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DIGITALIZED CULTURAL HERITAGE OF CHINA: SYMBIOSIS OF TRADITIONS AND INNOVATIONS IN TEXTILE PATTERN DESIGN

HUO Dongze^{1,2}, SKLIARENKO Nataliia^{1,3}

¹ Kyiv National University of Technologies and Design, Kyiv, Ukraine

² Xi'an Peihua University, Xi'an, People's Republic of China

³ Lutsk National Technical University, Lutsk, Ukraine

76125021@qq.com, nata_skliarenko@ukr.net

This paper explores the transformative impact of digitization on traditional Chinese textile patterns in the context of the evolution from the physical realm to the digital realm. Through the system analysis, the research reveals the essence of the experiment, the automated generation methods and the adaptability of the digitized patterns. On the basis of samples of Chinese textiles from different historical periods, the processes of integration of traditions and innovations, which are provided by digital tools, are substantiated. Ultimately, it highlights the importance of digitization for the preservation of cultural heritage and contributes to the further development of design.

Key words: digitization, traditional textile patterns, innovation, cultural heritage of China, design evolution.

INTRODUCTION

Preserving China's rich cultural heritage in the face of rapid globalization and technological advancement poses a formidable challenge [1]. Among its diverse cultural artifacts, traditional Chinese textile patterns stand out as repositories of centuries-old narratives and artistic expressions, encapsulating the essence of Chinese identity and history [2]. The relentless march of time threatens to erode this invaluable heritage, necessitating urgent measures for its conservation. One promising avenue for preservation lies in digitization, converting physical patterns into digital images to create enduring records accessible to future generations [4]. While existing research has explored digitizing cultural elements, such as artifacts and documents, there remains a notable gap regarding the design features of Chinese textile patterns. Despite their significance, researchers have yet to delve deeply into their intricacies, leaving questions unanswered about their aesthetic nuances, symbolism, and evolution. Thus, further research is needed to unravel the complexities of Chinese textile patterns and their role in preserving cultural heritage.

PURPOSE

The primary objective of this study is to conduct a comprehensive analysis of the distinctive features inherent in digitized traditional Chinese textile patterns. By



examining these digitized patterns, we aim to unravel their aesthetic, symbolic, and cultural significance. The objects chosen for study encompass a diverse array of traditional Chinese textile patterns from various historical periods and regional influences. Through meticulous examination and interpretation, we seek to shed light on the multifaceted nature of these patterns and their enduring impact on Chinese cultural heritage.

RESULTS AND DISCUSSION

Digitization emerges as a transformative process integral to the preservation and evolution of traditional Chinese textile patterns. At its core, digitization involves converting physical patterns into digital images, facilitating their storage, dissemination, and analysis in virtual formats [1]. This process imbues traditional patterns with newfound accessibility and versatility, transcending the limitations of physical preservation. Moreover, digitization equips designers with a diverse array of functions and tools, enabling them to manipulate, reinterpret, and innovate upon these patterns with unprecedented ease and precision. One notable function of digitization is its capacity to facilitate interactive presentations of textile patterns, thereby engaging viewers in dynamic and immersive experiences. Through digital platforms, users can explore and interact with these patterns, gaining deeper insights into their intricate designs and cultural significance. This interactive approach not only enhances engagement but also fosters a deeper appreciation for the richness and complexity of traditional Chinese textile heritage.

The digitization process, exemplified by "A pair of bird patterns in a string of beads Brocade" from the Tang Dynasty in Figure 1, involves a meticulous series of steps aimed at capturing and transforming the essence of traditional Chinese textile patterns into digital form [2]. Sophisticated image analysis software is employed to scrutinize and dissect the intricate details of the original pattern, followed by the identification and interpretation of graphical elements such as origins, line variations, and evolutionary processes. Subsequently, each component of the real object is meticulously extracted and translated into a vector diagram using specialized software tools. Individual elements are symmetrically arranged, ensuring harmony and balance in the digital composition. Throughout the digitization process, a simplification approach is adopted, gradually removing extraneous details while preserving the essence and integrity of the original pattern. This iterative refinement process enables designers to distill the pattern to its core elements, enhancing clarity and visual impact. Ultimately, the digitization process culminates in the creation of digital elements that faithfully capture the essence of the traditional pattern, poised for further exploration and adaptation in contemporary design contexts.

The digitization of textile patterns introduces a paradigm shift in design, marked by experimentation, automation, and adaptability [3]. In this digital landscape, designers are empowered to explore uncharted territories, leveraging automated generation techniques to seamlessly blend tradition with innovation. These digitized patterns transcend physical limitations, effortlessly transitioning between material and digital environments, while retaining their aesthetic integrity. Through meticulous analysis and refinement, designers navigate a delicate balance between preserving cultural heritage and embracing contemporary design



sensibilities [4]. Ultimately, as shown in Figure 2, digitized textile patterns serve as dynamic platforms for creative expression, heralding a new era of design possibilities grounded in tradition yet propelled by technological advancement.

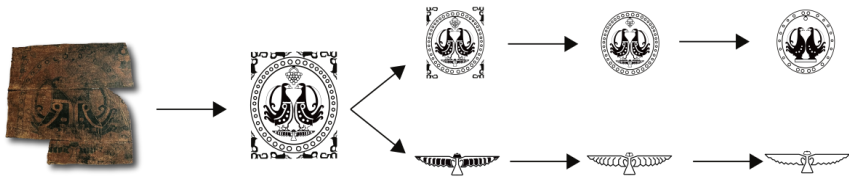


Fig. 1. Process of extraction and composition of traditional Chinese Textile Patterns elements



Fig. 2. Samples of modern digitized textiles



CONCLUSIONS

Digitization emerges as a pivotal tool for preserving and advancing traditional Chinese textile patterns, bridging the gap between heritage and modernity. Through the transformative process of digitization, these patterns are immortalized in digital form, ensuring their accessibility and longevity for future generations. As designers harness the power of digital tools, they unlock new dimensions of creativity and innovation, enriching the cultural landscape while honoring centuries-old traditions. The fusion of tradition and technology heralds a promising future for Chinese textile design, where the past converges with the present to shape the aesthetic narratives of tomorrow.

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НУО Д., СКЛЯРЕНКО Н.

ЦИФРОВАНА КУЛЬТУРНА СПАДЩИНА КИТАЮ: СИМБІОЗ ТРАДИЦІЙ ТА ІННОВАЦІЙ У ДИЗАЙНІ ТЕКСТИЛЬНИХ ВІЗЕРУНКІВ

У статті висвітлено трансформаційний вплив цифровізації на традиційні китайські текстильні візерунки у контексті еволюції від фізичної сфери до цифрової. Завдяки системному аналізу дослідження розкриває сутність експерименту, автоматизовані методи генерації та адаптивність оцифрованих шаблонів. На основі зразків китайського текстилю різних історичних періодів обґрунтовано процеси інтеграції традицій та інновацій, які забезпечуються цифровими інструментами. Зрештою, це дозволяє підкреслити важливість оцифрування для збереження культурної спадщини та сприяє подальшому розвитку дизайну.

Ключові слова: оцифрування, традиційні текстильні візерунки, інновації, культурна спадщина Китаю, еволюція дизайну.