

Construction and Design Applications of the Cultural Genealogy Chart for Nanhua Yi Embroidery

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ABSTRACT

Objective: In view of the aging of the inheritance population, the homogenization of products and the lack of cultural and creative integration faced by Nanhua Yi embroidery, the cultural genes in its intangible cultural heritage are excavated, and the translation path and product development mode conforming to the contemporary context are explored to promote the living inheritance and cultural resource transformation of Nanhua Yi embroidery intangible cultural heritage. **Methods:** The embroidery patterns, colors and crafts of Yi nationality in Nanhua were obtained, and the core elements were extracted by pattern extraction and decorative meaning interpretation, and the database was established. Through market research, user questionnaires and interviews, the needs are clarified, and then symbol simplification, color innovation and process improvement are used to evaluate and optimize from the dimensions of cultural presentation and market feedback. **Results:** The traditional patterns such as sun pattern and fire pattern were extracted successfully, and the main colors were red, yellow and black with modern colors, combining traditional culture with manual embroidery. **Conclusion** This practice provides an effective example for the intangible cultural heritage of Yi embroidery in Nanhua, which is helpful to enhance its market competitiveness, assist rural revitalization and national culture dissemination, and provide reference for the integration of similar intangible cultural heritage.

Keywords: Nanhua Yi embroidery culture, Cultural gene translation, Gene pedigree map, Product design.

1. INTRODUCTION

Nanhua in Yunnan is a significant settlement of the Yi people. Due to its relative geographical isolation, the traditional styles, craftsmanship and patterns of Yi clothing have been well preserved. Among these, embroidery stands out as a distinctive ethnic emblem through its unique pattern construction, profound cultural heritage and delicate emotional expression. Its techniques and cultural significance have been included within the scope of intangible cultural heritage protection. Though the Nanhua Yi sub-group exhibits variations in garment details due to differing habitats, their embroidery shares common presentation methods and symbolic meanings. Carrying ancient ethnic memories and cultural DNA, it is hailed as 'living history' and 'visible chronicles'. Current research on Nanhua Yi

embroidery is largely embedded within broader studies of Yi ethnic clothing. Specialised investigations either focus on the cultural and aesthetic analysis of patterns and stitches, or explore historical and cultural aspects from perspectives such as clothing aesthetics. However, research centred on design innovation and practical application based on symbolic characteristics remains scarce. This research will construct a cultural genealogy map. Through archival collation, field investigations, and design translation, it will deconstruct the patterns and cultural composition of Yi embroidery. Employing contemporary design methodologies to integrate motifs, the study will explore avenues for merging these traditions with modern products. By uncovering underlying principles, it aims to identify innovative value and pathways for cultural transmission.

2. RESEARCH BACKGROUND

2.1 An Overview of Nanhua Yi Embroidery Culture

Nanhua Yi embroidery is a traditional craft created by the Yi people through centuries of productive and domestic practice. It embodies profound historical memory, spiritual beliefs and practical wisdom, serving as a vital material expression of Yi culture. Its patterns feature distinctive forms, rich colours, and profound cultural significance, constituting one of the core elements within the Yi cultural system. In composition, Yi embroidery emphasises symmetry and harmony, often using a central point or axis as the layout foundation to create a unified visual aesthetic, reflecting the Yi people's aesthetic pursuit of balance and order. The patterns exhibit meticulous, orderly detailing with fluid lines and rhythmic variations. Colour palettes predominantly feature high-saturation hues such as vivid reds, yellows, and blues, employing stark contrasts to create visual impact. These striking colours not only deliver pronounced decorative effects but also

carry specific cultural symbolism [1-2]. Culturally, Yi embroidery is intrinsically linked to the Yi people's natural worldview and religious beliefs. Its diverse motifs encompass patterns like sun, fire, and mountain designs reflecting nature worship, alongside geometric, botanical, and zoomorphic symbols expressing life aspirations. The colour system primarily employs red, black, and yellow, paired with striking and profoundly symbolic combinations, as illustrated in “Table 1”. Technically, Yi embroidery employs representative stitches such as flatwork, lock stitch, and raised embroidery, adhering to the principle that ‘the needle follows the heart's intent, the thread embodies genuine emotion.’ This approach not only showcases exceptional craftsmanship but also channels the creator's sentiments and aesthetic sensibilities, as illustrated in “Figure 1”. Embroidery activities are frequently intertwined with folk rituals. Women learn the craft from childhood, and embroidered pieces are widely used in clothing, ceremonial occasions, and home décor. They serve not only as everyday items but also as cultural symbols in significant ceremonies, embodying the Yi people's ethical values and collective identity[3].

Table 1. Primary colours in Yi embroidery and their symbolic meanings

Colour	Symbolic Significance
Black	Black, as the colour of the earth and mountains, symbolises depth, height, breadth and vastness
Yellow	Yellow is associated with light, beauty, and the future. Linked to bountiful harvests, it symbolises prosperity and fertility
Red	Red represents flames and the sun, symbolising passion

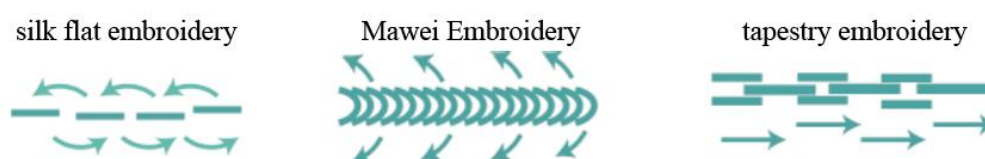


Figure 1 Demonstration of Yi ethnic group embroidery stitches.

2.2 The Current State of Cultural Heritage Preservation in Nanhua Yi Embroidery

In terms of the primary bearers of tradition, the embroidery craftswomen are predominantly middle-aged and elderly, with low participation among younger generations. Skill transmission has long relied on the narrow, intra-family method of ‘mother to daughter, mother-in-law to daughter-in-law,’ resulting in a singular channel of dissemination. Compounded by the outflow of young labour during urbanisation, the willingness

to learn traditional embroidery techniques has generally declined, intensifying the risk of a generational gap in transmission. Regarding the continuation of techniques, intricate stitches such as lock stitching and raised embroidery—demanding high skill and considerable time—are gradually disappearing. The accelerated pace of contemporary life has led younger embroiderers to favour simpler stitches, placing certain representative techniques at risk of marginalisation. From a product and market perspective, existing embroidered goods predominantly focus on apparel

accessories and small homewares. Designs often directly replicate traditional motifs, lacking effective integration with contemporary aesthetics and usage scenarios, resulting in pronounced homogenisation. Sales channels predominantly rely on offline markets and tourist souvenir shops, with weak brand development and market operation capabilities. Limited product value-added potential hinders industrialisation support. Despite intangible cultural heritage protection policies, the Yi embroidery sector lacks systematic training mechanisms, design innovation support, and market

resource integration. Inheritors face unstable economic returns, dampening their long-term enthusiasm for embroidery. Overall, while Nanhua Yi embroidery possesses profound traditional foundations, its developmental vitality remains insufficient. Innovative inheritance models and accelerated industrial transformation are urgently required to achieve its living preservation and sustainable development. The primary challenges facing Nanhua Yi embroidery and corresponding solutions are illustrated in “Figure 2”.

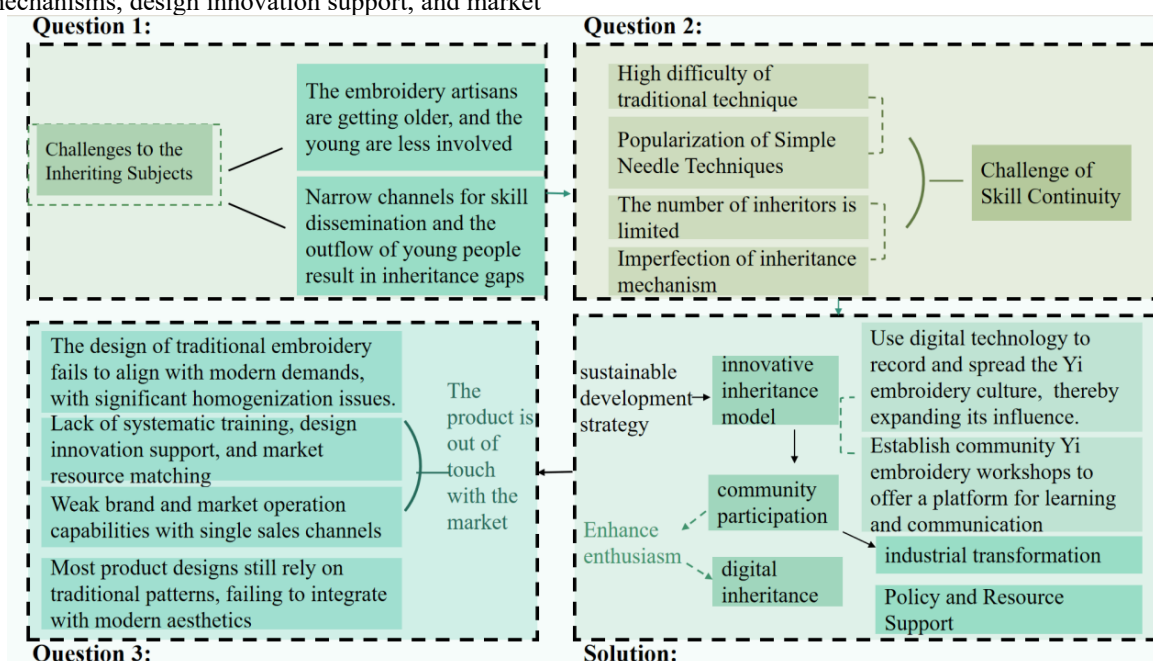


Figure 2 Current challenges facing Nanhua Yi embroidery and proposed solutions.

3. RESEARCH INTO THE CULTURAL GENES OF NANHUA YI EMBROIDERY AND APPROACHES TO CONSTRUCTING ITS GENEALOGY

3.1 Research Methods for the Cultural Genealogy of Nanhua Yi Embroidery

This study, grounded in the holistic cultural ecology of Nanhua Yi embroidery, employs an interdisciplinary approach to systematically identify and extract its cultural genes. Through extensive fieldwork, researchers immersed themselves in the daily life and ritual practices of Yi villages, observing embroiderers' creative processes firsthand. This enabled comprehensive documentation of the practical applications and

cultural symbolism of patterns, colours, and techniques [5-6]. Building upon this primary data, semiotic theory was applied to conduct a layered decoding and reconstruction of Yi embroidery elements. This analysis, examining dimensions such as morphological structure, colour semantics, and craft practices, identified characteristic combinations possessing cultural stability, continuity of transmission, and minimal semantic units.

3.2 Pathways for Constructing the Genealogical Chart of Nanhua Yi Embroidery Cultural Genes

From a biological perspective, genes are categorised as dominant or recessive. Dominant genes refer to those material morphological characteristics observable directly from the exterior; recessive genes denote implicit cultural

connotations such as spiritual concepts and value systems that cannot be directly observed [7-8]. Within cultural gene research, incorporating the three-tiered theory of cultural structure, spiritual culture may be classified as recessive genes, while social culture and material culture fall under dominant genes. In constructing the cultural genealogy of Nanhua Yi embroidery, the first step involves exploring its core cultural essence from a historical perspective, collecting, organising, synthesising, and restructuring relevant cultural factors. Subsequently, the distinct cultural

connotations and patterns reflected by spiritual, social, and material cultures are analysed. Finally, the cultural genealogy map of Nanhua Yi embroidery is refined through layered analysis, deeply exploring the artistic characteristics manifested across different levels. This provides theoretical underpinnings for subsequent design work based on Nanhua Yi embroidery [9]. The construction pathway of the cultural genealogy map for Nanhua Yi embroidery is illustrated in “Figure 3”.

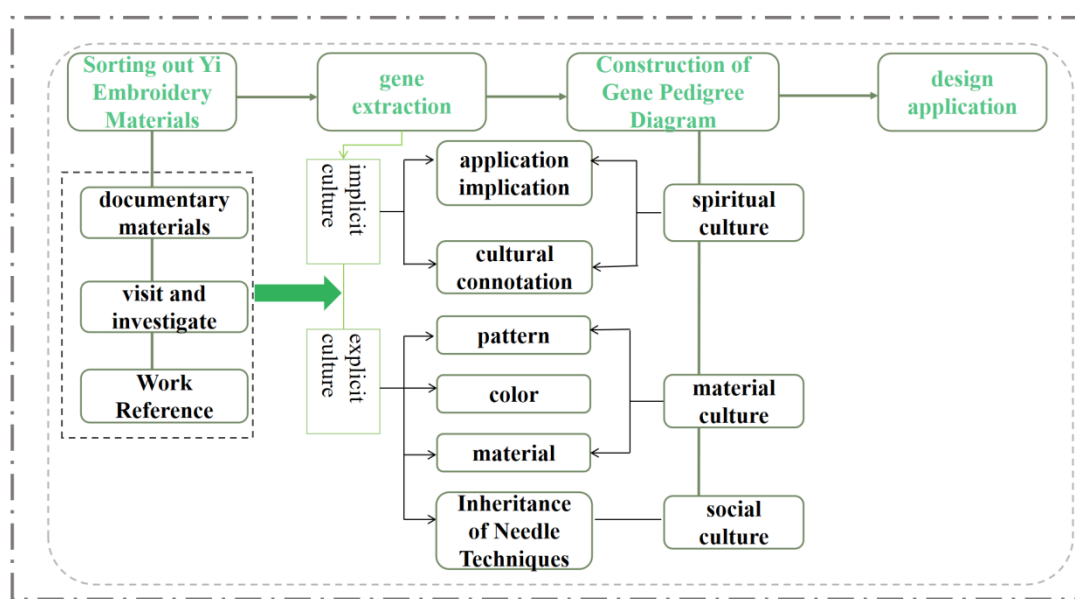


Figure 3 Pathway for constructing the genealogical chart of Nanhua Yi embroidery cultural genes.

4. ANALYSIS OF THE CULTURAL GENES OF NANHUA YI EMBROIDERY AND CONSTRUCTION OF ITS GENEALOGY CHART

4.1 An Analysis of the Core Cultural Genes of Nanhua Yi Embroidery

The cultural gene system of Nanhua Yi embroidery embodies the core memories and technical essence of ethnic culture, constituting a vital manifestation of its intangible cultural heritage value. This system may be analysed through two fundamental dimensions: cultural symbolism and technical origins. Within the cultural symbolism dimension, Yi embroidery patterns centrally express the Yi people's spiritual reverence for nature, ancestors, and beliefs. For instance, the circular sun motif originates from animistic beliefs

while symbolising light, life, and cosmic order. Animal patterns such as tiger designs are intrinsically linked to totem worship and ancestral veneration, serving as visual symbols of ethnic identity and generational continuity that convey profound cultural connotations of reverence for tradition and clan cohesion.

In terms of technical origins, the essence of Yi embroidery manifests in highly inheritable and distinctive craft elements. Take the “locked-edge stitching technique” as an example: not only does it ensure clear pattern outlines and structural stability, but its transmission through “oral instruction and heart-to-heart teaching” to the present day embodies the humanistic value inherent in skill inheritance. Similarly, the colour system built upon the foundational hues of red, black, and yellow originates from the availability of natural materials. It constitutes the ‘underlying grammar’ of Yi embroidery creation through its potent visual

expression and cultural symbolism. By analysing the interrelationship between these two dimensions, one can distil highly representative and irreplaceable cultural gene fragments within Yi embroidery.

4.2 Extraction of the Cultural Genes of Nanhua Yi Embroidery

4.2.1 Field Research and Collection of Primary Materials

This study employs an ethnographic research methodology, delving into Yi ethnic villages in Nanhua. Through participant observation, visual documentation and in-depth interviews, it systematically collects evidence of Yi embroidery's

practical application within folk rituals and daily life. Particular emphasis was placed on pattern morphology, colour combinations, and craftsmanship details. Over 200 embroidery samples were collected, alongside interviews with 32 practitioners. This established a primary database containing vectorised patterns, colour palettes, and stitching technique videos, providing authentic and rich source material for pattern extraction. This research further demonstrates the extraction process of typical patterns from field investigations and their translation pathways in innovative design, vividly illustrating the dynamic mechanism of Nanhua Yi embroidery's transformation from traditional vocabulary to a contemporary design context, as shown in "Figure 4" and "Figure 5".

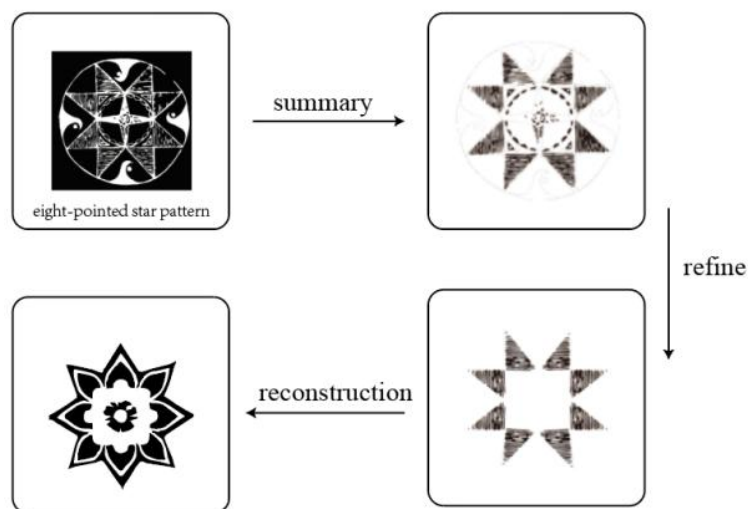


Figure 4 Innovative design process for the octagonal pattern.

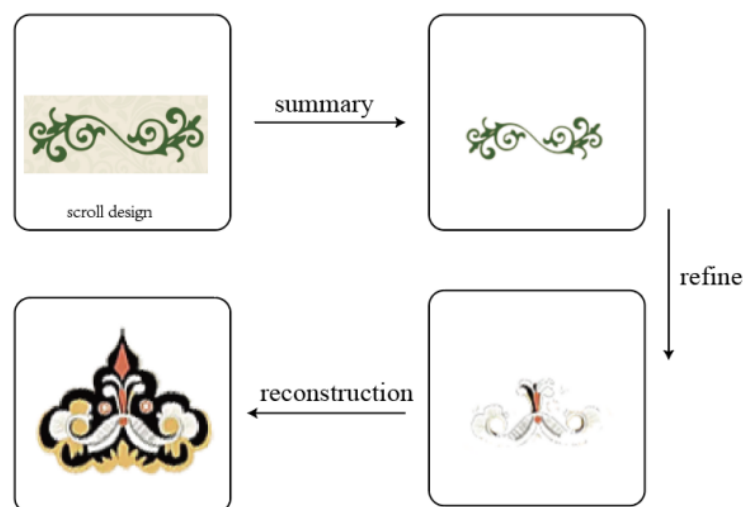


Figure 5 Innovative design process for scrollwork patterns.

4.2.2 Classification and Organisation of Cultural Symbols and Artistic Elements

Employing semiotic and artistic form analysis methodologies, the collected materials were categorised according to a dual-dimensional framework of ‘culture-craftsmanship’. The cultural dimension encompasses themes such as nature worship, ancestral beliefs, and life aspirations; the craftsmanship dimension covers needlework techniques, colour structures, and medium forms. Through cross-referencing, the cultural symbolism,

technical characteristics, and application contexts of each element were clarified. “Table 2” presents representative motifs from the cultural dimension alongside their interpretations, illustrating the visual forms and cultural significance of key patterns such as the sun motif, sun-moon motif, and Soma flower motif. “Table 3” details specific applications within the craft dimension, systematically demonstrating the decorative functions and cultural symbolism of ‘jiaoce embroidery’ across different sections of Yi ethnic group attire.

Table 2. Classification and interpretation examples of cultural genes in Nanhua Yi embroidery

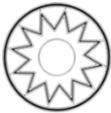





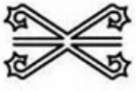



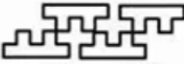





Category	Name	Form	Specific meaning
Nature Worship	Sun pattern		Sun patterns serve as cultural symbols for communicating with deities, possessing supernatural powers
	Sun and Moon Pattern		Express reverence for the heavens
	Sunflower pattern		Symbolising the beauty of Yi girls
	wave pattern		Awe for the great rivers and streams
Folklore and Legends	Soma pattern		Symbolising courage and love
Animal worship	Ram's horn pattern		Gratitude towards the animals upon which we depend for survival
	Crab-foot lines		Divine Worship
	crow's feet		To cherish the nomadic way of life
Special pattern	Fern pattern		Grateful for nature's bounty, we hope for a life free from want.
	Guozhuang Pattern		Aspiring to a life of happiness
	windowpane pattern		Pray for peace and safety at home

Table 3. Common application sites and cultural functions of ‘jumping colour embroidery’ in Yi ethnic group attire

Common application sites	Corresponding pattern	Cultural function
Embroidery on the lapel		Adaptive and dynamic, reflecting the wearer's aesthetic and cultural inclinations
Embroidered apron		Ornamentation that bears the symbols and narratives of families and tribes, perpetuating cultural heritage and signifying identity
Bow embroidery		Enhancing visual appeal, embodying auspicious blessings, adorning attire and elevating cultural expression
Embroidery on the back of a garment		Core ornamentation, featuring intricate and elaborate patterns, symbolising reverence for nature and ancestors
Embroidery on trouser cuffs		Enhancing trousers through refined detailing, reflecting the Yi people's production, daily life and customs

4.2.3 Identification and Extraction of Core Gene Units

From categorised materials, the researchers select genetic combinations exhibiting cultural stability, continuity of transmission, and minimal semantic units. For instance, the combination of ‘sun motif + lock stitch embroidery + red and yellow colour palette’ is regarded as a typical genetic unit, embodying the cultural connotation of sun worship and technical characteristics of needle-wrapping for shape retention and high-saturation colour schemes. Concurrently, they exclude unstable elements arising from short-lived trends or material variations to ensure the purity and representativeness of the genetic composition.

4.2.4 Dual-track Encoding and Digital Storage

The researchers establish a dual-track coding system for ‘culture-craftsmanship’, standardising the identification of gene units. Cultural gene coding employs the format ‘WH-Theme-Symbolic Element’ (e.g., WH-Blessing-Sun Pattern), whilst craft gene coding uses ‘JY-Type-Characteristic’

(e.g., JY-Needle Technique-Binding Edge to Stabilise Form). Through database construction, this enables the digital storage, retrieval, and visual management of gene units, providing structured data support for genealogy chart construction and design applications.

4.3 Construction of the Genealogical Chart of Nanhua Yi Embroidery Cultural Genes

The cultural genealogy chart visually presents the evolutionary trajectory and intrinsic connections of cultural genes, offering both an intuitive display of logical relationships between cultural elements and a reconstruction of their dynamic historical transmission. It thus serves dual academic and design purposes as both a ‘gene bank’ and a ‘cultural roadmap’. The Nanhua Yi Embroidery Cultural Genealogy Chart systematically presents the classification, coding, and transmission relationships of each gene unit, providing clear cultural foundations and creative guidance for subsequent design innovations, as illustrated in “Figure 6”.

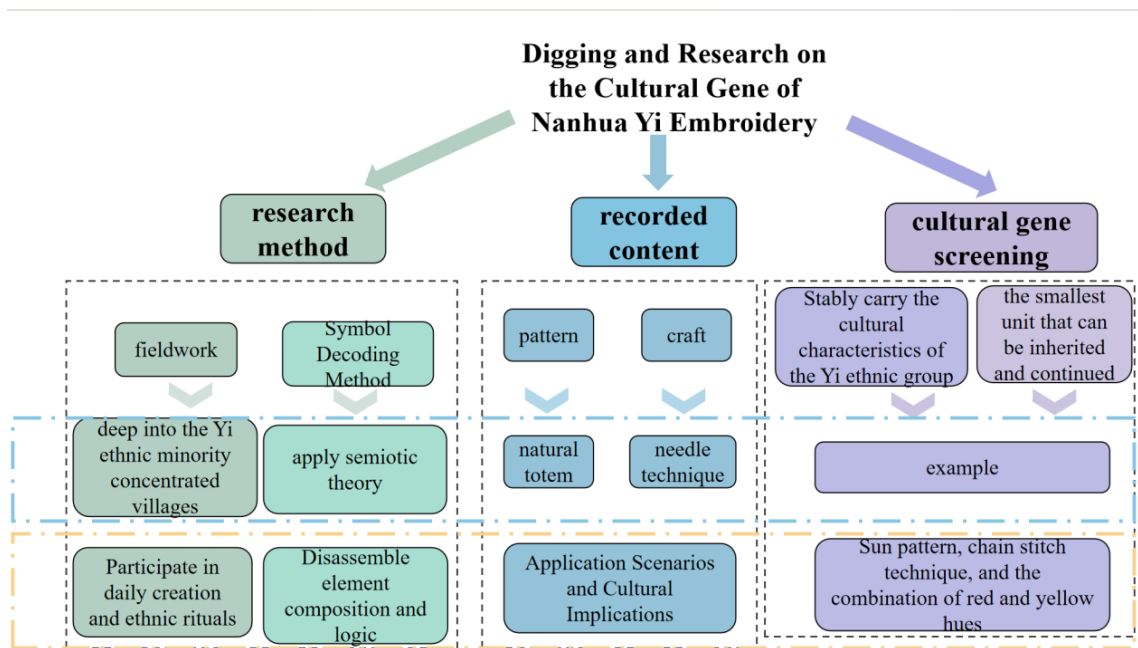


Figure 6 Genealogical chart of Nanhua Yi embroidery cultural genes.

5. DESIGN PRACTICE

5.1 Design Requirements Research and Positioning

To precisely define the design direction, this research systematically conducted investigations across three dimensions: culture, users, and market. The team immersed themselves in Nanhua Yi ethnic villages, actively participating in folk customs and engaging in in-depth exchanges with embroiderers and heritage bearers. They systematically mapped the practical challenges facing the transmission of traditional skills and distilled the cultural narratives embedded within core motifs such as the ‘sun pattern’ and ‘hearth pattern’ [10]. Concurrently, analysis of sales data for intangible cultural heritage-inspired creative products on e-commerce platforms, alongside competitive research, revealed a significant gap in the market for products that balance culturally light-touch expression with practical functionality. Guided by the findings of the cultural genealogy analysis, this research positions its design approach around ‘the contemporary translation and everyday integration of traditional heritage,’ unfolding across three innovative directions: Firstly, a daily accessories collection employing ‘subtle cultural symbol integration,’ applying Yi embroidery motifs to small items like earrings and brooches to foster cultural affinity through low-threshold, high-frequency use; Secondly, an experiential product

line for the cultural tourism market, developing DIY Yi embroidery kits and complementary cultural creations to heighten user engagement and cultural immersion. Thirdly, a collectible series targeting the premium gift market, combining classic Yi embroidery motifs with high-value materials such as silver jewellery and natural gemstones to create exquisite artworks possessing both wearable and collectible value. The process for extracting, restructuring, and redesigning the cultural DNA of Nanhua Yi embroidery is illustrated in “Figure 7”.

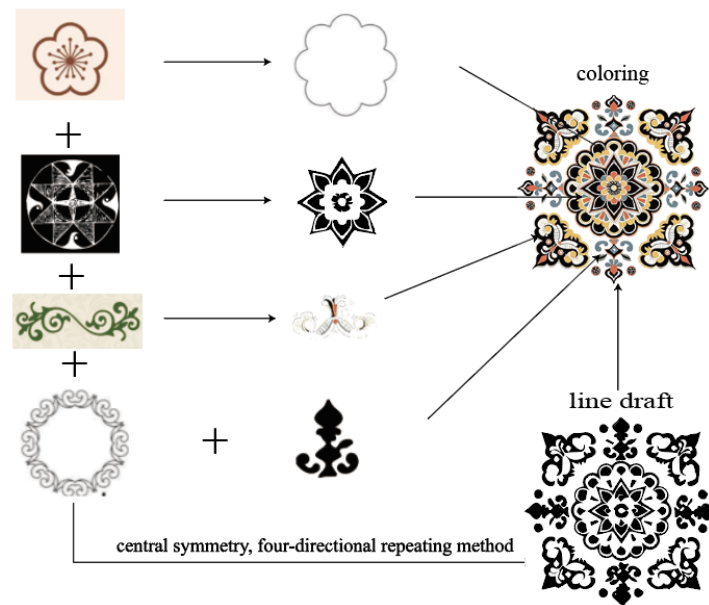


Figure 7 Pattern reorganisation and redesign.

5.2 Innovative Design Applications of Nanhua Yi Embroidery Patterns

This research breaks away from the conventional singular presentation of “canvas embroidery”, exploring the expression of Yi embroidery's botanical motifs within jewellery materials and forms. Taking the “octagonal flower” pattern as an example, high-resolution imaging scans extract its petal morphology and vein characteristics, converting these into precise 3D modelling data for application in the forging and chasing processes of silver brooches. In terms of colour treatment, the primary Yi embroidery hues of red and black were extracted. Through the layered application of enamels and high-temperature firing, the traditional colour language achieved a contemporary material transformation. Innovative brooches, stud earrings, and bracelets based on the octagonal flower motif. The brooch design employs a sterling silver base, combining enamel techniques to artistically recreate the flower's petal forms and hues. This preserves the distinctive colour gradations and aesthetic beauty of the Yi embroidered soma flower, while the interplay of silver lustre and enamel hues enhances its refined contemporary elegance, conveying the Yi people's spiritual pursuit of courage and beauty symbolised by the soma flower. The stud earrings incorporate Yi embroidery elements, with an alloy core adorned using traditional embroidery techniques. The bracelet design combines a silver chain with an engraved pendant, transforming

traditional cultural symbols into an art form for everyday wear. Design renderings of the series are shown in “Figures 8”(a) to (c).



(a) Brooch



(b) Earrings



(c) Necklace

Figure 8 Innovative design applications of Yi ethnic pattern motifs.

6. CONCLUSION

The innovative design of Nanhua Yi embroidery constitutes a systematic cultural translation project, rather than a mere replication and application of patterns. By introducing cultural gene theory, this study constructs a cultural gene genealogy of Nanhua Yi embroidery, achieving a systematic analysis and visual representation of its cultural essence. Building upon this foundation, the proposed four-dimensional translation strategy – integrating pattern, colour, technique and medium – provides methodological guidance for the contemporary transformation of intangible cultural heritage. A series of design practices has validated the effectiveness of cultural gene theory in innovative design, charting a viable path for the contemporary inheritance of Nanhua Yi embroidery. Findings indicate that innovation design methodologies grounded in cultural gene genealogies effectively bridge the disconnect between traditional culture and contemporary aesthetics, preserving the intrinsic essence of intangible cultural heritage while infusing it with renewed vitality for the modern era. Future research may further explore the application of digital technologies in preserving and innovating cultural genes, deepening the transformative potential of Nanhua Yi embroidery within contemporary design contexts, and offering more diverse solutions for the living transmission of intangible cultural heritage. This research not only offers concrete guidance for the innovative practice of Nanhua Yi embroidery but also provides a theoretical framework and practical methodology for the cultural transformation and design innovation of other intangible cultural heritage projects.

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