the backbone of the future Chinese cultural construction and shoulders the inheritance of the culture of the country. Today's young people have a relatively shallow understanding of valuable Chinese cultural symbols and have not yet formed an effective method that is widely recognized and suitable for the use of current core cultural symbols. With the rapid development of modern and contemporary design, the influence of



cultural symbols in the design field needs to be enhanced. By extracting representative elements from culture, carrying out valuable design promotion, and using symbols to recreate culture. It focuses on the inheritance and promotion of cultural value in the research process and can improve it on the ideological level.

Clothing is a mobile museum and gallery, borrowing clothing as a carrier, promoting culture through clothing, and realizing the design and utilization of traditional cultural symbols. Decorative elements carry people's sustenance for spirituality and oriental aesthetics. The idea of creative design promotes the design of cultural elements and lets the designed products reflect the profound cultural charm. The challenge of artistic creativity is mainly driven by the need to meet. Creativity help the conceptional provide a positive aesthetic experience. We will present a large number of individual-style works in line with modern aesthetics in practical creativity (Malaga, 2000). Abstract art and other concepts, and cognitive challenges of complex and multidimensional stimuli need to extend previous empirical aesthetic methods.

Human culture is the product activities of creating and using symbols. The beauty of art, the truth of science, the goodness of ethics, and the pursuit of religious belief together constitute a wonderful world of the organic unity of the cultural system. The various categories of culture are the various parts that constitute the hierarchical composition of the cultural system. Research on cultural symbols to spread and promote oriental cultural concepts through clothing design. The research orientation of design practice is presented through the design practice of clothing products. Therefore, its needs research on the national of the living environment, life production level, aesthetic taste, clothing color, shape, ornaments, pattern, and the integrated correlation process of research.

## **1.4.2 The language of experimental ink**

Ink and wash are important elements in traditional Chinese culture. It contains simple philosophical values and oriental charm and is representative of Chinese local culture image. Chinese traditional culture is expressed in various forms through ink and wash, and the sharp contrast of black and white in ink and wash also makes the content more intuitive and clear. The ink art has formed its unique language expression in the long historical development process. The concise and vivid ink elements bring different feelings to the audience and attract wide attention. The infinite changes of white and black make ink painting a unique artistic conception, and adding design works makes it have a good artistic effect. In addition, the unique space created by ink art has a simple beauty and reflects the designer's inner emotion and design appeal with special visual tension.

Ink and wash elements have been widely used in various fields of modern design, and many excellent works with high artistic value have appeared. The design integration of traditional Chinese culture is playing an increasingly important role in commodities. With the development of society and the economy, people's spiritual needs have improved, and the original fancy design has gradually been difficult to attract the attention of the audience. Ink has a beautiful artistic conception and is a unique existence in Chinese painting. In a lot of practice, it is found that the combination of ink and wash elements and modern design concepts has a unique aesthetic and expressive effect. Ink language plays an important role in

the spiritual world and emotional creation. It is undoubtedly very good to be able to use this form of ink in the design.

The combination of ink and wash elements and modern design can produce a distinctive artistic effect. The expansion of ink and wash language in the field of design constantly seeks new forms of visual bearing. To discuss the application of the integration of ink and wash elements in modern clothing design, we must first refine the design language of ink and wash in the experiment. Expression is more important than reproduction, and design research has shifted from focusing on image and form to spiritual expression. The fusion of ink language and modern design has opened up a new artistic expression space for ink art. Let ink change from painting to a source of inspiration for design and provide an application method for design language.

On the one hand, the application of ink as a design language reflects cultural heritage of the design work. As an important part of Chinese painting, ink painting can use the characteristics of rice paper and brush and ink to combine thick and thin lines with ink rendering. The rhythm of painting can stimulate different associations and perceptions of designers. The characteristic of ink is that space sets off the body and volume, which highlights the design concept of simplicity as beauty. The integration of modern design can inspire design ideas from complex to simple, express appeals with simple descriptions, and show the level of culture.

On the other hand, the exploration of ink language has brought new inspiration to modern design. That is a special perspective which from an oriental painting aspect to see the modern design. The relationship between oriental painting language with modern designs through the case study. The research will be confirmed by design cases and find the methods and principles of multi-dimensional representation of traditional painting language in modern design. The systematically analyze of design application methods of oriental painting can be used in the later oriental style creative design. It is not only a language method but also a spiritual carrier that can sharply inspire the emotional meaning of the creator and convey the designer's aesthetic judgment.

## **1.5 Research Questions**

### **1.5.1 Major research question (MRQ)**

This study is characterized by the use of a design-practice approach to validate the main research question raised. The design practice of cultural inheritance is based on literature research as the theoretical basis, combined with a large number of market research and information feedback. The research on cultural inheritance is presented through the two major aspects of figurative cultural elements and abstract cultural language of ink, and the following two main research problems are formed and proposed.

MRQ 1: How to effectively inherit culture by activating the meaning of elements through creative design practices?

MRQ 2: How to carry out the practice of experimental ink to effectively refine and convey the cultural language in design works?



## 1.5.2 Subsidiary research questions (SRQ)

Two major research questions are separately validated through four cases, each of which poses two subsidiary research questions.

For MRQ 1: we use case 1, case 2 to study and illustrate.

For MRQ 2: we use case 3, case 4 to study and illustrate.

- Case Study 1: We elaborate on the major research question by studying figurative elements and symbolic images. Based on how to use cultural elements in creative design practice to obtain clothing with oriental characteristics, and how to use design methods and design process to solve problems in the actual conversion application process. Effectively retain the connotation and emotion of cultural elements in creative design. And how to achieve sustainable inheritance of cultural projects through design transformation. To show that the practical process can lead to a better understanding of the production of quality design products and to achieve higher creativity. Through a literature review combined with practice-based design research, the following two subsidiary research questions are raised:

SRQ 1: How to effectively convey the cultural semantic information of elements in design practice?

SRQ 2: How to convey culture through fashion design to achieve sustainable emotional inheritance?

- Case Study 2: In this case, to demonstrate the flexible use of 3D printing technology and the combination of different materials to show culturally practical products, and how to effectively integrate traditional Chinese elements into contemporary people's home life, the following two subsidiary research questions are proposed:

SRQ 3: How to present the combination of different materials and structures through technology support?

SRQ 4: How does material structure integrate culture, function, and practicality to influence purchase intention?

- Case Study 3: Inspired by the uniqueness of ink language, the refinement of the design process from observation generalizes and extractions, the inspiration of design thinking is quickly conveyed. The purpose of this case study is to use a method based on the integration of ink practice into design and to showcase the possibilities of acquiring design language and communicating cultural semantic activities. In the following two subsidiary research questions, we will discuss the types of ink creative and practice design cases.

SRQ 5: How improve the aesthetics of design works through the fusion of ink?

SRQ 6: How to achieve the combination of ink language and fashion creative practice?

- Case Study 4: Activating ink, used for interpreting the code of fashion design, inherits traditional culture and expands design ideas. In the process of theoretical and practical research, this case study proposed and solved the following two subsidiary research questions:

SRQ 7: How to obtain aesthetic perceptual language through experimental ink in design education?

SRQ 8: How to realize a conversion and application that conveys the ink semantics in the creative fashion design practice?

The four cases focus on practical design exploration, presenting the design expansion and innovation of cultural symbols and languages from various aspects. Through the presentation of design practice, the case demonstrates the development of sustainable cultural heritage. The problems raised by the major research question of the dissertation have been verified in many ways.

## **1.6 Research Ideas and Methods**

- 1) The research is based on the proposed Items-Activation-Inheritance creativity model method, combining the form of inheritance, the effective cycle, and the development of theory and practice. Be able to explore the fusion of cultural elements and modern design concepts through improvement and adjustment in design practice. From the inheritance of cultural expression to creative design, it is the theory to guide practical application research.
- 2) The culture is inclusive and can carry out the extended practice of multi-disciplinary design (Spencer-Oatey and Franklin, 2009). Fashion innovation is realized in design practice and enriches people's cultural life. To study and explore the essence of Chinese culture and to feel more cultural charm in daily life.
- 3) Demonstrates the integration of Chinese cultural elements and modern design through the organization of auspicious patterns, the realization of patterns, the craftsmanship of production, and the study of model systems. After the development of modern times and multi-dimensionality, it will move forward and become the continuation of the next heritage.
- 4) Different strategies help designers improve emotional granularity and refine the design intentions according to potential emotional effects. Modern multicultural exchanges are frequent, and cultural design pays close attention to popular trends. Combining the practical application of culture with the ability to innovate, it is important to cultivate design talents who can use design to express the connotation of culture in the future.
- 5) Combine creative thinking with cultural expression and apply it to the practical process of designing professional cultural items. The experimental practice culture is confident, emphasizes the connection between designers and product developers, and constantly explores and produces design products with inheritance and connotative semantics.
- 6) Use ink as a tool to unlock the cultural character of the design language. Ink is a kind of painting with strong characteristics, which conveys the visual design effect of imagery and artistic conception. This kind of imagery effect can produce rich imagination and conform to the aesthetic ideal of oriental art that incorporates artistic conception into design practice.
- 7) Ink is not only a simple painting tool but also a distinctive cultural symbol (Cai, 2014). Ink

can be used in the field of cultivating creative practice as it is easy to operate and extremely malleable.

- 8) Through the exploration of the combination of multidimensional expressions of oriental painting language and the design of fashion accessories, the languages of oriental ink paintings are expanded to the multidimensional form with fashion inheritance. Experimental ink is properly executed with unique and non-repeatable cultural element creativity (Homayoun and Henriksen, 2018).
- 9) The design practice of cultural language borrows the generalization of objective objects in ink and wash, and the original image has been integrated into the design expression in the abstract stage. Under subjective control, the evolution of water and ink produced the contingency of ink color, familiar with the nature of water and ink to extract the design language, and then conduct the experiment.
- 10) 3D printing technology facilitates the design of cultural heritage. Use science and technology to help the development of design, and give traditional culture new practicality and usability. Multi-field discussions and combined with a variety of current technical means to help the implementation of culture, present the power of science and technology to help the inheritance of culture.
- 11) The design and expansion of cultural elements still have room for improvement, and more professional fields are needed to explore. Multi-disciplinary, technology-assisted, multi-dimensional, multi-party discussions to achieve the established goal of cultural heritage. Let the culture revive, and truly let the cultural relics go out of the museum and be used interactively in a way closer to life.

## **1.7 Structure of the Dissertation**

The main content of this dissertation is shown in Figure 3. The structure consists of seven parts:

First of all, the research background interprets and establishes the cultural awareness of design and the relationship between cultural heritage and fashion design research. Propose the research motivation statement of research aim and significance. Present the major and subsidiary questions of the research, as well as the overall research structure and methodology of this paper. Secondly, the literature review defines and interprets the characteristics and manifestations of cultural symbols and ink language. Third, launch a deductive creative design model, that analyzes and interprets the diverse sources of the design process. The model combines practice with theoretical research and summarizes the trend of clothing culture development and inheritance and evolution. The fourth is to deeply study the implication and significance of element design, and conduct design research for the target population. Fifth, is the practical case studies and the design extension based on the diversity of painting language. The sixth is the implications and contribution of design practice and the originality and novelty of this research. The seventh is the summary of this thesis and the limitations and directions in future creative design practices.

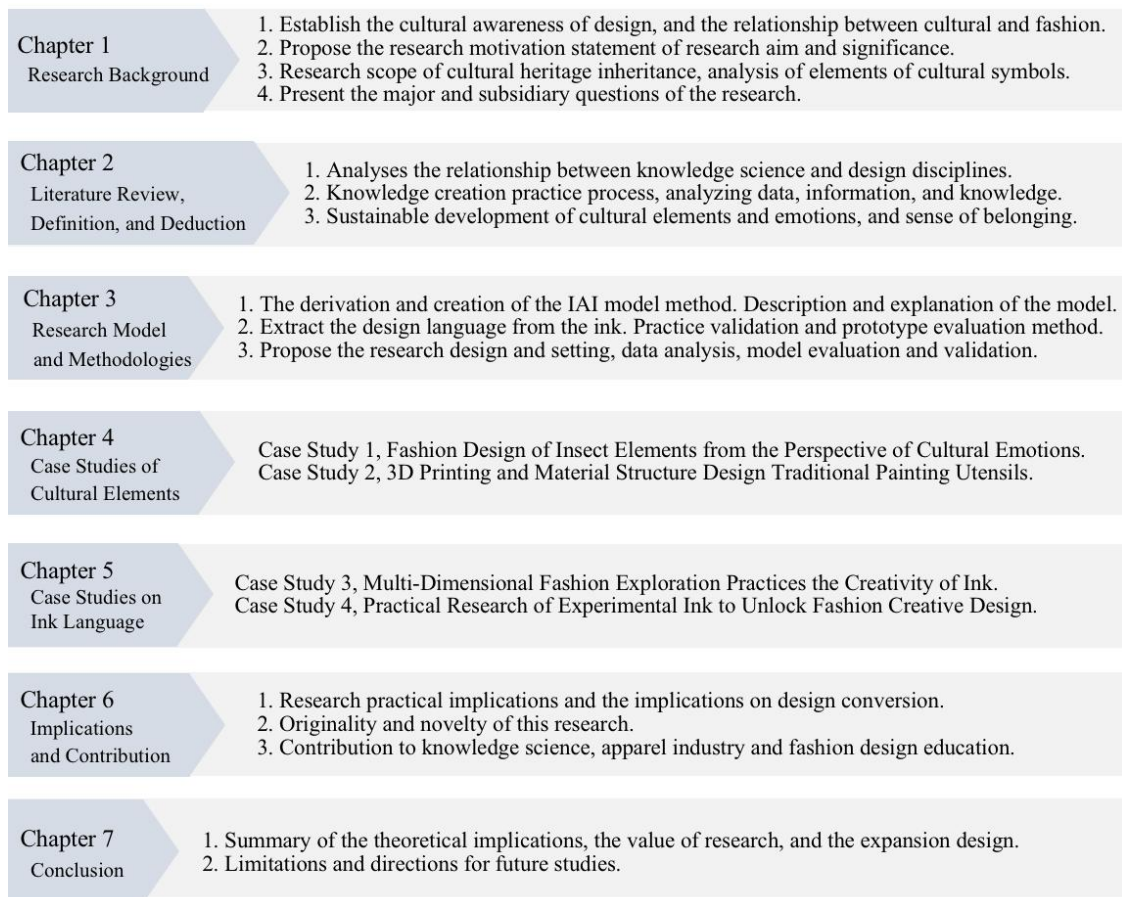


Figure 3. Dissertation structure road map

#### Chapter 1, Research Background.

(1) Establish the cultural awareness of design, and the relationship between cultural heritage and fashion design research; (2) Propose the research motivation statement of research aim and significance; (3) Research scope of cultural heritage inheritance, analysis of elements of cultural symbols, and the background of cultural language; (4) Present the major and subsidiary questions of the research.

#### Chapter 2, Literature Review, Definition, and Deduction.

(1) Analyses the relationship between knowledge science and design disciplines based on multidisciplinary knowledge areas; (2) Knowledge creation practice process, analyzing data, information, and knowledge; (3) Sustainable development of cultural elements and emotions, cultural emotions, and sense of belonging.

#### Chapter 3, Research Model and Methodologies.

(1) The derivation and creation of the IAI model method. Description and explanation of the model decomposition; (2) Extract the design language from the ink. Acquire the design method of linear language. Practice validation and prototype evaluation method; (3) Propose the research design and setting, case studies, case selection, data analysis, model evaluation and validation, and research role allocation.

#### Chapter 4, Case Studies of Cultural Elements.

Case Study 1, Fashion Design of Insect Elements from the Perspective of Cultural

Emotions;

Case Study 2, 3D Printing and Material Structure Design Traditional Painting Utensils.

Chapter 5, Case Studies on Ink Language.

Case Study 3, Multi-Dimensional Fashion Exploration Practices the Creativity of Ink;

Case Study 4, Practical Research of Experimental Ink to Unlock Fashion Creative Design.

Chapter 6, Implications and Contribution.

(1) Research practical implications and the implications of knowledge science on design conversion; (2) Originality and novelty of this research; (3) Contribution to knowledge science. Contribution to the apparel industry and fashion design education.

Chapter 7, Conclusion.

Summary of the theoretical implications, the value of research, and the expansion design. Limitations and directions for future studies.

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# **Chapter 2**

## **Literature Review, Definition and Deduction**

### **2.1 Multidisciplinary Knowledge Areas Construction**

#### **2.1.1 Overview of knowledge science**

Knowledge is a discipline that focuses on theoretical research and practical activities and is a science that unlocks the essence and function of things. Knowledge acts on the comprehensive science of using technology and social development, and its formation and evolution laws provide a guarantee for the cultural memory and innovation of human society. The theories and methods applied by knowledge in the field of design can be linked to organizing a series of knowledge activities such as production, design processing, and cultural dissemination.

Knowledge is an ancient and young discipline, and its antiquity lies in the fact that people's attention and research on knowledge can be said to have started since the beginning of human civilization; It is said that it is young because people's systematic investigation and scientific understanding of knowledge are undertakings that need to be constantly updated, especially the knowledge system caused by the concept of knowledge as the object of study, and the theoretical framework and basic content need to be continuously improved.

Knowledge, whether as an everyday language vocabulary or as a serious academic concept, is probably the most accessible today. Knowledge is not a static statement and concept, but a dynamic way of researching problems. Knowledge is constantly updating and expanding into new areas, and when faced with challenges, knowledge explains phenomena through the nature of things (Gaetano, Yukari, Georgi et al., 2019). Design is developing, from product-oriented design to design for services for specific populations.



## 2.1.2 Approaches to knowledge science

The concept of “knowledge” is widely accepted in that knowledge is composed of six W. Know-what, Know-why, Know-how, Know-who, Know-when, Know-where. This is pointed out that the extension of the concept of “knowledge” is extremely broad. It can be said that all the wisdom and achievements of human beings in the past, present, and future belong to knowledge, that is, the cognitive category, cognitive content, and cognitive form that human intelligence has been able to achieve so far are in the category of knowledge. Expanding the concept of design, coordinating the application of knowledge system, and the development of deductive culture are more beneficial to human life.

- Knowledge disciplines have the characteristics of being able to link and integrate multiple disciplines (Sengers, 2018). More than ever before, design creativity research is looking at expansion rather than stagnation in the same field. This requires complex multidisciplinary linkages to be produced in a strict social system, which is the coordination and integration of knowledge disciplines in multiple dimensions.
- The development of knowledge science is based on the complex foundation of research across cognition, technology, education, society, culture, art, and other disciplines. Acknowledges the contemporary aspects of design development and believes in the designer’s problem-solving abilities (Diethelm, 2019). The research of design creativity led by knowledge disciplines focuses on refining a large amount of information, summarizing and summarizing them into a thinking model applied in the professional field (Taura, Yamamoto, Fasiha et al., 2012).
- The approach of knowledge science is to regard design creativity research as the continuous exploration of design experience and creation and to pursue a balance between the expansion space of divergent thinking and the functionality of the design. Creativity in design is based on the subject area of knowledge (Kamply and Valtanen, 2011), and the constant collection and accumulation of knowledge through personal experience. All human experience is summarized, categorize, classified, refine, and then designed for expression.
- Knowledge science is characterized by continuous updating and inclusiveness. Due to the complexity of the discipline, its research results will inevitably have limitations, that is, the epoch of the discipline. The advantage of knowledge disciplines is that they can be updated continuously, and with the development of the times, the breadth and depth of knowledge fields will be expanded. What is now briefly outlined is the method of knowledge science, with an emphasis on deriving the results of the thinking method, rather than specific immutable narratives.
- Individuals survive and create possibilities in groups, and Kansei engineering evaluation and data analysis is also the most powerful cognitive science of knowledge disciplines (Nagamachi, 2011). It has innovative significance in theory, and can more effectively transform emotion into the rational substance of the product. The inclusion of knowledge disciplines also requires non-design professionals to join the design team, collaborate on the impact and value of innovative design projects, and contribute to designer innovative solutions.

## 2.2 Knowledge Science and Design Practice

### 2.2.1 Data, information, and knowledge

Data, information, and knowledge are all basic resources in social practice activities and can be expressed by multimedia such as language, characters, symbols, graphics, sounds, and video. Moreover, they all have the characteristics of objectivity, authenticity, correctness, value, sharing, and structure at the same time. Data, information, and knowledge provide researchers with three coherent and progressive stages of perception and cognition of objective things (see figure 4). Data, information, and knowledge are discussed separately, primarily for academic analysis and practice.

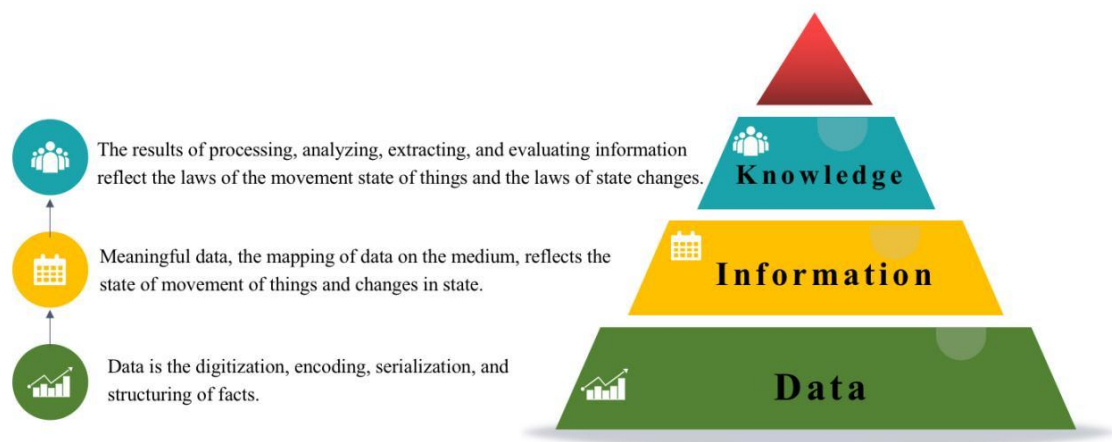


Figure 4. Pyramid structure of data, information, knowledge

Data is the digitization, encoding, serialization, and structuring of facts. Data is the original numbers and facts, information is the processed result of several pieces of data, and knowledge is the processed information of each individual.

- Data is an original record obtained by perceiving an objective thing according to a certain measurement. It can come directly from the real-time record of the measuring instrument or from the human cognition. Large amounts of data are collected and organized automatically from data sources using data processing systems. Data source refers to real-time data of changes in objective things.
- Data are raw numbers and facts that reflect the state of motion of things. Data can be unrelated, objective facts without a clear purpose, such as isolated words, numbers, symbols, etc.
- Data and information are interconnected. Data is a record that reflects the attributes of objective things and is a specific form of information. After data is processed, it becomes information; and information needs to be digitized into data before it can be stored and transmitted.

Information is meaningful data, and the mapping of data on the medium reflects the state of movement of things and changes in state. The representation, dissemination, and storage of information must be attached to some kind of carrier, and the carrier is the thing that carries

the information.

- Information is a very broad concept, not unique to humans. “Information” also exists in animal societies such as birds, beasts, and fish. That is to say, information exists in all living phenomena or life activities. Before human civilization, information existed.
- Information is the state of the movement of things and the way of state transformation. It is the form, content, and effect of the movement of things and their changes perceived or expressed by the subject, and it is the reaction to the existence or movement state of things in the real world. Information is time-sensitive, can be passed and shared, and can be reused without loss of materials and energy.
- Information is produced by custom processing according to a certain stage of development and its purpose. An information system is a system used to process and create information products. According to the different objects, purposes, and processing depth, information products can be divided into primary information, secondary information, and even higher-order information.

Knowledge is the result of systematically refining, processing, researching, analyzing, and evaluating the acquired information, reflecting the laws of the movement state of things and the laws of the nature of things changing. Knowledge is the result of human beings’ knowledge of the objective world, including human beings themselves, in practice. It includes facts, descriptions of information, or skills acquired in education and practice.

- The generation and formation of knowledge is the sign of the beginning of human civilization. Knowledge indicates the formation and development of human rational thinking, thus distinguishing human and animal thinking. This enables people to think logically and to make judgments, inferences, results, or explanations that animals cannot make.
- Knowledge has levels and categories and is an objective and logical interpretation based on what has been known through rational thinking (Tschimmel, 2012). Knowledge is acquired in society, history, and culture, and the process of dissemination and creation is the social attribute of knowledge. The realization of knowledge at the social, historical, and cultural levels enables human beings to develop toward a more and more civilized society.
- The acquisition and dissemination of knowledge are multi-layered and multi-faceted, and the most important one is education. Education is about the acquisition, imparting, and dissemination of knowledge. The external way of realizing knowledge is education, and the internal way is logic. When educating and processing all the knowledge acquired, the knowledge in the human brain is subjected to new logical processing, to generate new knowledge by itself.

### **2.2.2 Knowledge creation practice processes**

Knowledge belongs to the category of cognition, which requires people to accumulate a lot of experience in social practice (Varela, Rosch and Thompson, 2017). Social practice is carried out under the condition of accumulation of knowledge, and it is an activity produced by knowledge. Without knowledge as a premise, there is no social practice (Nonaka, 1994). In a

broad sense, practice refers to the ability of people to practice socially, the activities and phenomena of the senses and mind.

Wisdom leads to innovation, drives fashion design, and integrates into people's lives (Figure 5). Constructing the relationship between tradition, modernity and the future through lifestyle is the thread that forms the culture network in daily.

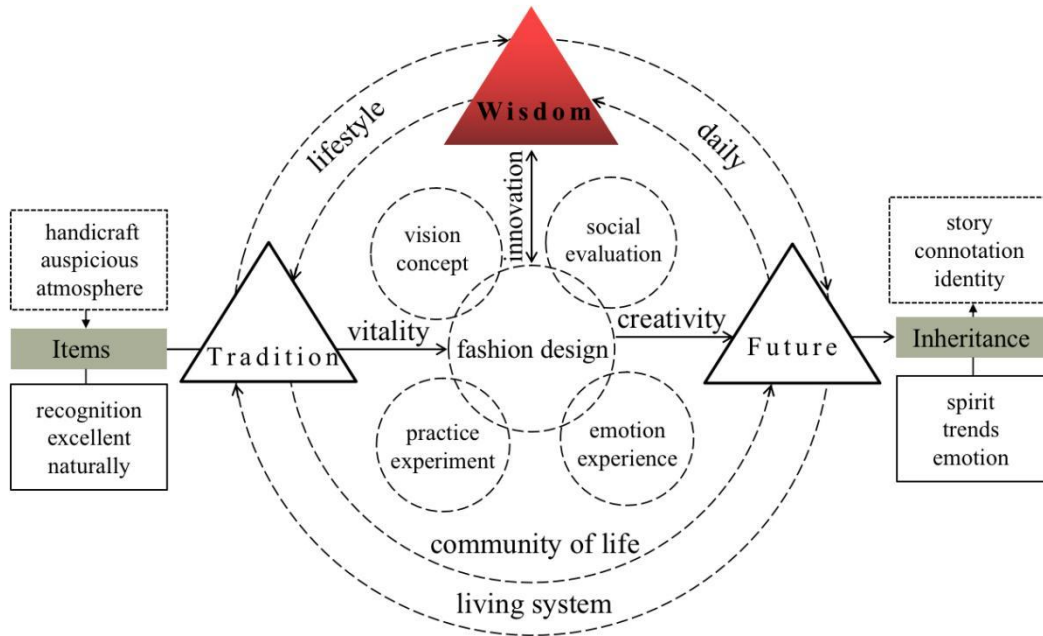


Figure 5. Knowledge science guides the dynamic evolution of cultural inheritance

Of course, for creative design works, there can be numerous interesting interpretations, appreciations, or reviews. One may even put it together and use it as a source of wisdom. This is a way of communicating with the art and design in some way. The design is not motivated by self-expression, and its foothold is more focused on society (Christensen and Ball, 2016). Solving the common problems that most people face in society is the essence of design. The problem-solving process is also the kind of value or spirit that human beings can feel together in the design process, as well as the emotions caused by it. This is the most attractive point for design (Hara, 2014).

## 2.3 Sustainable Development of Culture and Emotion

### 2.3.1 Cultural attributes of the festival

For a long time, China has been a self-sufficient society centered around agriculture. From very early on, people have undertaken efforts to create accurate calendars to better coordinate agriculture. The creation of the Chinese Lunar Calendar led to the establishment of twenty-four solar terms, and the creation of festivals that are usually associated with the beginning of a specific term. These festivals, which mark the start period in the calendar year, are thought of as nodes that connect the physical realm and the divine one. Through the sacrifices and offerings often given to celestial bodies or entities perceived as powerful within

nature, such as mountains and seas, the Chinese people sought to establish a connection between nature and the spiritual realm. These customs led to the birth of the philosophical idea of harmony between man and nature.

Chinese festivals come from the refinement and summary of nature. The ancients determined the festival time to consider the coordination of natural time series and social humanities. When ancient people want the country to operate benignly, they must have an observation of the sky and have a grasp of the natural time. Ancient Chinese philosophy pursues the unity of man and the universe. The “festival” is the intersection of the heavens and the earth, the rhythm of universe and earth, and naturally the rhythm of humans, the “node” connecting the natural rhythm and the destiny of human life, which makes the festival for the ancients to form a certain degree of sublimation.

The diversity of Chinese traditional festivals is an integral part of the long history and culture of the Chinese nation. The formation process of traditional festivals is a concentrated display of the vitality of traditional folk culture. It is a specific humanistic mark that divides the daily life that people gradually form in the long-term historical development and social life. It is the coordination between timing and human relations. Based on the four seasons and solar terms, people establish relationships between heaven and the universe, through the mountains and rivers, the sun and the moon, and going to the high mountains for sacred activities. These activities are communicating with nature. People express their feelings and concepts of respecting nature, esteeming life, and living in harmony with nature in traditional festivals. “Communicating with the heavens and the earth”, and “taking nature as a neighbor and using mountains and rivers as friends” is a process of long-term accumulation of history and culture. It is developed from the ancient ancestors’ period. From these secular folk festivals that have been passed down to the present, the rich and colorful social life culture content of the Chinese nation is recorded.

### **2.3.2 Festival culture and costumes**

A festival is a ritual that retains rich historical connotations and the most representative intangible cultural heritage (Xu, Chen and Xu, 2018). Festival 节日 in Chinese characters consists of two words; 节 means the node that can gather emotions and the mood that can also soothe and restore. Wearing featured costumes and accessories at festivals can increase people’s joy and sense of belonging (Fang, 2005) and it also disseminates profound cultural information (Du and Wang, 2017). People’s feelings are pinned on their clothes to set off the atmosphere and convey celebration messages.

Figure 6 shows the national costumes of different countries, which are compared with the current fashion and popularity. Extract the keywords with comparability on the left side of the figure. The inheritance of culture is to protect the emotion and diversity of culture. Focus on the elements in the specific regional environments, and to explore the sustainable cultural inheritance led by creativity design. Interpret the meaning of elements, illustrate application and development of cultural items in the practice themes of fashion design.

Human culture experienced thousands of years of development, clothing culture always playing potential language function, and with more and more vitality. The pursuit of clothing accessories is directly related to the perfection of art forms, and the taste and use of cultural



design products are also the embodiment of national soft power. These aspects explore the festival clothing culture in nowadays social status and development prospects (Lesley-Ann, 2022).



Figure 6. Contrast diverse cultures and fashion

*Source: Baidu, type the keywords for choice: “Costumes of different countries” and “Fashion brand clothing”.*

The UNESCO Convention on the Safeguarding of Intangible Cultural Heritage has determined the status of festivals as an intangible cultural heritage. The study of festival costumes is conducive to the inheritance and protection of Chinese festival culture. The national statutory holiday system adjustment program has added three holidays, namely the Ching Ming Festival, Dragon Boat Festival, and Mid-Autumn Festival, which embodies the principle of carrying forward and inheriting the traditional culture of the nation, while the apparels are an important factor in the festive atmosphere. The festival apparel culture is based on the cultural bearing form under the core of “learn from nature”. Taking nature as a program, and taking nature as a teacher to learn from nature and follow its laws is the influence of natural law on Chinese culture.

Festival culture has bred the clothing, while the clothing culture has enriched the national culture, they two inclusive, influenced, and changed. The traditional dress went well with four seasons and has become the highlight of the festival. But we are regrettably to see nowadays, the traditional style, such as treasure pots silk flower in the spring festival, willow branches in Ching Ming festival, and multicolored rope in Dragon Boat Festival All these seems to be memory or even unknown to young people. Too many interesting and popular festive clothing styles are far away from our life, that’s the reason many traditional festivals

lost their original meaning and glory. The festive clothing culture research is an effective supplement to our festive culture. Costume art is a mobile form of expression, allowing more people to understand and pay attention to the fresh and vivid national culture.

### **2.3.3 Cultural emotion and costumes**

Emotion refers to evoke of feelings during the creative process and is usually practiced in the intrinsically sensory-driven stage of concept generation. In the process of design, people's emotions are pinned through the mining of element concepts and meanings, and interacting with them in the process of use will generate new memory storage (Matsumoto, 1996).

We often describe emotions with beauty, and emotions embody the interactive experience, association, and memory of people and objects (So, 2020). In the oriental culture, humans, art, and morality always act as a dynamic whole, and human emotions form an abstract material to convey the artistic concept of “nihility and existence growing out of each other” and “constructing the situation with emotion”.

Dressing in specific costumes at festivals is not just interesting, but also meaningful. Many people especially those who leave their hometown or even motherland, once they see these meaningful clothes, well into the festive atmosphere. It is an effective way to explore the festival's costume, and see it as a carrier and a platform to spread the culture, so that can recall people the memory of their roots. Dressing in beautiful festival costumes can also obtain a sense of belonging and national pride. We depth study the status festival culture through theoretical research and design practice. To explore the cultural image of the symbol, and improve the image of national festivals to play a positive role.

## **2.4 Cultural Elements of Insect**

### **2.4.1 The natural properties of the element**

Human beings co-exist with animals, plants, insects, and other creatures in nature. The origin of cultural diversity is that people in different regions have different interaction emotions with creatures in production and life. The insects living around us are often neglected, despite being vital to human development. For example, bees play a crucial role in plant pollination and contribute to the success of human agriculture. Bee products, such as honey, have become an important component of our diet. Insects are, by their nature, seasonal creatures, and throughout the year a great variety appears and disappears. In China, during traditional festivals, motifs depicting commonly seen insects are frequently used to decorate apparel.

The natural attributes of insects are transient creatures that have gained a connotation of adaptability, akin to the seasonal flowers and seasonal fruit associated with the different Solar Terms of the lunar calendar. Seasonal insects refer to the image of insects that appear according to seasonal changes in the 24 solar terms in the Chinese lunar year. Throughout the specific time of the year, a great variety of insects appear and disappear. They conform to the laws of the seasons and are also related to the festival's customs. This is illustrated by the naming of some of the Solar Terms using insects. For example, the third Solar Term, which begins in the first week of March, is named “the waking of insects” after the time of the year

that brings temperatures warm enough for insects to appear once again. In *Shi Jing*, July, one finds the passage “May, katydids swaying its wings; June, cicada vibrate its wings” (Wang, 2015). This suggests that it was easy for people to divide the seasons and determine festivals by observable signs of insect activity. By observing the signs of insect activity, it is easy to infer the weather.

## **2.4.2 The cultural attribute of the element**

The word ‘insect’ used in the modern sense has a strict taxidermic definition. However, in Ancient China, the boundaries were much less distinct, and anything with ‘delicate and meticulous things, or shape, or hair, or wings, or the mouth has a clip or scales’ could be considered an insect (Xu, 2013). In ‘Outlaws of the Marsh (in this paper, Outlaws of the Marsh refer to the Chapter long novels written by Shi Naian and Luo Guanzhong in the late Yuan and early Ming Dynasty)’ of the four masterpieces of Chinese classical novels, a giant white tiger is called a ‘giant bug with a white forehead and bulging eyes (Shi and Luo, 1980).’ Insect elements often appear in poems and songs. They are often associated with having a big family and the ability to pass one’s blood down. For example, the *Classic of Poetry*, the oldest existing collection of Chinese poetry, contains such a passage in its Zhou Nan section: “Beat your wings insects, let your family be numerous; Beat your wings insects, let your family prosper; Beat your wings insects, let those that share your blood live in harmony.” Insects can reproduce rapidly, so they are regarded as a symbol of fertility.

The relationship between insects and culture is not limited to this. Many traditional festivals will be decorated with seasonal insects, and the decoration will have a more auspicious semantic. On New Year’s Eve, children in Zhejiang Province will light silkworm lanterns, cut them into petals with silkworm cocoons, and dye the color called silkworm flowers. It is to express the harvest at the beginning of the year by sacrificing silkworms. During the Ching Ming Festival, women bought silkworm flowers and put them on the bun, while the men put them on caps. The Lantern Festival is also having a custom of butterfly and cricket lights. Putting the seasonal insect into the lamp, enjoying its shape, and listening to it, it is really elegant and interesting in today’s eyes.

## **2.4.3 Auspicious semantics of elements**

Traditional elements generally have symbolic cultural significance. Ancient Chinese people like to express their ambitions through objects and express their emotions through objects. For example, the common auspicious words in life are rich every year (using the homonym of fish), being a leader when everything goes smoothly (the homonym of eating rice cake), happiness and wealth are endless (the homonym of gourd), and so on. The element symbols cover a wide range, and their rich content includes religious beliefs, benevolence and morality, and aesthetic concepts. They have profound cultural connotations and spiritual sustenance (Georgiev and Taura, 2014).

Traditional costumes pay more attention to the auspicious meaning in elemental decoration, embody the cultural connotation of etiquette, aesthetic character, ideology, and philosophy, and show the spirit of cultural identity. The origin of cultural diversity lies in the different emotions of interaction with creatures in production and life in regions. Chinese



characters are ideograms; the writing of characters is different, and the pronunciation is indeed related to each other. Homophones are each of two or more words having the same pronunciation but different meanings, origins, or spelling. Many small animal names use the similarity of pronunciation to gain auspicious and novel meanings. For example, during the Mid-Autumn Festival centered on the reunion and gathering of family members. Crab is a popular food because the pronunciation of crabs, 蟹 (xie), is the same as the pronunciation for the character ‘agreement and gratitude’ 蟹 are often accompanied by lotus leaves because the word for lotus, 荷 (he), together with 蟹 (xie), forms the phrases ‘harmony,’ 和谐 (hexie). The combination produced by putting these two words together doubles the auspicious semantics. Therefore, it can be used in the application and design of clothing elements.

It is clear from the above that although the writing of characters is different, their pronunciation is interrelated. Chinese characters are the carrier of writing, gradually forming calligraphy, and usually have similar shape attributes found in nature. For example, spiders are designated as seasonal insects for Chinese Valentine’s Day because the shape looks like a Chinese character for happiness, 喜 (xi) (Jia, 2016), such as the Ming Dynasty inlaid gem spider-shaped gold hairpin unearthed outside Nanjing Zhonghua Gate in 1987. Spiders cleverly cater to the auspicious connotation of fortune coming down from above since the habit of spiders often descends from great heights by hanging from a thread.

The interpretation of “semanteme” and “semantics” in Chinese characters is two concepts. Their categories are not clearly defined, and they can constantly change and expand their fields as new things emerge. Concepts reflected at the linguistic level are semantics, and cognitive linguistics emerged.

- Semanteme: The meaning of words, refers to the meaning of the language unit itself, is the reflection of objective reality in people’s consciousness, it is combined with the form of speech, it forms a language unit, emphasizing the meaning of its objective existence, generally refers to the only meaning, language meaning. Semantics can simply be seen as the meaning of the concept represented by the things in the real world corresponding to the data, and the relationship between these meanings, which is the interpretation and logical representation of data in a certain field.
- Semantic: Refers to the meaning expressed by the language unit after being used by people for oral and written expression, and after integrating the user’s personal subjective thoughts, emphasizing the meaning of speech, focusing on the emotions and subjective thoughts expressed by the user, the meaning of speech is not unique. The meaning and emotion contained in the discourse, the meaning of the context, not only has meaning, but also the structural role, the effect of rhetorical devices, and the environment to be rendered or the prominent emotions and reflections.

Nowadays, the cultural semantic design of Chinese elements is not only a visual symbol representing traditional culture, but also a continuation of five thousand years of an ancient civilization. The creative design practice of “cultural semantics” will become a fashion trend, and the unique design semantics produced by the cultures of various countries is an indispensable and important component of the richness of human culture.

## **2.5 The Emotional Attribution of Elements**

### **2.5.1 Emotional expression of elements**

How do elements contribute to the transmission of cultural emotions through costume design? Elements are concrete and visualized emotional expressions. In an environment of social challenges and technological progress, the practical activities of product creative design need to pay more attention to and consider people's emotional needs. The practice of transforming elements into emotion uses static language descriptions to present dynamic visual memories (Townsend, 2011). The adaptive changes of cultural elements need to follow the advance simultaneously with product design, and the interactive experience and association of people and objects generate emotional memories (Moalosi, Popovic and Hickling-Hudson, 2010).

Traditional cultural elements condense the precipitation of history and carry people's collective emotional memory. The choice of elements and the generation of emotions, comfort, and sustenance are what the Oriental calls "borrowing objective item to lyrical feelings", "be moved by what one sees" (Zimmermann, 2010). Our research needs to go beyond treating fashion as merely an expression of wear or beauty but as our thought-provoking emotional companionship (Ni and Lin, 2022). The design pays attention to people's emotions, which is the guarantee for cultural heritage inheritance, and strives to integrate the inner spirit of the elements and auspicious semantic information into clothing design. It stimulates people's interest, joy, and pride in participating in culture, enhances awareness of emotional inheritance, and achieves the goal of cultural progress. Adapt the product to focus on emotions and highlight the importance of design for human well-being.

### **2.5.2 The sense of emotional belonging**

In the creative design process, creative thinking and intention are the first things to consider before the design action begins (Tan, 2016). Among the rich and varied elements to choose from, one needs to follow the origin of semantics to create a sense of belonging (Hernan and Georgi, 2021). We excavate the concept and meaning of elements and design to form a concrete image, interact with them during use to pin the emotions, and generate new memory storage (Kwon and Lee, 2015). For example, patterns and graphics seen in childhood memories can soothe our emotions through fashion design, wearing, or displaying, and achieve a combination of practicality, storytelling, connotation, cultural identity, temperature, and ceremony (Taura and Nagai, 2017).

The visual design touches the inner part of emotion. Emotion drives people to preserve and cherish clothing, including accessories, buttons, and decorations to become artistic classics. The structure and details of these apparel are related to life, effectively prolonging the service life of clothing products and making the spread of cultural semantics more deeply rooted in people's hearts. This series of human behaviors and rituals combined give birth to a sense of emotional belonging (Rieuf, Bouchard, Meyrueis et al., 2017). This identification with cultural emotions will make you pay attention to your ancestry home wherever you are in the world, the same as the sense of homecoming.

The design of cultural elements is to satisfy people's sense of belonging, it can achieve adaptive changes to meet people's current spiritual needs. This kind of clothing that exudes a strong cultural color can make the wearer feel cultural belonging and pride. For foreign consumers or consumers of other ethnic groups, wearing clothing with regional cultural elements can fully understand the cultural connotation of the region represented by the ethnic elements through the content of these elements, to obtain the designer's initial ideas.

## **2.6 Technical Support and Human-Centered Design**

The humanized design of fashion must first meet the care of people's physiological level. Pay attention to the needs of consumers and the impact of the surrounding environment on people when wearing, so that the wearer and clothing can form a good interactive relationship. The shape, texture, color, structure and size of clothing are in line with environmental and social needs.

The trend of modern and future technological development pays more attention to humanistic care at the spiritual level and pays more attention to emotional refinement at the functional level. Product design based on cultural heritage should be more synchronized with the times, not only technical but also to meet people's inner emotional needs. Use new carriers to express the essence of traditional culture, allowing experts in more fields to accept exploration and inheritance. Realize the effective combination of traditional culture and future intelligent technology. The selection of materials and the research and development of technology have designed a traditional yet novel appearance and practical shape. The modern form is used to show the element design in line with the aesthetic orientation of contemporary people, and the perfect combination of tradition with modern and future technology can withstand the test in the market (Georgiev, Nagai and Taura, 2010).

### **2.6.1 Link with fashion design**

Clothing cultural design not only needs to have the visual identification characteristics of elements, but also needs to have the cultural connotation of Chinese elements, and must conform to the current universally recognized fashion and popular rules in the world. The fashion inheritance of culture requires the visual identification of characteristics of traditional elements so that consumers can see them at a glance.

Traditional elements not only provide rich materials for the cultural market, but also inexhaustible resources. Using traditional elements for design and rationally developing the fashion of elements is a problem worth thinking about by every designer. Traditional Chinese elements generally pay attention to the beauty of artistic conception. If the visual form of traditional Chinese elements can be displayed in the fashion creative design while also expressing a certain artistic conception, then the essence of cultural heritage applied to fashion design methods will be obtained.

As a fashion designer, you must understand and master modern fashion design concepts. Fashion takes people as the starting point and foothold of design. The design emphasizes human nature, faces up to the spiritual value of people, and fully considers the social factors, aesthetic factors, and psychological factors in the process of wearing people. Only in this way

can we design interesting and humane clothing products. To realize the human-oriented fashion and functional design of clothing requires not only starting from clothing modeling but also considering the selection and application of clothing fabrics. Keeping up with the trend of shape and appearance design can not be ignored.

This series of cultural practice exploration is worth studying. In short, the fashionable design of cultural heritage needs to select elements suitable for the structure of clothing styles, and redesign using the rules of formal beauty that are popular today (Cross, 2004). In this way, design works with fashionable culture widely recognized by consumers can be designed.

### **2.6.2 Link with 3D printing technology**

Modern design is neither the invention of pure engineering technology nor pure artistic creation. It is a creative design activity that integrates scientific rationality and artistic sensibility. Science and technology solve practical problems, and artistic creation solves beauty problems. As a link of social production activities, fashion design is a practical activity that requires technical support, and is a combination of science and art.

3D printing is a type of rapid prototyping technology, also known as additive manufacturing. It is a technology that builds objects by layer-by-layer printing based on digital model files and using adhesive materials such as powdered metal or plastic. 3D printing is usually achieved using digital technology material printers. It is often used to make models in the fields of mold manufacturing, industrial design, etc., and is gradually used for the direct manufacturing of clothing products. There are already accessories printed using this technology.

The realization of innovative value is supported by new technologies, helping to realize the inheritance of culture. The combination of cultural heritage and new technology, and technological innovation ability leads to the development of culture. The research combines the exploration of multi-dimensional design methods, integrating research methods, and analyzing data to connect with 3D printing technology. Interactions exist between traditional elements and innovative thinking, spreading cultural products through advanced science and technology.

Design creation and innovation is the process of refining traditional culture and life to achieve self-expression. It is a necessary and useful method to promote fashionable and cultural national design with modern communication means so that more people can get the meaning and happiness of culture (Zhang, De Pablos and Xu, 2014).

### **2.6.3 Link with material diversity**

Design activities need the support of the theory, but also need a lot of practice to realize the sketch design into a finished product. What designers face is the depth of professional skills and the grasp of various materials in the embedded social system. Human needs are multi-level, including different levels of material and spirit. The people-oriented design concept can make people change from pure material consumption to spiritual and emotional satisfaction, and make people's consumption activities more emotionally satisfied.

To express the theme of fashion design and show the artistry and systematicness of

fashion, designers should break the traditional thinking mode and change from the traditional clothing modeling innovation to the innovative application of clothing materials. Fabrics with specific functions such as plant fibers provide a new possibility for fashion designers to carry out innovative clothing designs (Jana, Eva, Merja et al., 2022).

- Design is a way of realizing the vision, and different materials need corresponding different technologies to help realize it and to bring innovative theories into real life. These challenges come from the design process's understanding of the market and current materials, including some new materials in non-specialized areas.
- Different materials have their unique aesthetics of material color and texture. Under the premise of clarifying the influence of material usage on clothing design, explore measures for clothing material innovation and reconstruction. Integrate the innovative application of specific materials such as traditional materials, anti-traditional materials, and high-tech materials in the process of clothing design.
- Through the secondary design, innovation, and reconstruction of traditional materials. Design static and flat materials into dynamic and three-dimensional materials; design traditional materials into modern materials, thereby expanding the space for clothing design. The clothing design concepts such as deformation, exaggeration, and abstraction in modern art are applied to the design of traditional materials, showing the unique personality characteristics of traditional materials.
- Relying on the high-tech production of new materials with typical scientific and technological beauty, these new materials enter the field of clothing design. Color-changing materials, waterproof and moisture-permeable materials, temperature-adjusting materials, and shape-memory materials have been widely used in different professional fields, and have produced relatively significant effects.

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# Chapter 3

## Research Model and Methodologies

### 3.1 Research Model

#### 3.1.1 Derivation of the IAI model method

The effective presentation of cultural symbols in design works comes from the designer's in-depth understanding of the tradition (Geng, 2007). To the creative ability drives creative design, highlights the regional cultural characteristics, and enhances the practical process of cultural language heterogeneity and diversity. The creation of creative design intends to strengthen the cultural atmosphere of market commodities and promote sustainable consumption (Li, Dai, Tang et al., 2020). Moreover, it cultivates creativity semantics to assist with the sustainability protection of more cultural heritage design through continuous practice.

Our focus on cultural information fundamentally influences the direction of our design and expression. The form and content of cultural items can provide rich materials for modern design. Items generally refer to the shape and decorative connotation of elements in the target graphic or image, especially the integrity of a cultural story. Chinese shape and image is rooted in national character and the origin of the regional arts. Auspicious meanings are very important in the position of traditional culture, it is a sort of idea and spirit conveyed by the objects. For example, the reason why ancient people repeat use auspicious graphics was not only because of the aesthetic significance of the appearance, but also the deep meaning behind these auspicious symbols. Culturally based forms and content can also offer rich materials to modern design.

Creation and reuse of the items cannot simply be a copy but need to understand their significant meaning as a prerequisite (Thea, 2019). Practical research is enlightening and



represents a visualization process of thinking space with an emphasis on conveying human emotions through items (Bohemia, 2014). We use modern aesthetics to refine and transform these items and introduce the concept and spirit of the auspicious meaning of cultural items into the design to make them fit for our times (Steffen, 2010). More precisely, we let local designers increase the deep digging of cultural awareness in design practice, such as discovering and solving current design problems, inspiring curiosity and complex judgment, and encouraging higher-level thinking on research items. Based on these discussions, we will propose a creativity design process model.

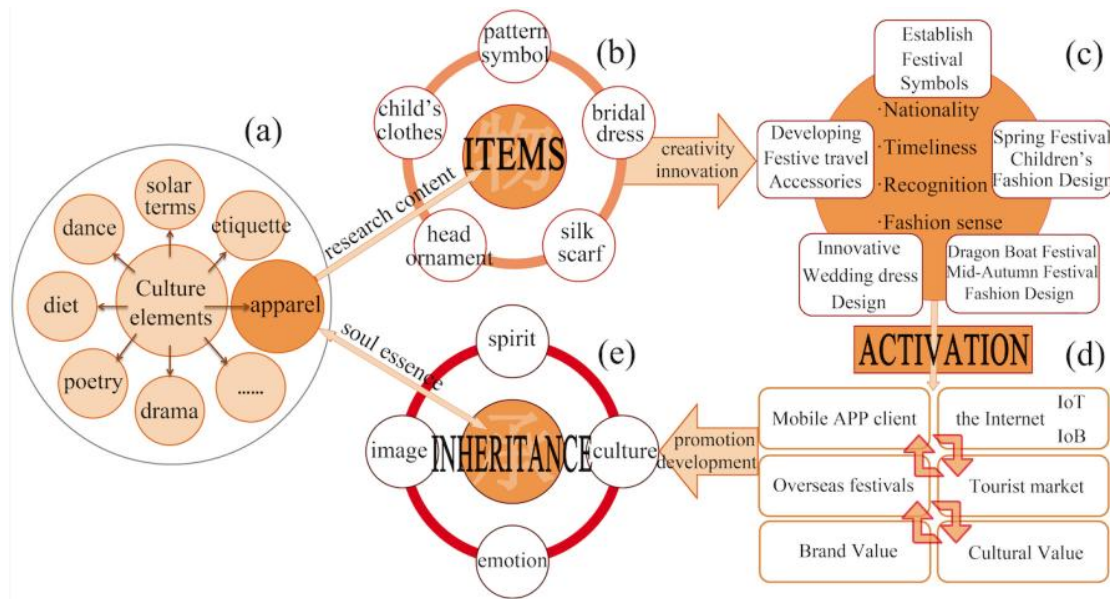


Figure 7. Items Activation Inheritance model

Source: Du, B., Nagai, Y., & Wang, M.Q. (2018). Toward the Inheritance and Application of Cultural Symbols in Apparel Creativity Design: A Case Study Using Seasonal Insects. The Thirteenth International Conferences on Knowledge, Information and Creativity Support Systems (KICSS 2018), November 15-17, 2018. Pattaya, Thailand.

Drawing on the literature review and early practice, we derived the Items Activation Inheritance (IAI) model (see Figure 7). This creative design application model is an empirical research summary of the interaction between cultural elements and creativity design (Hsieh and Guan, 2014). It provides a feedback loop between sustainable design and cultural heritage inheritance (Lee, Ostwald and Gu, 2019). While pursuing fashion, we consider returning to the inheritance of cultural emotions to redesign elements (Neshane and Desiree, 2021). The IAI model guiding practice consists of two stages. The first refines the essence of elements in traditional culture and connects them with contemporary aesthetics and emotions to guide design practice. Second, it carries out market promotion and consumer feedback on the design works produced by item activation to achieve a new inheritance in use (Wu, Zhang and Bao, 2008). It has been extended and applied in creative design practice. Based on the guidance of the model, it will derive the richness and inheritance of the current design are dedicated to the creative design of cultural elements (Du, Nagai and Wang, 2019).

To derivation the Items Activation Inheritance (IAI) model that is based on knowledge application system management, which describes the sustainability of the design of inherited

cultural elements. The IAI model recognizes that the potential of traditional cultural items may become a source of inspiration for popular fashion and help enhance the resilience of cultural preservation (Zhou, 2018). Moreover, it integrates cultural fluidity into the inheritance associated with the items through the design practice of creativity (Quirós-Ramírez and Onisawa, 2014). It enables researchers to flexibly consider and select design items according to their professional level and emotional needs.

The inheritance portion serves as an essential bridge between traditional culture and acceptance by modern society (Wang and Nagai, 2018). Meeting the needs of the present without compromising the ability of future generations to meet the development of their own needs becomes sustainable (Bollack and Frampton, 2013). The starting point of the design practice is to fully retain the meaning of culture to meet the inheritance of emotional needs. Getting feedback on emotional information facilitates the adjustment and optimization of design work. Arrows symbolize the direction of creative information flow. All boxes contain header labeling to describe the content operations performed at each processing stage. The model proposes five independent and interrelated parts, each involving decomposition of the implementation process of creativity in different environments. The following section describes the main components of this creative design application model.

### **3.1.2 Description of the model decomposition**

- In Figure 7a, upon the synthesis of the items and customs associated with social activity (Kolko, 2011), apparel is presented as a tentative physical vehicle for the preservation and expression of traditional cultural elements (Chen, Kang, Zhang et al., 2014). It provides the establishment of multi-theme research and design practices to ensure the diversification inheritance of culture.
- In Figure 7b, a specific item is created that retains its inherent cultural values (Ma, Shao, Chen et al., 2020). The selection criteria for these items is their compatibility with the tastes of modern society. Moreover, they need to inspire interest in traditional cultural themes in the most hard-to-reach segment of society, i.e., usually the younger generation (Li, 2011). The difficulty lies in finding an appropriate way to transform the traditional element into an easily recognizable symbol while minimizing the meaning and connotation loss (Chang and Hsieh, 2015).
- In Figure 7c, different instances of items work jointly to create a sense of ritual belonging and fashion sense (Thomas, Mitchell and Joseph, 2020) and recognition by consumers (Liaw, 2011). To sum up, the form of traditional festive costumes, analyze Its essence and go on with the modern design research and develop the festival costumes. For example. the design of the new Chinese wedding dress, the Chinese New Year children's clothing design, the Dragon Boat Festival accessories design, festive tourism jewelry design these modern style festival costumes research and development, trying to merge traditional culture with fashion to get the national identity. The items have become apparel products accepted by modern people who carried out inheritance and promotion. Through the design and transformation of the case, we can adjust and perfect this type of content into a spiritual image.
- In Figure 7d, in addition to fashionable product development, it is also necessary to

activate it through the market and price range. A positive feedback loop through mass media promotes the popularization of traditional cultural themes in the fashion industry and increases public interest in engaging in interactive culture (Ko and Lee, 2011). Such as the mass consumer market, and the high-end luxury goods market. In the high-end market, dissemination and advertising are usually carried out through artist cooperation, customization, and licensed products, which triggers consumer enthusiasm. In the ordinary consumer market, it is more through limited edition fashion, affordable prices, and cooperation with fast fashion brands. Dig deep into the cultural connotations of traditional ethnic, and establish the brand of native cultural festivals. Reference our own national culture, the formation of different cultures of multi-angle understanding can help us know more about our own. And is an effective way to strengthen the two-way communication of different cultures, to achieve multi-cultural harmony and common development. Help designers accurately convey emotional information into the medium of apparel. This process will further enhance the market viability and commercial value of traditional cultural elements (Almond and DeJordy, 2012).

- In Figure 7e, the temporary public interest develops into a horizontal spread of traditional culture, which stands in a three-dimensional echo with the vertical inheritance of culture between generations (Yu, 2010). Semantic acquisition and design conversion become a valuable circulatory system. The accumulated changes have been transient until now. Abstract emotional “materialization” forms similar or dissimilar, figurative or non-figurative, and condenses into a spiritual core stored in the cultural self-confidence of common inheritance. Therefore, it is refined into several elements and permanently added to the pool of common inherited cultures (Shin and Westland, 2017).

Inheriting the cultural spirit is the theoretical guidance of practicing “activated” design under the foundation of traditional culture. The practice of creativity helps trigger the inheritance and development of cultural connotations, and the cultural spirit in design is a new creation for this era. The design practice integrates cultural concepts into the design process to form new emotions to continue the tradition, including design style, material selection, production process, creative ability, and other aspects of inheritance. The model integrates cultural theory, curriculum teaching, market research, and data analysis to help students transition from school to the design industry. It is a creative framework that supports the flexibility and fluency of young designers to convey cultural emotions through design language in the process of creative practice conversion so that this design work would also become a tradition for future reference.

The model is being expanded and applied to design education. This allows the creation of feedback loops between cultural creativity, design expression, and cultural emotion (Ulan, 2022). Lead the younger generation to participate in the design of cultural themes, and integrate the inner connotation concept of the elements into the creative design to form new works to continue the cultural genes and the unchanging feelings for tradition. Seek creative design to trigger the inheritance and development of cultural concepts and form new memory storage.

## 3.2 Research Methodology

### 3.2.1 The definition of research methods

Research methods, in philosophical terms, refer to the tools and methods used to discover new phenomena and new things in research, propose new theories or new viewpoints, and reveal the internal laws of things. This is the skill of using wisdom to conduct scientific thinking, which generally includes the literature survey method, observation method, speculative method, behavior research method, historical research method, conceptual analysis method, comparative research method, etc. Research methods are constantly summarized and refined by people in the process of engaging in scientific research (Chen, 2016).

When engaging in specific scientific research, researchers must first understand the characteristics, nature, and research objects of the subject and research topic, and then select corresponding research methods in a targeted manner. As people's perspectives on the problem are constantly updated, the complex factors of the research objects are constantly changing. The research method itself is in a dynamic development process that is constantly influencing, combining and transforming each other. Any research is inseparable from the support of methods. Scientific research without research methods does not exist, and without research methods, its research becomes water without a source, a tree without a root, and it is not true research. It is difficult to have a completely unified standard for the positioning and classification of research methods.

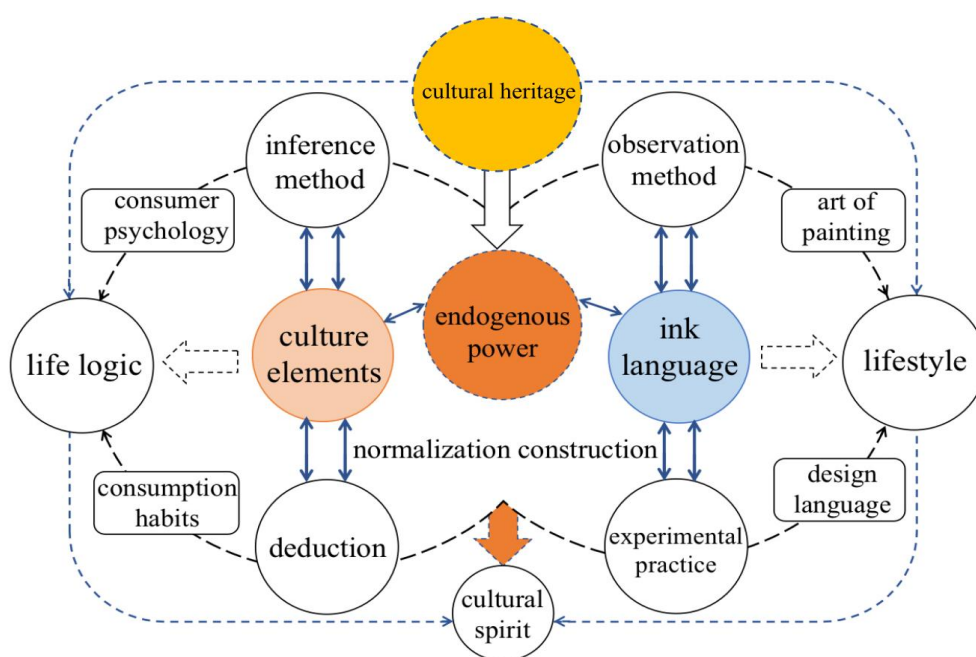


Figure 8. Endogenous power guide the sustainable application and expression of culture

Different methods have their specific application scope and application objects and are hierarchical. This research uses the research method of face-to-face communication to understand their views on current clothing brands and images and summarizes their verbal descriptions of ideal clothing images based on their expressions and statements rather than just the research on consumer psychology and consumption habits of such groups. Effectively refine the vocabulary for judging clothing images, design and extract keywords according to

the description of the ideal clothing image by the youth group, and locate the style of product image design. After obtaining the relevant data, it is processed and sorted by statistical methods, and finally, the data is analyzed, and a research hypothesis is proposed through the model method and comparison method. Follow the established design model, and then verify the hypothesis through hands-on activities and experimental theories. Sustainable application and expression of cultural heritage are guided by endogenous power, as shown in Figure 8.

Of course, in the research process, scientific methods such as design thinking, intuition or inspiration, logical thinking methods and systems, and information systems of knowledge disciplines will be used. In the specific practical research using element design, sociological sampling survey method, interview method, questionnaire method, etc. will be used to conduct related surveys to obtain relevant data, and then use statistical methods, classification methods, etc. to process the data. Finally, the derived model is tested by mathematical methods to obtain substantive conclusions. In the expanded research based on cultural elements and cultural language, due to different research objects, the corresponding research methods are also focused on. In the study of cultural elements, deductive methods and inference methods are mostly used; in the research of using cultural language, observation methods and experimental comparison methods are used for qualitative research, comparative research, or descriptive research. This research also used abstract and concrete methods, analysis and synthesis methods, and historical and logic to ensure the implementation of creativity and inheritance.

### **3.2.2 Extract the design language from the ink**

From the perspective of the composition of tools, ink is a combination of water, ink, and a pen brush, a form of painting and design on rice paper (Xuan paper, a high-quality paper made in Xuancheng City, Anhui Province, China). China ink, supplies for writing and painting are black lumps made of soot or pine smoke, and there are also various colors made of different materials, which also refers to a mixed liquid of ink and water. The ink experiments carried out in this paper are mainly related experiments of ink blended with water, which is different from oil and ink. To some extent, this method of mixing and combining natural ink with water is more in line with the concept of sustainable environmental protection. Ink painting is a form of Chinese painting generally referring to paintings made with water and ink. Rich changes are produced by the coke, thick, heavy, light, and clear ink color, which expresses the image and has a unique artistic effect. Ink has a unique painting effect, and expressing the resulting ink language through the creation of design works is the author's means and purpose of using it.

In modern design, ink and wash elements have been widely used in the fields of logo design, advertising design, clothing design, architectural design, and font design. The organic combination of traditional Chinese ink and wash elements with modern design not only promotes innovation and development in their respective fields but also plays a decisive role in the inheritance of traditional Chinese culture. Today, with the vigorous development of new media and interactive design, designers still need to combine the characteristics of their fields, use ink and wash elements flexibly, and continue to explore, inherit and carry forward China's excellent traditional culture.

### **3.2.3 Acquire the design method of linear language**

Modern design pursues the expression of real objects, while ink and wash elements pay more attention to the pursuit of artistic conception. The essence of mastering the combination of ink and wash elements and modern design lies in the use of linear language. In addition to the brushstrokes, the attractiveness of the ink language lies in the aura of the lines it contains. The use of lines in the field of art and design is subjective. Many works of art express emotions with lines in Eastern art. In Dunhuang art, the lines of flying clothes and the lines of auspicious clouds can be seen. In ancient murals, you can see the images of different materials expressed with lines, all of which reflect the charm of lines.

Ink and wash elements express unique humanistic connotations and thoughts and emotions through changes in the color depth and line thickness of the ink. The lines of ink and wash language are organically combined with modern design, which plays an important role in enhancing the visual effect of the design. The directivity of the line can touch and resonate with the viewer. In modern design, linear language has a sense of charm, which enhances the artistic value and cultural heritage of the design, so that modern design can not only show the characteristics of the product but also give the product a richer cultural imagination. The organic combination of modern design and ink elements can better show the cultural characteristics of the product and give new vitality to the ink language.

### **3.2.4 Practice validation and prototype evaluation method**

Choosing to adopt the fashion inheritance of cultural design is a topic worthy of study. The emotional evaluation analysis method in semantics is an ideal research idea and method (Sarkar and Chakrabarti, 2011). Different elements or diversified designs of the same element will bring different perceptual experiences to consumers (Henrik and Vanessa, 2008). Therefore, it is necessary to obtain the semantic evaluation results of the consumer's emotional experience for the design of different elements.

Collect consumers' perceptual vocabulary about element sensory evaluation through various methods, establish a perceptual vocabulary for element design research, and then use semantic difference analysis to refine and extract the effective perceptual vocabulary in the vocabulary, so that it can efficiently and comprehensively express consumers' feelings. The perceptual experience of element design is provided for subsequent design practice work (Georgiev, Nagai and Taura, 2008).

## **3.3 Research Design and Setting**

### **3.3.1 The positioning of practical research**

In the context of today's economic globalization, China is in a critical transition period from Made to Created in China. Various industries in the market have entered a stage of fierce competition that is different from the past. The cultural market continues to mature and begin to move towards the world. The industrial design and apparel industry have shown a diversified development trend, and the communication of culture through products has also

been paid more and more attention.

The clothing industry is an important part of the modern cultural market. Clothing conveys the image of culture, and its cultural positioning is vital to the future survival and development of the clothing industry. The cultural transmission of products requires a high degree of integration of appearance and spirit, that is, a good visual image and unique use connotation to inherit the culture. With the continuous enrichment of material life resources, the public's consumption tendency has shifted from material consumption to spiritual consumption in the beginning. The advanced development of clothing is not only to meet the beautiful appearance but also to meet the spiritual needs of today's people, which is a kind of spiritual companionship and emotional sustenance.

Fashion designers are developing and using more and more elements in their design practice, among which there are many excellent works. However, there is also the phenomenon of misuse of some elements, which leads to the failure to improve the overall quality. As the country vigorously advocates cultural self-confidence and is committed to reviving traditional culture, the design of clothing culture should pay more attention to satisfying spiritual needs.

Traditional Chinese elements are also being used more and more frequently in various design fields, gradually becoming a new design force. Therefore, how to better apply the elements to the fashion design of clothing culture, so that the public, especially the youth, can improve their cultural consumption concept is a topic worthy of research.

### **3.3.2 Case studies in practice**

A case study is a type of research through practical practice. The research is aimed at a specific problem, selects one or several research objects, systematically collects data and materials, and conducts in-depth research to explore the initiation and production of a design phenomenon in the actual life environment. Case studies can more intuitively present the rapid decision on a certain problem, and discuss and quickly adjust the problems raised by the study. Case studies are more qualitative and have characteristics in data collection and data analysis, including relying on multiple sources of evidence and different data evidence. Through unique design logic, specific data collection and unique data analysis methods. Research documents to obtain information, visualize and find solutions.

Targeted case studies are indispensable in the cultural design process of products. The design of successful clothing culture inheritance needs to resonate emotionally with consumers. Combined with the selection of design works of well-known clothing brands at home and abroad, the application characteristics of the elements and the unique artistic style are analyzed. Aiming at the case of combining Chinese elements and clothing culture, is conducive to promoting the vitality and inheritance of culture. Elements embody the inner spirit of traditional culture and are a symbol of traditional culture. The practice of inheritance research is beneficial to constructing and implementing a product design strategy centered on the visual image of culture, and it is a means of externalizing clothing and conveying emotions.

The product cultural connotation established by apparel products is very important to the

overall cultural concept and industry positioning of a clothing brand. Clothing consumption has entered an era where consumers continue to pursue personalized consumption. The public manifestation of personalized consumption is the increasing dependence on the brand, and the cultural concept of brand design is the externalized characteristic of the individualization of apparel products. Discover meaningful traits that are retained in the totality of life information. Compared with other research methods, a more comprehensive and holistic conclusion can be obtained by truthfully describing and systematically understanding the case, and grasping the dynamic interaction process and the context of the situation.

### **3.3.3 Case selection**

There are many available cultural elements left in the cultural heritage. This study selects one of them for design expression. Its uniqueness is that the selection of a series of design practices is an interpretation of Chinese style. Use clothing as a medium to express the understanding of tradition and the inheritance of culture. The choice of design cases cannot summarize all broad cultural directions, but it can present the results of specific element design. The choice of the case is positioned to find the elements of cultural inheritance, redesign through the current aesthetic taste, and explore the possibility of synchronizing traditional cultural elements with contemporary aesthetics in practice. I believe that through the attitude of professional research, intercepting a certain part and zooming in to practice design will arouse everyone's enthusiasm for traditional culture design. In this era of internationalization, reflect on the subtlety and broadness of local culture and contribute to the richness of world culture.

To analyze a design case derived from the practical creative design model. The five-insect motifs used for the Dragon Boat Festival show a way to integrate the image of seasonal insects into creative design and lifestyle. Seasonal insects in costumes are mainly derived from the auspicious semantic features and the theme of the corresponding festival and express a specific well-wishing wish associated with the festival. This is a vivid inheritance of traditional material cultural forms by modern people, and also the creation of the clothing cultural environment atmosphere that belongs to this era, which is inheriting and affecting future generations. The result of design practice shows a new culture image that carries the sustenance for spirituality and oriental aesthetics, which people wear and satisfy their emotional needs.

Designers refine the language of ink painting and utilize the formal aesthetic rules to deconstruct and reconstruct the brush and ink effect in artistic aesthetics. We select representative and classic cultural cases for practical research. Focus on the connotation of a cultural image, and constantly expand the interpretation through the practice of creativity. The research analyzes a series of design cases derived from the practical creative design model. Combine the spatial form of the morphological cognition method with the creativity of ink language to design and realize the "lively spirit and charm" costume image.

### **3.3.4 Data collection for evaluation**

The collection of evaluation data and the selection criteria of personnel are based on the market positioning of the target population for product design. Select young people who have



a higher level of education and pay attention to aesthetic taste and quality of life. They are the most active, broad-minded, and good at expressing themselves, and they have diverse and in-depth perspectives on things. Young people are willing to explore and accept new things, and their taste and aesthetic ability are relatively high. Understanding and interpreting the living conditions of such a group of young people can find that when comparing and choosing similar clothing brands, this group not only considers the quality and function of the clothing product itself but also cares about the perceptual interaction experience. Therefore, it is important to select and collect information from this group of people, and the data collection for emotional evaluation is more reliable and convincing.

Cultural consumption refers to a kind of consumption that uses cultural products or services to meet people's spiritual needs. Cultural consumption time mainly includes time spent on visiting exhibitions, reading, cultural entertainment, tourism, purchasing cultural products, and other cultural-related aspects. Under the conditions of the knowledge economy, cultural consumption has been given new cultural connotations, and cultural consumption has shown the characteristics of mainstreaming high-tech, popularization, and globalization. According to the national cultural consumption data report in the first half of 2021 (Table 2), the cultural consumption time of each age group is mainly concentrated in 1-3 hours and 3-6 hours. Among them, the cultural consumption experience of 25-34 year old and 35-44 year old groups is mainly concentrated in 3-6 hours. The cultural consumption experience of groups aged 45-54 and over 55 dropped significantly at 3-6 hours. For 6-9 hours, the younger group under the age of 44 has a greater advantage, which is also the target group targeted by cultural and creative research.

Young people have relatively high requirements for clothing brands, so choose people between the ages of 18-44. The educational growth environment of this group of people is synchronized with the rapid economic development in the past ten years. They pay attention to the changes in clothing product design and have a keen sense of smell and the ability to judge the changes in brand image. Compared with people over 44 years of age with the same level of education, these young people have a relatively higher level of understanding of clothing brands, and they can evaluate the preference of clothing image samples purely from the perspective of visual perception and experience. Can perform multi-dimensional sensory evaluation of new design elements from the perspective of cultural value.

Table 2. Distribution of cultural consumption time of different age groups

age \ time	less than 1 hour	1-3 hours	3-6 hours	6-9 hours	more than 9 hours
18-24	6%	44%	36%	11%	2%
25-34	3%	42%	<b>42%</b>	<b>11%</b>	2%
35-44	3%	45%	<b>38%</b>	<b>12%</b>	2%
45-54	7%	49%	26%	5%	22%
above 55	4%	69%	21%	4%	2%

The target population of positioning design services is young people, the main force of consumption, and the backbone of cultural heritage. Complexity and uncertainty are typical characteristics of human psychology. Young consumer groups can express their emotions and thoughts more accurately through words. The vague, abstract, and non-specific consumer emotional experience is presented in a concrete description. Language expressions are used to infer the consumer's perceptual experience, combined with multiple senses for multi-dimensional analysis and judgment. The research content transforms the internal emotions that users are difficult to quantify into data that can be quantified and analyzed. Through scientific and objective data collection and statistical analysis methods, the results of the correlation between the visual elements and the user's perceptual experience are obtained.

### **3.4 Role Allocation**

#### **3.4.1 Role of researcher in research**

With the continuous changes in consumers's requirements for clothing design and the transformation of the public's aesthetic concepts on clothing, the current clothing design can no longer meet the requirements of modern people for cultural clothing, which requires clothing design researchers to reform and innovate in design.

Researchers should master the spirit of eastern culture, strengthen the understanding of traditional culture. Researchers include historical researchers, archaeologists, calligraphers and painters, and theoretical researchers, who are required to contribute research results about culture in their respective fields of expertise. Provide research results to fashion designers who want to use traditional elements to design, to prevent surface symbolization, and superficial graphic design. To find the landing point of traditional culture and the combination of fashion aesthetics, it is necessary to show the uniqueness of Chinese elements in a novel style, to realize the practical inheritance of cultural spirit and traditional Chinese cultural concepts in practice.

#### **3.4.2 Role of designers in research**

Imagination, cultural perspective, aesthetic ability, and expressive ability are the basic elements possessed by designers. The fashion designer is the main body of cultural brand creation, and any brand needs the interpretation of the designer. Clothing companies use designers to effectively communicate design styles and build a brand culture so that consumers can fully feel the heritage of the culture. This is the best and most fundamental way to create cultural brands. Brand image as an integral part of culture also requires designers to use effective design methods to design.

As we all know, people of different genders and different growth backgrounds have different aesthetics, world outlooks, and consumer outlooks. The same is true for designers. Their gender and growth background determine their unique thinking and vision. Designers can design a variety of works according to their ideas and inspirations, but not all of these works are approved by consumers.

Objectively speaking, because each independent design image will give consumers a

different emotional experience when this emotional experience can meet the perceptual needs of most consumers, the design image can be said to be more than half a success (Bella and Hanington, 2012). As the external image feature of clothing products, whether clothing design can be recognized by the majority of consumers is crucial to its sales. Designers use sensory evaluation methods in the design process of clothing cases, which can greatly help designers to more quickly understand consumers' perceptual experience of designing products.

Designers are young groups in social activities and have the responsibility of bringing different roles into traditional culture. As shown in Figure 9, the data show the role shift of young generation born after 1990 and 2000, respectively, in cultural inheritance. Young people are a force for social activity, and young designers are able to drive the appreciation of culture to become the inheritors of culture through their works. Understand and appreciate the relevant content and works of traditional culture, integrate traditional cultural elements into everyone's daily life, and let more people realize traditional culture through their own design words and actions.

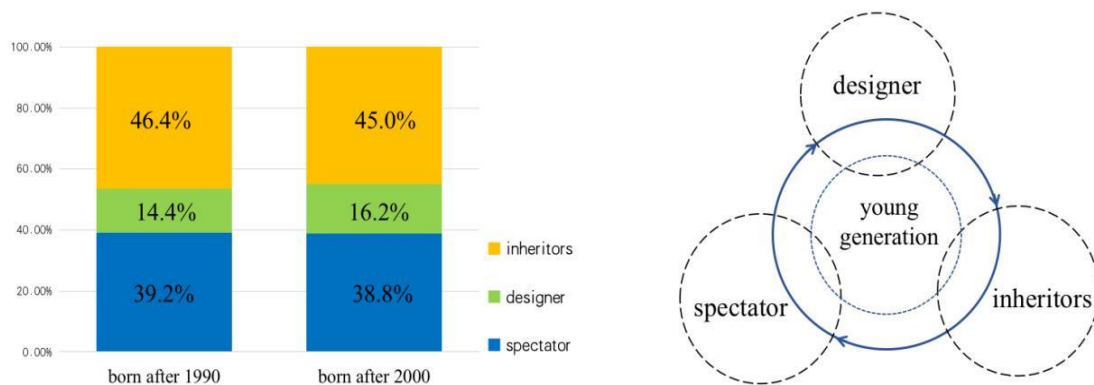


Figure 9. The role choices of young people's participation in cultural inheritance

*Source: Aurora Mobile (NASDAQ: JG); data retrieval period: 2021.09*

Designers should strengthen communication with spectators in their work, and then clarify the direction of the cultural inheritance of design. Satisfy the increase in the sales of cultural products, and at the same time obtain feedback from the design service terminal. The emotional feedback of the use process provides a powerful reference for the next research on clothing design. Emotional and psychological evaluations are for a deeper grasp of consumers' emotional needs for cultural images. In the design process, use scientific methods to close the relationship with the elements. Establish consumers' emotional needs for cultural heritage and find the best way to combine elements in design. Objectively digitize the subjective and perceptual needs of spectators, and provide designers with more rational design guidance. In this process, the bystander becomes a constant inheritor of culture.

### 3.4.3 Role of student in research

Students are the foundation of design progress in every era. Everyone is a learner, and students' plasticity and initiative provide the possibility for their education. A student's learner role includes both objectivity and subjectivity. A student majoring in art and design (Sawyer, 2017), should have various abilities and focus on the cultivation of their

comprehensive abilities. When students have abundant knowledge reserves, their key role in research can promote the enrichment and progress of the design.

- Students can grasp the concept of fashion design in design research, and quickly shorten the relationship between theoretical concepts and fashion. Know how to apply existing knowledge and create new knowledge based on research questions.
- The research space of creativity is broad, and the imagination ability has more potential. Students are active in thinking and can seriously absorb knowledge. When the accumulation reaches a certain level, students can enhance their thinking ability on the original basis, expand themselves, and infer other things from one case.
- Students are active learners, and their important role in scientific research is that they can continue to research and focus on research. When integrated into a multidisciplinary team to exert one's ability, this team effect will amplify the individual's ability, just like a chemical reaction, which is infinite.
- The development of the design work is relatively complicated, and in the face of the real design environment, the coordination and cooperation of all aspects of the design can be fully presented. Students should learn to cooperate with others to ensure the quality and efficiency of the entire design work.
- The design of the works depends on the team, and the students participate in the classroom through the group, to realize the comprehensive training of the students' professional ability, operation ability, innovation ability, and unity and cooperation ability.

### **3.4.4 Role of teacher in research**

Design work purpose on the simultaneous development the knowledge-based disciplines, product design, technical cooperation, and talent training. Cultivate the application of cultural symbols through teaching interaction and semantic exploration in design practice. Inspire the younger generations of designers to participate in design practice activities, and the younger generation accepts the inheritance of consumption of design works that reflect cultural elements. We urgently need to explore the sustainable development and inheritance of element application in design education.

- Based on the correct educational concept, re-examine the past teaching methods and teaching materials, and pay attention to the importance of practical links in the overall teaching activities. The teacher excavated the cultural elements with Oriental characteristics into sustainable education design. Actively create a real design atmosphere, allowing students to simulate and interpret the task approach to the design process.
- Under the leadership of the teacher, the students of fashion art design conduct social research in the form of a team. Understand the development status of the industry, give full play to the characteristics of practical teaching of fashion design, and active feedback to students on the situation of enterprise development, to better adapt to the development of the design industry.

- Improve the ability to use professional knowledge to analyze and solve problems, conduct teaching through real situations, promote students' association, and stimulate students' creativity. Teachers should look at growing students from a developmental perspective, be patient and careful, and expect all students to have multiple possibilities for future development.
- Stimulate students' potential, participate in practice and experience classrooms, exercise students' comprehensive ability of art and design, and improve professional skills. Realize group cooperation and strengthen joint participation. The group cooperative teaching method aims to allow students to participate in the design together, and to exercise students' professional ability and teamwork ability.
- The role of the teacher is not only the disseminator of knowledge but also the shaper of the learning knowledge environment and the guide of students' problems. It advocates taking students as the main body and highlighting the main body of students, to stimulate students' artistic design potential to the greatest extent. Train specialized research and applied talents, and provide targeted talents for the market.

### **3.5 Limitation of Research Methodology**

The research is meaningful and timely, and we are investigating useful and appropriate practices to pursue sustainable fashion within our current system of practice. This study proposed the applicable design method for sustainable fashion. However, the limitations of this research methodology need to be clarified.

The challenges in research are more complex than the actual design process. These limited conditions may limit the validity of the cultural concept generation process developed in this study. For the extraction of cultural heritage elements, this research uses a variety of practice methods for the design and production of finished products. Outlining the research with a derived model-guided approach to practical case design has its limitations. Instructing a large number of practices to verify the cultural inheritance scheme proposed by the research requires flexible organization and processing of the model method of this research, and requires the joint efforts of designers and related workers in different fields. Future research must explore the validity of the proposed method under other domain conditions. If it proves to be applicable to a wide range of conditions, it could provide us with important guidelines for developing unique insights into cultural values in promoting creativity and design education.

### **3.6 Research Structure**

The doctoral dissertation mainly focuses on cultural symbols and language, in-depth research on the design and application of cultural symbols, and the practice and expansion of traditional ink painting language. Based on the development of cultural heritage design, the general research direction is proposed, and the practical case study combines the theoretically derived IAI model design method to solve the main research problems raised in the paper.

Figure 10 shows the research structure guided by knowledge science, with four practice cases respectively verifying the major research questions from four directions. Including Case

1: Design of Dragon Boat Festival Insect Cultural Elements; Case 2: Science and Technology Help Cultural Development, 3D Printing Technology Develops Practical Design of Traditional Painting and Calligraphy Utensils; Case 3: Design and Expansion Practice of Refining Ink Language; Case 4: Experimental Ink Cultural Language Application the Practice of Fashion Design.

The cases mainly focus on practical design exploration, presenting the design expansion and innovation of cultural symbols and languages in various aspects. The research methods guide the design practice, and the solution to these research questions highlights the contribution of this doctoral thesis to cultural inheritance. On the basis of a deep understanding of traditional culture, he applied the spirit of traditional culture to the field of fashion design, and the inheritance of cultural language is constantly considered and innovated in design practice. Through the presentation of design practice, the cases show the development of sustainable cultural inheritance. The questions raised by the main research in the dissertation are verified in many ways.

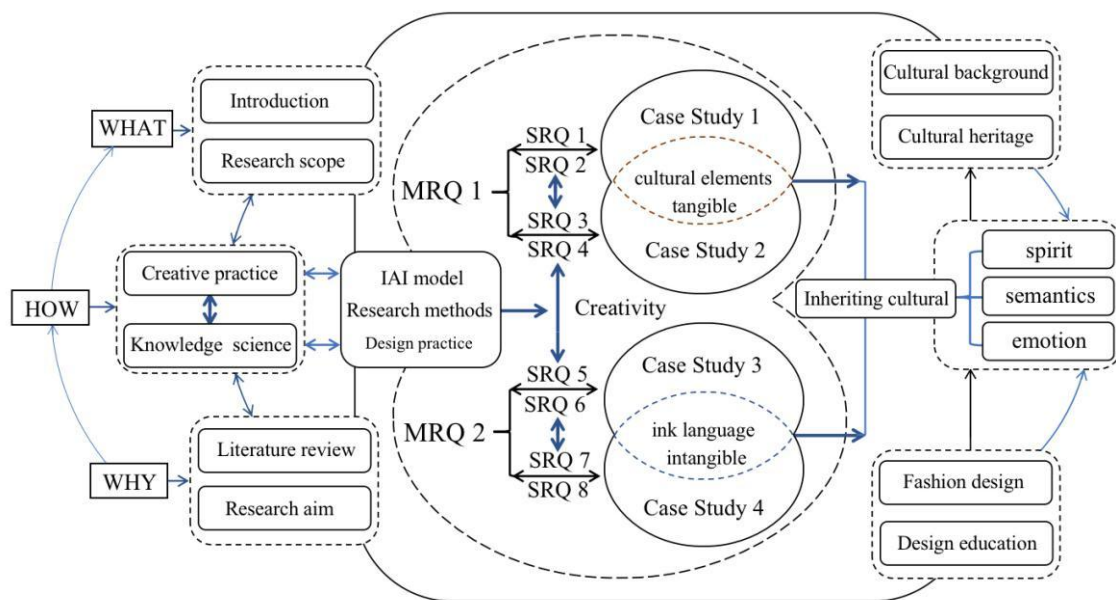


Figure 10. Research structure guided by knowledge science

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# **Chapter 4**

## **Case Studies:**

### **Case Studies of Cultural Elements**

#### **4.1 Case Study 1,**

#### **Activating the Inheritance Items: The Fashion Design of Insect Elements from the Perspective of Cultural Emotions**

##### **4.1.1 Case study abstract**

Apparel is the art of visual language, medium, and carrier of cultural dissemination. The charm and characteristics of culture lie in the uniqueness of its region. Despite the field of design interest in fashion expression culture, in the design practice, it is still necessary to further explore the importance of the emotions generated by clothing conveying stories for cultural inheritance. This case study follows the derived creative design application model “Items Activation Inheritance” (IAI) as an extended tool for creating and reusing items designed based on understanding the connotation of the culture. Cases aim to extract and activate the emotions of cultural elements and integrate them into the design and development process of apparel products.

##### **4.1.2 Research introduction**

The progress of science and technology has accelerated the pace of world development, and the vane of the trend has driven the commodities to be similar. Clothing brand chains compel people worldwide to buy and wear the same clothing. Fast-fashion clothing products have shortened their design development and production cycle to cater to the market (Feijs and

Toeters, 2018). People make purchase choices among existing mass-produced clothing products. Most of the appearance designs of these apparel products include attractive, cute, and colorful patterns (Zheng and Lin, 2019). Adoption and standardization of design elements in the name of fashion bring eye-catching and short-term visual experience, but also cause rapid aesthetic perception fatigue (Greenberg, Ehrensperger and Schulte-Mecklenbeck, 2020). The use of design elements mostly neglects the consumer's wearing environment and experience of cultural emotions. Simple replication elements emphasize commercial sales, and many cultural treasures are ignored and lost (Maags, 2014). Apparel is a mobile visual language that can carry cultural communication. The design and application of elements is not a simple use of raw materials but needs to embody the unique regional cultural emotions and the meaning of symbols (Lu, 2001).

The current design research on culture has mainly focused on the form and structure of elements. It lacks sustainable fashion design exploration of cultural items from the perspective of emotional value. Kwon and Lee (2015) discussed fashion influenced by traditional aesthetic characteristics from the perspective of contemporary practice and found that this method helps attract new consumers. However, this research lacks an explanation of the source of emotional value and design process methods. The most basic connection between the in-depth cultural semantics of the story background and the design process is still rarely explored (Chai, Shen, Bao et al., 2018). Cultural semantics explores the laws of interaction between culture and semantics, including cultural connotations and essences. It helps to deepen the study of semantic theory and design language. Based on the cultural inheritance of clothing, the use of elements is more considered to the auspicious meaning of the design expression image. Nazir et al. (2009) and Jeong et al. (2010) highlighted the importance of cultural and emotional values but did not conduct specific design practical analysis and experimental verification. In China, studies on apparel culture have mainly focused on etiquette and the restoration of traditional costumes. There is a lack of relevant research on the design quantification and evaluation feedback of apparel expressing emotions. Many practical studies have focused on imitating ancient costumes (Wang, 2005); however, these traditional costumes are directly derived from history with archaeological value and do not conform to the aesthetic and living environment of current society (Truong and Gaudet, 2020).

### **4.1.3 Research objectives**

The vitality of traditional festivals gathers the inheritance and development of human beings. An modern rich in culture festive logo is also an important factor to erect festive atmosphere. Costumes is an important part of festivals and is a form of expression. The dressing style is a demonstration of a strong ideological tradition and ritual rules.

- Refining the essence of traditional culture is combined with the fashion of modern clothing to realize the emotional inheritance through the meaning of the item so that the ancient cultural semantics glow with vitality. Design practice focuses more than just creating elements from scratch but on conveying human emotions through items (Bohemia, 2014).

- Creativity drives fashion design and gives clothing cultural emotions through the improvement of design process methods. Emphasize the contact between designers and product developers to explore and produce design products with inheritance and connotation semantics. Through the ability of creativity to drive creative design, highlight the regional cultural characteristics, and enhance the practice of culture language heterogeneity and diversity.
- To excavate the emotional connotation of culture and conveys the auspicious semantics of elements through product design in practice. The cultural background of the theme of fashion design practice chooses the representative Chinese Dragon Boat Festival, perceives and extracts the emotion of the elements, and uses apparel to establish a relationship with culture.
- Traditional culture is increasingly embraced by the younger generation and has become a cultural object eagerly sought after by young people. Through the display and interpretation of different carriers, Chinese traditional culture has formed a wave of traditional culture under the dual role of youth culture and trend culture.

Substance form of inheritance is not just inheriting the traditional object's style and form, and it is necessary to create a high-quality product in this era. As we can see in the Western festival like Christmas day, Halloween. they both have a clear logo image to drive a festive atmosphere well. We urgently to analyze the current situation of culture and tries to explore the characteristics of the elements through theoretical research and design practice so that people can get meaning and interest from our festival.

#### **4.1.4 Propose research questions**

Based on how to use cultural elements in creative design practice to obtain apparel with oriental characteristics, and how to use the design method and design process to solve the problem in the process of an actual conversion application. Effectively retain the connotation and emotion of cultural elements in creative design. And how to realize the sustainable inheritance of cultural items through design conversion. Show the practice process can lead to a better understanding of the generation of good design products and achieve a higher level of creativity. Through the combination of literature review and practice-based design research, the following two subsidiary research questions need to answer:

SRQ 1: How to effectively convey the cultural semantic information of elements in design practice?

SRQ 2: How to convey culture through fashion design to achieve sustainable emotional inheritance?

#### **4.1.5 Research ideas and hypotheses**

Based on consumers' personalities and professions (McLening and Buck, 2010), we explored the influence of the design results on consumption choices (Tromp, Hekkert and Verbeek, 2011). According to the acceptance degree of cultural elements in commodities by different groups of people in the market, feedback and guide design practice again.

According to the subsidiary research question, the following are the research ideas for this case:

- Find problems. Through the research and analysis from the introduction, we have a preliminary understanding of the clothing culture markets and the demand for consumer emotion. They pay more attention to the fashion of clothing and convey emotions with their unique personality.
- Analyze the problem. Analysis of the way of sustainable inheritance of cultural elements in fashion design, and to bring them into line with the aesthetic of the times and the emotional experience of dress accepted by young people. Relying on the festival to excavate the emotional connotation of culture, and convey the auspicious semantics of elements through product design in practice.
- Solve this problem. Combined with rigorous literature research and product design practices, we deduced the sustainable creativity design application model “Items Activation Inheritance” (IAI) method. It is an extension tool for creating and reusing cultural items based on an understanding of semantic meaning. Used to integrate cultural elements into daily use and dress to achieve emotional visual memory and storage in life.
- Follow-up problem. Questionnaire survey results on apparel products produced based on design models can drive the sustainable development of cultural item design diversity, and provide ideas for further in-depth research and design of related products. Continuously optimize the model in practice to help develop culture inheritance in design education and talent training.

To achieve a sustainable cycle of cultural semantics, fashion design, and creative practice, according to the design practice implemented by the research model, and use the survey of a questionnaire to evaluate and improve the design result, to verify and propose the following hypotheses:

H.1: Fashion design guided by the IAI model can follow the cultural semantics source of items.

H.2: The emotion generated by the clothing triggered by the IAI model can retain the inheritance meaning.

We practiced the design of clothing prototypes according to the derived model’s methods and conducted a questionnaire survey on them to verify the proposed hypotheses. Analyzed statistics to obtain the results of the evaluation.

## **4.1.6 Design practice: Dragon Boat Festival five insects**

### **4.1.6.1 Design extraction of festival elements**

The festival gathers people’s emotions, and the costumes of the festival are externalized emotional expressions. Festival costumes are explained as: at a specific time, in a specific area, and in a widely recognized festival period, people wear clothing and accessories that conform to the laws of the seasons, etiquette requirements, and customs and culture to dress. Based on the history of traditional culture, including ancient classics, documents, folk

clothing crafts, customs, and folk traditions, conduct in-depth research on clothing. Refining cultural elements for design and development practice, investigating people's fashion needs for the cultural market, and special guiding designs for serviceability and cultural inheritance of young groups.

Respect the cultural and historical background, and refine the design elements related to the festival. The biggest difference between ancient festival costumes and ordinary costumes is often seen in small ornaments, especially the head decoration to highlight the festival theme. The cultural expansion design takes the Dragon Boat Festival as an example. The main customs of the Dragon Boat Festival include dragon boat racing, eating zongzi, hanging wormwood, wearing sachets, drinking realgar wine, hanging the "Zhong Kui Statue" to catch ghosts, and picking medicine to drive away wolves. In folk traditions, it is mostly to avoid evil and exorcise evil, preventing epidemics and diseases.

The elements of the five poisonous insects applied to clothing are a summary of the natural world that people follow the laws. Refine the insect elements of the Dragon Boat Festival culture, and go deep into the story of the elements and the theory of costume culture. Insects are petite, lively, and agile, and the costumes made in the image of insects are very suitable for the finishing touch in the joy of festivals. The decorations of the insects in costumes are mostly seen in headdresses, and they are also reflected in costume patterns. Insects come with the seasons, designed and made into clothing accessories to decorate the festival people. The ingenuity of the design makes the insects become the accessories to decorate the clothing and the small and smart decorations. There are thousands of species of insects, and the choice reflects the law of festival culture and people's emotional appeals. The elemental emotions to welcome the spring require flying insects and song insects to have fun. The Dragon Boat Festival is to wear poisonous insects to drive away evil spirits and strengthen the body. Chinese Valentine's Day is a festival for women to beg for cleverness, and multi-legged spiders are used to decorate their hair.

#### **4.1.6.2 Selection of five insect elements**

The Dragon Boat Festival is an important traditional festival held on 5 May of the lunar calendar. On 30 September 2009, the Chinese Dragon Boat Festival was recorded by UNESCO in the Representative List of the World's Intangible Cultural Heritage of Humanity. During this festival, traditional costumes often feature patterns depicting insects. It is associated with five poisonous animals: scorpions, snakes, lizards, centipedes, and toads.

Festival costumes pay more attention to the auspicious meaning in elemental decoration, embody the cultural connotation of etiquette, aesthetic character, ideology, and philosophy, and show the spirit of cultural identity. Childrenswear, such as underwear and vests, has been decorated with five insect patterns.

In-depth observations of nature revealed that these animals are active and reproduce at certain times of the year. Since the Tang dynasty, the five poisonous insects have been used to decorate clothing items. Among the five poisonous animals, snakes and lizards do not belong to the category in any broad sense of the word in the English language. They fall into the category of reptiles and are not always small. However, it is worth noting that all five small animals are associated with insect species in the region and culture.

These insects are popular at festivals because people care more about their shapes, auspicious homonyms, historical legends, and extraordinary reproductive ability. The Chinese use pomegranates and insects to pray and express their wish for more offspring because they have many seeds.

### 4.1.6.3 Traditional decoration craftsmanship

Traditional apparels pay more attention to the use of auspicious symbols. Children-swear has five bugs decorated with a three-dimensional hand-sewn pattern on a red background fabric. Traditional items decorated with such patterns are underwear and vests. This type of clothing is the most popular childrenswear because children are the most vulnerable members of society and they require protection from poisonous insects. Because the children's resistance is weak and vulnerable to the environment, the images of the five insects are gathered on clothes to protect children. Embroidering the images of these insects on clothes and hair accessories signifies borrowing the deadly power of the insects' poison to expel evil and misfortune. Figure 11 shows three different fabric expressions of insect images.

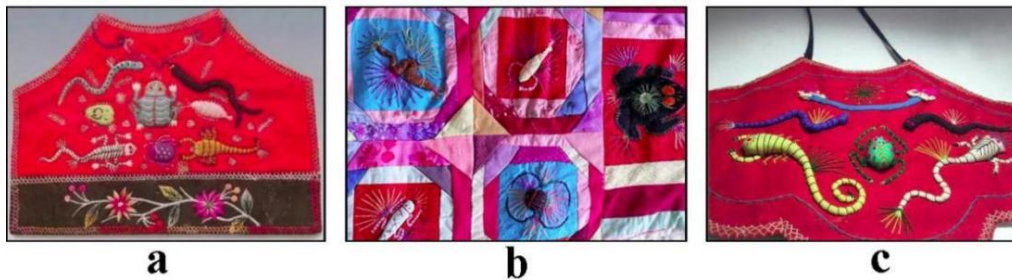


Figure 11. Children's underwear and vests for the Dragon Boat Festival

*Source: In the early stage of the research, the author collected a large number of documents and physical materials, and the partial photos taken belong to the clothing of personal collections.*

- Figure 11a consists of flat and semi-planar representations. The color is based on a large area of red with black, and the color is simple and bright. In Figure 11b, the insects are made of cloth and decorated with patchwork techniques. The craft is a combination of patchwork and embroidery. Cut fabrics of different colors into the shape of the desired pattern, and hand-embroider the stitching. And use different colors of embroidery thread for decoration.
- The patchwork form used in the pattern creates five independent internal spaces decorated with animal images. The black color is a toad, and the eyes, back patterns, and limbs are all finely decorated. The most interesting thing is that the toad's mouth can be opened and closed, satisfying the fun of children's clothing. Adjacent is the images of scorpions and spiders, then snakes and geckos. Although it is the five poisonous insects, the image is not terrible or annoying, but it gives people a kind and lovely feeling.
- There is no gap in the pattern layout, and it feels very fulfilling. The eyes of the five poisonous images are all completed by the method of seeding and embroidering. Except for toads, the facial directions of the other four poisonous insects are in the same direction toward the middle, which has a gathering effect from the visual effect. Although the colors are rich, they do not appear to be messy.

- Figure 11c consists of the accessories, which can be three-dimensional, and also significantly more abstract. Usually, these images are hand-stitched on a piece of red background fabric and special techniques to create three-dimensional cultural relics, just like the cute dolls.

Designers seek creative inspiration from traditional culture, extract elements and craftsmanship, combining graphics with three-dimensional fashion design to achieve sustainable creative services for the culture application.

#### 4.1.6.4 Traditional decoration meaning

Traditional crafts of collage small pieces of cloth: Children wear clothes made of small pieces of cloth collage and eat at other people's homes, praying for healthy growth. On the hundredth day of the birth of a child in ancient times, parents would collect rags from many homes and put them together to make clothes to drive away evil spirits and avoid strange things, and pray for the healthy and smooth growth of the child.

Children under the age of one year can get the underwear or vests made by their grandmother. The cloth used for the bellyband is generally red, and the five poisonous patterns are generally white, black or green, sewn with other colored threads. It is very exquisite and can be said to be a work of art. Some are shaped like shorts, and children can wear them all summer, until autumn. Because it is beautiful, comfortable, and durable, adults like it, and children are happy to wear it. Some children can wear two or three summers. When the child grows up and cannot wear it, the mother will keep it. Save the memory of the child's growth. Some will give it to others to convey healthy growth, and the recipients will also be very happy.



Figure 12. Wanli clothing, five insects together with tigers and wormwood

Figure 12 shows the clothing decoration artifacts from the Ming Dynasty. An important document of Ming court deeds is the *Zhuo Zhong Zhi*, written by the eunuch Liu Ruoyu (born in the twelfth year of Wanli in the Ming Dynasty, 1584 AD), contains the following passage: On the first day of May, the end of the 13th, the palace minister wears a five poison wormwood tiger clothes. In the figure above, it is observed that the five insects' patterns are decorated together with tigers and wormwood. As mentioned above, tigers are considered

bugs in the traditional sense of the word, whereas wormwood is a traditional symbol of evil banishment, which combines the fabrics of various materials and colors to represent the Dragon Boat Festival. Thus, the same goal of protection is accomplished for adults.

### **4.1.7 Create a prototype design**

Design is a medium for expression. To expand the concept of modern people, the way to deduce the design, the development of traditional culture, and the consistent spirit of today's people, such a design study has a certain degree of difficulty and challenge. Culture lies in the extension of the background of problem-solving through ideology. Modern design aesthetics was conceived and established in the context of an ideological result from integrating ancient traditional aesthetic principles with modern Western aesthetics (Du, 2016). Clothing is the crossroads of art, culture, and lifestyle. Clothing and accessories are a means of cultural information dissemination and can be regarded as a material carrier of cultural expression.

To guarantee the inheritance of culture, we study and practice the possibility of presenting various elements in creative design activities through the thematic prototype design. Explore the design practice of integrating cultural elements into the daily use and dressing of apparel and achieving visual memory and storage in life. Focusing on cultivating imagination, it comes from the different understanding and preference for elements, depending on the personality characteristics of the designer.

#### **4.1.7.1 Model-based prototype design**

Design practice helps promote cultural application, validate the semantic aesthetic theory, and utilize efficient knowledge to identify and judge (Melissa and Fatma, 2019). The creation of prototyping brings complexity and unknown design outcomes, model-based practices can ensure the smooth implementation of research questions and hypotheses, and design integrates and effectively retains the cultural emotion of the elements. We learn traditional cultural concepts, and then use modern vision, ideas, and attitudes to complete the creative design works.

It cultivates the sensitivity to creativity through practical operation and realizes the illusory subjective image formed in the brain. By observing and extracting cultural emotions, insect elements and festival apparel form an intersection of creative design. Using design methods to transform into dynamic costumes in practice through the cooperation of hands and brains, the skills that enhance creativity make discovery and creation necessary. The selection of items focuses on the activation throughout the model to retain the meaning of emotional continuity and inheritance. Combined with the IAI model, we ensure that these advantages could synchronize in practice.

Figure 13 presents the design process of creating and completing clothing samples containing insect elements. The acquired design language is comprehensively used to form a series of six-piece costumes in practice. The designer consciously expresses design thinking with their skilled hands, and physical perceptions are embodied in the draft. The designer's sensitivity and judgment of the design theme improve in this process. From manuscripts to partial displays of clothing, the experience of the emotions accumulated by designers in



practice as the work solidifies to form the tactile costume.



Figure 13. Prototype creative design based on the insect items

*Source: Based on the Humanities and Social Sciences Research Youth Fund of the Ministry of Education [15YJC760022], this paper conducts in-depth research on the graduation project of Zhang Yinuo guided by Wang Manqian (Du, Nagai and Wang, 2018).*

Cultural awareness leads the design practice, deeply understands the inner spirit of the Dragon Boat Festival culture, and stimulates the core value of the elements to present a high-level life aesthetics through clothing. The literature continues on insect element study and uses design language to deconstruct elements in this design practice. Seasonal insects associated with the Dragon Boat Festival come mainly from auspicious semantic features to express wishes related to the festival for specific clothing themes (Grierson and Ion, 2013). These insect elements form a design intersection with the clothing structure and constitute an agent that aids the inheritance and preservation of traditional culture (Zhao and Zhao, 2012). The personalized expression of design works is present through refining the universality of knowledge in design theory.

#### 4.1.7.2 Select of fabrics, colors and styles

The advanced customization of apparel samples uses traditional craftsmanship and plant dyes to incorporate insect elements into today's fashion. For softness and comfort, temperature sense, and environmental protection considerations, the choice of materials is mainly a blend of cotton and linen fabrics. The fabrics are mainly made of cotton and linen blended fabrics, because compared with other fabrics is that the cost performance is very high, and it has the advantages of environmental protection, breathability, comfort, good drape, comfortable wearing, it is the advantages of cotton and linen.

- Designers seek creative inspiration from traditional culture, extracting elements and craftsmanship and combining graphics with three-dimensional fashion design. In the redesign of the fabrics, pieces of cloth are intertwined and spliced into the five insects image of the Dragon Boat Festival. In addition, there are ethnic jacquard fabrics. By reprocessing fabrics, exaggerated insect shapes appear on clothing, and the large area of

dark and black accentuates colorful three-dimensional images and details.

- The physical properties of color do not have temperature, but the change of hue can make people produce emotional temperature. This magical effect is applied in fashion design. Generally speaking, warm colors have longer wavelengths, and consumers are prone to emotions such as excitement, joy and warmth when receiving the image of warm colors. It may increase the desire to acquire. The wavelength of cool colors is shorter than that of warm colors. Consumers will have calm, cool, and tender emotions when they visually receive cool colors. The series of design works integrate the proportions of cold and warm colors, and the manual craftsmanship of warm colors under the background of cold colors is highlighted, which is a visual presentation of concise and cold colors contrasting complex warm colors.



Figure 14. The practice of tie-dyeing method and splicing and shading method of fabrics

- The color has chosen a multicolored broken pieces patchwork techniques to embellished, representing the colorful festival of the Dragon Boat Festival, is an interpretation of the Chinese style. The main color uses a large area of blue, soft and not glaring, both stylish and practical. From sketch design to detail presentation is the combination of basic style clothing and hand stitching. The complex patchwork elements are simple, the stitching of tie-dye fabrics is rich, and the overall fusion changes are natural and interesting (Figure 14).
- We adopted classic and widely accepted clothing styles such as skirts, pants, long skirts, and windbreakers and seek design changes in structure and style. The pattern used eclectic patchwork processing to decorate the edge details of the garment. To make the clothing prototype more complete, we integrated the information about cultural items into the hand-stitched accessories decorations. Hand-crafted clothing samples exude humanistic emotional care, leaving behind the spirit of craftsmanship. There is an emotional temperature in the crafted handmade accessories, which embodies the value of the inheritance.

#### 4.1.7.3 Design of prototype decoration accessories

The overall presentation of clothing includes clothing accessories. Based on the previous literature, it goes deep into the traditional graphic elements and combines paper-cutting and shadow puppets with modern design concepts. Through modern aesthetics and traditional forms, abstract and refined shapes, such as segmentation, fracture, dislocation, and transformation. Reassemble the design to construct a new creative necklace jewelry (see Figure 15). These works retain the charm of traditional cultural stories and have distinctive characteristics of the times, expressing the concepts and ideas that the designer wants to express in the accessories.

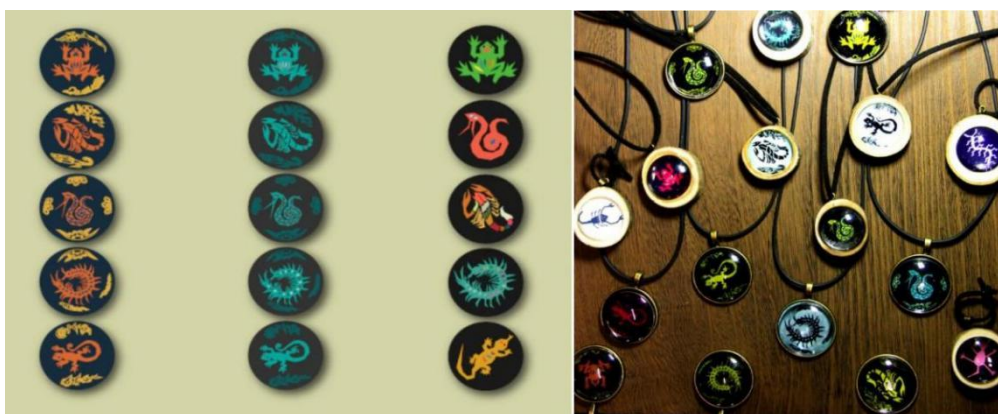


Figure 15. Insect pattern accessories design draft and finished product display

The carrier of clothes ignites young people's participation in traditional Chinese festivals and their love for culture. The five poisonous elements are extracted and converted into design patterns, and the image of the five poisons of the Dragon Boat Festival is designed as decorative accessories. Following traditional craftsmanship and creative use of accessory materials, glass and wooden stands are selected, and five poison paper-cut patterns are used flexibly in the accessory design.

The next step is to develop evaluation criteria and conduct a questionnaire survey on the overall presentation of the clothing prototype, to analyze and validate the proposed research hypotheses.

## 4.1.8 Prototype analysis and evaluation

### 4.1.8.1 Case analysis and evaluative criteria

In general, the perceptual cognition of a visual symbol by mass consumers is a perceptual experience based on the interaction of their sense organs. Therefore, it is difficult for most consumers to accurately express their inner thoughts and visual experience in words, especially the emotional experience and momentary sensory experience in the subconscious. Because different design elements will bring different emotional experiences to consumers, it is necessary to obtain the semantic evaluation results of consumers' emotional experiences of different cultural elements. Excavate the emotional experience of consumers accurately and deeply and present it in the form of data.

Positioning the target group for design services and market feedback can help improve the purpose and efficiency of clothing case practice. We analyzed consumers' consumption psychology and emotional preferences and recorded the needs of different groups for ideal clothing. The selection of the designed items and the application to inheritance were quantified and evaluated by vocabulary indicators. They were combined with the network, magazines, and books to screen and collect accurate evaluation vocabulary. We aimed to understand their views on the current clothing image through face-to-face communication and extract keywords about the ideal clothing descriptions from the expressions such as fashionable, beautiful, concise, eye-catching, and culturally connotative.

Among the qualified vocabularies that met the conditions, we re-filtered, modified, and

classified semantically similar or poorly expressed words through discussions with design members. The team members extracted 19 descriptive criteria indicators through brainstorming, and these descriptions were in line with consumers' emotional experience of element design samples. We combined literature research with questionnaire surveys to evaluate works designed based on the IAI model. The specific questionnaire is shown in the appendix, Case 1.

According to the research hypothesis, a combination of questionnaire and scale design was used to evaluate the prototype clothing shown in Figure 13. The evaluation elements were combined with the literature and the opinions of relevant experts, and finally, we divided the 19 descriptive criteria into three categories of first-level indicators: Basic Design level, Items Application-level, and Inheritance Meaning level. The Basic Design level included seven criteria, such as practicality. The Items Application-level included six criteria, such as handicrafts. Furthermore, the Inheritance Meaning level included six criteria, such as story cognition with a total of 19 secondary criteria indicators (see Table 3). In the scale design, a seven-point Likert scale (1 = strongly disagree, 7 = strongly agree) was used for evaluation to obtain higher sensitivity variation. The reliability of the data was evaluated with Cronbach's alpha coefficients.

Table 3. Evaluation criteria

<b>Category 1:</b>		<b>Category 2:</b>		<b>Category 3:</b>	
Basic		Items		Inheritance	
Design level		Application level		Meaning level	
<i>No.</i>	<i>Evaluation factor</i>	<i>No.</i>	<i>Evaluation factor</i>	<i>No.</i>	<i>Evaluation factor</i>
1.	Practicality	8.	Handicraft	14.	Story cognition
2.	Fashion	9.	Auspicious	15.	Connotation
3.	Comfort	10.	Atmosphere	16.	Identity
4.	Model	11.	Smart point	17.	Belonging
5.	Color	12.	Constitute	18.	Temperature
6.	Style	13.	Inspiration	19.	Ceremony
7.	Material				

#### 4.1.8.2 Collect data in groups

The evaluation of the design required designers, the public and users' participation and experience and used life details to arouse emotions. The design method linked culturally relevant fields and guided the younger generation to actively participate in the design activities enabling them to become co-designers and participate in the design process. It stimulated positive emotions to collect feedback information, thereby enhancing public awareness of participation and support for design creation.

It selected samples and divided them into three groups to conduct the questionnaire survey. We obtained ethical approval for the study, as well as provided verbal informed

consent to participants. The first group of experimental subjects was professionals and academics associated with the creative design field, including designers, teachers, and students of design schools (Group 1). The second group was sampled from the mass consumer group, and the questionnaires were randomly distributed through the questionnaire star using the mobile phone as the terminal (Group 2). The third group consisted of women aged 20-40 who engaged in fields related to traditional Chinese cultures, such as sinology, ethnic dance, tea art, and flower arrangement. This group of young women was more independent and had more active thinking, ideas, and higher requirements for quality of life. They were more sensitive to the cultural connotations of fashionable appearance (Group 3). We informed participants that the questionnaire was anonymous and that the data collected was valuable for the study.

The reason for choosing the first group was to receive feedback from the professionals, which would help improve the design plan at an early stage. They were engaged in design-related industries and could conduct professional evaluations through sample comparison. The choice of the second group was to investigate the cultural consumption propensity in the general market in a random way to determine the public's emotional approval of design works to obtain potential market opportunities. The third group could conduct a deeper value evaluation of the symbolic meaning and emotion of the design theme. Cultural cultivation enabled them to have a good appreciation ability, and it was easier to recognize the emotional resonance contained in clothing. The target purchasing group of clothing consumption was in the third group, and thus the result would be more convincing with the help of an evaluation from target users. Considering avoid the overlap of attributes in the survey sample, the principle of attribute sorting is added to the grouping. Group 1 > Group 2 > Group 3, such as a 40-year-old female professional designer has given priority to Group 1, then Groups 2 and Groups 3. When 21 samples were taken in each group the Cronbach's alpha of the experiment was  $0.919 > 0.8$ , indicating that the reliability of the data was high.

#### **4.1.8.3 Collection evaluation results**

Design research combined empirical research with theoretical model-driven practice, which is an effective method from creation to innovative design. The experimental test obtained feedback on perceived emotional value and quantified the intensity of cultural emotions integrated into apparel products. In the data generated by these three categories, we discovered the weaknesses and improved and enhanced them. From the indicators, different groups of people had different statistical results.

As shown in Table 4, we input the collected data into the Statistical Package for Social Sciences (SPSS) for analysis. For the basic design level, the values for group 1 are higher for the model, color, and material. For group 2, the mass consumer pays more attention to the color, which is not particularly relevant to the professional background. For group 3, the highest-rated criteria are fabric and comfort. For the item application level, group 3 significantly improved its focus on the handicraft, with auspicious meaning to express that the theme design is very interesting. Moreover, group 1 pays more attention to the descriptive criteria of atmosphere and inspiration. From the inheritance meaning level, in the data of

group 3, story cognition is highly prominent. The target group shows very high interest, and the story cognition gives the emotional connotation of clothing, which is conducive to the inheritance and development of design elements. From the cultural-emotional perspective of creative design, story cognition adds interest to the design and increases the opportunity for storytelling through clothes.

Table 4. Evaluation criteria and three categories of mean comparison

<b>Basic</b>	Group	Group	Group	<b>Items</b>	Group	Group	Group	<b>Inheritance</b>	Group	Group	Group
<b>Design</b>	1	2	3	<b>Application</b>	1	2	3	<b>Meaning</b>	1	2	3
Practicalit	4.86	4.00	4.71	Handicraft	6.00	6.00	6.43	Story cognition	6.00	4.14	6.86
Fashion	6.00	5.14	6.00	Auspicious	6.00	4.29	6.43	Connotation	6.14	5.29	6.29
Comfort	5.86	5.29	6.43	Atmosphere	6.29	4.29	5.86	Identity	5.71	5.00	6.00
Model	6.43	5.86	6.00	Smart point	5.57	4.14	5.62	Belonging	5.71	4.43	6.00
Color	6.29	6.14	6.43	Constitute	6.00	5.00	6.29	Temperature	5.29	4.57	5.29
Style	5.71	5.00	5.86	Inspiration	6.57	5.00	6.14	Ceremony	5.43	4.00	4.86
Material	6.29	5.71	6.57								

The one-way ANOVA (with F-test) was used in this study, as shown in Table 5. Through the analysis of data, we could test whether the same influencing factor influenced differences in the dependent variable at different levels between groups. As shown, aside from the model (sig. = 0.087 > 0.05) and color (sig. = 0.43 > 0.05) that were not significant enough between the three groups, the remaining 17 criteria differed in a statistically significant way between the groups.

Table 5. One-way ANOVA

<b>Category</b>	<b>SS</b>	<b>df</b>	<b>MS</b>	<b>F</b>	<b>Sig.</b>
Practicality	45.714	62	4.429	7.209	0.002
Fashion	42.857	62	5.143	9.474	0.000
Comfort	31.714	62	6.857	22.857	0.000
Model	47.429	62	1.857	2.549	0.087
Color	30.857	62	0.429	0.857	0.430
Style	39.714	62	4.429	8.611	0.001
Material	21.714	62	4.000	17.500	0.000
Handicraft	19.714	62	1.286	4.500	0.015



Auspicious	63.429	62	27.000	171.818	0.000
Atmosphere	63.714	62	23.286	81.500	0.000
Smart	60.222	62	14.778	28.913	0.000
Constitute	35.429	62	9.571	35.263	0.000
Inspiration	47.429	62	13.857	42.174	0.000
Story	98.000	62	40.429	141.500	0.000
Connotation	41.429	62	6.143	12.647	0.000
Identity	15.429	62	5.571	78.000	0.000
Belonging	44.857	62	14.714	57.222	0.000
Temperature	32.857	62	3.571	8.333	0.001
Ceremony	35.429	62	10.857	47.500	0.000

We try to validate this creativity model between these three categories. Figure 16 shows the difference in evaluation results among the three groups. The scoring indexes are 19 criteria items from the three categories of first-level indicators in Table 3. The data correspond to the One-way ANOVA in Table 5.

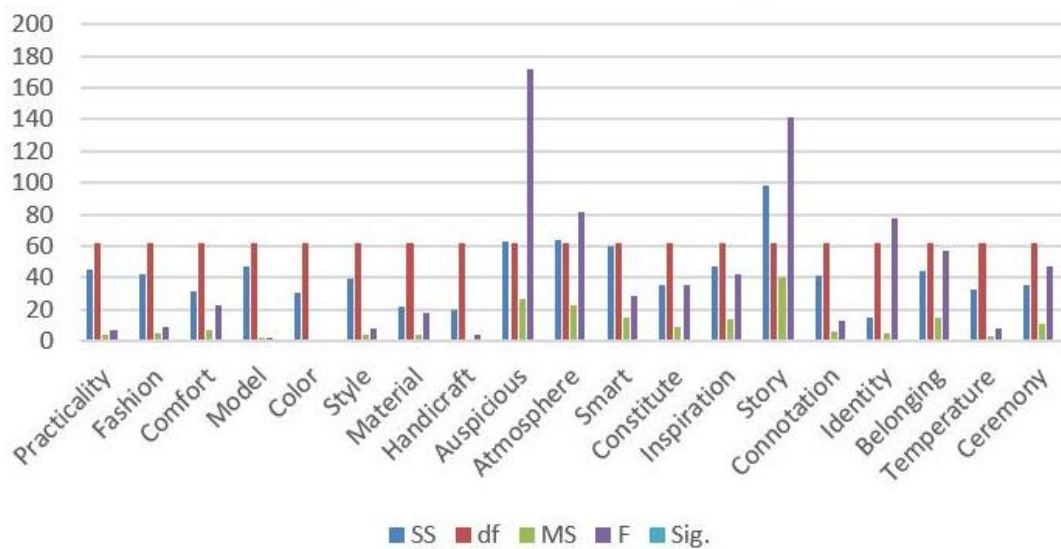


Figure 16. Differences in evaluation results among the three groups

The scoring indexes are 19 criteria items from the three categories of first-level indicators in Table 3. The data correspond to the One-way ANOVA in Table 5.

#### 4.1.8.4 Evaluation and result of hypotheses

H.1: Table 6 shows the results of the analysis performed using the LSD (Least Significant Difference) method in ANOVA. The differences in data between auspiciousness, atmosphere,

and inspiration are prominent in that they can be better expressed by ITEM. However, in groups 1 and 3, there is no significant difference between the smart point and constituent in the ITEM dependent variable. It indicates that the target customer group can appreciate these two evaluation elements from a professional perspective and accordingly pass the test. There are no significant differences between group 2 and group 3 for handicrafts ( $\text{sig.} = 1 > 0.05$ ), which means that the third group, or the targeted customers, do not hold different opinions about handicrafts than the general public. Because there is no significant difference in handicraft elements compared with the general public, H.1 is not entirely valid. In applying ITEM to creative apparel design, we should focus on the auspicious atmosphere and inspiration to emphasize cultural characteristics.

Table 6. ITEM and INHERITANCE multiple comparisons

	(I)	(J)	MD	Sig.	95% CI	
	Group	Group	(I-J)		LB	UB
ITEM						
Dependent Varia						
Handicraft	3	1	-0.429*	0.012	-0.76	-0.10
		2	0.000	1.000	-0.33	0.33
Auspicious	3	1	-0.429*	0.001	-0.67	-0.18
		2	1.714*	0.000	1.47	1.96
Atmosphere	3	1	0.429*	0.012	0.10	0.76
		2	2.000*	0.000	1.67	2.33
Smart	3	1	-0.048	0.830	-0.49	0.39
		2	1.429*	0.000	0.99	1.87
Constitute	3	1	-0.286	0.081	-0.61	0.04
		2	1.000*	0.000	0.68	1.32
Inspiration	3	1	0.429*	0.018	0.07	0.78
		2	1.571*	0.000	1.22	1.93
INHERITANCE						
Dependent Varia						
Story	3	1	-0.857*	0.000	-1.19	-0.53
		2	1.857*	0.000	1.53	2.19
Connotation	3	1	-0.143	0.509	-0.57	0.29
		2	0.857*	0.000	0.43	1.29



Identity	3	1	-0.286*	0.001	-0.45	-0.12
		2	0.714*	0.000	0.55	0.88
Belonging	3	1	-0.286	0.073	-0.60	0.03
		2	1.286*	0.000	0.97	1.60
Temperature	3	1	0.000	1.000	-0.40	0.40
		2	0.714*	0.001	0.31	1.12
Ceremony	3	1	0.571*	0.000	0.28	0.87
		2	1.429*	0.000	1.13	1.72

Note: \* The mean difference is significant at the 0.05 levels.

H.2: We used the same method to evaluate the criteria for the INHERITANCE group for H.2. There are sharp differences observed in the story cognition, identity, and ceremony in descriptive evaluation criteria (see Table 6), indicating that they can be expressed well through INHERITANCE meaning. There are no statistically significant differences between group 1 and group 3 for connotation, belonging, and temperature. However, a difference exists between the two groups and group 2, indicating that the target customer groups have the same understanding of these three secondary criteria indicators as those with a professional design background. Emotional inheritance pays more attention to the depth and inner emotion of culture, focuses on these three secondary indicators, and distinguishes them from the general public to help designers realize their design intentions in target customer groups. Practice-based evaluation is to obtain a higher level of design motivation, predict possible solutions for a given design task, and better serve the inheritance of cultural emotions in design work. Therefore, H.2 is deemed valid.

The inheritance of cultural elements in modern design products also includes the use and expansion of forms, the extraction and derivation of textures, and the reorganization and creation of shapes (Nagai and Taura, 2015). The research on the expansion of traditional cultural expression was conducted to adhere to the inheritance of the cultural language system. The emotional interaction between consumers and traditional cultural elements required designers to add cultural connotations, a sense of belonging, and temperature to the potential customer group. Through emotion to balance the inheritance of culture and the fashion of design, enhance creativity design in the heritage of tradition. Satisfaction feedback on customer needs and requirements was validated in the questionnaire and incorporated into the adjustment of the apparel pieces. Consumers participated in and accepted the emotions of the elements in the design product, express the recognition of the sense of cultural belonging, and made the inheritance meaningful.

Case study evaluates the design of integrated festival cultural content and the hypothetical result made the design purpose clearer in the initial stage. The continuous adjustment of the IAI model allowed people to participate in the emotion of traditional cultural element design and promoted the creation of cultural heritage. Therefore, this model can guide the design process of the cultural product and provide solutions for sustainable cultural emotions design.

## **4.1.9 Answer the subsidiary research questions from Case 1**

### **4.1.9.1 Answer for SRQ 1**

Through emotion balance the inheritance of elements and the fashion of design. Consumers embrace and accept the cultural emotions of the elements in the design product, to add the recognition of the sense of the auspicious, atmosphere and inspiration of the elements. The design theme is both functional and culturally emotional while satisfying the design purpose. Designers spread the understanding of cultural elements according to their design rhythm. Wearing a cultural language costume that can be moved is also a visual aesthetic process. This case study presents that fashion design based on auspicious semantics can resonate with consumer emotions. Consumers follow their cultural identity when purchasing and dressing, generating new emotions and storing them, creating a virtuous circle from cultural heritage design to sustainable inheritance.

Traditional costumes fully embody the elegant temperament and refined introverted character. Design research needs to be explored and expanded in practice, and it needs to be promoted in the needs of market consumption. The research question has cultural inheritance value and positive social significance. Communicate the image of culture in the process of realizing user experience and letting it live in life. The innovation of this subsidiary research question is that it addresses how to use cultural elements for sustainable design with oriental characteristics in the practice, and it can be a source of inspiration for designers in the process of creative design conversion.

### **4.1.9.2 Answer for SRQ 2**

The experimental practice shows that fashion design with cultural heritage is easier to be accepted and choose by people from an emotional perspective. The purchaser's choice, the wearer's cultural self-confidence, and the viewer's aesthetic appreciation create a new form of heritage and interactive culture. The obtained data analysis results are applied to the design of clothing culture to achieve the purpose of expanding the research perspective and enriching the research methods. The research on the expansion of traditional cultural expression was conducted to adhere to the inheritance of the cultural language system. The emotional interaction between consumers and traditional cultural elements required designers to express cultural connotations, a sense of belonging, and temperature to the potential customer group. Combines the emotion of concern with the image design of clothing culture, the unity of perceptual design, and rational analysis, and provides far-reaching theoretical guidance for cultural construction.

Cultural self-confidence emerges as buyers choose and wear, and the aesthetic appreciation of the masses creates an interactive atmosphere for cultural inheritance. Fashion design based on cultural items conveys the humanistic spirit when realizing the user life experience. The clothing prototype visualizes the subjective emotions of traditional culture, and auspicious semantics adds to the inner connotation of contemporary fashion culture. To better expand the activation and inheritance meaningful of oriental aesthetics in modern style design works.

#### **4.1.10 Case conclusion**

Design-based practical research combines empirical research with theoretical model-driven design, an important method of how to creativity. The prototyping phase is fundamental to show the various solutions, verify a set of designs, select one, and improve it, thanks to the feedback received during the analysis phases. Comfort and satisfaction are attained through emotion. Research of creative activation based on cultural elements can play a positive role in promoting the aesthetic appreciation of ordinary people and the enjoyment of culture and art. From this case practical studies, we were now able to have a deeper understanding of the cultural element and the consumer. We hope that all those who participate will be able to find their own connection with nature while experiencing the ancient national culture.

This case study conformed to the development of traditional culture, effectively used insect elements based on the festival background to carry out design activities, and provided a case of the sustainable cultural heritage of inheritance for enriching contemporary apparel design. The exploration of costumes is directly related to the perfection and innovation of art forms. We followed the proposed item inheritance framework model to conduct practical research on cultural elements to achieve the emotional inheritance of creative design inspired by traditional culture. Furthermore, implementing these cultural measures at the origin of the creative process can avoid insufficient creative resources in the later stages.

### **4.2 Case Study2,**

## **3D Printing and Material Structure Creative Design**

### **Traditional Calligraphy and Painting Utensils**

#### **4.2.1 Case study abstract**

The stationery bears the history of Chinese calligraphy and painting for thousands of years, but there has a distance between traditional modeling and the diverse needs of modern environments. This case presents luminous stationery through creative design practice combined with 3D printing technology and materials to realize the heterogeneous integration of available materials and practical functions. 3D printing materials combine different materials to achieve matching combinations through detailed design to create a complete creative design product. Take a sense of modernity and technology as the design focus, and give the product more functionality to the modeling and structure design. Apply different materials in different use spaces to blend in the colors of the environment, and integrate them into fashion life. “Luminous stationery” assembly of writing brush, pen frame, ink stone, paperweight, water container, and light-emitting storage structure system composition. The inner light-emitting storage system in the pen holder space is supported by a column structure, which has storage, and lighting when writing functions, embodying classical beauty and modernity, suitable for modern home style and convenient for industrial production. Use 3D printing technology to preserve the essence of traditional culture and help traditional writing instruments achieve new vitality in modern life.

## 4.2.2 Research introduction

The focus of design communication is the continuation of emotions and respect for the work of the predecessors. We have to think about the spiritual and cultural heritage that design will leave to our children and grandchildren in the future. There are rich elements in traditional culture, which provide designers with endless resources to practice design development and utilization. To carry out the practice of cultural creation should maintain a high degree of confidence in cultural ideals and values (Piotr, 2022), vitality, and creativity of Chinese culture (Liang and Li, 2017). The design and application of traditional cultural elements are not simply to copy ancient cultural relics. Retro will lead to incompatibility with the modern living environment.

The use of traditional elements for design expression should meet the living space of modern society, and the combination of cutting-edge science and technology should be in line with modern aesthetics (Chen, 2015). An excellent design needs to reflect the essence of national, while at the same time pushing traditional culture to the forefront of fashion trends (Ferrero and Tim, 2012). Therefore, the combination of traditional cultural elements with modern aesthetic trends and the rational use of science and technology is the key and difficult points of design. Explore the inner spirit and meaning of culture and be able to revitalize them in our time. We urgently need to find a reasonable and effective way to combine creative design with technological means to enhance the cultural connotation of design.

How to combine traditional cultural elements with modern design? Figure 17 shows the flow of design thinking that combines tradition and modernity. Traditional culture lies in the background and is an extension of modern design. The process of artistic creation and innovation is the process of refining traditional culture and life to achieve self-expression. Selective inheritance, critical absorption of traditions, making full use of modern science and technology, artistic concepts, design methods, and means, find the best contact points for traditional art and modern design, promote the development of modern design, and inherit the Chinese traditional art and culture.

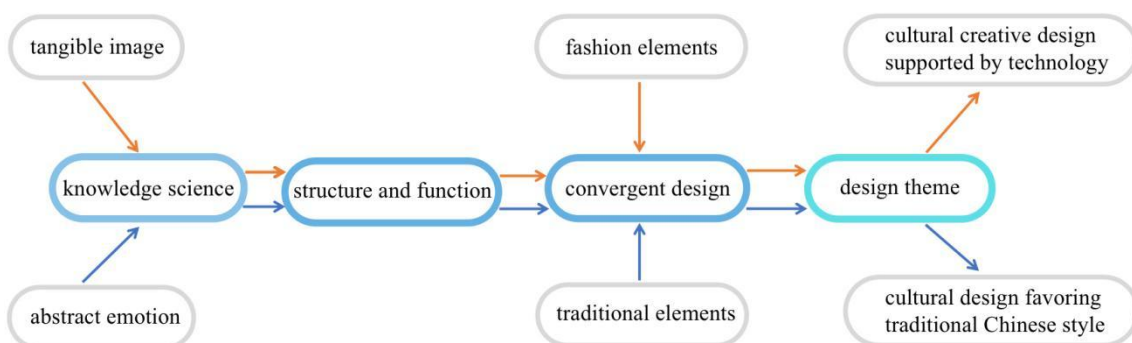


Figure 17. Design thinking flow that combines tradition and modernity

Traditional culture needs to use new technology to increase the vitality of fashion because digital technology can play a role in protecting heritage. 3D printing technology has been widely used, including in the industrial design and fashion industries (Holly, 2020). Combining 3D digital technology with the inheritance of traditional culture can help

designers better complete complex and accurate three-dimensional design sketches and sample. As an auxiliary tool for creative design, it can print out partial parts or fashion accessories to help designers to let the plane image in the computer print a three-dimensional object model. The use of 3D printing technology is expanding to the field of art and design, and it is necessary to make rational use of it in the process of design practice. Master the theories of 3D printing technologies, practical concepts, model creation, prototype design, the matching of various design components for the corresponding calculation, and finally produce a novel 3D printed product.

### **4.2.3 Research ideas and questions**

Culture is constantly advancing in the historical process, and the inheritance of cultural spirit requires the rational use of scientific and technological means to produce design works that conform to modern aesthetic tastes to retain emotions (Lee, 2018). In communication and integration with other cultures, it is necessary to have national characteristics, which is the unique sense of belonging of culture (Wu, 2016). Design practice may be the lubricating factor between the process of driving design and emotional mediation. Integrate the slogan of cultural inheritance into the actual action of the design. Explore and research the design items under specific cultural themes. The inheritance and development of Chinese traditional culture require practical expansion in the design field combined with 3D printing technology. Create a specific item and retain its inherent cultural values (Ivonbony, Joe, Chupo et al., 2021). The selection criteria for these items are that they need to be compatible with the tastes of modern society. And they need to inspire interest in traditional cultural themes in the most hard-to-reach segment of society, i.e. usually the younger generation (Gu, 2006). The science, technology, and cultural theme projects drive young designers to participate in design practice, think about the service and inheritance of design from the perspective of young people, and produce design works that young people like. Let the inheritance of culture be utilized around us and maintain the vitality of culture.

Based on the poetic life of the ancients in the literary works, the “Four Treasures of Traditional Stationery” in traditional Chinese stationery was used as the theme, combined with new design concepts and technologies, to explore creative product design through 3D printing technology (Luximon and Yan, 2021). Use design technology to pursue the lifestyle of the ancients. In the fast-paced living space, let the design work give people a sense of cultural and emotional belonging. According to cutting-edge market information and design trends, propose the creative design theme of traditional writing utensils based on the inheritance of culture. Try to give the product more functionality and a sense of science and technology with the shape and structure design. Find the balance between traditional elements and the modern residential environment in the case, and give the writing brush, ink stick, paper, and ink stone a modern sense. Incorporating into the modern environment, being accepted and loved by more people, let the traditional calligraphy and painting utensils of the study room glow with new vitality (Duan, 2018). While retaining the charm of Chinese books and volumes, it is closer to the lives of modern people. Make the design work activate the culture, combined with the material into the changing use of space to adapt to the modern living environment. Incorporating the elegant Chinese taste into the modern and concise home style, it provides a unique, practical, and easy-to-operate derivative product of painting and

calligraphy equipment for the youth group.

In this case study, how to flexibly use 3D printing technology and the combination of different materials to show culturally practical products, and how to effectively integrate traditional Chinese elements into contemporary people's home life, the following two subsidiary research questions are proposed and need to be solved:

SRQ 3: How to present the combination of different materials and structures through technology support?

SRQ 4: How does material structure integrate culture, function, and practicality to influence purchase intention?

According to the research question, the following are the research ideas of this case study:

- Through the research and analysis from the introduction, we have a preliminary understanding of the cultural markets and the demand for consumer emotion. They pay more attention to the fashion of culture and convey emotions with their unique personality.
- According to the research question, analysis of the way of sustainable inheritance of cultural items, and to bring them into line with the aesthetic of the times and the emotional experience of use accepted by young people.
- Relying on 3D printing technology to excavate the emotional connotation of culture, and convey the cultural semantics of elements through product design in practice (Emilio and Massimo, 2020). Analysis of the way of sustainable inheritance of cultural elements, and to bring them into line with the aesthetic of the times and the emotional experience of use accepted by young people.
- Combining rigorous literature research and product design practices, we derive the design concept of cultural utensils. It is the creation and reuse of cultural items based on semantic understanding. Used to integrate creative works into daily use and display to realize the visual memory and storage of emotions in life.

## **4.2.4 Related work**

### **4.2.4.1 The aesthetic semantics of oriental culture**

In ancient China, people took nature as their teacher, emphasizing the unity of life and the beauty of nature. Chinese aesthetic wisdom pays special attention to understanding and processing the development and structure of correspondence, integration, dialectics, and unity. The starting point is to respect and learn from nature. In aesthetics, the ideas of “harmony between human and nature” and “learning naturalness and the laws” are deeply immersed in the Chinese aesthetic realm. Based on the research of the natural view of oriental culture, develop the concept of green ecology and carry out creative design research practice. Practice creative design from the perspective of environmental protection concept, the possibility of new design thinking concept.

Respect for nature is by far the most frequently discussed and overarching concept in

literature. Naturalism in different times and places reflects how the culture defines its relationship and attitude toward nature. In China culture, nature is a sublime object and human beings are to adapt themselves to nature rather than destroy it. Naturalistic beauty values pleasant simplicity without much intention to look perfect.

Traditional semantic style in the design is a design form that combines auspicious meaning with philosophical connotations and patterns with rich decorative (Guo and University, 2014). The specific application in product design usually manifests itself as decorating patterns such as dragons, tigers, and auspicious clouds, or incorporating Chinese characters and traditional patterns into modern design shapes. It is presented in the form of symbolic patterns in product design and cultural products. It is easy to be accepted by the public to express fashion trends with a unique visual aesthetic and is close to the human settlement environment. To reflect deeper emotions and philosophies in design work needs to be considered and improved (Casakin, 2011).

The expression of elements in the design is not simply splicing and form reference, but through conceptual interpretation to achieve harmony and integration of the various details of the performance design innovation. Transform freehand into visible realism, and incorporate Chinese-style artistic conception and aesthetics into the design. These two methods do not mean copying traditions, but the combination of people's emotions and retro forms to become the current fashion. Ingeniously incorporating Chinese philosophical thoughts such as "harmony between human and nature" and "leave blank space for thinking and imagination" starting from the Chinese artistic conception and meaning, the final design presents a more classical aesthetic form.

#### **4.2.4.2 Cultural information in literature**

In traditional Chinese culture, the harmony and unity between man and nature, and the unity of the relationship between the natural world and the spiritual world are emphasized. Humans follow the laws of nature, the world, morals, and the laws of nature are consistent, and the ideals of life live in harmony with nature. Refining the essence of traditional culture is combined with the fashion of modern products to realize the emotional inheritance through the meaning of the item so that the ancient cultural semantics glow with vitality. By tracking the source of elements, we use design thinking to integrate cultural emotions into creative practice.

With the continuous advancement of the cultural power strategy, the country's soft power has gradually increased, the creation of traditional cultural elements has become the focus of current product design, and young and fashionable products continue to emerge. The choice of cultural elements not only comes from images but also includes spirit. China has unlimited design resources that can embody the story of inheritance. With the development of science and technology, the use of elements continues to expand in-depth, and the design is constantly changing and climbing. Inspire and guide the continuous exploration of design practice, to produce thought-provoking works.

This case is inspired by literary works and shows the ancient literati's yearning for a better life and feelings about the world through the lines between the lines. From the concise and beautiful verses, feel the author's delicate depiction of the beautiful life of the ancients.

Taking literature as a cultural basis for design practice exploration is not only text but also moving pictures. Awakening the Chinese aesthetics that appeal remains in our genes, and we can still feel the charm of the immersive culture of the ancient literati.

Writing brush, ink stick, paper, and ink stone carry thousands of years of writing history in China and are tools for literati and ink scholars to write. At present, most of the related products of stationery have more traditional shapes, which cannot meet the diverse aesthetic needs of consumers. Therefore, the modernity and technology of the works are the key points of the design, passing traditional cultural tastes to the lives of modern people (Arti, 2020). Creative activation includes calligraphy supplies such as pen holders, writing brushes, ink stones, etc. The purpose is to integrate the elegant Chinese taste into the modern home style and provide a unique, practical, and easy-to-operate derivative product of writing tool, include ink stick, paper, and ink stones for the youth group. The traditional culture provides abundant design practice resources. By analyzing the design aesthetics of the elements, the visually-oriented design based on fashion trends is closer to the modern living environment. Figure 18 shows a mind map that activates traditional cultural elements and triggers design. Guide the development of 3D printing creative product design with the theme of traditional calligraphy and painting utensils.

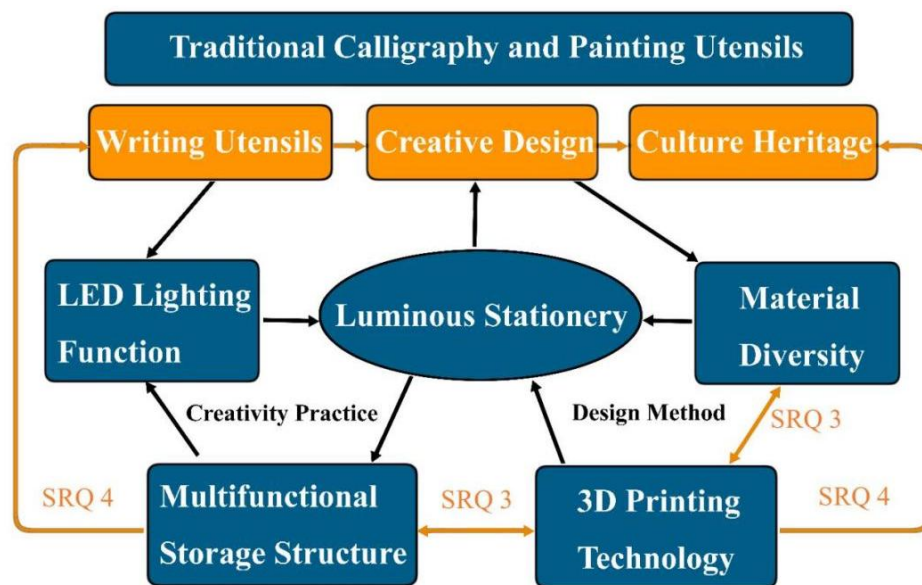


Figure 18. Research framework and objective triggered by cultural information

The flow of design thinking is interoperable and bidirectional:

- On the one hand, it is guided by traditional calligraphy and painting utensils as the overall visual flow, adding popular elements to it. Find the visual commonality between the traditional style of the main body of the design and the selected popular elements, conduct a homogenized design to make it into a harmonious whole, and finally present a design subject with a visual effect that is biased toward the traditional style.
- On the other hand, taking modern popular style as the main design, adding traditional elements to make the main design effect have a modern sense. In practical applications, different thinking directions are selected according to different design purposes.



### **4.2.4.3 Plasticity of Chinese elements**

Architecture, clothing, film and television, and gardens contain Chinese and Western styles, such as the Old Summer Palace, which combines the characteristics of various elements such as Italian, Ming Dynasty, and Suzhou gardens. The typical Chinese classical column in the Old Summer Palace has a western-style stigma, and the decorations are designed with ancient craftsmanship and integrated to form a new Chinese style (Lu, 2013). French Chinoiserie is a self-culture symbol grafted by Westerners' reverie of mysterious Eastern culture. The 18th-century European interior decoration and decorative patterns on clothing combined Chinese porcelain and ink painting to create a new style. This mixed-style home decoration design is full of romantic colors, leading the European social fashion.

These examples show that despite the huge cultural differences between China and the West, practice enables patterns to meet the common aesthetic orientation of mankind in the integration of design composition activation (Fei, 2015). Chinese elements are everywhere, with strong adaptability and tolerance.

### **4.2.4.4 Interactive design of cultural emotion**

Combining the design of prototypes with 3D printing technology creates practical design cases with inheritance significance (Wang, Kim and Yang, 2020). Practical research methods and design processes develop the multi-factor interactive emotional design. This kind of emotional design is affected by many factors, including society, culture, and the environment. When people use it, the interaction between people and design seems to shape and influence user behavior. In the fast-paced city life, in the corner of the bedroom or the study, cultural lights that travel through history are slightly illuminated. At this time, culture comforts the soul and it is essential to give people emotional comfort and consideration. This interactive design is a design that links various types of work. These tasks will not appear in isolation but interact with users and the environment to establish different relationships. These relationships are purposefully designed to support a very specific user experience. The functional performance and cultural value of the prototype works affect the user's use, experience, and aesthetics. Therefore, in industrial design, the activities to achieve user experience goals have always been the factors that define function, form, and behavior.

## **4.2.5 Luminous stationery supported by 3D print**

### **4.2.5.1 Create a product design with the theme of stationery**

A practical design should give full play to its advantages, discover hot issues in life, and solve it through creative design with social responsibility. Writing brush, ink stick, paper, and ink stone are indispensable tools for practicing calligraphy and traditional Chinese painting. They are the four essential treasures in the study room of ancient literati. A tool for writing and drawing human spiritual wealth. These writing utensils are exquisitely crafted, rare material, and are considered works of art by the literati to collect. With the improvement of people's material living standards and the emphasis on traditional culture, painting and calligraphy

supplies have become more and more people's hobbies to enjoy their leisure time and cultivate temperament, so the market demand continues to increase (Wang, 2019). At present, the styles of calligraphy and painting products are single, there are fewer types of products for consumers to choose from, and they lack personalized and fashionable designs. Most of them still appear in a more traditional and retro image, which is hard to integrate into the modern and concise home space (Celadyn, 2018).

#### 4.2.5.2 The source of the structural styling of creative works

Relying on the research on the ancient rhyme of "Between Flower Collection" creative design of the 2020 provincial college student innovation project (202010152052), the student team is driven to develop design works. The overall design is composed of cubes and cylinders, conforms to the traditional Chinese architectural concept. The combination of square and circle conforms to the traditional Chinese cultural concept, interpreted as the sky is round and the ground is square (Wang and Du, 2012). The large-area color of the product is red, which is a festive and warm symbol of China. Inspired by the mortise and tenon structure of architecture, the stylistic features are expressive and the design elements have their complexity and richness. The creation draws on and preserves the structure of the appearance of the artifact, refining simple forms. Integrating the traditional style into an independent single structure makes the stationery shape of the study room more concise and in line with modern aesthetics.

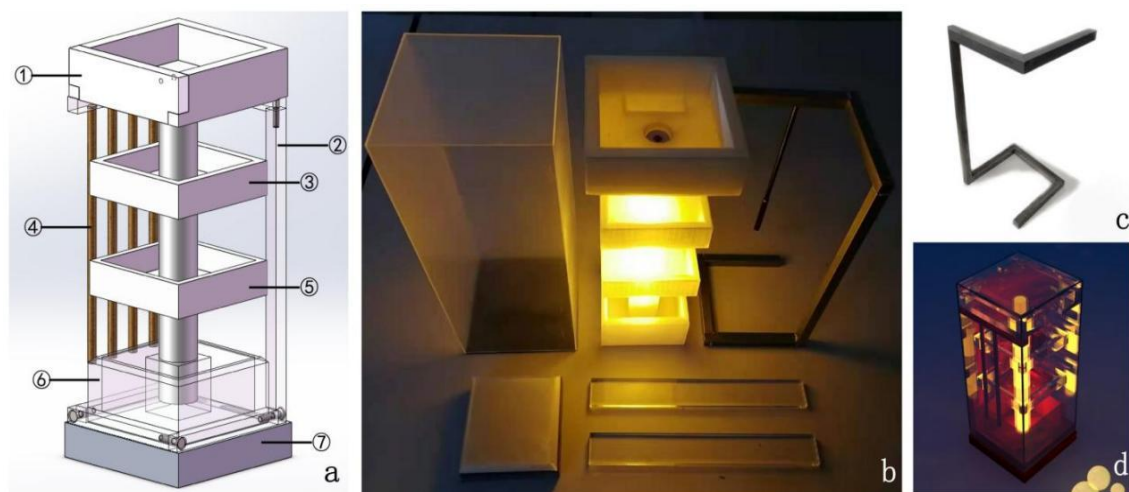


Figure 19. Luminous stationery 3D printed prototype and decomposition display

- a. 3D modeling schematic diagram of creative products, each part is composed as a whole and can be stored, ① ink stone storage layer, ② pen frame, ③ the first layer of storage of objects, ④ writing brush, ⑤ the second layer of storage of objects, ⑥ water container, ⑦ base.
- b. 3D printed product lighting status physical display.
- c. Schematic diagram of the pen frame.
- d. The whole is composed of various parts, and the lighting effect diagram is attached.

By observing the traditional wooden pen holder, the pillar-like brushes hanging from the door-shaped structure are combined with the beams and columns of ancient Chinese

architecture (James, 2021). Analyzing the shape of the steel frame of the skyscraper supporting the exterior glass of the modern building combines the traditional writing brush and pen holder to have a visual design integration and transformation (Figure 19-c). Take the square skyscraper as the inspiration of the creative product design, making the product full of modernity in the overall vision. The red shape design on the top of the product refers to the bucket arch structure of ancient Chinese architecture. The exterior wall surface is decorated with superimposed seal characters, which simplifies the numerous carvings and decorations in traditional buildings and makes the shape very concise. Summarize the steel frame and tenon-and-mortise structure of the building by a rectangular parallelepiped, and use it as the modeling foundation (Figure 19-b); Red is used as the main color of the design (Figure 19-d); the simple and capable structure carries the shape of the pen holder, water container, and ink stone, which reflects the modernity of the product and is also convenient for daily use (Figure 19-a).

The practice process is a process of trial and error and improvement. Hand-drawn design renderings cannot fully describe the details of the space, which will lead to the simplification of the design process. 3D modeling and simulation can avoid repetitive errors in the learning process. Using a computer to build a model can see every detail in a 360-degree rotation (John and Jon, 2006), which stimulates the expected performance in different directions and enriches the 3D modeling and process details (Figure 19-d). This corresponds to how easily viewers can intuitively detect the creator's design expression.

#### **4.2.5.3 The idea of storage structure**

Traditional calligraphy and painting utensils need to be placed separately after use, and stone seals, writing brush, and other objects need a separate space for storage. The space occupied by computers and keyboards on modern home desks is the main body, which causes inconvenience to the storage and placement of these parts and takes up space. Therefore, after determining the overall shape, the details need to be further optimized. Consider designing the storage layer in the space of the pen holder to collect all the objects into a whole. The inside of the tower-shaped stacked structure becomes the storage space so that the middle of the pen holder becomes the storage layer. The column structure penetrates the supporting storage layer to fill the blank area in the middle of the pen holder (Figure 19-a-③⑤).

The design requires precise dimensions, and there are no gaps in the connection of the parts. Figure 20 show the luminous stationery supported by 3D printing technology. 3D Printing Material: ABS engineering resin, with high hardness and light transmission. The pen frame is nested into the space of the storage layer, the writing brush and paperweight are stored on the side the ink stone is stored on the top, and the water container is stored on the bottom, forming a rectangular parallelepiped. Make a cover of transparent material with a beautiful and dustproof effect on the outside (Kriz, 2010). The dust cover transmits light like a glass exterior wall of a building, and all objects are contained in a square structure as a whole (Figure 19-b). The shape has the quiet elegance of ancient pavilions cascading, and the sense of science and technology of an urban mansion, which is in line with the modern environment and space. When writing, the whole is broken down into various parts to form a set of learning tools and a table lamp. Retract back the items inside the lampshade to save

space and display culture when placed. It improves the interactive interest and practicability of the product and facilitates the sorting, preservation, and collection of items.

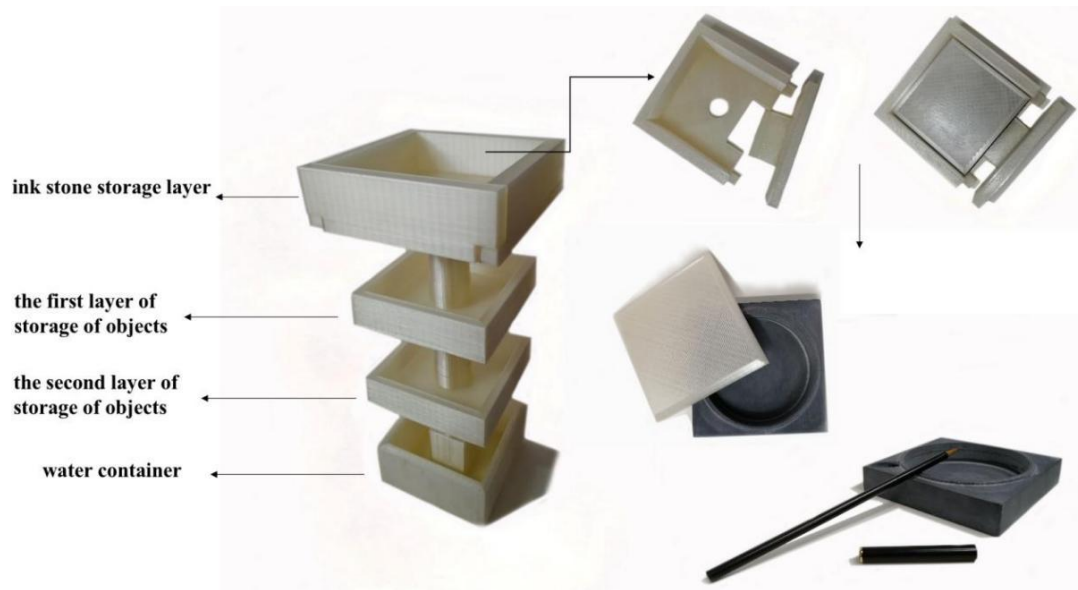


Figure 20. Luminous stationery supported by 3D printing technology

*Source: 2020 Provincial College Student Innovation Project 202010152052 (Research on the Ancient Rhyme of “Between Flower Collection” and the Creative Design of Modern Home)*



Figure 21. CAD rendering shows the effect of luminescence

Figure 21 show the CAD rendering shows the effect of luminescence. When using these writing utensils, they can be easily removed from the storage layer and become a whole when returned. The storage space increases the interest in the product, increases the space utilization rate, and reduces the space occupancy of the product. It is very convenient to collect and organize complex calligraphy and painting utensils so that the products can be better preserved and viewed. While expressing the traditional Chinese writing culture, luminous stationery cleverly added modern aesthetics and technological light perception to

give life modernity and vitality.

Unique features of this design: The pen frame can be nested into the space of the storage layer. Minus the lanyard on top of the writing brush and inlay the magnet so that it can be easily attached to a metal pen holder. The paperweight is stored on the side of the pen frame and becomes a part of the structure. The ink stone is stored on the top floor, and the water container is at the bottom of the storage layer. The middle column of the storage layer is designed as a rechargeable luminous lamp to provide illumination for writing, and also can use as a desk lamp in ordinary times.

#### 4.2.5.4 Glow design and detail optimization

In the conception stage, after the overall structure is determined, the design adds a light-emitting function in the middle of the rectangular parallelepiped, which resembles the atmosphere of an ancient palace lantern (Bian, 2020). Set the support post in the middle of the receiving layer to be a light-emitting lamp post. The complex light softens the straight lines appearing in this design work, echoing the inspiration for the column structure of ancient Chinese architecture. The combination of traditional writing and painting stationery and the wooden structure inspiration of the building perfectly blends in the application space and the surrounding furniture and office spaces, forming a unique visual change effect. The luminous storage function is the main innovation point of 3D printing technology participating in design cooperation. Turn on the light switch, and the surrounding of this design is lit up like a luminous architectural model, matching the modern tone of the environment (Figure 19-d).

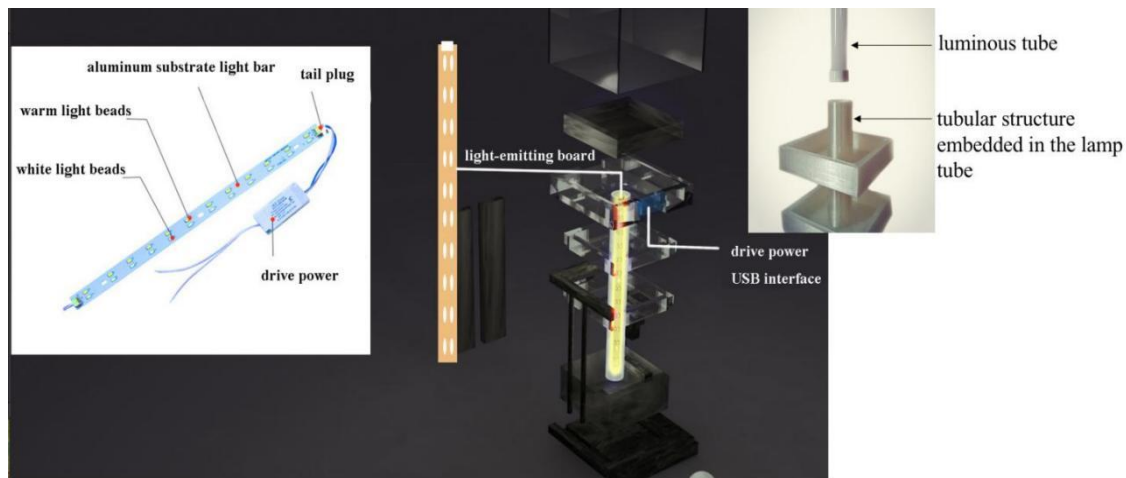


Figure 22. Schematic diagram of the internal connection of the LED lighting circuit

To ensure the absolute safety of use, the space of the LED light-emitting board adopts a waterproof design and a driving method of USB charging, which also saves the trouble of the power head and power cord (Figure 22). In the middle of the square storage structure in the pen holder space, a circular hole is reserved in advance to support the columnar structure of the storage layer. That is to say, let the cylindrical support structure pass through the storage layer of the cube. The cylindrical structure plays the role of supporting the whole and can provide space for the lamp tube. The metal pen frame is nested in the space of the storage layer to become a metal structural frame. Ink stones, writing brushes, paperweights, and other utensils are put together in the storage layer. It's like the parts of Lego bricks are tightly

connected. The appearance of final appearance is in close harmony with the modern environment, which resembles an ancient pavilion but also has the sense of science and technology of urban architecture.

## **4.2.6 Diversity of material selection**

### **4.2.6.1 Selection of related materials**

The selection of materials taking into account regional resources is an application of design practices that effectively utilize local industrial chains. In the practice and exploration of the richness of materials and the concept of environmental protection, we also pay attention to recycled materials. Renewable materials refer to various wastes that are produced during social production and life consumption and have lost all or part of their original use value. After recycling and processing, they can regain their use value. Recycled materials include metal, plastic, rubber, fiber, etc.

The reuse of resources can not only reduce production costs, but also reduce environmental pollution, and increase the feasibility of material selection for sustainable design. Combining today's environmental protection concepts, the materials applied to design practice reflect traditional craftsmanship and conform to fashion trends. Through the promotion, interpretation and use of the concept, a special sense of honor and social responsibility can be produced, which is also the new direction of the environmental protection concept of material diversity. After completing the functional structure and appearance of the design work, the next step is to evaluate and select the possible materials for each part (Pearson and Dubé, 2021).

### **4.2.6.2 Selection of practical materials**

The creative design aims to promote local economic construction. The old industrial base in Liaoning Province of China is rich in mineral resources and has a solid foundation in stone culture. Each city has its own unique and high-quality design raw material resources. The selection of design materials is composed of local characteristic mineral resources and wooden materials, combined with a metallic frame structure. The materials made by the ink stone use Fuxin agate, and Xiuyan jade, which have a good ink grinding effect; The storage layer, paperweight, and water container need to transmit light, so jade, agate, glass, acrylic, and transparent engineering resin materials are selected to increase the durability. If the product is for daily use, it can reduce material costs, increase durability and meet industrial mass production (Zhang, Wei and Zhang, 2015).

Practical design research can promote local economic transformation and industrial upgrading and has a good role in promoting the effective use of regional resources and improving the training of industry talents. Table 7 gives the comparison of the diverse materials in the study. The pen frame material is determined to be a metal material that is easier for industrial production and later maintenance to ensure that it can be attracted to the magnet at the end of the writing brush. For the production of precious metal craftsmanship, you can refer to the popular 3D hard gold, and enamel processes in the jewelry industry.

Table 7. Comparison of diversified choices of product materials

	*Mohs Hardness	Color	Value	Transparency	Suitable or not
Duan inkstone	2.8-3.5	simple	low	opaque	yes
Tao inkstone	3.5-4	simple	high	opaque	yes
She inkstone	4	rich	middle	opaque	yes
Red silk stone	4-4.5	rich	high	opaque	yes
Jadeite	6.5-7.5	rich	high	translucent and opaque	no
Xiuyan Jade	4.7-5.4	rich	middle	translucent and opaque	yes
Fuxin Agate	7-7.5	rich	high	translucent and opaque	no
Fushun Amber	2-3	rich	high	translucent and opaque	yes
Dushan Jade	6-7	simple	middle	translucent and opaque	no

\* Ink stick hardness 2.2-2.4, carving knife hardness 5-7.

3D printing technology is usually the preferred technology when traditional cultural items are integrated into modern creative design to realize the application of different materials in different use environments (Pedgley, Şener, Lilley et al., 2018). To study the feasibility of different materials for use and to further questionnaires and surveys evaluate the value and purchase intention in the range of optional materials.

#### 4.2.7 Evaluation of purchase intention

The “luminous stationery” design of 3D technology combined with materials to create structural functions is an integration of technology and materials to express culture. Whether the creative design can enhance consumers’ cultural perception of products, and then achieve the purpose of combining traditional culture and modern design to inherit culture. To this end, we select the cultural perception value as the change in the internal psychology of consumers after being influenced by the outside world and then form the final purchase intention. Taking material structure as an important factor in moderating the relationship between cultural perceived value and purchase intention, the research path is formed as follows (Figure 23), and the hypothesis as shown in Table 8 is proposed.

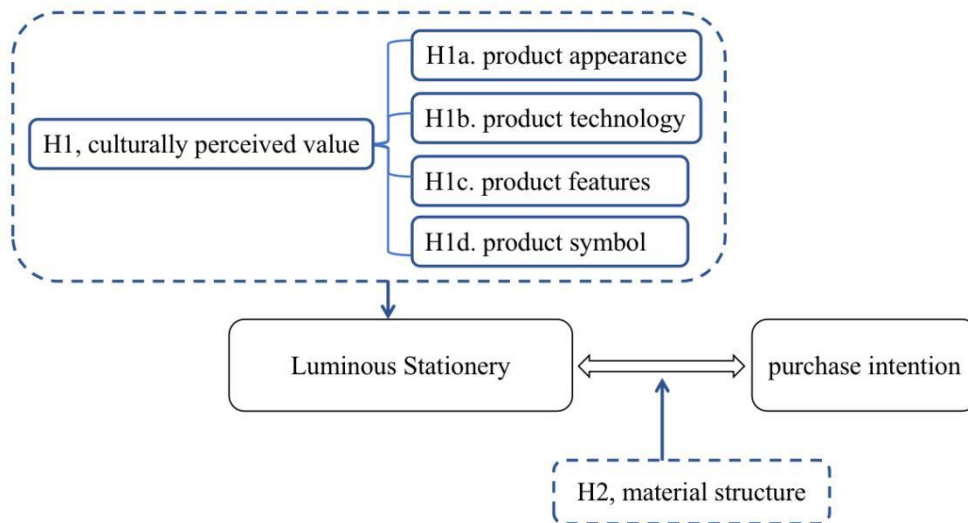


Figure 23. Research paths that influence purchase intention

Table 8. Influencing factors and related hypothesis

Hypothesis	Content
<b>H1</b>	Cultural perception value has a significant positive impact on consumers' purchase intention
H1a	Product appearance has a significant positive impact on consumers' purchase intention
H1b	Product technology has a significant positive impact on consumers' purchase intentions
H1c	Product function have a significant positive impact on consumers' purchase intentions
H1d	Product symbols have a significant positive impact on consumers' purchase intentions
<b>H2</b>	Material structure has a moderating role in the influence of perceived value on purchase intention

#### 4.2.7.1 Design questionnaires and surveys

##### 1) Design of the scale

Questionnaire on purchase intentions for “Luminous Stationery” (Table 9). The indicators related to impact factors, cultural perception, and purchase intention were investigated separately. To ensure the authenticity of the questionnaire results and the information security of the form-filler, we guarantee and explain to the participants that the questionnaire results are only used for thesis research and that the information of the form-filler will not be leaked. The questionnaire includes the basic information of the person filling in the form: gender, age, etc.; The four aspects mentioned in the independent variable selection hypothesis: product appearance, product technology, product function, and product symbol; Modulating variables: material structure; Dependent variable: Purchase intention to develop the design.

Table 9. Culturally perceived value indicator scale

Independent	Items	Indicator Content
product appearance	AN1	The pattern of the product is very unique and has cultural characteristics
	AN2	The shape and silhouette of the product is very unique and fits my aesthetic
	AN3	The color of the product matches my aesthetic
	AN4	The appearance of the product is more attractive than the appearance of ordinary products
product technology	TY1	The application of 3D technology is very fascinating
	TY2	Products with 3D technology are more accurate than traditional processes
	TY3	3D Technology can help better solve the problem of expressing the cultural message of the product
	TY4	Technology helps the cultural expression of the product to be more prominent
product function	FL1	The versatility of the product is more practical than traditional stationery
	FL2	The function of the product is more convenient than traditional stationery
	FL3	The material of the product is of better quality than traditional stationery
	FL4	The glow function increases my frequency of use
product symbol	DX1	The product design style is remarkable
	DX2	The cultural symbols of the product appeal to me more easily
	DX3	Product symbol image is more valuable
	DX4	Products can get more emotional satisfaction



Table 10. Material structure scale

Modulating Variables	Items	Indicator Content
material structure	CF1	The material structure is environmentally friendly, which can increase my willingness to buy
	CF2	The combination of material structure and regional characteristics can increase my willingness to buy

Table 11. Consumer purchase intention scale

Dependent Variable	Items	Indicator Content
purchase intention	GY1	I am willing to purchase the product
	GY2	I would like to refer a friend to use the product

## 2) Questionnaire formation and data collection

### ● Questionnaire structure

The questionnaire consists of 3 parts. The first part is the basic information of the interviewee, and the respondent can fill in truthfully according to his situation. The second part is the measurement of each influencing factor, divided into product appearance, product technology, product function, and product symbol, which is measured by the Likert 5-level scale. The single choice of options 1-5 indicates the degree of influence on the purchase intention, 1 represents an abandonment of purchase, and 5 indicates firm purchase; The third part mainly considers the cultural perception value, material structure, purchase intention, and the degree of recognition used, from 1-5 to represent very disagreeably, relatively disagreed, generally neutral, somewhat identifying, and very much agreed. The specific questionnaire is shown in the appendix, Case 2.

### ● Distribution and collection of questionnaires

In this case study 2, a total of 210 questionnaires were collected, invalid questionnaires with poor filling status were eliminated 4, and the final valid questionnaire was 206, with a valid sample recovery rate of 97%.

## 3) Data analysis

### ● Descriptive statistical analysis, the descriptive statistical analysis of sample characteristics is shown in Table 12.

Table 12. An individual description provided by the consumer

Name	Options	Frequency	Percentage(%)	Cumulative percentage(%)
Your gender:	Femal	135	65.53	65.53
	Male	71	34.47	100.00
How often you buy stationery	1 - multiple times / quarter	94	45.63	45.63
	1 time per year	64	31.07	76.70
	More than 4 times a year	27	13.11	89.81

Name	Options	Frequency	Percentage(%)	Cumulative percentage(%)
<i>The price of the stationery you buy is mainly located in</i>	1 - multiple times / month	21	10.19	100.00
	100-300 yuan	2	0.97	0.97
	20-39 yuan	69	33.50	34.47
	less than 20 yuan	109	52.91	87.38
	more than 300 yuan	1	0.49	87.86
	39-60 yuan	20	9.71	97.57
	60-100 yuan	5	2.43	100.00
Total		206	100.0	100.0

- The statistical description and analysis of variables, the specific summary data is shown in Table 13.

Table 13. Variable statistics description table

Name	Quantity	Minimum	Maximum	Average Value	Standard Deviation	Median
AN1	206	1.000	5.000	4.126	0.829	4.000
AN2	206	1.000	5.000	3.835	0.948	4.000
AN3	206	1.000	5.000	3.743	0.941	4.000
AN4	206	1.000	5.000	3.218	1.167	3.000
TY1	206	1.000	5.000	3.068	1.107	3.000
TY2	206	1.000	5.000	3.068	1.120	3.000
TY3	206	1.000	5.000	3.218	1.089	3.000
TY4	206	1.000	5.000	3.170	1.062	3.000
FL1	206	1.000	5.000	2.748	1.019	3.000
FL2	206	1.000	5.000	2.786	0.964	3.000
FL3	206	1.000	5.000	2.869	1.044	3.000
FL4	206	1.000	5.000	2.922	1.028	3.000
DX1	206	1.000	5.000	3.539	1.020	4.000
DX2	206	1.000	5.000	3.238	0.935	3.000
DX3	206	1.000	5.000	3.335	0.978	3.000
DX4	206	1.000	5.000	3.529	0.898	4.000
CF1	206	1.000	5.000	3.398	1.001	3.000
CF2	206	1.000	5.000	3.058	0.882	3.000
GY1	206	1.000	5.000	3.320	0.965	3.000
GY2	206	1.000	5.000	3.403	0.977	3.000

There are no outliers in the current data, and the analysis can be described directly against the average.

#### 4) Reliability analysis

In this case study, the samples were analyzed by SPSS. The results of this analysis are shown in the following Table 14.

Table 14. Variable reliability check table

Variable factors	Item	Corrections total related items	Item deleted $\alpha$ factor	Cronbach $\alpha$ coefficient
product appearance	AN1	0.524	0.631	0.706
	AN2	0.538	0.614	
	AN3	0.490	0.644	
	AN4	0.447	0.686	
product technology	TY1	0.586	0.848	0.847
	TY2	0.694	0.802	
	TY3	0.737	0.784	
	TY4	0.728	0.788	
product function	FL1	0.843	0.943	0.949
	FL2	0.891	0.930	
	FL3	0.906	0.924	
	FL4	0.870	0.935	
product symbol	DX1	0.411	0.809	0.774
	DX2	0.635	0.690	
	DX3	0.668	0.670	
	DX4	0.617	0.701	
material structure	CF1	0.598		0.745
	CF2	0.598		
purchase intention	GY1	0.742		0.852
	GY2	0.742		

It can be seen in the Table 15 that the reliability coefficient values of the impact factors are greater than 0.7, which indicates that the reliability quality of the research data is good. For the “ $\alpha$  coefficient of deleted items”, after any item is deleted, the reliability coefficient will not increase significantly, so it means that the item should not be deleted. In summary, the value of the reliability coefficient of the study data is higher than 0.7, which comprehensively indicates that the data reliability quality is high and can be used for further analysis.

#### 5) Validity analysis

Table 15. Variable calibration check table

Variable factors	Item code	Coefficient	Cumulative variance interpretation rate	KMO value
product appearance	AN1	0.772	54.216%	0.681
	AN2	0.787		
	AN3	0.708		
	AN4	0.672		
product technology	TY1	0.749	68.806%	0.784

product function	TY2	0.835	86.833%	0.837
	TY3	0.869		
	TY4	0.861		
	FL1	0.911		
	FL2	0.940		
product symbol	FL3	0.949	60.87%	0.748
	FL4	0.927		
	DX1	0.608		
	DX2	0.817		
material structure	DX3	0.853	79.917%	0.500
	DX4	0.813		
	CF1	0.894		
purchase intention	CF2	0.894	87.115%	0.500
	GY1	0.933		
	GY2	0.933		

KMO and Bartlett tests were used for validity verification, and it can be seen from the above table that except for the variable factors of the two research projects, the KMO values of the remaining variables and factors are greater than 0.6, which is between 0.6~0.8, and the research data are suitable for extracting information.

#### 4.2.7.2 Test of hypotheses

##### 1) Correlation analysis

The correlations between the dimensions of this study are shown in Table 16.

Table 16. Correlation analysis table for each variable

	Average value	Standard deviation	AN	TY	FL	DX	CF	GY
AN	3.731	0.713	1					
TY	3.251	0.802	0.603**	1				
FL	2.831	0.945	0.379**	0.584**	1			
DX	3.294	0.706	0.489**	0.636**	0.685**	1		
CF	3.254	0.775	0.370**	0.488**	0.540**	0.552**	1	
GY	3.326	0.796	0.412**	0.509**	0.604**	0.531**	0.817**	1

From the above table, it can be seen that the purchase intention has a significant positive correlation with product appearance, product technology, product function, product symbol and material structure.

##### 2) Main effects analysis

Main-effects analysis is a measure of the effect of a factor on the dependent variable at each level in a multilevel experiment with one or more factors (independent variables).

Table 17. Main-effects test

	Class III squared	Degree of freedom	Mean square	F	Salience
remediate the model	163.307 <sup>a</sup>	181	0.897	3.587	0.000
intercept	1173.798	1	1173.789	4695.798	0.000
AN	4.426	10	0.443	1.770	0.012
TY	2.968	10	0.297	1.187	0.022
FL	4.485	11	0.408	1.631	0.011
DX	10	10	0.488	1.953	0.022
$R^2$			0.785		
$Adj-R^2$			0.695		

It can be seen from the table that the main effects of the four factors of product appearance, product technology, product function, and product symbol are significant, and  $P$  is less than 0.05. It shows that when the other three factors are not considered, but only one of them is considered, the purchase intention will change significantly with the change of this factor. Therefore, these hypotheses that H1a, H1b, H1c, and H1d in H1 are true.

### 3) Moderating effect analysis

Table 18. Study variable handling instructions

Type	Name	Data type	Data processing
dependent variable	GY	ration	no dispose
independent variable	FV	ration	centralization
moderating variable	CF	ration	centralization

Step 1 is established without the control variable to investigate whether there is a correlation between the independent variable and the dependent variable. This is shown in the following table:

Table 19. Moderating effect analysis step 1

	$B$	Standard error	$t$	$p$	$\beta$
constant	3.362	0.043	77.365	0.000**	-
FV	0.667	0.044	15.124	0.000**	0.727
$R^2$			0.529		
$Adj-R^2$			0.526		
$F$			$F(1,204) = 228.727, p = 0.000$		

For step 1, the purpose is to investigate the effect of the independent variable (Fv) on the dependent variable (GY) without considering the interference of the moderating variable (CF). From the above table, it can be seen that the independent variable (FV) showed significance ( $t = 15.124, p = 0.000 < 0.05$ ). This means that CF has a significant impact on GY relationships.

Then, in step 2, the research adds a moderating variable (CF) and the interactive item (FV\*CF) into the analysis process based on step 1, and the results are shown in Table 20 and Table 21.

Table 20. Moderating effect analysis step 2

	<i>B</i>	Standard error	<i>t</i>	<i>p</i>	$\beta$
constant	3.362	0.043	78.782	0.000**	-
FV	0.513	0.068	7.522	0.000**	0.559
CF	0.254	0.087	2.923	0.004**	0.217
$R^2$			0.548		
Adj- $R^2$			0.543		
<i>F</i>			$F(2,203) = 122.864, p = 0.000$		
$\Delta F$			$F(1,203) = 8.544, p = 0.004$		

Table 21. Moderating effect analysis model 3

	<i>B</i>	Standard error	<i>t</i>	<i>p</i>	$\beta$
constant	3.364	0.049	69.145	0.000**	-
FV	0.513	0.068	7.505	0.000**	0.559
CF	0.252	0.089	2.837	0.005**	0.216
FV*CF	-0.005	0.039	0.117	0.907	0.006
$R^2$			0.538		
Adj- $R^2$			0.541		
<i>F</i>			$F(3,202) = 81.516, p = 0.000$		
$\Delta F$			$F(1,202) = 0.014, p = 0.907$		

From the above table, it can be seen that the interaction between FV and CF does not show significance ( $t = -0.117, p = 0.907 > 0.05$ ). And from model 1, it can be seen that X has an effect relationship with Y, which means that when FV affects GY, the moderator (CF) has not a significant change in magnitude at different levels. Therefore, the moderating effect generated by the material structure is not established.

In summary, after testing the proposed hypothesis, the verification results are shown in the following table:

Table 22. Summary of hypothetical validation results

Research Hypotheses	Hypotheses Content	Verify the Results
<b>H1</b>	cultural perception value has a significant positive impact on consumers' purchase intention	establish
H1a	product appearance has a significant positive impact on consumers' purchase intention	establish
H1b	product technology has a significant positive impact on consumers' purchase intentions	establish
H1c	product function have a significant positive impact on consumers' purchase intentions	establish

H1d	product symbols have a significant positive impact on consumers' purchase intentions	establish
H2	material structure has a moderating effect in the influence of cultural perception on purchase intention	unsupported

## 4.2.8 Answer the subsidiary research questions from Case 2

### 4.2.8.1 Answer for SRQ 3

Using 3D printing technology can give full play to the designer's ideas in the initial stage of the design, and quickly print out the model of the product. Experiments with models do not waste real raw materials, which greatly guarantees resource conservation. The texture of the model surface can be replaced with different materials and improves the efficiency of creative design. Check the visual effects of different materials in advance, and if you find problems, you can predict and improve in advance to reduce the loss of materials in actual production.

Selection of related materials aims to implement the design innovation of cultural products, better develop the practicality of the products, and integrate 3D printing technology into the inheritance and application of culture. Store the original data of the files created by the 3D software in the computer, and extract the data to generate a series of new design works, reducing repetitive work. The 3D software realizes the multi-angle observation and thinking of the design content, and the stereo imaging of the traditional elements adds a sense of fashion and modernity.

### 4.2.8.2 Answer for SRQ 4

Cultural elements convey information about design concepts and cultural language to users in the design conversion. Traditional elements interact with innovative thinking, disseminate cultural products through advanced technology, and realize the communication between participants and designers. Consumers follow their cultural identity when purchasing and using, generating new emotions, and storing them, creating a virtuous circle from cultural heritage design to sustainable inheritance. Creativity drives cultural design and gives product cultural emotions through the improvement of design process methods.

3D printing technology is an important key to helping innovation; it becomes the driving force of fashion trends and forms an interactive design process. Practice the activation and application of Chinese elements through traditional calligraphy and painting utensils as a case study. Luminous stationery is a product inspired by traditional Chinese study tools. It combines complicated tools into a whole structure with writing, assembling, and lighting functions. The design explores the activation and application of Chinese elements, and 3D printing technology realizes the practice of combining the diversity of materials with product design. Consumers follow their own cultural identity when buying and using, generate new emotions and store them, forming a virtuous circle from cultural heritage design to sustainable inheritance. Through fashionable design, more young people pay attention to and love traditional culture. Integrate cultural semantics into cultural products presented by 3D printing to create a younger form.

### **4.2.9 Future work**

This research presents a design practice based on cultural semantic theory and creates practical design products with characteristic items. The design work's use of cultural elements can not only create economic benefits but also greatly promote the construction and innovation of human spiritual civilization and cultural heritage. Science and technology are constantly evolving, and we should reflect on the importance of cultural diversity in design. Based on the traditional culture and looking at the international perspective, it is necessary to train the young generation to carry forward its inheritance. Invite professionals in the design industry to help feedback better link interaction design and stimulate creativity in design practice. By stimulating the cultivation of the stored cultural internal motivation, establish the professionalism of cultural awareness expression.

Knowledge is constantly transformed through creativity, resulting in economic benefits in the market, to optimize the experience of creative practice. We set the series of design cases to integrate tradition into modern daily life and promote the scope of inheritance to drive the younger generation to participate in cultural innovation. The design of cultural language will be a technical system that realizes the simultaneous development of technology product design. It is foreseeable that 3D printing technology will be rapidly applied and will play a role in helping the inheritance of culture in the future. It is hoped that in the future, it can help cultural products achieve a better use experience, enhance the concept of culture, and revive the design and use of cultural elements.

## **4.3 Limitations and Further Research**

Frequent cultural creation and design expression, constantly generating a deep understanding of aesthetics. Teachers should have the experience to guide students to sort out the rhyme of aesthetic categories from literary theory and design cases and to deeply analyze its connotation, extension, and perception. Design thinking drives design action, and theory guides experimental practice. To summarize, the case study includes learning and applying design to create innovative solutions to specific societal challenges. Observe higher levels of design motivation in practice, predict possible solutions to a given design task and evaluate their design results.

The progress of civilization requires science and technology to help the development of culture. The effective combination of traditional cultural elements and fashion design still needs to be continuously explored in the practice of creativity. The current practical research is important given the scarcity of qualitative assessments on how clothing design experiences and responses to cultural emotions. Although we have received a lot of praise and affirmation, we also know that there are still many problems in current research that need to be improved and perfected. For example, clothing is more in place for traditional craftsmanship, but the fashion and practicality are not enough. The emotion-driven fashion design is not a partial paste but an overall build. We will select representative, suitable, or protective items to trigger design activities. Set the series of design themes step by step, and redesign the cultural elements into a modern style to bring them into daily life.

Next, we realized that sustainable design of cultural items also required technical means



combined with new materials to help convey emotions. Scientific and technological materials evoke the vitality of ancient culture, with creative designs to open the market to drive the culture industry, create products docking the tourism industry, and pursue the revival of cultural emotions. The team and echelon construction of cultural practice also contribute to the reform of subsequent design education and the reserve of design capital. Therefore, our work should focus on the simultaneous development of knowledge-based disciplines, product design, technical cooperation, and talent training. Future work will gradually adjust the practice method in the article to improve the effectiveness of traditional cultural elements and modern creative design docking. The summary of this forward-enterprising topic can provide a reference for related item work and derivative product design in other countries.

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# **Chapter 5**

## **Case Studies:**

### **Case Studies of Ink Language**

#### **5.1 Case Study 3,**

#### **Multi-Dimensional Fashion Exploration Practices the Creativity of Ink**

##### **5.1.1 Case study abstract**

The purpose of this case study is to practice a design experimental approach. The poetic expression of oriental art in modern garment design. And to showcase and demonstrate the process of creative thinking practice in design language and present the possibilities of water-ink art in educational activities. By studying the oriental ink painting language and the natural flow and transformation of the artistic conception of fashion art in two-dimensional and three-dimensional space, to explore the poetic and artistic expression language in modern clothing design. Practical examples analyses are provided as to how to integrate water-ink experiments into the creativity design area, which culminates in the transition from design elements into unified information with practical value.

##### **5.1.2 Research introduction and questions**

The development of ink painting in contemporary is often entangled with traditional concepts, reflecting the status of the inheritance and development of Chinese painting (Hwang, 2010). Ink language is important because it has unique aesthetic elements in Chinese painting. The ink paintings can reflect the spirituality of life. The physical characteristics of the brush, the

paper, and the ink itself determine the tendency to adopt expressionist expression. The water on the tip of the brush and the ink of different shades are in direct contact with the paper. It is a such directness that the painter seems to have an advantage that other art does not have. Borrow the image of an objective object and integrate it into the expression of the abstract stage of the picture (Gonçalves, Cardoso, and Badke-Schaub, 2012). The evolution of water and ink under the control of the painter produces ink-colored contingency, reaching the understanding of the nature of water and ink and then conducting free experiments. The main problem that needs to be solved in the use of ink language in the development of contemporary design is that it is synchronized with contemporary design aesthetics (Wang, 2016). Mr. Christian Dior designed the cocktail skirt, which directly uses the cursive works of Zhang Xu in the Tang Dynasty (Figure 24).



Figure 24. A cocktail skirt inspired by Chinese calligraphy

Design thinking needs to use the sensitivity and methods of designers to meet people's needs and solve their problems (Balamuralithara, 2021). The starting point of the design is only gorgeous and beautiful images, but cannot express their meaning in depth, cannot be consistent with the design concept, or we cannot experience the beauty of implication from it, and the design that only stays on the appearance is empty. Experimental ink is conducive to the stimulation and development of imagination in the conversion of design applications (Cila, Hekkert and Visch, 2014). The practice of experimental ink allows for the adequate preservation of the emotions derived from the designer's visual and dynamic experiences and for quick and easy recording of ideas. In the setting of the core courses of design colleges, uses the ink painting to unlock the experimental method of the creator's personality, freely exert the imagination of the young students, and ignite the students' initial love for the design.

In the creative process, intentions before creation are more attention to emotion than general skills. Figure 25a shows the opening ceremony of the 2008 Beijing Olympic Games, Chinese ink painting of dance. In the film 'Shadow' ink costume and poster in 2018, director by Yimou Zhang, ink-like imagery is used, as if the ink is worn on the body, blending with the natural scenery of the picture (Figure 25b). Opening Ceremony of the 2022 Beijing Winter Olympics, ice blue ink came from the sky (Figure 25c). This is a way of existence based on cultural meaning, a form that conforms to the regional characteristics and the harmony of the unity of nature and man, and provides endless multiple design directions in the practice of integrating the imagery into the work.

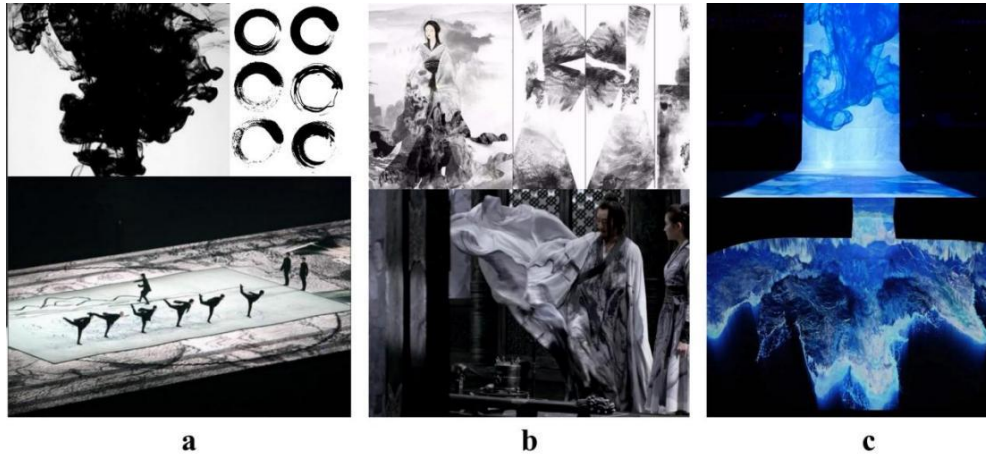


Figure 25. Dynamic media intuitively express the cultural image of ink

Different strategies help designers improve emotional granularity and refine the design intentions according to potential emotional effects. Inspired by the uniqueness of ink language, the inspiration of design thinking is quickly conveyed by extracting design factors from the observation process. The purpose of this case study is to use a method based on the integration of Oriental ink semantics theory and practice into design and to showcase the possibilities of acquiring design language and communicating cultural semantic activities. In the following, we will discuss the types of creative design and various aspects of creative design cases based on the model described in this paper.

The problems that need to be solved include:

SRQ 5: How improve the aesthetics of design works through the fusion of ink?

SRQ 6: How to achieve the combination of ink language and fashion creative practice?

The rest of this case study demonstrates the integration of cultural elements and modern design through the organization of auspicious patterns, the realization of patterns, the craftsmanship of production, and the study of modal systems. The multi-dimensional development of research through practical design will continue to be the next legacy.

### 5.1.3 Fashion creative method

#### 5.1.3.1 Leave blanks and space in aesthetics

The integrity of the clothing system also includes the accessories of the garment. Clothing and accessories have played a vital role in the development of Chinese culture. The exploration of costumes is directly related to the perfection and innovation of art forms (Choong and Rebecca, 2021). Our research is a well-established system, including the field of clothing, accessories are part of clothing, can not be ignored. Research on the expansion of traditional painting culture expression language has chosen to maintain the inheritance of the traditional language system and the inheritance of new forms of clothing. Imagination is a creative faculty of the mind; it is the vehicle of active creativity (Gaut, 2005) and the source of invention, novelty, and generativity (Egan, 2005).

Designers largely rely on their imaginations to visualize ideas (Eun and Mi, 2021). Leave blanks and space is a special technique in Chinese painting. It is based on the creation of artistic imagination. Leave blanks and space to enable endless imagination of the picture, while also conveying a sense of infinity. It means: there is no word, but the artistic conception of the picture conveys infinity. Hua Lin, a painting critic of the Qing Dynasty, explains the technique as a kind of painting expression in traditional Chinese aesthetics, which is expressed as a way of life. It can give people virtual and real mutual beauty of the artistic conception, and space as the carrier of design language is the material basis of the design and the objective object of artistic creation (Tuan, 2001).

Traditional costumes always express the traditional culture and value orientation of the nation with a stylized wide-body plane cutting structure and decorative materials and techniques. Clothing pays attention to the relationship with the human body, so the effect is mostly symmetrical and balanced composition, with simple ornamental embellishment. The expression of “leave blanks and space” in the re-creation of fabrics, taking into account the momentum of the fabric due to the movement of the human body, and the use of real and virtual contrast to present the simplicity of modern beauty, giving traditional costumes a new vitality. The key lies in the expression of flexibility and artistic conception. To do this, the designer must first have good taste and an appreciation of the tradition.

Fabrics and clothing give people space for imagination with simple and elegant charm, enhance the taste of the wearer, and interpret the multi-dimensional cultural expression of the painting art while walking. In the apparel creative practice, leaving blanks and space layout, coloring, and other methods of blank space are combined with the reconstruction of fabric media. In traditional ink paintings, denseness and dispersion are all left blank layouts, and black and white are used as the two poles of tone, contrasting strongly, reaching the artistic conception of “fuzzy and definite mutual growth”. This “leave blanks and space” method can give people plenty of room for imagination. It is a concrete manifestation of the poetic expression and aesthetic taste of Chinese traditional spiritual temperament. It is of great practical significance to combine this traditional painting concept with modern fashion design.

### **5.1.3.2 The method of “three fars”**

In the famous landscape painting of Chinese Northern Song Dynasty painter Guo Xi, the “three fars” method proposed in “Lin Quan Gao Zhi” is a special perspective method of Chinese landscape painting. There are three ways to express the mountain space, high-far: from the bottom of the mountain and looking up at the mountain peak (Figure 26a); far-reaching: the front of the mountain and the distant view of the mountain (Figure 26b); parallel far-near: the composition is viewed from a flat view, and the scenes appear in parallel to form a space (Figure 26c). This “three fars” method is a kind of time and space view. It looks at the scenes in the painting from different viewpoints such as looking up, looking down, and looking far. It breaks the limitation of the general painting with a viewpoint, that is, the perspective of the scene. It’s more about recording in a mobile way of observation and memory.



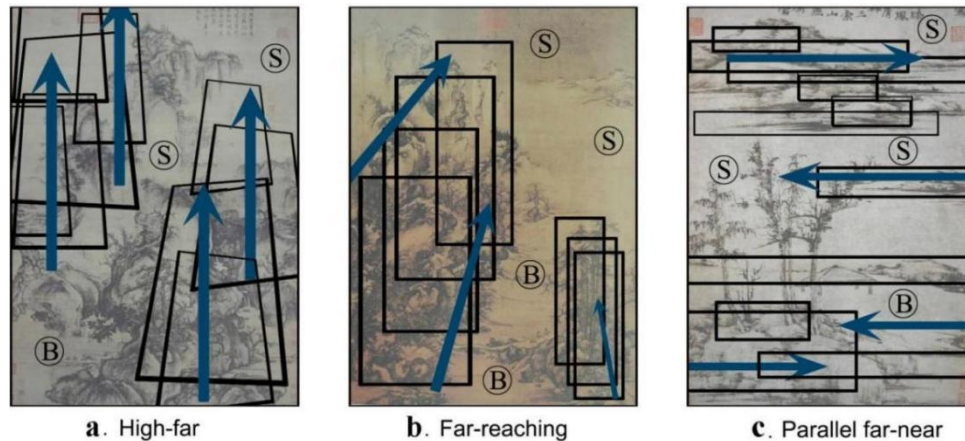


Figure 26. The “three far” method (B-blanks, S-space)

*Source: Chinese Northern Song Dynasty painter Guo Xi, the “three fars” method proposed in “Lin Quan Gao Zhi”: high-far, far-reaching, parallel far-near.*

The important thing is to “leave blanks and space” so that space becomes meaningful content on the screen. As long as it is the sunlit place of mountains and stones (Figure 26a-B; Figure 26c-B), the smooth plane of the hillside (Figure 26b-B), and the open water and sky outside the picture, the clouds, and space, the depths of the mountains (Figure 26a-S), the top of the trees, and the sky and water (Figure 26c-S). Smoke, places where clouds connect, roads, and sunlight (Figure 26b-S), all involve the leave blank technique. The beauty of traditional Chinese painting is the rich level of black ink in the water. In addition to this change, a “white” is added, and the black and white are more distinct and the whole picture is more harmonious. The “white” should not be too sporadic and repeatable. When using this method, we should make full use of the rich level of Chinese painting color, and the space in this time cannot be simply understood as white, but space is used to rationally arrange different colors, and the elegant and harmonious artistic conception on the fabric is allowed. Let limited clothing generate unlimited imagination.

## 5.1.4 Fashion creative practice: ink language plate

### 5.1.4.1 The plate as the medium of ink

After a long period of development, ink and wash have formed their unique artistic language in painting, which is difficult to replace with other art forms and has profoundly influenced the thoughts of contemporary designers. It has played a role in different levels and perspectives in modern creative practice (Guilford, 1981). In the practice of fashion creativity, we practice and explore the design language of ink culture, extract ink symbols from artistic beauty, amplify the interpretation of ancient charm and delicate and meticulous multi-dimensional design expression (Joyce, 2021).

In practice, observation is a skill that can be sharpened, and the brain forms an illusory subjective image from what is seen. The skillful hands are consciously expressed, and the artist’s subjective judgment is reflected in the picture through the movement of the body

through ink. There exists a need to read the works of the ancients and understand the way through which they express their ideas. Through the deconstruction of artistic language, interpret the changing sky in nature, mountains, plants, flowers, and creatures are all on the plate of ink language (Figure 27). The design condenses people's sustenance to the spirit of oriental aesthetics. Showing the multi-dimensional appreciation and aesthetics of wrapping and three-dimensionality.



Figure 27. Creative practice of ink plate

Source: Du, B. (2014), plate artworks “Travel, Towering, Cloud, Chang” from the “Li” Museum of Art in Daejeon, South Korea, “Shape and Quality” personal art exhibition.

#### 5.1.4.2 Aesthetic emotional sublimation

The language of ink and wash is expressed in sentimental, intentional, rational, flesh-and-blood, and rhythmic emotions. It is a kind of psychological phenomenon produced by the interaction between subject and object. It can attract the linkage of all the body's sensory information, and the work is driven by the author's emotions to present a certain sense of beauty. The image that is repeatedly flowed and inspected possesses “the kind of gradually infiltrating beauty” mentioned by Nietzsche. Is it natural or supposed to be fashionable? Through different designs, we can reconstruct these materials and repurpose them to help express our concepts.

The evocative power of designers can be enhanced by the type of inspiration used and the designers' levels of expertise (Bonnardel and Marmèche, 2004). In the practice of creativity, the front of the plate works is the artistic conception of Chinese culture, and the strong linguistic symbols bring endless imagination to the viewers and satisfy the spiritual comfort of different people in the ink language.

- Plate is a multidimensional space that presents painting. When we look at only the materials, we will find no real difference. Just like the landscaping of Chinese gardens, the elements are the same, but it is the space and the situation that changes everything. When we choose the material, we first consider the mood that we want to express.

- It is more amazing on the back of the plate. With the change in the structure of the plate, the combination of poetry, calligraphy, and painting in Chinese culture is used in the circular area at the bottom to transform, the bolder calligraphy symbol language (Lin, Lin, and Hsieh, 2005). The small space of the circular area does not limit the momentum of the calligraphy symbol language, which is considered in the design.
- Compared to the beauty of pure formality, the beauty of naturalistic simplicity manifests more of the indigenous ethos of a culture. The Chinese believe that simplicity was the quintessence of nature. Compared to Western minimalism which tries to reduce everything to its essential quality, the simplicity of Eastern art conveys warmth, comfort, and ease of nature.
- There is no absolute limit to the process of creativity. The key is to see whether the language in your works has the corresponding independence and a profound image. It is gradually forming its distinctive aesthetic value pursuit in various aspects such as modeling, color, and composition.

## **5.1.5 Fashion creative practice: ink paintings to silk scarf**

### **5.1.5.1 Conversion of attachment medium**

As a symbol of Chinese civilization, silk carries people's sustenance for spirituality and oriental aesthetics. It is a good choice to combine silk scarves with ink paintings with oriental charm (Hsieh and Guan, 2011). Paintings focus on the unique perspectives of themes, reflections, and observations (Phan, Fu and Chan, 2018). Silk scarves as clothing accessories also need to show the theme and corresponding artistic beauty. Enhance the use value of silk scarves, dynamically spread the concept of painting, and spread Chinese traditional culture. The brushwork of Chinese painting has a strong subjectivity. It does not seek shape, but only the mood. Its formation is based on philosophy, because ink advocates simplicity, and the rhythm of ink is reflected in color science, that is, black and space, that is, the flexible use of ink.

Learn to use the spirit of ink and wash, to nourish people's body and mind through the beauty of the color of ink and silk, and to spread and promote traditional culture and art. Silk scarves are picturesque and women can wear silk artworks and are unique. They can spread more individual pursuits of modern people through silk scarves (Yen, Lin and Lin, 2014).

The case study is mainly aimed at young people, and the style positioning of the silk scarf design selects young women as the target group of this design. Because young people not only require functionality and quality when buying and consuming products, they also hope to get the greatest degree of satisfaction in terms of vision and consumption emotions. They are more inclined to buy products that have a good appearance and cultural image (Moldovan, Goldenberg and Chattopadhyay, 2011). When they choose to buy accessories, they take into account fashionable and culturally connotated items, and also meet the matching of their existing clothing. Therefore, the selection of such groups as the target design service group has certain reference significance.

### 5.1.5.2 Practice presenting poetic designs

Chinese painting is based on ink as the main body to express nature, subjectively summing up the colors of nature with black and white. The pen and ink of Chinese painting are divided into five colors. The blend of flowing silky material and vivid ink language is suitable for expression.

- The design work “Cloud Reflection” (Figure 28a) starts from modern people’s thinking about nature and interprets the clouds and stars in ink language. The silk scarf is a separate piece of textile product. The design of the pattern is not limited by the width or cutting. It can be designed independently and made into a picture. The design of the scarf pattern is more flexible, and the pattern has certain freedom under the premise of conforming to the principle of composition. The layout of the overall figure fully considers the different wearing methods and formation effects of the scarf. The density changes in the pattern, and the wearer’s temperament and taste are increased by the expression of the scarf (Goldschmidt and Smolkov, 2006).



Figure 28. Creative practice of ink to the silk scarf

Source: Du, B., Nagai, Y., & Wang, M.Q. (2019). *Fashion Creative Practice Exploration Multi-dimensional Performance from Painting to Creative Design*. *Kindai Management Review*, Vol. 7, No. 4, pp. 54-66.

- The design work “Spring Rain Forest Flower” (Figure 28b) was inspired by the poet Du Fu’s poems in the Tang Dynasty. “The flowers in the woods are wet in the spring, and the color of the rouge is more intense.” The pattern looks like flowers, but not flowers, and looks like rain and not rain. The dot-shaped figure suggests desolation since there is a lack of people traveling (Cao, 2011). When making a silk scarf, several layers come together to form a superposition of patterns, and the color and ink of the Chinese painting are blended, light and dark so that the silk scarf is not so thin. The emphasis on the repetition of the unit structure can also be the repetition of other visual factors in the picture, such as texture repetition, color repetition, and point line repeating. Repeat to make the picture unified, forming a visual sense of rhythm in harmonious contrast and change. When wearing, different wearing patterns and different tying methods are superimposed to produce different visual layering; the clear and elegant expression of the water and ink reveals an elegant and harmonious artistic conception, which generates infinite imagination. Silk scarves and the human body are “illusory and real”, the virtual



and real design method is based on the traditional flat pattern design based on sublimation. Treating people as entities, through the different ways of tying, the scarves pattern will have an infinite virtual and real space change with the human body.

- “Mountain Rain” (Figure 28c) is based on the silk scarf as clothing and transform into wearable silk scarf clothing. This concept can also be considered as amplifying the function of the accessory. It is a one-piece strip in the middle of the mouth, the basic shape is simple but the wearing style is rich. “Mountain Rain” (Figure 28c) takes the mountain scenery in traditional ink as a basic element. Under the traditional concept that Chinese paintings are scattered and intensive, the two sides of black and white are used as the two poles of the color tone, and the contrast is strong, achieving the artistic conception of “virtual reality”. The different attributes of stone and water are the core of Chinese landscaping, which echoes the coexistence of reality and fiction in the concept of art. We used a waterfall to heighten spirituality through the flow of water. The sounds of water falling are contrasted by the stillness of the rough stones. This polarity between movement and static expresses the harmony that should exist between man and nature. If worn in the usual way, the side is not buckled, and the silk scarf pattern generates rhythm through the movements of the human body, thus reflecting the fuzzy beauty. The visual color sense of the “flower color” and the “base” in the pattern is balanced, blending into each other and showing the illusion of ink and wash.

## **5.1.6 Answer the subsidiary research questions from Case 3**

### **5.1.6.1 Answer for SRQ 5**

Traditional brushstrokes rely on skill, but also accumulate unique doorways and strength. Only after experiencing the objective existence of artistic language descriptions can we truly understand the process of rich creativity practice and innovative practice. Presently, it is very important to mobilize the enthusiasm of art workers to participate in the multi-dimensional performance of paintings and important to expand and develop the field of ink. Fundamentally speaking, pen and ink itself is an abstract symbols that can be appreciated, and through the design of thematic creativity, the realizations achieve the fashion presentation of cultural items.

The ink is not only a language method but also a spiritual carrier that can sharply record the emotional meaning of the creator and accurately convey its aesthetic judgment. In the process of creative practice, we also study the likeness and dissimilarity, image and non-image, and formed a complete set of subjective mind language. More can freely play the theme of ink language according to the subjective thoughts of the creators, not bound to the image and technology, which requires a rich guide of sensibility to create a meaningful form to achieve a personalized style. The forms are all adhering to the traditional culture.

### **5.1.6.2 Answer for SRQ 6**

The expression of oriental painting refers to reflecting the artist’s spirit and thought through the organization of the pen, ink, and medium. Ink language can represent the unique

aesthetics of oriental culture, and its vitality is not only in calligraphy and painting. The medium of pen and ink goes beyond paper and expands into more design fields.

Comfort and satisfaction are attained through emotional satisfaction. Aesthetic perception is people's keen judgment and insight into emotions when facing traditional cultural forms. Oriental connotation and image temperament are suitable for elegant natural dress styles and images. Such as wearing ink language silk scarf is also a visual aesthetic process. It is a moving cultural language. The development from two-dimensional to three-dimensional and flat visual images to body vision is a three-dimensional and holistic experience. While worn, the silk scarf can be fully unfolded, which produces maximum coverage of the upper body to the maximum extent and maximize the beauty of the human body. Silk scarves can also be worn in traditional draping styles. The space left in the pattern itself can be used to create more fluidity through folding.

### **5.1.7 Case findings**

The ink language can reflect the spirituality of culture. The physical characteristics of the brush, the paper, and the ink itself determine the tendency to adopt an expressionist. It is a design expression language that conveys aesthetics and philosophical thoughts through media. The design practice obtains creative inspiration through direct contact between the water on the nib and the ink of different shades in the painting language. This quick and direct way of expression brings experience advantages to design activities.

The vitality of oriental culture lies in the inheritance and development of human beings. Transform this inheritance and development into a visual memory and storage. The analysis of the case and practical design exercises have shown that oriental painting aesthetics are not limited to the expression of flat language, but have already influenced the various design fields that penetrate people's lives. The integration of ink into creative design and the practice of the true integration of traditional art and fashion design also require the joint efforts of multiple disciplines. For example, in the garden landscape, Chinese jade carving, costume art, etc. can feel the strong influence of the semantic expression of traditional painting.

## **5.2 Case Study 4,**

### **Sustainability of Cultural Semantic: Practical Research of Experimental Ink to Unlock Fashion Creative Design**

#### **5.2.1 Case study abstract**

Fashion design is a medium of visual communication that requires a heterogeneous mixture of linguistics and culture. The charm of cultural language is reflected mainly in the unique way information is disseminated. The use of ink as an extension tool for design language development is desirable because of its extreme flexibility and plasticity. Moreover, it helps designers to quickly retain ideas in the creative process. The study presented in this case demonstrates the process of incorporating ink into creative fashion designs, thus transforming

it from a painting language into design information with practical value. The application of the ink language in fashion design has triggered the conversion of cultural intrinsic value and design thinking, which produce a new inheritance relying on clothing products. The core is to integrate the practice of experimental ink with the design process of clothing, focusing on the infiltration of cultural semantics. The artistic conception created by ink realizes the practicability of the traditional cultural context in design, increases the connotation of fashion design, and better expands the activation of culture. Inject new vitality into the development of traditional painting and innovation to modern design.

### **5.2.2 Research introduction**

Traditional painting has always been a two-dimensional medium, with flowing, intangible, and casual language features. Ink is a painting tool and a distinctive cultural symbol. It contains the spirit of traditional culture and is an art form with a profound historical foundation (Yu, 2016). However, in the field of creative design, paintings possess strong extensibility and are thus suitable for the development of multidimensional forms. In the process of design, people's emotions are pinned through the mining of element concepts and meanings, and interacting with them in the process of use will generate new memory storage (Taura and Nagai, 2010).

The case study is based on developing a method of using the ink design language with cultural characteristics in the practice of creativity and using this method to solve the problem in an actual design conversion application (Nagai and Noguchi, 2003). That is, through the activation of experimentation to understand the relationship between ink elements and creative design.

Excellent design works often convey a kind of spiritual aspect through vivid visual language (Nagai, 2015). To guarantee the inheritance of cultural elements, it is necessary to study and design the practice. Apparels are presented as a tentative physical vehicle for the preservation and expression of traditional cultural elements. The purpose of this case study is to acquire the cultural language of ink through practice and use the method of ink language in creative activities to unlock designs and achieve sustainability in cultural semantics. Incorporating cultural language into design works to convey the uniqueness of culture is an important task in this case study.

### **5.2.3 Research questions**

In the process of practical thinking and design, this case study combines the design to interpret the code of ink, inherits the traditional culture, and expands the design ideas and methods. To more accurately convey traditional culture, this research extracts design elements from the method of experimental ink through practice and acquires design language to revitalize it in clothing design.

In the process of theoretical and practical research, this case study proposed and hopes to solve the following:

SRQ 7: How to obtain aesthetic perceptual language through experimental ink in design education?

SRQ 8: How to realize a conversion and application that conveys the ink semantics in the creative fashion design practice?

We will further develop the practice of cultural projects from the perspective of creative design, and develop practical research on the concept of ink materials from the two aspects of the relationship between brush and ink and the transition from ink to color.

- First, the ink element has a “formal beauty” on the brush (Du, 2002). The beauty of the form of ink is embodied in the brush. There is a saying in ink language called ‘Emphasis on brush and light ink’, which shows the importance of the brushwork in ink (Xu and Fan, 2015).
- Second, the artistic charm of ink elements is reflected in the process of using ink. Since ancient times, there has been the saying that ink is divided into five colors. Moreover, because of the different ratios of water to ink, dry and wet changes are formed, thereby forming a distinct layered black-and-white gray-stage level with rich content.

## **5.2.4 Brush and ink language in design concept**

Brush and ink is a unique visual design language carrying the historical origins of painting culture. Brush and ink is the material existence form of ink art and has its unique aesthetic value (Brubaker and Wang, 2015). The design concept is acquired by the creative exploration of the art world, such as the shape, texture, quality, and characteristics of visual art. The formal beauty of ink elements is embodied in the use of brushes. It is an artistic symbol that carries a broad and profound spiritual and cultural character. The following expounds on the design concept from two aspects of the language of brush and ink.

### **5.2.4.1 Brushes form the culture of line language**

The brush is a tool for the formation of ink language, referring to the brushwork, which emphasizes how the brush works (Zhuang, 2013). The method of brushwork is the most characteristic form of language in ink art, and it is the material form in which we can perceive the design language from ink. Chinese painting stresses the usage of calligraphy to “write” down a story using the brush. This is related to the abstract expression of calligraphy. The way to move the brush is to “write” the image and “draw” the hieroglyphics (Zhang, 2013). The brush moves and changes to form lines and images on the paper, including the cultivation of calligraphy and the unique mastery practice of brush and ink. Such as a plump vertical pen tip, vigorous and powerful reverse pen, or sharply using the true sideways of the pen are all language elements that portray the objective world.

The presentation of artworks is the expression of the artist’s will in a specific social context and is the embodiment of people’s subjective initiative. Figure 29 shows a certain connection between ink and calligraphy in the method of brushwork. The most indispensable method in art and design is the use of lines, which is an independent factor in design creation (Yang, 2013). A line, a flow of emotion, is a design method that shows the shape, feeling of quantity, volume, and sense of movement. It involves turns of lines, false or true lines, long or short lines, light or heavy lines, and other various techniques of designing. For this reason, to inherit the characteristics of cultural language, according to Shang (2006), every designer



should attach importance to lines.

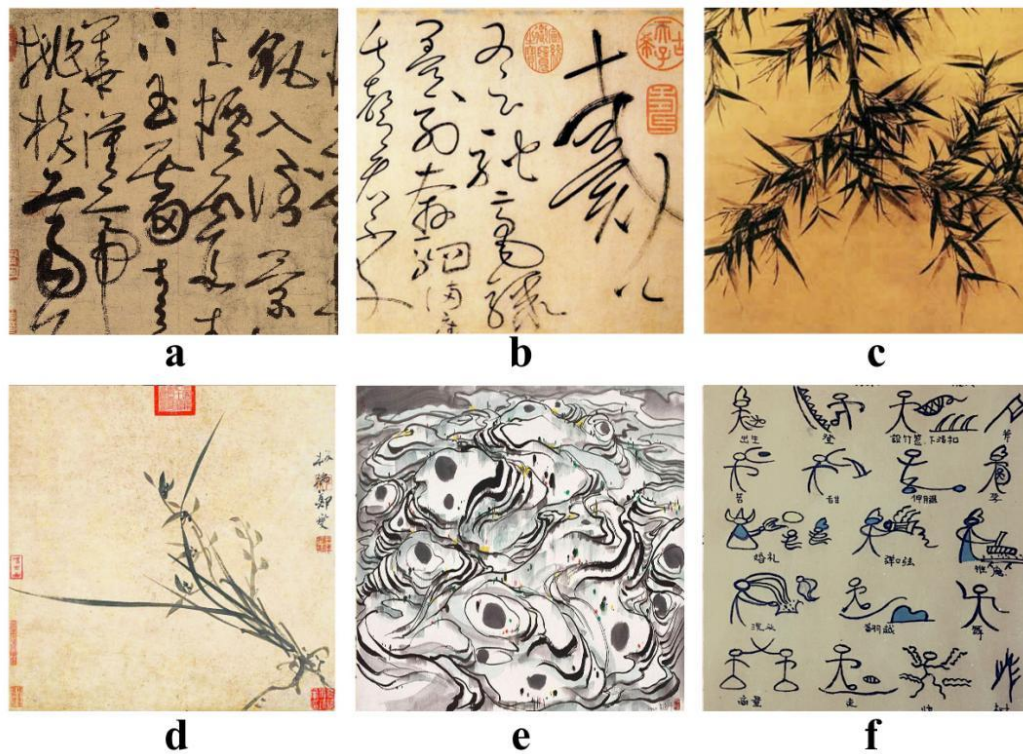


Figure 29. Brush writing to form a linear language

Figure 29a, Xu Zhang (685 - 759), a calligrapher in the Tang Dynasty, sees the timing and strength of lines in cursive strokes. Figure 29b, Su Huai (737 - 799), a calligrapher of the Tang Dynasty, is a snake-like brushstroke in the crazy grass calligraphy works. Figure 29c, the ink bamboo of the Song Dynasty painter Tong Wen (1018 - 1079), pays attention to the experience using the brush writing method painted the bamboo. Figure 29d, the poet and painter of the Qing Dynasty, Banqiao Zheng (1693 - 1766), the long lines of orchids painted using the calligraphy brush method. Figure 29e, Guanzhong Wu (1919 - 2010), a native of Yixing, Jiangsu, is a famous contemporary painter, oil painter, and art educator. The texture of ink lines and the method of space composition fully express the form of terraced fields in Jiangnan water town. Figure 29f, Dongba, the pictograph writing used by the Naxi ethnic group, is the text used by ethnic Naxi people living in eastern Tibet and northern Yunnan. Hieroglyphics are drawn like this and are still in use today. The ink tools have produced different design languages in different eras and thinking spaces, and it is the emotions that elevate the height of the aesthetic realm.

Improving the understanding of calligraphy is conducive to improving the linear design language of strokes. The use of the same lines produces different design languages in different spaces and expresses the inherent strength of culture by enhancing the aesthetic realm of emotion. These are the languages that depict the rich art and design of objective objects. At the same time, using the writing method to design is not only “seeing the traces”, but also through a brush to connect the lines with the state of expressing the mind. The Southern Dynasty painter and painting theorist He Xie believes that using a pen is a kind of monologue from the inside out, a dance of the soul. His “Ancient Painting Catalog” is the

earliest painting theoretical work in China. The use of brush can be an explanation from a drawing perspective that many design graphics should have the inherent strength to express cultural language.

#### **5.2.4.2 The cultural language formed by ink**

Brush and ink are indispensable in the rhyme production of experimental inks. Its temperament of it is the composition of brush and ink elements under certain conditions. The charm of ink requires the brush to play, which is an inseparable whole and mutually conditional.

Ink refers to the method and technique of using ink, that is, how to use the different ratios of ink and water to express the design. The method of using ink is a very important technique formed in a large number of exercises. In the Five Dynasties period, Hao Jing (850 - 911), in his important theoretical work “The Brush Law”, clearly stated: that a person using the brush can extend the application according to the rules of the pen, and in the depiction of the object texture and image, it is like real flight and movement (Xue, 1979). It can be seen that, in the concept of brush and ink, the brush refers to the speed, skill, and method of the painter. Ink refers to a kind of grasp of the ink’s shade and thinness. Art is the expression of the will of the artist in the context of society and a demonstration of the subjective initiative of the individual. Therefore, only the artist himself can grasp the source of his art, which is also the loneliness and straightforwardness of art.

Brush and ink are indispensable in the rhyme production of experimental inks. Its temperament of it is the composition of brush and ink elements under certain conditions. The brush can best exert the charm of ink, which is an inseparable whole and mutually conditional. The connotation of ink reflects the different cultivation, temperament, aesthetic orientation, and personality of different people, which can be reflected in the use of brush and ink in the design works (Gonçalves, Carlos and Petra, 2013). Through the brush and ink, people can appreciate the quality of the spirit expressed and carried by the author, and can also see the temperament, not just the basic skills and techniques. This is the most important value between the inner spiritual level and the ink language.

#### **5.2.5 The concept of transition from ink to color**

##### **5.2.5.1 The ability of ink to refine nature**

Ink has a strong subjective ability to express the emotional color of dry and wet. Since ancient times, there has been the saying that ink is divided into five colors. The artistic charm of ink elements is reflected in the process of using ink. Ink art advocates the “simple” which also implies plain, and this is reflected in the discipline of color, namely, black and white, the color language of ink (Di, 2010). Moreover, because of the different ratios of water to ink, dry and wet changes are formed, thereby forming a distinct layered black-and-white gray-stage level with rich content. Ink language sums up the colorful colors in nature into endless changes between black and white. Figure 30 shows the colors formed by ink that highly summarized the characteristics of nature.

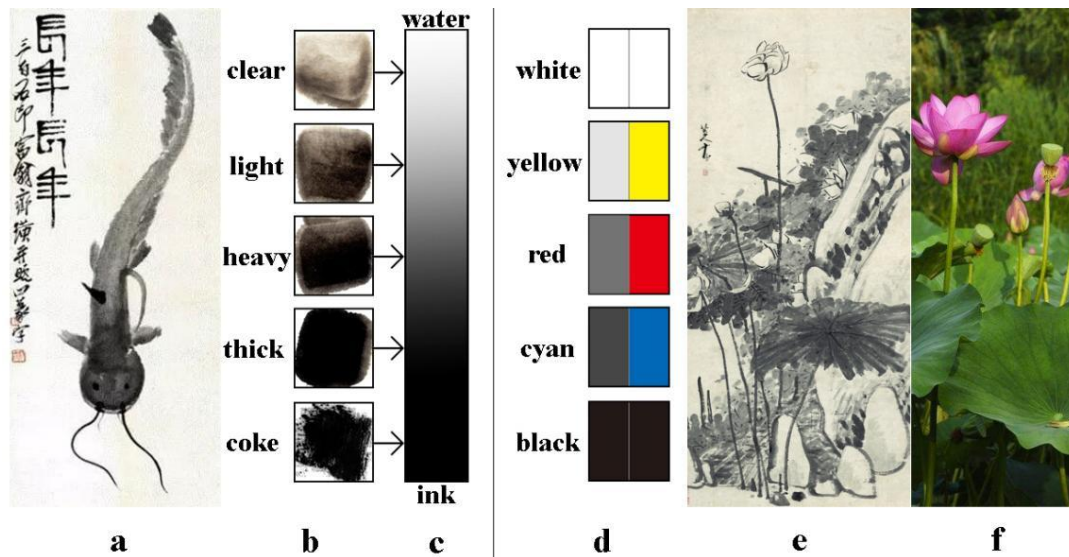


Figure 30. Highly summarized the characteristics of nature by colors formed by ink

Source: Du, B., Nagai, Y., Kim, E., Yuizono, T., & Wang, M.Q. (2019). *Acquiring Design Language: Creativity of Experimental Ink Semantics Conversion in Design Education. The 21st International Conference on Engineering and Product Design Education (E&PDE 2019), September 12-13, 2019. Glasgow, United Kingdom.*

As shown in Figure 30a, the catfish painted by modern ink master Baishi Qi (1864 - 1957) has achieved the unity of pen, ink, and color from the expression of the object. The change of ink color from the head to the tail is also a generalization of the object. Ink language not only achieves the reality of depicting nature but also has the design charm of language itself. Ink is the color language, which means a change in the density of ink in water that is the cause of the various colors. The color can be replaced by multilevel ink language. Yanyuan Zhang (815 - 907), Tang Dynasty, in his record of the famous paintings of the past dynasties, *The Story of the Paintings*, said that: ink is divided into five colors. The so-called five colors refer to coke, thick, heavy, light, and clear (Figure 30b). It is the change of water that gives the ink an infinite hue to express the natural world (Figure 30c).

### 5.2.5.2 The ability of ink to form colors

Color is the most intuitive and easily acceptable part of clothing image. In the external world that humans can perceive, color is an element that can directly stimulate human emotions. In the transmission of visual information, color is an indispensable component. Its application can be quantified into quantity, lightness, hue, and chroma.

Ink has its unique characteristics by altering purity to express richness. According to the different ratios of ink and water, it can produce different colors. If the color is strong, the impact is real, whereas if the color is light, the performance is illusory. This is the design language that brings out rich changes in a single color.

Black, cyan, red, yellow, and white correspond to the brightness of different inks (Figure 30d). It is like removing color from a color photo and turning it into a black-and-white photo. The brightness of the color is unchanged, and the level of detail of the picture is not reduced.

Shown in the lotus flower works in Figure 30e is the work of Bada Shanren (1626–1705, real name Da Zhu) in the early Qing Dynasty. It is his design and creation of a summary of the real objects in the natural world using rich ink and color language. The ink to color refinement and correspondence is the true landscape of Figure 30f.

In the innovation process of ink to express color, designers usually also create some texture content to enrich the form of the pattern. Let the simple black and white look more layered and spatial. In short, the use of ink language innovation in the design must grasp the spirit of using the water, infiltrating the modern sense in the quaint atmosphere, so that the simple and plain of the extracted design can touch people's hearts (Ling and Sanders, 2016).

### **5.2.5.3 Advanced gray produced by ink language**

The truth of design requires us to dare to discover and create (Georgiev, Nagai and Taura, 2013). The process of obtaining the language of advanced gray is a constant attempt, continuous discovery, and the process of continuous accumulation, which is the basic skill that designers should master. The designer's subjective consciousness needs to be clear and able to put forward ideas in the process of practice promotion and conversion. Otherwise, they would simply passively plagiarize and record the shapes and colors in nature.

By controlling the proportion of ink in water and understanding the law of change of the color levels, the practice of using experimental ink has obtained the training of advanced gray. Gray color has two concepts:

- The first of which refers to its position in the relationship of color brightness. We know that in the lightness relationship of the three colors of black, white, and gray, the two extreme brightness of black and white as the chromatic is relatively constant, and only the gray has a very broad performance space (Son, Lee and Choo, 2015).
- The second is the synthetic component of the gray original characteristics, which is the result of a large level of change between the ink and the water and expresses the harmony of emotional details of the object. It is the change in the amount of water that gives ink an endless gray tone to express nature's characteristics (see Figure 30c). In the process of blending, a very rich variety of gray colors is produced, which greatly expands the expressive power of ink. You can try to imagine that if you add any kind of color in this process, we often say that the advanced gray and gray tones will appear in the design.

The brightness change of ink will make consumers' visual perception experience of clothing produce changes such as thick and steady or light and agile. The ink in clothing, the effective use and matching of lightness plays a key role in the overall perceptual experience of the work's vision.

- The increase in color brightness in clothing will create a cheerful and dynamic experience of movement, so colors with high brightness are often used in dynamic image design.
- When the brightness decreases, it will give people a heavy, steady and low-key emotional experience, which is suitable for middle-aged and elderly clothing.

## 5.2.6 Description of experimental inks

Design practice is the core of advanced theories that promote learning, create useful knowledge, and teach cognitive and interactive teaching in complex environments (Ayob, Aini, Mohd et al., 2011). Today's college students prefer experiential learning based on creativity in hands-on practice. At present, at the National Demonstration Center for Experimental Fashion Design and Engineering Education, Dalian Polytechnic University, the undergraduate design major is fashion art design and fashion design engineering. The professional direction includes fashion design, character modeling, clothing product design, display design, and so on. These areas of expertise provide students with the choice to apply knowledge in their educational background and future professional development.

### 5.2.6.1 Derive the design thinking model of ink

In the design of the basic course construction, the ink language is taken as the research object, and through the interaction of practice, disciplines are developed to construct the intersection of the specific relationship between the design language and product design (Petersen, Trine, Maria et al., 2016). The activation of cultural symbols through fashion design involves the process of obtaining and transforming the design language from the two-dimensional representation of ink to a multidimensional presentation.

Practical design research combines empirical research with theoretical model-driven design (Kim and Horii, 2016). The design language derivation of experimental ink is based on knowledge application system management (see Figure 31). The acquisition of knowledge is the result of a valuable information system, which extracts individualized expressions from the universality of knowledge, and retains the practical experience of subjective, rational, and abstract design language. The transformation of information into a contemporary design language with a strong sense of cultural identity is the result of a continuous cycle of rising knowledge from implicit to explicit.

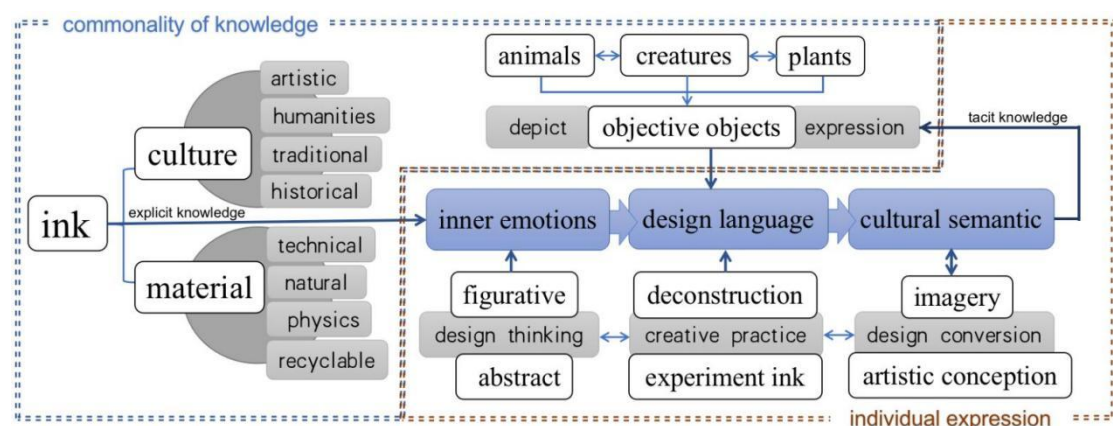


Figure 31. Model construction of practical experimental ink based on knowledge fluidity

Source: Du, B., & Nagai, Y. (2022). Sustainability of Cultural Semantics: A Case for Unlocking Fashion Design with Experimental Inks. *Trends in Textile Engineering & Fashion Technology*, Vol. 7, No. 2, pp. 839-841.



The model emphasizes the universality of refined knowledge, and the individualized and flexible use of emotions to express cultural semantics. The cultural forms of ink and the physical properties of materials provide a wealth of material for the field of fashion. Stimulate the inner emotions of ink, and trigger the description of objective objects in design language. Cultural semantics are conveyed to meet the needs of emotions, and the practice process fully revolves around the cultural meaning of ink.

The arrows in the left part of Figure 31 symbolize the direction of creative information and design thought flow. All boxes have been labeled with self-explanatory titles to indicate the project-related content that is executed at each stage of processing. The three separate but interrelated blue parts represent a breakdown of the sustainable implementation process that unlocks cultural semantic creativity. Through the adjustment of the design, we can improve this kind of meaning and ink image, become a fashion product that modern people can accept, and realize the living inheritance of cultural semantics. This model is a generalization and summary of the previous research literature review. Moreover, it provides theoretical framework support for the design and conversion of cultural semantics in the next step.

### 5.2.6.2 Model-guided experiments and practices

The focus on ink information influences the depth of our design and direction of expression. To adapt them to the needs of contemporary design theory and creative practice, it is also necessary to expand the field of teaching content according to different disciplines (Valkenburg and Kees, 1998). Combining traditional cultural elements with fashion design themes enables the latter to become a vehicle for culture, and to apply abstract visual effects in ink to creative design.



Figure 32. Experimental ink semantic acquisition and conversion process

Source: Design work created by Du Bo and Wang Manqian “2017 Fashion Designer Exhibition, China (Dalian) International Apparel & Textile Expo”.

Successful implementation programs may focus on the development of cognitive skills and the heuristics involved in subject area application. Heuristic construction presents a visual thought-space process that allows designers to make full use of cultural semantics in their

design practices. The creative practice process consists of three progressively cycles: cognitive language exploration, practice of ink semantics, and conversion of creativity into designs (see Figure 32).

### **5.2.6.3 Ink to fabric printing and dyeing conversion**

From the perspective of design, the artist practices the aesthetics of applying ink painting art in clothing design. From the study of the composition of the painting to the comprehensive expression of the beauty of clothing related to the structure of the human body. From the selection and transformation of drawing materials, the application of ink in creative clothing design is presented. Summarize the creative clothing design experience of ink painting in practice, and provide a reference for research in related fields.

Ink splits a landscape painting into parts in creative clothing design, which can be a composition of dot shapes, and the design is presented on the clothing. It can also be layered in shape, and the entire garment should be layered with ink painting elements. You can also apply the ink language to fit the pattern and make a line design at the cuffs and hem. Highlight the ink image by exaggerating the shape of the shoulders, collar, and hips. In short, fashion designers can choose styling methods according to the design theme and highlight their design creativity.

Ink language is integrated into creative clothing, and the choice of clothing fabric depends on which form of expression the designer chooses. If you choose a hand-drawn form of expression, it is advisable to choose light, solid colors and absorbent fabrics, and designers should choose the appropriate medium according to the design theme. In the process of practical experiments, the expression of ink in creative clothing fabrics, and the transformation of ink language on fabrics include three forms:

- 1) The first method is to choose an existing painting or draw a new image that needs on the medium of paper. Record the digital version through scanning or high-definition shooting, and use the computer to digitally process the ink painting such as color measurement and color matching. Through the printing machine and transfer machine, the image is printed by the computer and transferred to the garment parts or garment fabrics. On different fabrics, we get the design raw materials of cotton and linen, and silk with ink images;
  - Advantages: Fast, can be mass-produced, accurate, stable.
  - Disadvantages: The commonality between the personality of art and printing.
- 2) The second method is to choose a blank fabric as an alternative medium for painting, and the artist communicates with the designer to paint the ink painting on the raw materials with a brush. Hand-painted with garment dyeing and weaving pigments to obtain a unique flat ink fabric for garments. Depending on the characteristics and content of the painting, the next step is to make ready-to-wear.
  - Advantages: The inspiration and freedom of ink are not limited, similar to familiar paper, and through the medium of fabrics to obtain different new creative feelings, artistic value is relatively high.
  - Disadvantages: It is difficult to control the accidental shape and the organic combination

of the art painting part and the costume design part.

- 3) The third method is to create a painting on the finished garment. It is an organic combination of clothing design and painting creation to make a garment with a blank fabric design, and then draw the required ink content on the whole garment with a brush according to the overall theme and style of the design.
- Advantages: Accurate positioning, rich color layering, ink arbitrariness, overall style can control.
  - Disadvantages: The production process is time-consuming, there is a risk of failure, and the cost of clothing increases.

## **5.2.7 Unlock cultural semantics by ink**

The application of experimental ink semantic culture concept in fashion design has led to the conversion between the intrinsic value and design thinking of culture design, which produce the innovative heritage in the process of creative practice. The use of cultural semantics in design has become a mainstream trend, and design enthusiasts from all walks of life are constantly trying to innovate and convert perfectly (Claudio and Roberto, 2007). Educators and students in product design, industrial design, fashion design, and engineering provide a source of practical creativity design. Therefore, when we talk about the integration of ink languages to design, we must consider the fusion of aesthetics and application, which is also the transition from design language to semantics.

Ink is a tool for unlocking creative design conveying the visual semantic effect of imagery and artistic conception (Dell’Era and Verganti, 2007). The fusion and infiltration of ink and media, it is good at expressing the object characteristics of virtual and real. The case deconstructs the contemporary expression of ink from culture, conveying cultural semantics and beauty through modern design language. Learning involves the familiarity and adaptation of the individual to the objective world as a whole, and requires conflict, differences, and disagreements to drive the learning process. This kind of image effect successfully integrates the aesthetic ideal of culture into the design and also enables different viewers to produce rich imaginations.

### **5.2.7.1 Design semantics of imagery**

The imagery expresses the author’s sentiment through the layout of the design image, often manifested by abstraction, and is also closely related to spirit, life, strength, and belief. In the Oriental culture, humans, art, and morality always act as a dynamic whole, and human emotions form an abstract material, thus conveying the design expressions of “nothingness and reality grow each other” and “constructing the situation with emotion strikes a chord in one’s heart.” Imagery is extremely important for the final communication of ink semantics. It is a basic component of creation and an evaluation standard for excellent semantics design, so integration is inevitable.

Through the experience of experimental ink, the designer’s subjective consciousness is emphasized to express the inner feelings, and the depiction of imagery is raised to the innovative ability and creative spirit of pursuing individual creation. If there are only natural



scenery and no human emotions, there will be no design conception and creativity. Imagery is to forget the image, the focus of ink semantics is to refine the true nature, and to try to get rid of the bondage of nature. To use partial represents the whole to depict a profound and comprehensive design, just like poetry, people read then have endless imagination of the text language. Based on the form of expression, it conveys the spirituality of design language in the thought of vivid emotion.

### **5.2.7.2 Design semantics of artistic conception**

Artistic conception can give space for rich imagination, and it is a concrete manifestation of cultural temperament and aesthetic taste. In creative practice, using very few languages one can express many spatial artistic conceptions, which fully reflect the design of ink semantics, simple, abstract, and vivid. Simplicity also reflects its expressiveness, allowing the audience to taste its design charm of it, and blending with artistic conception and subjective thinking. Artistic conception is the visual art realm of the merging of the subjective idea and the objective environment, and it is a space and thinking activity between design creation and appreciation. Changling Wang (698 - 757) in the Tang Dynasty claimed that the poetic has three characteristics: artistic conception, context, and situation. And stressed the realm of “there are painting languages in poems, there have poems in paint works and scenes blending” (Li, 2002). It can be seen from this that artistic conception originally refers to the poetic space in which literary works blend the scenario and reality.

The design conception of the work will also play a role in edifying and perceiving the emotion of the viewer. In the process of blending rationality and emotion, form and spirit permeate each other to form the design environment. The understanding of the design conception of work is a psychological process of the viewer, which is to make a reasonable imagination based on the storage of knowledge.

When performing design conversion, designers need to use elements to create an artistic conception. Combining the design with the theme ideas shows the artistic conception beyond reality, so that the audience associate and produce a rich form of ink semantics. The artistic conception created by ink semantic has a hunk of space scene, which allows the viewer to resonate through “the voice outside the string, the meaning outside the image” and then the design beauty appears. The emergence of rich imagination and association makes the design works inspiring, guiding the viewers to understand more symbol meanings beyond the surface and the things outside the picture so that viewers can integrate into the surreal artistic conception rendered by the design works.

### **5.2.7.3 Semantics of virtual and real**

The language of visual perception emphasizes the virtual and real expression, which is the most important way to produce the conception of design semantics. Virtual refers to the parts of the design work that are light and implicitly vague in the forms, usually the small part of the whole work or the blank part between objects. Virtual means leaving blank and space, leaving room for the viewer to fantasize. In the design expression, despite the blank and space, the viewer does not feel that it is an empty image but uses the blank and empty to express a scene and emotional feelings (Edward, Barbara and Barbara, 2001). That is, the design leaves

room for the viewer to think, not particularly full and excessive design. That is to say, the blank part of the space is not the useless part remaining in the composition, but the important design language, which is the important factor that constitutes the beauty of the design semantics.

Through the imagination and association of humans, virtual semantics can be used to represent the imaginary part of the design. It is like drawing or designing a fish, leaving blank around it is reminiscent of water. If a drawing or designing a bird, leaving space will be reminiscent of the blue sky. By guiding the viewers to appreciate the wonders beyond the design work, the viewer can rely on the description provided by the design language to get it more artistic than the actual object. Real refers to the shape of the object with a strong and clear outline on the screen. The beauty of artistic conception in design is the result of the interaction between the virtual and real in design semantics. Without the relation semantics of virtual and real, art design lacks flexibility and there will be no artistic conception of fantasy.

In the semantic expression of design, the unity of the virtual and real can directly determine the existence of the whole environment of linguistic integration design. Regardless of the part of the whole, we must pay attention to the degree of virtual and real. If the protagonist is too real, you can use the virtual break, if the supporting role is too weak then strengthen it to real. Design style needs to be simple and honest, and skillfulness needs to be required, this is what is often mentioned in design semantics processing. There is truth in the emptiness, and there is emptiness in reality. The remedy and help each other to make the composition achieve the purpose of diversity and unity.

## **5.2.8 Description of ink design practices**

### **5.2.8.1 Cognitive language exploration**

The truth of nature is not the same as the truth of art. The truth of art makes it necessary to discover and create. The designer should understand the cultural processes produced by the ink language to express the unique aesthetic concept of the ink. The practical exploration of design makes it necessary to discover and create. Analyze and collect a lot of inspiration materials is very useful. The sensitivity of observation is a skill that can be improved through practice and can form an illusory subjective image in the brain. Practice can give a direct sense of touch and gain first-hand experience. Then the teacher need to guide and open students minds to get more good inspiration through practice. Consciously expressed by skilled hands and design thinking, both the ink and the human body should be embodied in the picture, as well as the subjective thoughts of the designer (Roy, Luo, Fahad et al., 2020).

- The deconstruction of objective objects by design language, the ink is used to describe the mountains, landscapes, plants, flowers, and creatures in nature.
- In the process of ink language exploration, one also studies the likeness and dissimilarity, image and non-image, to forms subjective memory storage.
- Creators can freely use the characteristics of the ink language based on subjective thinking, free from the constraints of images and technology and support divergent thinking, which requires rich emotional guidance to create meaningful forms.

Achieve cultural individual expression through the commonality of knowledge in the design courses. The process to get inspiration is very important. Students need innovative ability training. Each student was asked to get their own inspiration according to their preferences. In teaching process, we often encounter students who don't know what to do, and how can be creativity (Kazmierczak and Elzbieta, 2003). It is very important to collect and find their own inspiration in design class. Find your own inspiration through your own points of interest, and then go deeper. Therefore, saying ink-water is not only a language method but also a spiritual carrier that can sharply inspire the inspiration of the creator (Bloch, Brunel and Arnold, 2003).

### 5.2.8.2 Practice ink semantics

The formation of design semantics is the continuous accumulation of language descriptions in design practice. The acquisition process of the design language involves finding the inner part of the emotions through visualization, and the creative practice of using ink is a static language description for presenting dynamic visual emotions. The memory of practice can influence the creativity of designers and enrich the level of visual creation. These can give people a sense of excitement, and use linear language to express the information conveyed by the author on the spiritual level. The linearity of cursive script has already been explained. Ink language can illustrate the richness while taking into account the shape of the image, and it can also use the chromatic to weaken the shape to highlight the level of performance (Berkowitz and Marvin, 1987). The trade-offs during the practice process also make the ink language unique.



Figure 33. Refine and apply the fashion language of ink

Source: Du Bo and Wang Manqian 2021 *The exhibition of Manchu costume protection and research achievements won the "Silver Award" for costume inheritance and innovation.*

- The process of practice is instructive, and it is a visualization of thinking space. Practice-based learning intends to encourage students to develop their problem-solving skills, rather than be told how to solve the problem. Focus on cultivating and developing imagination, which depends on students' different understanding and preferences of ink-water, as well as the display of their personality characteristics.
- The ductility of the attached medium, such as fabric, has the magic effect of carrying ink, and the ink moves on the medium to the changes of the pen tip constituting the storage of the ink language memory. Language can transform the image into a form of ink, and it

also can organize and process design images. Figure 33 is a refinement of the process of practice experimental.

- The construction of personal lateral thinking and vertical knowledge, and the emotional, visual, and dynamic experiences are integrated into the creative practice of ink-water (Du, Nagai, Kim et al., 2019). The experimental ink has truly realized the training of advanced gray design language. The self-characteristics of gray color are the result of a large level of change between ink and water, which is the reasonable interpretation of the object being expressed.

Gradually develop the habit of self-study and the ability to experiment independently. In the design practice, each student's ideas vary widely. Their imagination is completely different in materials, techniques, and structures. In practice-based learning, the problems faced by students in professional practice are similar to those they would face in the real world. It is necessary to think about the various possibilities of design through independent creation and experimentation, this is very important in the design course. Color is not needed in a line design at the beginning, it can be applied with light ink, so the result of a unique pattern style is produced. Plenty of practice makes the feeling sense of brush tools grow, and when a person uses more techniques such as thick, light, and strong lines, they don't have any difficulty in design.

### **5.2.8.3 Conversion of creativity into designs**

In the design practice, the contingency of ink elements becomes the inevitable symbol language, making the objective carrier of design more cultural and more specific, and the final design works become the carrier of the spirit. The clothing incorporates antique forms and appears in an abstract gesture. Incorporate the powerful, smart, and charming ink language into the fashion design. Use natural fabrics to bring clothes closer to nature.

Painting on silk with vegetable dyes, and the advanced customization of apparel have rejuvenated the traditional culture and become a living cultural heritage for more young people to participate. It also requires simple, restrained, plain, dignified, and elegant clothing style characteristics, without destroying the texture of fabric, silk, or made of linen. In the practice of fashion creativity conversion, the symbols of ink culture are refined from the design concept, and the interpretation of meticulous multidimensional design is enlarged. The designer's design intent requires understanding the direction that the clothing wants to express, using techniques and methods commonly used in experimental ink to interpret the fashion style (Hanington and Martin, 2012). The viewer can feel the artistic and cultural complex conveyed by the design, and blend the ink elements with modern design, so the audience's vision and the designer's artistic claim can resonate.

- Apparel is one of the media for cultural information dissemination and has been selected as the material carrier of cultural expression by this research. Combining ink elements with new design themes and mediums can make the design work as a carrier to seek new support for traditional culture.
- The form of aesthetic rules is used to deconstruct and reconstruct the ink effects in the design, and the spatial form is combined with the creativity of using the ink language

method to reflect the fashion and convey a certain theme and connotation. Focus is kept on combining the abstract visual and emotional responses produced by ink, integrating the perception obtained in practice into the prototype clothing design, and incorporating the concept of ink language in the clothing design process (Lee, Ostwald and Gu, 2016).

- Clothing advanced customization uses textile dyes and plant dyes instead of ink, and their performance is the same. Ink has left blank and space layout semantics in the conversion of fashion design, and the coloring and blank space methods are combined with the reconstruction of fabric media. Design works are aesthetically pleasing and applicable and are closely linked to product features, styles, materials and social culture, aesthetic habits, fashion trends, consumer objects, and other factors (Seifert and Veena, 2017).

The conversion of creativity-driven can be traced to the modernization design itself, which was attributed to many factors of social development (Wang, Nagai, Fang et al., 2018). Wearing clothing with semantic features of ink-water is also a visual aesthetic process. Fashion practice not only expresses a kind of oriental gentleness and softness but also shows the fashionable style of the beauty of the human body and lines. We can describe it like this: the skin is a living organ and need clothes to protect it, we hope our designs are not lifeless decorations in the space. Our goal is to make this design return to nature and present culture scenery.

The texture inherent in the material itself also influences the implementation of patterns and colors. The textures of natural materials such as stone, wind, and rain are used to enhance the space and its spatial awareness. Softness, hardness, and smoothness, all bring out the different olfactory sensations to comfort the consumer. This is the so-called cultural nature of fashion skin. We want it to convey emotion and become an expression of emotions. It is the outcome of an attempt to create a new design thinking model based on the existing resources of ideology and culture, and thus solve the problems in the modernization of the design (Kees and Dorst, 2011). The theory of humanities should first study the real problems in the particular historical background according to their significance and value. The storage of knowledge and theory ferments in practical cognition, and outputs a steady stream of diverse products. To ensure the inheritance of cultural semantics, it is necessary to study and practice many design themes. Make the acquisition and conversion of ink semantics become a valuable circulatory system.

## **5.2.9 Answer the subsidiary research questions from Case 4**

### **5.2.9.1 Answer for SRQ 7**

The formation of design semantics is the acquisition of individual semantic design language produced by students in the commonality of educational practice. Obtain an ink design language with oriental characteristics in the practice of creativity, and it can be a source of inspiration for design conversion in the process of design education. Implementing these creative inks at the basic stage of cultivating creativity solves the problem of insufficient communication in later design. Through the design language conveys cultural elements, the design works are made easier to resonate with, and thus helping to fuel a virtuous cycle of

creativity and design education.

Cases have shown that the mutual penetration of design concepts and the design language triggered by ink can bring out the profound charm of cultural heritage from these design works. In the process of education, attention is paid to the creative ability of ink art, so that the emotions generated by the designer's visual and dynamic experience are fully preserved. The formation and application of the concept of experimental water-ink semantics in creative design education have led to the conversion of modern semantic expression, which leads to innovation in the process of creative design education. Ink images that convey culture in the process of realizing user experience.

### **5.2.9.2 Answer for SRQ 8**

Inspired by the uniqueness of the ink language, design language extractions from observation generalizes and refinements, the inspirational elements of design thinking are quickly conveyed. It is conducive to the development of imagination in the semantic transformation of ink. Express these ideas through the medium and incorporate them into modern design pieces. By doing so, the intrinsic value and artistic thinking of water-ink art can be integrated into the design work and contribute to its cultural richness.

The integration of ink language and design should consider the fusion of aesthetics and application, which is the transition from design language to semantics. The design works are ultimately used by people, and the ink language conveys useful information about the design concept and cultural language to the user in the design transformation. The ink image of the culture is communicated in the process of realizing the experience. Therefore, we were able to present ink clothing as a simple, modern, decorated by an aesthetic and pleasing fashion.

### **5.2.10 Case summary**

Thematic practice and design guidance explored the teaching positioning and cultural orientation based on experimental ink. Problem-based practice study consists of carefully selected topics, that require problem-solving techniques and methods, self-directed learning strategies, team participation skills, and application of disciplinary knowledge to real design situations.

Design practice is based on cultural characteristics, and focuses on the inheritance of activated ink elements by design thinking. The research has cultural inheritance value and actively stimulates the potential and vitality of culture. Experiments have shown that the mutual penetration of contemporary design concepts and the design language triggered by ink can bring out the profound charm of cultural heritage from these design works. Ink images that convey culture in the process of realizing user experience. The design and application of sustainable culture is a multi-dimensional linkage system that requires coordination among all parties to produce design works that conform to the times. Creativity-induced innovation will happen more frequently when the accumulated method of one research field to another.

## **5.3 Limitations and Further Research**

The lack of research on cultural characteristics and an understanding of market positioning

can lead to blind following trends. To make the image of cultural elements achieve the expected effect of inheritance, designers need to design discussions and emotional positioning of consumer groups. From it, we draw elements and creative designs that are suitable for the current clothing image and meet the perceptual needs of consumers. Combining the trends of cultural image design at home and abroad, the two can learn from each other and merge, so as to better integrate Chinese elements into the inheritance of design works.

Design works can display the information of national spirit and aesthetic taste, and can also greatly promote the construction and innovation of human spiritual civilization heritage, and inherit cultural characteristics. Cultural self-confidence, allowing local designers to go deep into traditional Chinese culture, design and convey, and achieve cultural self-improvement. If designers lack an in-depth understanding of traditional Chinese culture, it will make it difficult for consumers to understand the meaning behind the culture when using ink elements. It can be seen that future research and application of Chinese elements need to be cautious, reasonable, and correct.

The uniqueness of cultural semantics is promoted to the public through design, relying on the expression of design to inherit the emotion of culture, and will improve the level and quality of cultural communication. With the continuous development of visual design forms, the application in people's daily life and production is becoming more and more important. In the era of digitization of texts, visualization of books, the network of readings, and videos of information, we should communicate cultural messages through the media. The design of the cultural language is a knowledge system for the simultaneous development of collaborative technology product design. It is the linkage of all aspects of knowledge disciplines. It is multidimensional and needs to coordinate the cooperation of all parties to produce a new cultural design in a new era. Requires the joint participation of designers from different countries to discuss research and exchange, express the design semantics belonging to one's own country, and apply it to the transformation and application of visual design. Let us spread cultural language in our respective fields to make the world more colorful.

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# Chapter 6

## Implications and Contribution

### 6.1 Research Implications

#### 6.1.1 Practical implications

Practice-based design research combines empirical research with theoretical model-driven, an important method of how to innovate, and when and why it works in practice (Acar and Runco, 2014). Creativity-based creation embodies the human element of design and practice. Design practice is the core of advanced theories that promote learning, create useful knowledge, and teach cognitive and interactive teaching in complex environments (Georgiev and Georgiev, 2018). Through design and adjustment, we can transform and improve this kind of meaning and spiritual image, become a fashion product acceptable to modern people and realize the promotion in inheritance and innovation.

Evaluating the creative design process can optimize the design model and guarantee the inheritance of culture. The emotional feedback in clothing represents internal satisfaction, external comfort, and overall cultural experience of the connotation and external image temperament.

Whether cultural clothing can be favored by consumers is closely related to whether the work can meet the emotional needs of consumers. The research method based on emotion provides a method for this topic to explore the perceptual needs of consumers more deeply. In the design research of clothing cultural images, the emotional experience of consumers is explored in a scientific, objective, and rigorous method. The case analysis and design research methods in this study can present the possibility of traditional painting language and element application in modern design and have guiding significance for cultural creative design. The research elaborates on the inspiration and influence of traditional culture on design, and the influence of traditional culture on the inner connotation and outer image of design. The perfect combination of traditional elements into the design has become a new novel cultural heritage.

- Practical research is not simply copying the appearance of national culture, but the integration of the verve of the essence of culture. The combination of the uniqueness of the element image and the modern design language has activated and influenced the academic and industry related to culture.
- Design in-depth cultural stories, design practice research links archaeology, history and literature. Explain the inheritance of emotion from the perspective of cultural connotation, and contribute excellent cultural design to the international perspective.
- Transform the experience of cultural emotions into thematic elements, practice innovative design methods that apply Chinese elements to cultural image design, and provide realistic references for other visual communication research. The questionnaire survey analysis improves the scientific and reasonable method of consumers' satisfaction with the inheritance of clothing culture, and provides a strong reference value for the construction of clothing culture.
- The vitality of culture lies in the development of creativity, which awakens through design and forms new visual storage. Cultural apparel presents a multidimensional visual image on the body, which is a mobile visual aesthetic experience. These costumes will be passed on to future generations, creating a virtuous circle of the spread of cultural elements.
- Designers affected began to pay attention to artistic design with cultural characteristics, directed in-depth market research, and focused on the design expression of specific groups of people. Effectively combine traditional elements with modern design to establish its own unique cultural expression style. Ideology guides design practices and allows more people to participate in the vision of cultural development.

Practice research based on cultural design also contribute to the reform of subsequent design education and the reserve of designer human capital. With increasing demands for spiritual and cultural life, design practices based on cultural festival activities are the most closely related to the residents' lives. Truly let people participate in culture, let culture come alive, use it in people's daily life, and continue to activate inheritance.

## 6.1.2 Theoretical implications

Through the evaluation of the traditional creation ideas and modeling aesthetics contained in the existing elements, the application characteristics of Chinese elements and the unique artistic style are analyzed. Apply the data analysis results to the emotional inheritance design of clothing, expand the research perspective and enrich the research methods. Using scientific, objective, and rigorous methods to mine consumers' emotional experiences and combine emotion with clothing culture design is the unity of emotion and inheritance and has far-reaching theoretical value.

To ensure sufficient theoretical knowledge reserves, we must also possess divergent and innovative thinking, keen and detailed observation and strong hands-on ability. Improve personal comprehensive theoretical ability through extensive literature reading. For design research based on culture, reading the literature to understand the development frontiers of the involved disciplines, familiar with the ideological connotation and technical support of

professional research. Mastering the important results of the current international and domestic developments can establish a clear direction for scientific research needs and hot issues facing.

The history of human civilization is great, it is commendable, it is miraculous, it is incredible. People continue to explore themselves and the universe, and constantly discover new breakthroughs on the road of exploring nature. Human creative thinking is infinite, like the vast universe. It is the space in which the universe gives humans unlimited exploration, and the infinite possibilities to explore infinite space is the dialectical relationship between the human brain and the infinite universe with infinite thinking. People are keen on creative thinking and the integration of diversification. Time is moving forward, and the innovation produced by human thinking will continue in the next second.

### 6.1.3 The implications of knowledge science on design conversion

Design derivation of cultural elements is based on knowledge application system management. Combining traditional cultural elements with the new design themes enables the latter to become a vehicle for culture, to seek new support for traditional culture, and to apply imaginary abstract visual effects to creative design. To guarantee the inheritance of traditional culture, we must also study and design the practice through many themed costumes. Using the method of the knowledge management system, in practice, the cultural elements are continuously applied to the development of the clothing culture market and the creative industry and become the booster of the cultural creative industry. This is a process that is also applicable to other countries, because of economic globalization. In the cycle of knowledge management, cultural designs are constantly generated and affect people's lives (Figure 34).

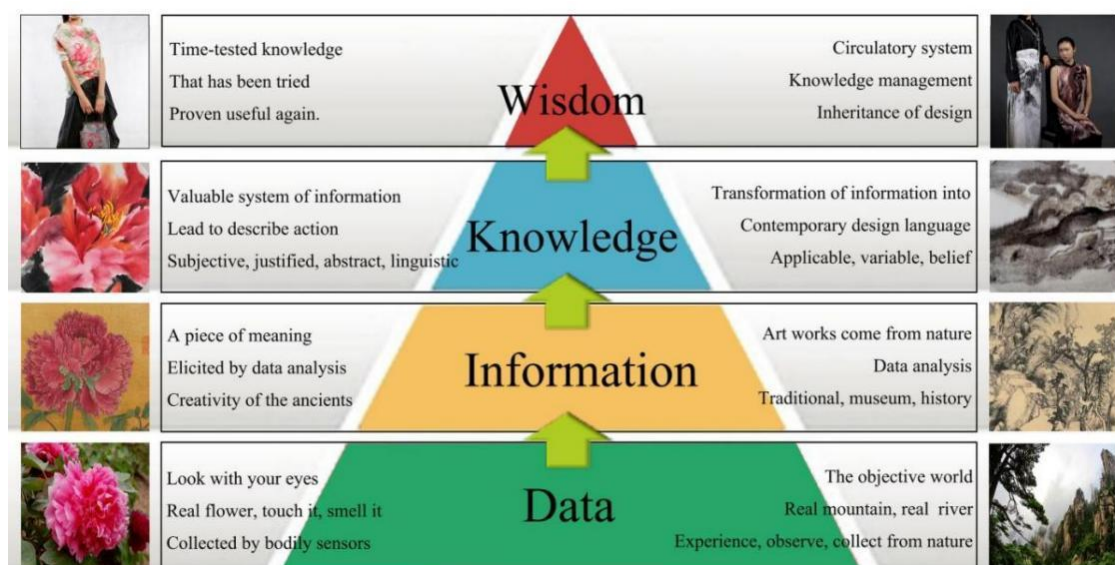


Figure 34. Knowledge application derivation of design language

Source: The author drew by the deduction model base on Knowledge Management (KM).

- Data collection is what people experience in nature. Through the eyes, the sensory

experience of the body, is real, touched and smelled. It is the real mountain and plant in the objective world, people experience, observe, and collect natural data.

- Information is organized through the analysis of people collecting data. For your understanding, form a meaningful expression. Data analysis quantifies and interprets the creativity of the ancients, becoming the expression of natural art language, and the language expression of works of art from nature to painting.
- The acquisition of knowledge is the result of a valuable information system, leading to the formation of a description of an action that can be subjective, rational, abstract, and linguistic. Information is transformed into contemporary design language with a strong cultural identity, forming the application of language expression.
- Wisdom is time-tested knowledge, a transformation of knowledge and practice useful for creativity. The circular system of knowledge uses the management of knowledge to carry on the inheritance of the design. Let the results of the case studies provide reference and reference value for other related fields. The formation of human wisdom is a kind of design nutrition, providing cultural inheritance with valuable spiritual wealth.

In the design of clothing, the cultural elements become the inevitable symbol language, making the objective carrier of design more cultural and more specific, and the final design works become the carrier of the spirit. The use of cultural semantics in the development of clothing art forms and the development of future cultural markets have effectively promoted the advancement of the fashion design industry.

Innovation and creativity enrich the design, the culture, and people's lives while conveying culture, and promoting the progress of the fashion design industry. Innovation driven by creativity will become a booster for the development of the apparel culture market and the creative industry.

### **6.1.4 Manage knowledge by designers**

Designers are the initiators of research activities, the main body of design practice, and important decision-makers involved in design problem solving. Maintain the sustainable inheritance of culture, extract auspicious semantics and aesthetics from cultural history, quantify and classify the collected data, and apply it to design and development. The study of culture is comprehensive, and designers apply the works generated by knowledge transformation to the market, and judge the information obtained by feeding back design activities (Nonaka and Konno, 1998). The excellent results of existing research are refined and summarized, and the knowledge is synthesized to produce a benign design, which has been verified in this practice case.

Knowledge condenses the spirit of design work, and is the progressive relationship between data and information. The systematic combing of the knowledge system forms a framework experience, and form effective management of the organization of knowledge (Nonaka and Peltokorpi, 2006). In the cultural context of this study, we will explore the meaning of how designers manage knowledge, first decompose knowledge, classify and sort out the level of knowledge (Figure 35). Intangible resources that share human intelligence and knowledge help generate benefits that go beyond the limited value embodied in tangible



assets. The effective dissemination and application of knowledge, as the core element of designers' management knowledge, presents the sharing of knowledge from different perspectives in the design research of cultural inheritance. Designer management knowledge, practical empirical research including:

- Knowledge acquisition is a core intangible asset based on organizational design services to improve organizational performance by creating, blending, transferring, reusing and disseminating knowledge. Whether the existence of things can be perceived by human eyes, ears and other sensory organs is the process of transforming things from tangible to intangible, through the collation of knowledge and then into tangible design. Intangibility can be an objectively existing substance that requires the designer's insight, or it can be a concept that is immaterial at the level of consciousness or exists in the form of energy. For example, abstract emotional perceptions of air, fear, and power are "objectified" by feeling to form tangible forms.
- Analyze research knowledge, organize and classify it. In the process of cultural heritage protection, cultural inheritance is closely related to knowledge. The management of knowledge can provide a strategic advantage for organizations to design resources in complex environments. Knowledge can be imparted as a cycle of creation, transfer, sharing. Extractions need to be refined to determine what knowledge can be acquired and transferred to gain a competitive advantage.
- Relying on the development of cultural background research and design, keenly conduct in-depth dialogue with knowledge for designers to make professional judgment. Knowledge is not only embedded in cultural elements or semantic systems, but organizational practice processes are embedded in value systems and integrated into life. Knowledge supports the exercise of design judgment, and advances in information technology have affected the management of knowledge-based organizations. The archaeology of traditional culture, the practice of human-centered use of technology, let it give fresh vitality, innovate and improve the performance of cultural inheritance.
- Design practice focuses on customer-oriented management of organizational knowledge. The practice of knowledge management is the ability to inherit the dynamics and needs of traditional culture within culture to improve the accessibility of cultural design services and optimize quality. The goal of managing knowledge is to effectively create and disseminate knowledge during organizational design activities and to contribute to the efficiency of design communication culture. The study seeks design cases of different solutions to help meet people's high requirements for quality of life, and has been effectively improved and enhanced.
- Knowledge creation, design sharing and application dissemination (Nonaka, Byosiere, Borucki et al., 1994). Case study have shown that by enabling knowledge management within the cultural language, the quality of communication solutions between designers and clients can be improved and become more oriented to the target group of design. Through the practice of knowledge and the effective use of cultural resources, it helps to improve the practicality of aesthetic transformation, thereby improving people's satisfaction with design.
- The development of cultural undertakings is interested in and highlights of managing



cultural knowledge in the production of creative industries, and relying on the practice of increasing the market to provide a stronger boost to economic development. Knowledge is oriented towards the practice of the design process, and the practice of systematic management of knowledge has far-reaching implications.

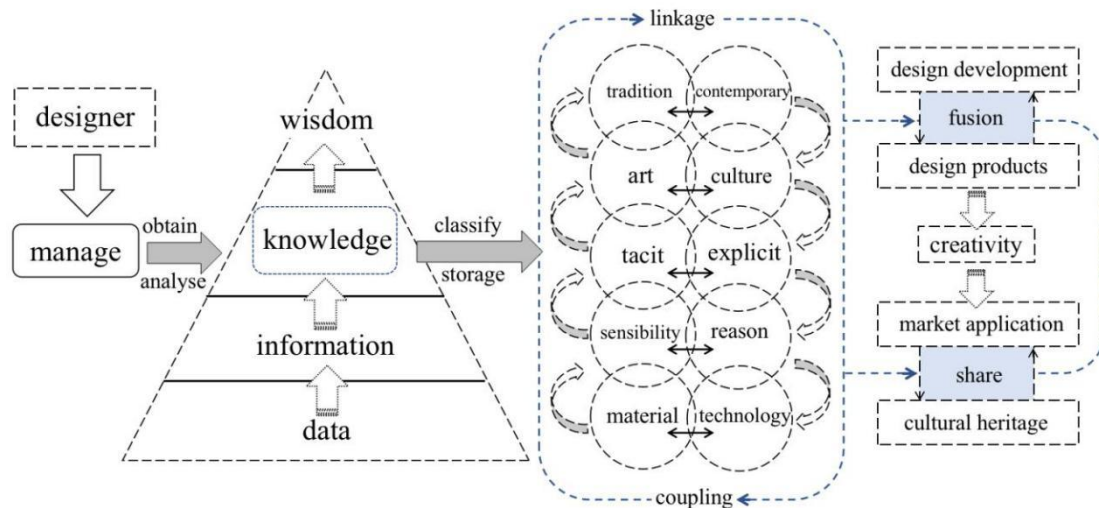


Figure 35. Linkage fusion and share manage knowledge

The practice provided in this study supports how designers manage knowledge, providing a framework for evaluating and integrating new experiences and practical cases. Knowledge is intangible, absorbing curriculum, practice and informal learning, and constantly updating and developing over time through experience and practice. Carrying out design practice around elements, studying tangible elements, we delve deeper into their inner intangible ideas, cultural stories, and emotions. The starting point of design practice around ink painting is intangible, and the research and expansion of its external shape and cultural image are generated by relying on intangible design products.

## 6.2 Originality and Novelty

### 6.2.1 Research originality

People inherit and carry forward the national culture and gain a sense of national belonging and cultural self-confidence. The expansion and in-depth development of traditional culture is very important and will become a continuous research task. No matter which ethnic group or culture, inheritance is undoubtedly the most important. Inheritance is not only the direct use of design, nor is it to cater to the current fashion taste, it is the emotion accepted by fashion and creative design, which belongs to the creation of this era. Traditional culture can be spread vertically from one generation to another, and it can also spread horizontally. Presenting specific research methods and innovative design approaches can open up an avenue to explore possible changes in traditional cultural forms.

The value of design will drive the public's aesthetic orientation and play a role in cultural guidance. Design has always been driven by people's needs and desires for beauty and kindness, evolving through design practices ranging from technical to human-centered

(Ceschin and Gaziulusoy, 2020). Focusing on rational development and adaptive reuse elements can prolong the life cycle of items, guide the cultural positioning of elements in the design process from the perspective of sustainable emotional inheritance, and arouse cultural vitality (Cudny, 2016).

To expand the connotation of “inheritance” is to use modern people’s concepts and methods to interpret design, develop traditional culture and the mental outlook of today’s people, and turn it into a visual language of flowing walking. Applying the elements of Chinese traditional culture to the new design theme, the subject carries the culture and finds new support for the traditional culture. Applies the abstract effect of the imagination to the creative design, so that the new design work has become the carrier of the spirit and then passed on. The creative design process, not only depends on cultural literacy and savvy, but also has the vision and the technology on hand, and it is also the embodiment of personal cultivation and understanding in the new media.

The evaluation results validate the achievement of challenging goals and the balance between designer expression and client needs. We gathered this information, provided improvement of materials, and incorporated it into the framework of the revision proposal to guide design practice again. In future research, we will focus on the theoretical assessment of creative design in each type of application level and inheritance renewal. It can create a virtuous circle, which is conducive to the spread of culture and art. Based on local research, we are hopeful that in the future, the IAI model will become a valuable tool for the incorporation of traditional cultural elements into creative design.

### **6.2.2 Research novelty**

The unique innovation point of this study is to extract and incorporate traditional painting language and elements into the process and application of creative design.

- In this research, we extract cultural language and symbols as the research objects. The design model using the “Items-Activation-Inheritance” creativity method, combined with the inheritance form to effectively cycle the development of theory and practice, through improvement and adjustment in practice. Activate and apply in practice, to integrate the cultural elements and modern design concepts, fashion innovation in design practice to enrich people’s cultural life.
- Explore the transformation of art in modern design, let culture show new vitality through modern design again. Through a series of case studies and analyses, the combination of traditional painting language and creative design methods will be further practiced. From the presentation of a single field to the diversity of creative design, it has theoretical and applied research significance.
- The extent to which participants can influence the design work through design activities. This is the independence and uniqueness of artistic design expression. For creative design works, there can be many interesting appreciations or comments. This is how consumers communicate with art and design in the process of using cultural products (Cash, Stanković and Štorga, 2014).
- The design is not motivated by complete self-expression, its foothold is more focused on

society. Solving the common problems that most people face in society is the essence of design. The problem-solving process is also the kind of value or spirit that human beings can feel together in the design process, as well as the emotions caused by it. This is the most attractive design expression.

- In addition, there are a large number of design examples in contemporary Japan and Korea, which shows that the language of Eastern culture has begun to transform into an expression of diversity. On this basis, my research innovation lies in analyzing the humanistic spirit embodied in the field of modern design from the perspective of painting language and culture elements to exploring the ways and means of traditional semantics. Through the inductive method, data analysis method, and questionnaire survey method, the traditional painting language refinement is summarized into modern design creation service.

## **6.3 Research Contributions**

### **6.3.1 Main practical contribution of the study**



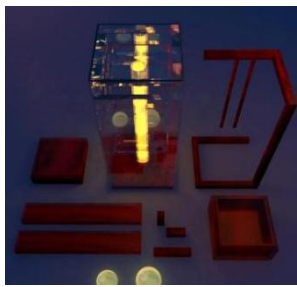
This research is based on the inheritance of creativity to culture and conducts research on practical design in three aspects: cultural elements, cultural language, and sense of technology. Including the research background, research methods, validity of cultural design heritage, and product targeting to specific groups of people in the market. Four common ways traditional elements are applied to modern design: Inheritance and development of consciousness; Inheritance and extension of form; Extraction and derivation of texture; The grasp and inheritance of color. Table 23 lists the design ideas and target customer feature positioning of the prototype design works.

Whether a design can be loved by consumers is closely related to satisfying consumers' emotional needs. Through an in-depth exploration of the emotional needs of consumer groups and integration into the design research of elements of clothing image. Based on the objective and rigorous method of knowledge, explore the cultural and emotional experience of consumers.

The perceptual experience is expressed through the combination of various design styles and thematic elements. Practice the innovation of applying cultural elements to clothing and apparel design, and provide reference for other visual communication researches with realistic cases. At the same time, it tries to provide a scientific judgment method that satisfies consumers' satisfaction with the image of clothing culture, and provides reference value for the construction of clothing culture.

The vitality of oriental culture lies in the inheritance and development of human beings, and it is also a kind of visual memory and storage. Inheritance is not only the modern people's inheritance of traditional material and cultural forms, but also the creation of costumes belonging to this era, which will be passed down to future generations and will be influenced by culture language. Fashion design based on the inheritance of elements is directly related to the perfection of cultural semantic expression. It began with studying cultural semantics and emotional expression, creating costumes belonging to this era.

Table 23. Design ideas and target customer feature positioning of prototype design works

Prototype Design	Prototype Design Works	Design Idea	Design Idea Features	Target Customer
Design of insect elements		Fashion design using seasonal insect elements; Use patchwork animal images instead of real animal furs and bodies, embodying environmental concepts and heritage designs for a sustainable future;	interesting; interactive; cotton and linen fabric; patchwork craft; image symbol; design storytelling; auspicious semantics and cultural emotions;	educated young women; pursue uniqueness and individual fashion (aged 16-36); interested in traditional culture;
Design of Ink language		Incorporate painting language into fashion design works; The painting context of ink painting is integrated into the production process of costume design; The combination of the ink image and the body part;	the expansion of ink language; the inheritance of cultural language; painting and fashion design; The feminine curves of oriental women are combined with the design of silk fabric, the ink cultural image is prominent; the representation of cultural emotion and connotations;	female (aged 26-56); sexy mature women; professional women; engage in ink painting; work in the field of culture;
Design of culture utensils		Technology combined with creative traditional painting and calligraphy utensils; Simple stationery with a sense of technology and light, to meet the combination of culture and technology; Detachable assembly and multi-function;	straight line; save space; technology light sense; sense of strength; practical and use; efficient use of space; Multifunctional; combination; disassembly and assembly;	all people, especially male (aged 6-76); college Students; engaged in ink painting; home, office space, desk;

In this study, the researchers used the design of cultural symbols and the ink language to fully apply the emotional concept in cultural creation to design. Original clothing design products that deeply integrate traditional culture and take into account cost-effectiveness. The creative results can be used as a reference for future practitioners in relevant fields for conversions between art and design.

### 6.3.2 Original contribution to knowledge science

The theory and design thinking model of deductive knowledge discipline can well solve the adaptability in the face of complex research projects, and leave rich results for knowledge discipline. In the course of practical research, many design themes aimed at fostering creativity have been proposed from various perspectives. In the research, the data

questionnaire analysis was carried out on the project evaluation work, and the well-designed implementation plan brought about the improvement of problem optimization for the design results. The impact of these results can be scaled up to form standard service target populations.

Furthermore, when considering the changing design theme, its effective impact remains. Cultural research implications for expanding knowledge in subject areas suggest that successful implementation programs may focus on the development of cognitive skills and the heuristics involved in subject area application. The impact of developing creativity and areas of new directions for future research (Scott, Leritz, and Mumford, 2004), questions raised for practice can be effectively addressed through knowledge areas.

Creativity is at the heart of design progress and one of the driving forces that lead social development. The practice of creativity design promoted by knowledge science relies on the cross integration of different disciplines. The comprehensive, systematic, and penetrating knowledge formed by the cross-discipline can effectively solve new problems and challenges faced by mankind.

Design is an act that connects all the elements of the system as a whole and is interconnected as a fact. The clothing industry developed under the guidance of the theory of knowledge disciplines is the product of the interdisciplinary integration of chemistry, materials, technology, culture, and electronics. Cultivate innovative thinking and use scientific methods to solve complex problems in a multi-disciplinary cross-integration model. Knowledge defends the truth in the process of constant flow. Under the theoretical guidance of knowledge science, the design of cultural inheritance is practiced, and the clothing semantics of cultural connotations are expanded.

The relationship between skill acquisition and creativity is seen more by intellectual disciplines as a synergistic relationship than a competitive relationship (Bourgeois-Bougrine, Buisine, Vandendriessche et al., 2017). Creativity training now links creative thinking skills in different fields and pays more attention to the practice content of multidisciplinary knowledge. Research results and skills based on knowledge subject areas are considered essential for creative research, and thinking and using content in creative ways is seen as an effective way to enhance knowledge areas and skills acquisition.

### **6.3.3 Contribution to the apparel industry**

The multi-dimensional expansion design of traditional cultural language in design practice can bring economic and cultural value in a relatively short period. The design and research and development of clothing products containing oriental ink elements can promote the development of the cultural market and inject vitality into the industry. The research on the inheritance form of ink and wash clothing has effectively promoted the design and positioning of the clothing design market. The development of this design language is to use modern ideas and methods to infer the design, making it a language that expresses the designer's language and inherits the culture.

Our philosophy is to continue exploring the visual language and design rooted in Chinese culture. We will hire new partners to add a fresh perspective to our developing team.

We will gather a group of designers who share similar values, passionate about design, and want to grow together. In-depth tracking is carried out through the design works, from the initial design to the future trend of analysis and judgment. Consider the life cycle, pricing, development, and promotion of these culture products. We hope that one day, we can help export Asian culture to the world through the design of brands.

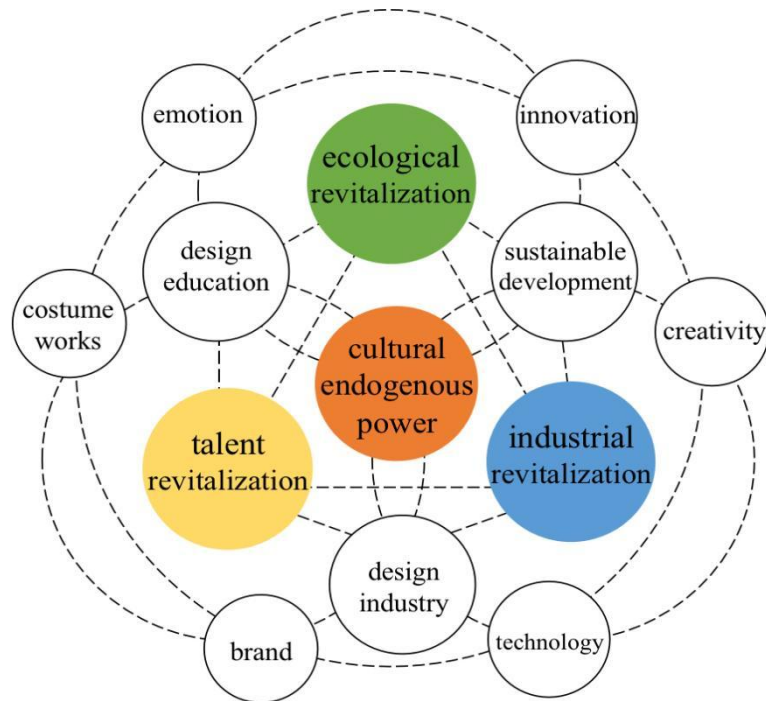


Figure 36. Revitalizing culture drives sustainable development of industry and education

Cultural revitalization drives sustainable development of industry and education (Figure 36). The cultural and creative industries have the following three characteristics:

- Knowledge intensive: Cultural and creative products take culture and creative concepts as the core, which is the materialized expression of human knowledge, wisdom and inspiration in specific industries, and talents and technology constitute the cornerstone and driving force of industrial development.
- High added value: technological innovation and research and development belong to the high-end links of the industrial value chain, once cultural and creative products are recognized by the market, they can be disseminated globally, the market value is doubled, and the corresponding derivatives market can be expanded.
- High degree of integration: Cultural and creative industries are the products of the integration of economy, culture and technology, with a high degree of integration, strong penetration and extensive radiation, which can not only drive related industries and promote regional economic development, but also radiate to all aspects of society and enhance the cultural quality of the people.

### 6.3.4 Contribution to fashion design education

Learning is the process of achieving creative and interactive transactional outcomes between

people and knowledge. Our goal is to deeply establish the relationships between theory and practice, the maker and the audience, the painting language, and the designer, and between aesthetics and design. There are two experiences and advice for designers that are just starting their design careers. One is to learn and the other is to practice. In the beginning, you need to improve your awareness of design and concepts. Then you need to practice repeatedly through a variety of cases until you can find your insights and understandings (Boucharenc, 2006). The ability to develop creativity in such a practical process is the most important component of art and design education.

The expression of self-cultural language produces a profound understanding of aesthetics, which can be achieved by creating regular designs. Through the cultural information collaboration supported by the practical platform, breaking the spatial boundary of teaching and seeking the integration of multiple forces into education. Teachers should have the experience to guide students to sort out the rhyme of aesthetic categories from literary theory and design cases and to deeply analyze its connotation, extension, and perception. This allows students to observe higher levels of design motivation, predict possible solutions for a given design task, and evaluate their design results.

Design education training should be academically oriented to lead the cultural direction of the market. Be good at inheritance to pass on to the next generation. The information collaboration and practice platform is the support, breaking the spatial boundary of teaching and seeking the integration of multiple forces into education. In particular, talent development should focus on shaping competitiveness, helping students to find their best self, and focusing on what they do best and what society need in the future. We must not forget the original information to open up the future. Incentive students and teachers to actively participate in international professional exchanges, academic seminars, and design competitions. Communicate and cooperate with professors from world-renowned schools to understand the dynamic information of cutting-edge fashion.

## **6.4 Extension of Research Contributions**

Through design methods and case studies to present the produced design products, the research results are not limited to the product itself, but also the application of creative design methods to drive more possible cultural design directions. Expanding the wider application of design methods, and creative practice leads to enlightening the cultural elements of different countries and the various possibilities of painting language design. In the process of global integration, we continue human civilization through design activation, highlight the cultural richness that retains differences, drive countries to invest in in-depth design practice to study their cultural connotations, and continue the cultural wisdom created by human beings.

### **6.4.1 In-depth design of local items**

Elements and painting are the application of tangible images and invisible language in the design, which is of great significance to contemporary culture and artistic creation. Under the leadership of designers, promote the creation of art and design fostered by “local” culture. Analyze the development of cultural heritage in different historical and cultural contexts, and promote new endogenous power to ancient culture through design activation. The



far-reaching significance of activating the vitality of this powerful internal rising force is the focus of the exposition and case study conclusions of this paper.

Culture has regional characteristics, and design serves the good life of human beings. The practical research of the case is based on the local area, and the method can radiate to the relevant research of many countries. Excavating traditional elements to make it a cultural project for design research, deeply understanding cultural emotions to carry out creative design practices, paying attention to refining the unique painting language of the region and integrating it into the fashionable design, becoming the inheritance of this cultural element and painting in the design process.

In Asia, people's eating habits, clothing culture, living habits, and cultural customs are similar. Share the commonality of people's lives in common living areas, narrow people's distance, and promote a community with a shared future for mankind. The creative approach focuses on the culture of a particular region and provides cases for the inheritance and development of the cultures of neighboring countries. Designers focus on the cultural creativity of their own countries and let other countries see the prospects and possibilities of applying this design method to their own countries.

## 6.4.2 Expand the application of design methods

The combination of art form and design is the trend of contemporary design development. It is under the influence of fashion trends that more and more young artists and people with unique preferences for art can be integrated into the vision of art and fashion popularity. In the process, it is necessary to integrate and retain the unique personality of one's own culture, which is the most important preservation of cultural progress and uniqueness.

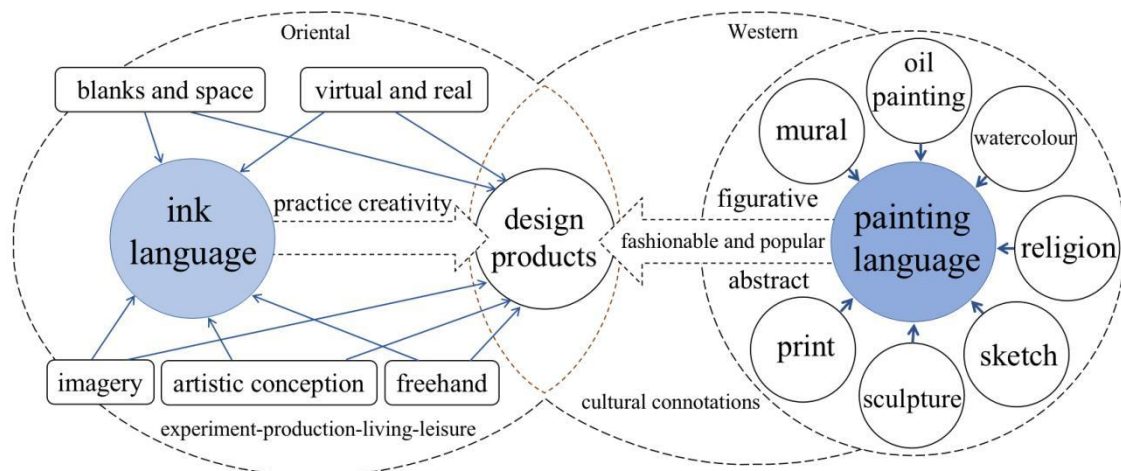


Figure 37. Research contributions to extend painting language design methods

Art forms are ever-changing, and the interaction between art and design develops through continuous innovation. Incorporating unique elements into design development is a process brewed in the development of art and design. Discover the application methods generated by the development of cultural semantics so that they can have an impact on a broader scale. The design methods proposed in this research and the design cases based on model guidance present a complete story and emotional design work, allowing people to



appreciate the charm of culture in their interaction with the product.

With the vigorous development of fashion design, painting, as a formal language of design research, has become an important research object. How the design language of ink painting has developed in other countries, and the condensation and summary of concise formal language can be said to have Western characteristics in contemporary art (see Figure 37). It is more important to guide designers to explore their own “localized” painting art and expand to the field of design to have a far-reaching impact. Ink case studies inspire different kinds of painting in other countries to expand their native painting languages, such as oil painting, watercolor, and wall painting. Through design deconstruction and language analysis, the image of these paintings has become a new design language applied to products for promotion, just as literature research explains that these paintings are not used directly. The value and artistic status of painting language are enhanced in the continuous development of design, and culture is promoted on the international stage through design.

### **6.4.3 The scope of cultural radiation**

The exchange between East and West met on the ancient Silk Road, and this intersection did not lose each others cultural charm but integrated and strengthened the cultural vitality of one’s own life. This difference also strengthens the appreciation of Eastern and Western cultures for each other. The development of culture brings together the changes and summaries of different historical periods, and then integrates and reflects them into a whole, which is a long-term cumulative process of history. Let the cultural relics in the museum not just be a display, but into people’s lives and nourish the soul. This research provides an awakening to protect the culture and allow the creative design to continue the diversity of cultural development. Starting from people’s hearts, they externalize their design works to become people’s cultural confidence. Embodying the inner spirit through the external image is the embodiment of cultural progress driven by the internal dynamics of culture.

The design thinking methods presented in this study, and the design cases derived from them can lead to the dissemination of cultural inheritance research around the world. Each country has its unique cultural elements, just like symbols that represent the cultural image of the country and the nation. Design activities are not only limited to expanding the development of one’s own national art forms, but also to applying design methods to the cultural design of different countries. From an emotional point of view, designers from different countries explore the story of local cultural elements and integrate them into the design. Extend to different countries, go deep into the cultural perspective, and create cultural and creative products of your own country. Through design, awaken the wisdom of ancient culture, design excavation, and rescue, so that more people can enjoy the traditional culture.

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# Chapter 7

## Conclusion

### 7.1 Answer for Major Research Questions

#### 7.1.1 The expansion design of cultural elements

The combination of tradition and modernity is the driving force that promotes cultural development. The great wisdom of traditional is extracted elements from nature and the expansion of culture transforms them into contemporary fashion through inherited design forms. We use clothing as a carrier to explore ways and means of cultural inheritance. To study the relationship between the pattern, color, material, and internal culture of clothing and traditional Chinese solar terms and festival. Theory guides design practice, following the contemporary design inheritance of the spirit of nature. It is important to perpetuate the meaning of tradition through design, so that the culture continues. Never let excellent culture have a distance from our lives, and we must not break the vein of culture.

Traditional culture must not only be inherited in design, but also must be innovated. Efficient practical design also enables the sustainable development of cultural heritage. Visual design continues to evolve, borrowing 3D printing technology to strengthen the application of cultural emotions in people's daily life and production. Luminous stationery products display the information of culture spirit and aesthetic appeal, greatly promote the sustainable development of culture heritage, and bring cultural identity to users. To awaken the younger generation's participation and interest in traditional culture. The application of Chinese traditional elements in modern design through the inheritance and development of consciousness, the use and expansion of forms, the extraction and derivation of textures, and the grasp and inheritance of colors.

Different cultural images can trigger different cultural emotions. The first visual impression of the product is a cultural image with a sense of belonging. Traditional culture has become no longer boring and has gradually become rich and interesting in form and content, and young people's cultural self-confidence is gradually increasing with research,

striving to be the inheritors of “traditional beauty”. Contemporary young people have become the main force for the development of traditional culture, and young people are more willing to assume the role of inheritors of “traditional culture”. Influence others through their own words and actions, let more people know and feel the beauty of traditional culture, and show their national identity in daily life.

### **7.1.2 Design expansion of ink language**

The design language is acquired by the creative exploration of the art world, such as the shape, texture, quality, characteristics of visual art. The theme design and practical exploration are based on the cultural positioning of experimental ink. Experiments show that the mutual penetration of contemporary design concepts and the design language triggered by ink can enable design works to show profound cultural charm. Unlock the design language through ink practice and provide educators and students with practical creative design resources.

The design tasks developed with experimental ink are active, and the uncertainty of the ink language unleashes the designer’s thinking. Ink can achieve adaptive changes in the design of actual applications, it can intuitively generate ink-water images, and also refine the design language to satisfy people’s current cultural needs and sense of belonging. Design practice is based on the cultural characteristics of regional design and focuses on inheritance activated by design thinking. The ink image of the culture is communicated in the process of realizing the user experience.

## **7.2 The Value of Research**

Research has always been carried out around the expansion of cultural design and innovative design. Based on the traditional cultural symbols, the theory of auspicious semantics in pattern decoration, and the practice of creative semantics of cultural symbols in apparel design, the Items-Activation-Inheritance (IAI) model was derived. In the practical research, the design idea of the model is followed, and the refined design model is designed and verified, and the auspicious semantics and spirit of the culture are preserved. The way of thinking in harmony between man and nature in oriental culture is applied to modern design works, which is the inheritance and promotion of modern design works in the process of innovation and development.

The IAI model approach focuses on the understanding of tradition and the issue of interactive creativity, and is a redesign of the inherited form of traditional cultural and artistic ideas. The study of creative design to expand the application and inheritance of oriental aesthetics and philosophy in modern style design works. This model derives from the empirical study of the interaction between traditional culture and art creative design; it focuses on the process of creative practice and design work and allows the sustainable development of recycling between culture, art, and creativity.

Creative thinking triggered by knowledge science effectively extends the existing cultural value to the design field, making the design works more likely to arouse emotional resonance. The uniqueness of cultural semantics is promoted to the public through design, relying on the expression of design to inherit the emotion of culture, and will improve the

level and quality of cultural communication. This study innovates how to obtain design language with cultural characteristics in creative practice, and it can be a source of inspiration for designers in the process of design conversion. Innovation triggered by creativity enriches people's lives while conveying a sense of culture and promoting the progress of fashion design.

### **7.2.1 Value to researchers**

For the cultural heritage design research of visual form, to a large extent, what needs to be displayed is the information conveyed to the public through vision. Traditional culture needs the expression of visual language. As a cultural form, research contributes the wisdom of oriental culture, provides design researchers with a perspective to observe and understand the east, and promotes cultural prosperity and civilization progress.

In the process of historical development, cultural heritage has various forms. Ceramics, embroidery, architecture, poetry, and songs will require many aspects of exploration and practice by researchers in different fields in the future. Traditional culture plays a very important role in contemporary design communication, providing researchers with unlimited space for research and association. The refinement of visual design and the rational use of traditional culture continue to continue the vitality of traditional culture.

In recent years, Guochao (The popularity of local culture) has provided many opportunities for the cultural market. Many clothing brands have launched the Guochao series, and made clear the direction of product development. This fashion is part of the entertainment life of young people. In the design practice, researchers continue to closely explore traditional excellent culture, and communicate with young groups to stimulate the vitality of culture. The sales data of major platforms also show that cultural clothing is constantly winning the love of young people. Providing more advanced cultural output is not simply copying traditional culture.

When researchers are engaged in contemporary design research, the visual understanding of traditional culture should not only stay at the external level, nor should they simply pursue the form of beauty, but should pay attention to the cultural connotation conveyed by the visual form. Guide researchers to in-depth design in line with the development of the times, to avoid overdraw consumers' enthusiasm for culture. The connotation of quality, technology, and culture has been comprehensively improved. Ensuring the continued cultural positioning of the product is the foundation of development. No matter how the market changes, consumers' basic needs for cultural products will not change. The practice integration of these traditional visual forms enables the inheritance of traditional culture and satisfies the aesthetic feeling of vision and soul. Practice needs the support of the theory. For practical research, it is necessary to summarize, record, adjust, and form a theoretical framework to give connotation and spirit.

### **7.2.2 Value to designers**

Traditional culture has a long history and has penetrated all aspects of production and life. Traditional culture affects designers' design thinking, ideas, and behaviors. The main body of

art is human, and traditional culture influences the art design in turn through the influence of the designer. Being able to inherit and carry forward Chinese traditional culture in design works depends on the designer's attention to Chinese traditional culture. Although the design products have different styles and different design methods, they all show the characteristics of the nation. The more unique the characteristics, the more colorful the culture can be.

Creativity education is a factor in continuing a sustainable cultural and fashion industry and improving young designers' judgment ability and cultural awareness of the future's vast possibilities. In the practice of higher education design, systematically integrate the discipline theory of classical culture, such as effectively discovering, analyzing, and incorporating multiple sources into the development of design thinking.

Synchronized with the fashion of society, creative traditional clothing style. Designers should pay attention to the cultural image in clothing when making artistic creations, and be good at using new styles and fabrics to recreate. Some designers boldly carry out innovative transformations based on traditional elements. This requires designers to improve traditional styles and retain the artistic conception of culture. For example, the waist-in-waist design of women's clothing shows curvaceous beauty. The solemn temperament of the traditional clothing is retained, and the design is improved to create a skirt style. The design has been transformed into a low neckline, sleeveless and open back, forming a combination of tradition and modernity.

### **7.2.3 Value to students**

Clothing is one of the important presentations of traditional culture, and the development of clothing in cultural trends is inseparable from the nourishment of culture. For young groups, to continue to gain their participation in culture, in addition to the original design, it is also necessary to continuously improve the performance of the product (Carsten, 2014). For example, make clothes that are suitable for the younger generation to wear in daily life. In the face of young consumers who are increasingly pursuing personalization, traditional products that lack innovation and differentiation will eventually face the fate of being eliminated. To make cultural products with novel designs, sophisticated fabrics, and higher cost performance.

Technology changes life, and cultural inheritance also needs the support of technology. Design learning is integrated and needs to be combined with various resources to be effectively used in practice. In the next step of research, young designers enhance the value of culture by improving the technical content and product added value (Kreitler and Casakin, 2009). The design of clothing structure should be scientific and reasonable, easy to process, and meet the requirements of modern large-scale industrial mass production. The design of clothing modeling details is full of cultural inner interest, guiding students to seek inspiration from traditional culture, and introducing the color and texture of cultural heritage into clothing design, making the work full of fun and romance.

In the internationalization of culture, traditional culture first has local advantages, and it has a deeper understanding and cultural identity for domestic consumers. Therefore, in the process of fashion design teaching, it is of certain practical significance to convey the design concept of cultural heritage to students. In the teaching of a fashion design course, this

concept is used to guide students to make clothing style design and structural design to meet the comfort of wearing as the starting point. We should try our best to consider satisfying the function of emotion and comfort. At the same time, we must also realize that the relevant design is not a simple symbolic application. Only by integrating personalized design and cultural identity can we endow the product with the essence of culture and form a product with a unique cultural trend. In the future, with the continuous growth of the student generation, there will be more original cultural products rich in traditional cultural connotations and more in line with the needs of Chinese people, forming a stable cultural trend and interpreting oriental fashion.

### **7.3 Limitations and Directions for Future Studies**

In the future, we will always study the design and innovation of traditional culture. Focusing on one thing may ignore another. Eliminating misunderstandings and prejudice, strong vitality, and attractiveness are the prerequisites for culture to go global. Innovating the mode of cultural dissemination, expanding the channels for going global, and more importantly, we must fully grasp the content of culture. Contribute cultural wisdom to the prosperity of world culture and the progress of human civilization.

The design of cultural language will be a knowledge system that realizes the simultaneous development of technology product design. It is the linkage of all aspects of knowledge disciplines. It is multidimensional and needs to coordinate the cooperation of all parties to produce a new cultural design in a new era. The responsibility of cultural inheritance needs to expand and link different disciplines, pass on the cultural language of their respective fields, and make the world more colorful. It is hoped that when the accumulated method in a research field is applied to another field, real innovation will happen more frequently. Thus, the cycle of creativity and design practice is perpetuated.

Additional and future works include the improvement of the IAI model proposed in the text to further improve its accuracy and its ability to promote the integration of traditional cultural elements in modern creative design. Based on local research, we do our best to achieve cultural richness and diversity in other countries. Requires the joint participation of designers from different countries to discuss research and exchange, express the design semantics belonging to one's own country, and apply it to the transformation and application of visual design. We are hopeful that in the future, the IAI model will become a valuable tool for the incorporation of traditional cultural elements into design field and promote its visibility in our society.

### **7.4 Suggestions for Further Research**

The core of today's design is the design of caring for people. The cultural image conveys the design concept through vision, which expresses the product's characteristics and the purpose of inheritance. The starting point of the design is to put people at the center, conform to the times, and have caring emotions. Practicability is the aspect that consumers care about. They pay more attention to the inheritance of the visual image and cultural emotion of the product. The direction of practice needs to reflect the use of value and representative culture. In the period of transition from factory mass production to design focusing on emotional creation,

creating creative inheritance must be the top priority of cultural development. With the development of science and economy gradually caring for humanities, the homogeneous production of mass commodities supported by technology has gradually transformed into a design that focuses on caring for specific groups of people in the market. The idea of making consumers recognize, interact and understand the product is a more complex, richer, and more comprehensive concept.

Further study the structure and style of traditional clothing. Traditional clothing styles are characterized by solemnity and broadness, such as loose clothes and buttons in the Han and Tang dynasties, pursuing straight-cut straight lines and a steady form style. With the progress of society and the accelerating development of people's life rhythm, traditional styles have not adapted to modern living habits and fashion pursuits. To adapt to the modern and free fashion concept, based on not losing tradition, the basic style is boldly integrated into the sleeves of the suit in modern design, which is a bright spot to enhance the spirit of traditional culture. Product classification and special research, expand the research on apparel-related products from a more professional perspective. Design representative traditional clothing into styles suitable for the moment, such as skirt styles or split styles, while satisfying modern fashion and traditional classics. Judging from the current development trend of fashion design, the cultural concept of fashion design has become the mainstream, and its style and concept are developing in the direction of internationalization.

Further study the combination of traditional and technology. The traditional patterns are rich and colorful, and can be redesigned and made according to actual needs. The traditional embroidery technique has bold composition methods and colorful clothing styles. Animals, plants and geometric patterns are the main elements, with exaggerated, abstract, naive, fantasy and fun concepts. A lot of fantasy myths, such as the bird with butterfly wings and the fish on the tiger, are presented in the design of Chinese clothing, creating various vivid artistic images. The pattern is not only flat, it combines its three-dimensional with the design structure. Thinking about the functional design of patterns, the design transition from supporting roles to protagonists.

In the future, according to the needs of different people, the leisure and entertainment and functional cultural consumer products can be reasonably allocated. Fully understand the needs of families and push customized cultural products, expand the promotion of culture through short videos and other communication channels, and expand the audience of culture through consumption. Research the preferences of different age groups, realize the precise delivery of cultural products with different experience durations, improve efficiency and increase the attention of design.

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# Appendix

## Case Study 1

**Notes:** The case study questionnaires is written directly offline.

The following is a partial presentation of the Case Study 1 questionnaire.

### **Fashion design questionnaire based on insect culture elements**

The screenshot documents of the paper questionnaire are as follows:



Dear Madam/Sir,

I am a researcher focused on cultural development. A questionnaire survey is being conducted to study the design of cultural elements of clothing. Hope to occupy your time, get your valuable opinions on cultural emotions, get your valuable suggestions and views can help designers, cultural design researchers effectively improve the design communication of cultural emotions, please fill in the following questionnaire materials.

The questionnaire was anonymous and that the data collected was valuable for culture study.



Gender: ☐Male ☐Female

Age: ☐15-20 ☐20-25 ☐25-30 ☐30-35 ☐35-40 ☐40-45 ☐45-50

Occupation: ☐designer ☐teacher ☐student ☐cultural-related worker ☐other

Please make your choice based on the clothing prototype design provided and the 7-point quantitative indicator.

Seven-point Likert scale  
(1 = strongly disagree, 7 = strongly agree)

First-level indicators:

**Basic Design level**

**Items Application-level**

**Inheritance Meaning level**

**Category 1: Basic Design level****1. Practicality**

Whether it is practical and convenient to wear. Efficiency in everyday wear.

☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7

**2. Fashion**

Fashionable and trendy, innovative, and outdated. It reflects the uniqueness of personality.

☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7

**3. Comfort**

Comfort, from the visual and actual wearing experience. Appropriate, suitable, convenient degree.

☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7

**4. Model**

The production form and craftsmanship of clothing match the degree of wearing and reflect the character.

☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7

**5. Color**

Is the color comfortable? The degree between stimulating and soothing.

☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7

**6. Style**

Whether the overall style of the clothing is suitable for you, or the degree to which you will choose this clothing.

☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7

**7. Material**

The choice of fabric is mainly cotton and linen materials, natural, environmentally friendly, and close to the skin.

☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7

**Category 2: Items Application level****8. Handicraft**

The look of the cultural elements adopts a handmade shape, which retains the warmth of the hand, and you like this cultural expression to the extent.

☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7

**9. Auspicious**

The image of the elements has cultural meanings, and these meanings are deep and have beautiful auspicious expressions.

☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7

10. Atmosphere

The atmosphere is set off, the role of the costume drives the atmosphere of the environment. Sense of involvement, sense of immersion.

☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7

11. Smart point

Highlights, uniqueness, strong recognition. The degree to which it is distinguished from other clothing. There are memory points that make people impressed.

☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7

12. Constitute

The redesign of the elements, the elements that make up the overall finish of the overall garment.

☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7

13. Inspiration

The source of inspiration, the guiding drive, and the cultural spirituality conveyed by the clothing in the actual display process have become the driving force to inspire and lead other industries.

☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7

**Category 3: Inheritance Meaning level**

14. Story cognition

Tell the story of culture through clothing, inherit the cognition of culture through stories, tell historical and cultural stories with physical clothing, and embody inheritance, interaction and crossing.

☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7

15. Connotation

Through widely recognized elements of festival culture, the design expression of connotation is rediscovered and strengthened.

☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7

16. Identity

Whether it is unique in the region, focuses on the inheritance of culture, and wears with identity authentication.

☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7

17. Belonging

The uniqueness of the culture is the emotional sense of belonging, the costume has the feeling of home, happiness and comfort.

☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7

18. Temperature

The sense of temperature, the inheritance of culture is psychological comfort, clothing has the temperature to protect the skin, and psychological and emotional comfort.

☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7

19. Ceremony

The uniqueness of clothing is a sense of ceremony, prayer, and remembrance in a specific environment and occasion. Witness important moments in growth with people.

☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7

**Thank you for your time and for your contribution to cultural heritage.**

# Case Study 2

**Notes:** The following is a partial presentation of the Case Study 2 questionnaire.

In this part, respondents are asked to select the answer from the choice provided.

## **Questionnaire on purchase intentions for “Luminous Stationery”**

The documents of the paper questionnaire are as follows:

Hello, we are conducting research on the purchase intention of luminous stationery products, thank you for taking the time to fill out this questionnaire.

This questionnaire is filled out anonymously, and all responses are strictly confidential and only for academic research purposes. There is no right or wrong answer for all answers, please answer according to the actual situation.

Your participation was crucial to this study, and we would like to thank you for your help.

1. Your gender: [Single selection]

- ☐ Male      ☐ Female

2. Your age: [Single selection]

- ☐ less than 18      ☐ 18~25      ☐ 26~30      ☐ 31~40  
☐ 41~50      ☐ 51~60      ☐ above 60

3. Please select a city: [Fill in the blank]

---

4. How often do you buy stationery [Single selection]

- ☐ 1 - multiple times / month  
☐ 1 - multiple times / quarter  
☐ 1 time per year  
☐ More than 4 times a year

5. The price of the stationery you buy is mainly located in [Single selection]

- ☐ less than 20 yuan  
☐ 20-39 yuan  
☐ 39-60 yuan  
☐ 60-100 yuan  
☐ 100-300 yuan  
☐ more than 300 yuan

How will the following situations affect your purchase intentions?

(1 means to give up the purchase, 5 means to buy resolutely, and from 1 to 5 means that the purchase intention gradually increases)

6. The pattern of the product is very unique and has cultural characteristics

☐1                      ☐2                      ☐3                      ☐4                      ☐5

7. The shape and silhouette of the product is very unique and fits my aesthetic

☐1                      ☐2                      ☐3                      ☐4                      ☐5

8. The color of the product matches my aesthetic

☐1                      ☐2                      ☐3                      ☐4                      ☐5

9. The appearance of the product is more attractive than the appearance of ordinary products

☐1                      ☐2                      ☐3                      ☐4                      ☐5

10. The application of 3D technology is very fascinating

☐1                      ☐2                      ☐3                      ☐4                      ☐5

11. Products with 3D technology are more accurate than traditional processes

☐1                      ☐2                      ☐3                      ☐4                      ☐5

12. 3D Technology can help better solve the problem of expressing the cultural message of the product

☐1                      ☐2                      ☐3                      ☐4                      ☐5

13. Technology helps the cultural expression of the product to be more prominent

☐1                      ☐2                      ☐3                      ☐4                      ☐5

14. The versatility of the product is more practical than traditional stationery

☐1                      ☐2                      ☐3                      ☐4                      ☐5

15. The function of the product is more convenient than traditional stationery

☐1                      ☐2                      ☐3                      ☐4                      ☐5

16. The material of the product is of better quality than traditional stationery

☐1                      ☐2                      ☐3                      ☐4                      ☐5



17. The glow function increases my frequency of use

☐1                      ☐2                      ☐3                      ☐4                      ☐5

18. The product design style is remarkable

☐1                      ☐2                      ☐3                      ☐4                      ☐5

19. The cultural symbols of the product appeal to me more easily

☐1                      ☐2                      ☐3                      ☐4                      ☐5

20. Product symbol image is more valuable

☐1                      ☐2                      ☐3                      ☐4                      ☐5

21. Products can get more emotional satisfaction

☐1                      ☐2                      ☐3                      ☐4                      ☐5

22. The material structure is environmentally friendly, which can increase my willingness to buy

☐1                      ☐2                      ☐3                      ☐4                      ☐5

23. The combination of material structure and regional characteristics can increase my willingness to buy

☐1                      ☐2                      ☐3                      ☐4                      ☐5

24. I am willing to purchase the product

☐1                      ☐2                      ☐3                      ☐4                      ☐5

25. I would like to refer a friend to use the product

☐1                      ☐2                      ☐3                      ☐4                      ☐5

Thank you for your time and dedication.