

Digital Inheritance and Innovation of Traditional Embroidery Techniques of She Ethnic Group in Minnan Area

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Abstract: This study examines the challenges of preserving, inheriting, and innovating traditional She ethnic embroidery in southern Fujian during modernization, proposing systematic digital solutions. Through literature review and field research, it systematically traces the historical origins, cultural significance, and technical characteristics of She embroidery while revealing regional distribution disparities and inheritance risks. The research innovatively employs 3D scanning, virtual reality (VR), embroidery robots, and 2D animation technologies to establish a digital archive and develop interactive platforms, achieving precise preservation and dynamic dissemination of She embroidery patterns and techniques. By integrating modern design elements, it expands product lines through innovative practices in fashion, home decor, and cultural tourism sectors. Results demonstrate that digital approaches not only provide permanent preservation pathways for endangered crafts but also facilitate technological empowerment to integrate traditional craftsmanship with modern industries, offering a crucial model for sustainable intangible cultural heritage transmission and cultural diversity protection.

Keywords: She Embroidery; Digital Inheritance; Innovation; Intangible Cultural Heritage

1. Overview of Traditional Embroidery Techniques of She Ethnic Group

1.1 The Historical Origin of Traditional Embroidery Techniques of the She Ethnic Group

The history of She ethnic embroidery traces back to ancient times, deeply rooted in the nomadic lifestyle of the She people. Through centuries of migration and pastoral activities, they developed unique embroidery techniques to adorn daily utensils and clothing. She and Han have lived together for a long time in history, which is mainly characterized by

large dispersion and small gathering. This pattern of she and Han living together has influenced the history, culture and economy of She [1]. Renowned for its vibrant colors, intricate patterns, and distinctive craftsmanship, she embroidery draws inspiration from nature's flora and fauna — birds, flowers, landscapes — and incorporates culturally significant motifs from She worship art and mythological legends. Historical records indicate that the She people revered the phoenix as their totem, which became the most common decorative element in women's attire. This cultural significance explains why traditional women's clothing is often called "Phoenix Attire" [2].

Over time, the She ethnic group's embroidery craft has matured and developed its unique style. Beyond being used as decorative elements on clothing, it has been widely applied to daily life items such as headscarves, aprons, footwear, hats, and handbags. These embroidered items serve not only as practical household items but also as vital mediums for the She people to express emotions, convey messages, and showcase their identity. In this sense, they play a significant role in cultural inheritance and promotion. With the acceleration of modernization, the traditional embroidery craft of the She ethnic group is facing significant challenges. To protect and preserve this invaluable cultural heritage, the Chinese government and various sectors are implementing multiple measures. These include designating She embroidery as intangible cultural heritage, promoting digital preservation and educational inheritance, among other approaches. Through these efforts, the traditional embroidery craft of the She ethnic group is being revitalized to thrive in the new era.

1.2 The Cultural Value of Traditional Embroidery Techniques of the She Ethnic Group

She ethnic embroidery, also known as "embroidery," is a folk art with a long history that has been passed down to this day. It originated from the tradition of embroidering sachets. According to the *Nanyue

Notes*, newly married women would hang an embroidered sachet, which later evolved into decorative items like quilt covers, pillowcases, aprons, collars, cuffs, skirt edges, shoe uppers, fan hearts, women's leg bindings, children's hats, and belly bands [3]. The preservation and development of She embroidery not only enhance ethnic unity and cultural exchange among different ethnic groups, but also play a positive role in building a harmonious society. Additionally, as a cultural tourism resource, it can boost local economic growth and support cultural poverty alleviation and rural revitalization in She regions. Therefore, traditional She embroidery is not only a cultural treasure of the She people but also a shared heritage of humanity. Protecting and passing down this craft is an inescapable responsibility for all of us.

(3) The characteristics of traditional embroidery techniques of She ethnic group

The characteristics of traditional She ethnic embroidery are mainly reflected in the following aspects:

First of all, the embroidery craft of the She ethnic group has a unique national style, reflecting the history, beliefs and aesthetic concepts of the She people. Its patterns are mostly derived from the animals and plants in nature, such as flowers, birds, mountains and rivers, but also incorporate the totem worship and myths of the She people, with strong national characteristics and implications.

Secondly, the She ethnic embroidery uses silk threads to embroider, and employs various techniques such as plain embroidery, braiding embroidery and seed embroidery, so that the works present delicate and exquisite effects. The application of these techniques shows the exquisite skills and unique artistic style of the She ethnic embroidery.

Finally, the craftsmanship of She ethnic embroidery demonstrates remarkable versatility. Beyond clothing adornment, it finds applications in daily life through items like headscarves, aprons, footwear, and accessories. This multifaceted application showcases both the practicality and aesthetic appeal of She embroidery techniques.

As a unique ethnic handicraft, the traditional embroidery of the She people shows the strong artistic creativity and aesthetic pursuit of the She people. It is a precious treasure in the treasure house of Chinese folk art.

2. The Present Situation of Traditional Embroidery Techniques of She Ethnic Group

2.1 The Distribution of Traditional Embroidery Techniques of the She Ethnic Group

The traditional embroidery craftsmanship of the She ethnic group is primarily found in mountainous regions across China's Fujian, Zhejiang, Jiangxi, and Guangdong provinces, which are home to the majority of this ethnic group. In these areas, the embroidery art has been well preserved and developed. While maintaining traditional techniques, each region has cultivated its own distinctive regional style and characteristics.

For instance, in Fujian Province's Fuding and Ningde regions, she ethnic embroidery is celebrated for its vibrant colors, intricate patterns, and meticulous craftsmanship. In Zhejiang Province's Lishui and Wenzhou areas, the craft is renowned for its fluid lines, disciplined composition, and harmonious color coordination. In Jiangxi Province's Ganzhou and Ji'an regions, the embroidery emphasizes symbolic meanings and cultural symbolism. Meanwhile, Guangdong Province's Shaoguan and Heyuan areas praise the art for its delicate stitching techniques and elaborate designs.

The distribution of She embroidery craft reflects the regional diversity of She culture, and also shows the artistic creativity of She people in different regional environments. These are very precious wealth in the treasure house of She culture, which is worth our protection and inheritance.

2.2 The Inheritance Status of Traditional Embroidery Techniques of She Ethnic Group

As a vital component of She ethnic culture, traditional embroidery craftsmanship faces challenges in its preservation. With the acceleration of modernization, younger generations show diminishing interest in this craft. Furthermore, market economy pressures have impacted the inheritance and development of She embroidery techniques.

Currently, the inheritance of She ethnic embroidery craftsmanship mainly relies on veteran embroiderers and artisans who pass down their skills through oral instruction. However, due to young people's lack of interest in traditional handicrafts and the accelerated pace of modern life, the craft faces risks of talent shortage and skill loss.

To safeguard and preserve the traditional embroidery techniques of the She ethnic group, the Chinese government and various sectors are implementing multiple measures. These include designating She embroidery as intangible cultural heritage, enhancing research and exploration of its craftsmanship, and promoting digital preservation and educational

inheritance. Concurrently, organizing exhibitions, training programs, and exchange activities for She embroidery helps young people recognize and develop interest in this craft, thereby advancing its legacy. The preservation of She embroidery fundamentally relies on the active role of intangible cultural heritage bearers. It is essential to integrate these bearers into mainstream social development frameworks, providing comprehensive support and social security measures. This approach enables bearers to cultivate market opportunities and social functions for the intangible cultural heritage they inherit, seamlessly blending their creative expertise with its preservation efforts. , This highlights the historical significance and cultural value of bearers [4]

2.3 Challenges Facing Traditional Embroidery Techniques of She Ethnic Group

The traditional embroidery craft of the She ethnic group faces multifaceted challenges in modern society. Firstly, public awareness of intangible cultural heritage remains low, with younger generations increasingly distancing themselves from their cultural roots. Their diminished interest and attention toward traditional practices have led to an aging workforce of heritage bearers [5]. Secondly, the industry's scale is constrained. While China's intangible cultural heritage spans diverse historical and geographical contexts, most developed within self-sufficient natural economic environments. Moreover, the limited number of She embroidery artisans and the generational gap in skilled practitioners pose risks of cultural extinction. These challenges demand government support and societal collaboration to implement effective measures for preserving this precious ethnic cultural legacy.

With the modernization of the She community, many traditional cultural customs are being replaced. It is gradually being replaced by modern lifestyles. For example, she wedding dresses were worn in the past, but wedding attire is now limited to special festivals or cultural exhibitions. Demonstration activities, daily needs are greatly reduced. Moreover, modern young people, influenced by global fashion trends and Western aesthetic concepts, it is a traditional national dress. The interest in decoration has decreased, resulting in a decline in the sense of identity of She embroidery culture. In daily life, In the meantime, most of the She residents no longer wear traditional costumes and are more inclined to do so. Wearing modern popular clothing, this further weakens the market demand for She embroidery. Shrink. The weakening of cultural identity not only

affects the inheritance of She embroidery, but also weakens it [6]. Its unique value in the national cultural system.

3. Exploration of Digital Inheritance of Traditional Embroidery Techniques of She Ethnic Group

3.1 The Connotation and Characteristics of Digital Inheritance of Traditional Embroidery Techniques of She Ethnic Group

3.1.1 Conceptual analysis of digital inheritance

Digital inheritance refers to the use of modern information technologies such as computer networks and digital media. By collecting, organizing, preserving, and disseminating these resources, it enables traditional arts and crafts to be widely and conveniently shared and studied in digital formats. This approach not only better protects and preserves cultural heritage but also enhances its influence through expanded reach, contributing to the sustainable development of traditional culture. Additionally, digital inheritance provides innovative pathways and methods that facilitate learning, research, and educational innovation in the study of traditional culture.

3.1.2 The necessity of digital inheritance

The necessity of digital inheritance lies in the fact that as modern society continues to evolve, some traditional cultures face the risk of being lost. Digital technology can effectively document, preserve, and disseminate these cultural heritages. By transcending time and space limitations, digital methods make cultural heritage more accessible and usable. Moreover, digital inheritance promotes innovation and development within traditional culture, enabling it to adapt to modern society while ensuring better preservation and promotion. Therefore, digital inheritance holds significant importance for protecting, inheriting, and developing traditional culture, serving as a crucial pathway to achieve its sustainable transmission.

3.1.3 Objectives and principles of digital inheritance

The primary objectives of digital heritage preservation are to ensure the long-term conservation and widespread dissemination of cultural legacies while fostering innovation and development in traditional culture. The implementation principles of digital heritage preservation mainly include the following aspects: First, maintaining the authenticity and integrity of cultural heritage must be prioritized; Second, high-standard digital technologies should be adopted to guarantee accessibility and interoperability of digitized content; Third, cultural

diversity and intellectual property rights must be respected; Additionally, public participation and educational promotion should be encouraged to achieve sustainable utilization of cultural resources, thereby enhancing public awareness and appreciation for cultural heritage.

3.2 Methods and Technologies for Digital Inheritance of Traditional Embroidery Techniques of She Ethnic Group

3.2.1 Digital embroidery design software

Digital embroidery design software is essentially a suite of computer applications that enable users to create and edit embroidery patterns for various embroidery machines and production needs. Featuring vector graphic editing capabilities, it supports multiple image formats, provides extensive stitch libraries, and includes color management tools. Through these software applications, enthusiasts can achieve personalized designs while enhancing creative efficiency and pattern quality. Moreover, the adoption of digital embroidery design software has significantly propelled the innovative development of embroidery art. Therefore, it can be said that digital embroidery design software has played an indispensable role in driving innovation and advancement within the embroidery industry.

3.2.2 Application of embroidery robot

Embroidery robots are automated sewing devices utilizing modern technology. These machines can execute precise, efficient, and seamless embroidery patterns through computer programming. Their application not only enhances production efficiency and reduces labor costs but also elevates the quality of embroidered products. Equipped with high flexibility and adaptability to meet personalized customization and diversified production needs, these robots allow rapid pattern changes. The adoption of embroidery machines has driven technological innovation and industrial upgrading in the embroidery industry, opening up new possibilities for the sector.

3.2.3 Virtual reality and augmented reality technology

Virtual Reality (VR) and Augmented Reality (AR) are two modern computer technologies that provide immersive or interactive digital environments by simulating or enhancing real-world visual, auditory, and tactile experiences. VR technology completely replaces users' visual and auditory senses, creating entirely new virtual environments. AR technology overlays digital information onto the real world, enhancing users' sensory perception. These technologies have found extensive applications in

gaming, education, healthcare, military, and industrial design, offering users innovative interaction methods and immersive experiences.

3.3 Advantages and Limitations of Digital Inheritance of Traditional Embroidery Techniques of She Ethnic Group

3.3.1 Advantages of digital inheritance of traditional She embroidery techniques

The digital preservation of She ethnic traditional embroidery techniques offers several advantages: Firstly, digital technology enables precise documentation and archiving of its intricate craftsmanship. Secondly, digital platforms facilitate global dissemination of She embroidery culture, enhancing its international recognition. Additionally, innovative design through digital tools fosters the integration of traditional embroidery with modern fashion trends, driving cultural industry development. Moreover, this digital approach employs interactive learning methods to spark students' interest in traditional crafts while promoting cultural inheritance. These multifaceted advantages collectively ensure the sustainable development of She ethnic traditional embroidery techniques.

3.3.2 Limitations of digital inheritance of traditional She embroidery techniques

While digital preservation of She ethnic embroidery techniques offers significant advantages, it faces multiple limitations. Firstly, digitization may fail to fully capture the nuanced craftsmanship and tactile qualities inherent in traditional embroidery, potentially erasing essential artistic details. Secondly, this approach requires substantial technological infrastructure and equipment investment, which could lead to high costs and time consumption. Moreover, over-reliance on digital tools might diminish the practical skills required for traditional embroidery. Additionally, copyright and intellectual property protection pose challenges in this process. Therefore, maintaining a balance between preserving tradition and embracing modernization is crucial for ensuring the sustainable development of She embroidery craftsmanship.

4. Digital Innovation Practice of Traditional Embroidery Techniques of She Ethnic Group

4.1 Design Concept of Digital Innovation of Traditional Embroidery Techniques of She Ethnic Group

4.1.1 Integration of modern design elements

The integration of modern design elements involves incorporating contemporary concepts, technologies,

materials, and innovative thinking into traditional craftsmanship. This fusion expands the expressive possibilities of traditional arts while enhancing their practicality and fashion appeal, making them more aligned with modern aesthetics and market demands. With the nation's growing emphasis on cultural heritage, designing innovative patterns for phoenix attire and local culture not only showcases She ethnic costumes but also conveys the community's positive outlook on life. By combining traditional culture with modern artistry, this approach effectively communicates the cultural values embedded in She ethnic clothing [7].

4.1.2 Exploration of new product lines

The exploration of new product lines refers to the process where enterprises develop entirely new product series beyond their existing offerings. This requires market research, demand analysis, product design, prototype testing, and marketing strategy formulation. New product lines must meet market demands while demonstrating innovation and competitiveness. Successful new product lines can drive business growth, expand market share, and enhance brand image. However, exploring new product lines also presents challenges that require careful risk assessment to ensure balanced resource allocation and returns. Proper exploration of new product lines can unlock fresh growth opportunities for enterprises.

4.2 Application Fields of Digital Innovation of Traditional She Embroidery Techniques

The digital innovation of She ethnic embroidery has found extensive applications across multiple fields, including fashion design, home decoration, cultural education, cultural tourism, and digital art. In fashion design, digital technology enables the integration of She embroidery patterns with modern fashion elements, creating distinctive clothing and accessories that showcase the unique charm of She culture. For home decoration, digital embroidery technology can be used to produce bedding, curtains, sofa covers, and other home decor items, combining the exquisite patterns of She embroidery with interior design to enhance artistic and cultural ambiance. In cultural education, this technology helps the public gain deeper insights into She ethnic history, techniques, and the aesthetic value of embroidery craftsmanship. For cultural tourism, digital embroidery can be utilized to develop souvenirs and cultural experience activities, providing tourists with unique cultural experiences while boosting economic development in She regions. In digital art, combining digital embroidery with virtual reality or augmented

reality technologies creates new artistic forms and immersive experiences that allow audiences to interact with embroidered works and appreciate the allure of She culture. These explorations and practices not only provide new opportunities for preserving and passing down She culture but also create fresh platforms for regional economic growth and cultural dissemination.

4.3 Practice Cases of Digital Innovation of Traditional Embroidery Techniques of She Ethnic Group

4.3.1 Digital display of embroidery works

The application of digital technology in the digital presentation of embroidery artworks allows audiences to appreciate high-definition embroidered works without geographical or temporal constraints. Through interactive experiences enabled by virtual reality and augmented reality technologies, viewers gain deeper understanding and heightened interest in embroidery art. Digital exhibitions have opened new avenues for the dissemination and preservation of embroidery artworks while providing artists with broader platforms for showcasing their creations. This digital approach not only introduces innovative display formats for embroidery art but also attracts a wider audience base.

4.3.2 Two-dimensional animation display of embroidery technology

The traditional embroidery art of the She ethnic group can be vividly showcased through 2D animation, offering audiences a more intuitive understanding of its unique characteristics and charm. A prime example is the frame-by-frame animated film "Embroidery". Centered on the emotional bond between grandmother and granddaughter, this work employs 2D animation techniques to demonstrate both the artistic essence of She embroidery and the vital importance of cultural preservation. The narrative depicts how, within a short span of time, the grandmother pours boundless love into every stitch, crafting exquisite embroidered pieces for her granddaughter. In the animation, embroidery transcends mere craftsmanship — it becomes a profound emotional bond between generations. By presenting this traditional art through digital 2D animation, we can spark public interest in embroidery. This approach not only revives the essence of intangible cultural heritage but also effectively promotes its dissemination, allowing more people to appreciate this distinctive manual craft.

5. Inspiration of Digital Inheritance and

Innovation of Traditional Embroidery Techniques of She Ethnic Group

5.1 Protection of Traditional Crafts

The preservation of traditional craftsmanship is a multifaceted endeavor involving cultural heritage preservation, historical continuity, and sustainable development. To ensure the enduring legacy of these invaluable traditions, comprehensive measures must be implemented. First, conducting thorough research and documentation of traditional crafts will establish complete digital archives for future generations to study. Second, providing training programs for artisans can inspire young talent to learn and practice these skills, maintaining their vitality. Third, integrating traditional craftsmanship with modern design enables the creation of market-driven products that enhance their economic value. Additionally, governments and relevant institutions should develop protective policies, regulations, financial support, and training opportunities to foster a conducive environment for preserving these traditions. Through these integrated approaches, we can effectively safeguard traditional craftsmanship while revitalizing it through modern adaptation, facilitating its seamless integration into contemporary society.

5.2 Inspiration of Digital Inheritance and Innovation

The Enlightenment of Digital Inheritance and Innovation: The preservation and transmission of traditional craftsmanship must keep pace with the times [8]. By fully utilizing digital technologies to expand communication channels and boost public engagement, we should integrate modern design concepts into the innovation and transformation of traditional crafts. This approach not only meets market demands and promotes healthy development of cultural industries but also strengthens education in traditional culture and cultivates talent for heritage preservation. It is crucial to ignite young people's interest in traditional skills through collaboration between government agencies, enterprises, and cultural institutions, providing sustainable support for the digital inheritance and innovative development of traditional crafts. Thus, traditional craftsmanship can rejuvenate itself in the new era and achieve sustainable growth [9].

5.3 The Development of She Embroidery Industry

The key to developing the She ethnic embroidery industry lies in blending tradition with modernity. By

leveraging digital technology to integrate traditional embroidery patterns with contemporary design elements, we can create unique and fashionable products. Moreover, while training artisans to enhance craftsmanship is essential, maintaining strict quality control remains crucial. Expanding marketing channels and developing cultural tourism products have significantly boosted awareness of She embroidery [7]. Through these efforts, I believe this traditional craft will regain its vitality and thrive anew.

6. Conclusion

As an important intangible cultural heritage, She embroidery in Fujian carries the profound national cultural memory and unique artistic value of the She ethnic group. However, in the wave of modernization and marketization, its inheritance and development are facing severe challenges. As a professional discipline dedicated to promoting social equity, protecting cultural heritage and promoting community development, social work can play a key role in the protection and revitalization of She embroidery. Through professional intervention such as case management, community development and policy advocacy, social work helps to solve the core problems faced by the She embroidery industry, such as the fault of skill inheritors, insufficient market competitiveness, and weakening of cultural identity, and provides strong support for its sustainable development.

First of all, social work helps the inheritance and innovation of She embroidery skills. Social workers can help practitioners improve their skills and sense of professional identity by establishing "She embroidery inheritor files", organizing vocational training, and providing marketing guidance, and inspire the younger generation to learn and innovate She embroidery skills. This individual-level support not only helps maintain the integrity of the technique, but also promotes its transformation and upgrading in the contemporary market environment.

Secondly, social work empowers the community and promotes the industrialization of She embroidery. By promoting the establishment of She embroidery cooperatives and integrating community handicraft resources, social workers can improve production efficiency and market competitiveness, and help the growth of the She embroidery collective economy.

Finally, social work promotes policy optimization and multi-party support. Through policy advocacy, social workers can promote the government to introduce targeted support measures, such as special funds for intangible cultural heritage, tax incentives

and intellectual property protection policies, to enhance the sustainable development of the industry. In addition, promoting the establishment of She embroidery geographical indication certification and brand standards will help enhance product value and standardize market order. At the same time, the active use of modern communication methods such as social media and short videos can effectively expand the social influence of She embroidery and enhance the public's awareness and recognition of its culture.

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