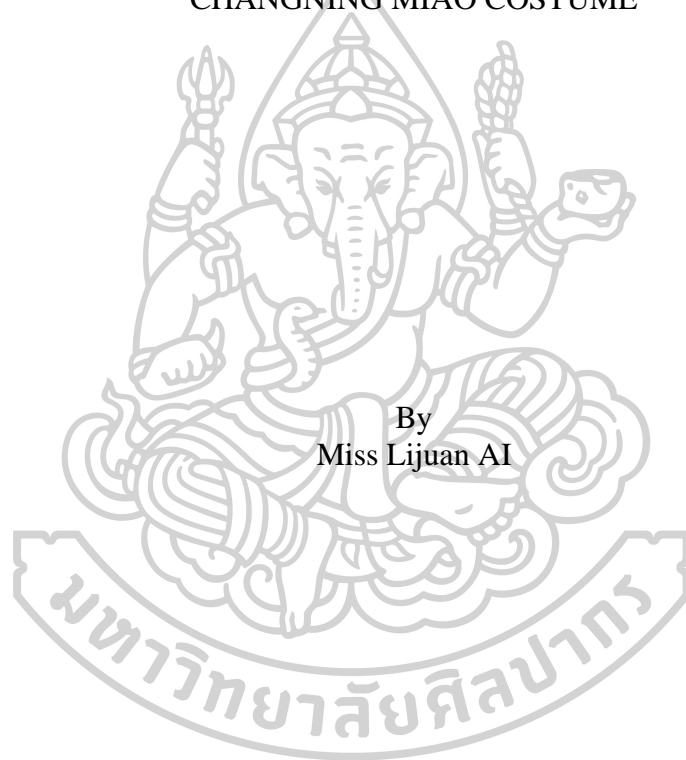




RESEARCH ON THE INTANGIBLE CULTURAL HERITAGE TO A
PERSPECTIVE OF CULTURAL ECOLOGY: CASE STUDY OF THE
CHANGNING MIAO COSTUME



A Thesis Submitted in Partial Fulfillment of the Requirements
for Doctor of Philosophy Culture - Based Design Arts

Silpakorn University
Academic Year 2023

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วิทยานิพนธ์นี้เป็นส่วนหนึ่งของการศึกษาตามหลักสูตรปริญญาคุุณบัณฑิต
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RESEARCH ON THE INTANGIBLE CULTURAL HERITAGE TO A
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By
Miss Lijuan AI

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Cultural Ecology: Case Study of the Changning Miao Costume
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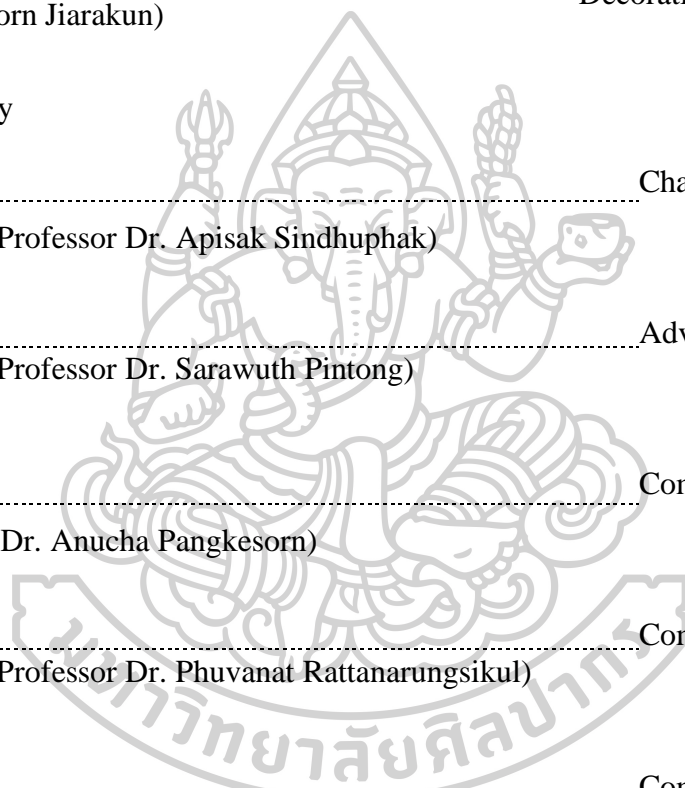
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From a cultural ecology perspective, utilizing a grounded theory method to collect and code data, using the theoretical framework of cultural ecology, a case study of the Changning Miao costume was conducted. A mixture method of qualitative and quantitative research methods was employed in the study.

The objectives are to establish a text-graphic database of Changning Miao costumes, extract the cultural identity, offer a rationale for the facilitation of inheritance and translation through design intervention, and examine sustainable indicate for the preservation of intangible cultural heritage in contemporary society.

By analyzing the inheritance and expression mechanism of cultural genes in their environment, the systematic design method of CTEE is proposed as a design solution for cultural subjects. This method entails a systematic approach to designing and evaluating intangible cultural heritage to foster its living inheritance, as viewed through the lens of cultural ecology. Analyze the genetic factors and use them as the basis for design and translation, to ensure the authenticity of intangible cultural heritage. The systematic design and evaluation system ensures the participation and expression of cultural subjects in the design process.

The design outcome provides the theoretical basis and practical reference for the Changning Miao costume to maintain its cultural authenticity, and restore and reconstruct the sustainable cultural heritage system under the current social environment. Simultaneously, it establishes a foundation for the inheritance, preservation, and advancement of additional intangible cultural heritage situated in underdeveloped regions.

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Lijuan AI

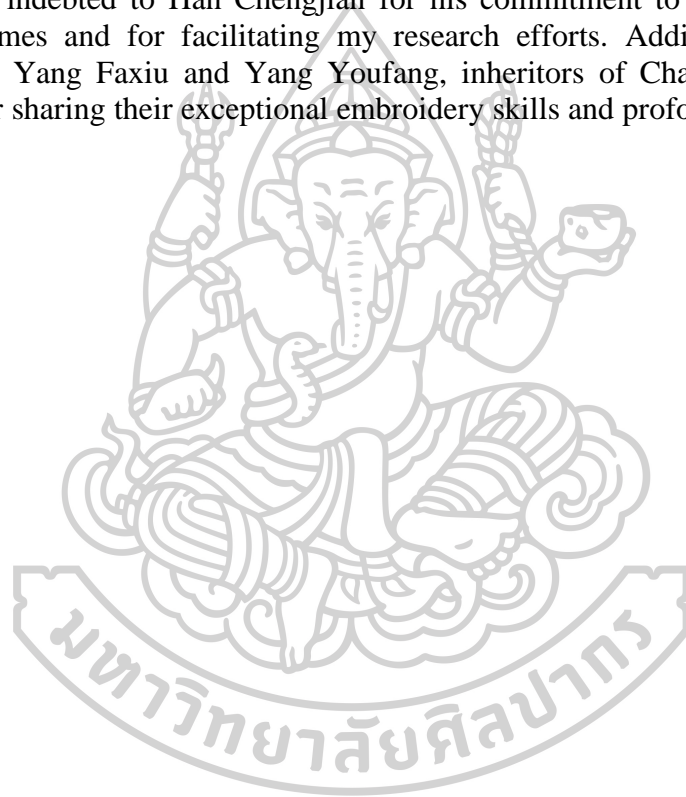


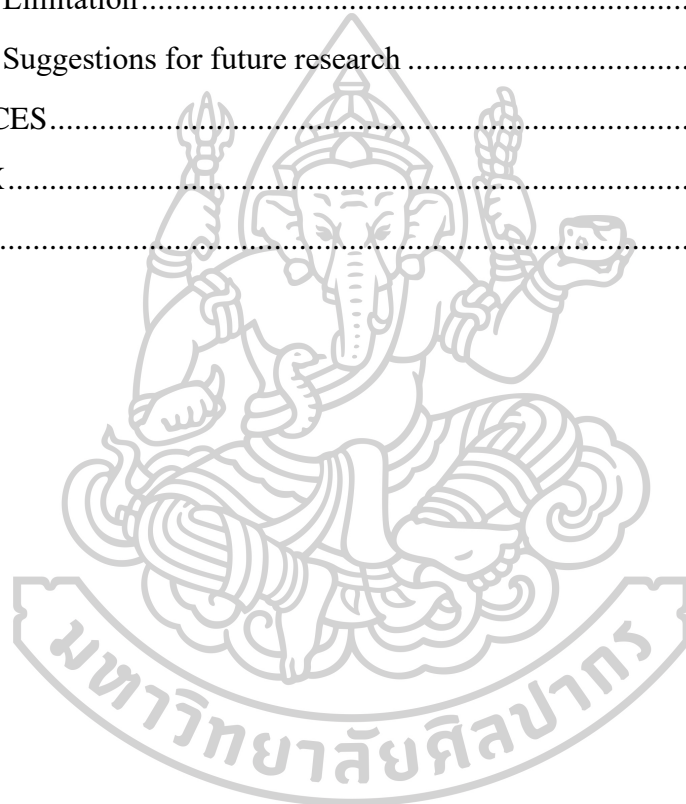
TABLE OF CONTENTS

| | Page |
|--|-------------|
| ABSTRACT | D |
| ACKNOWLEDGEMENTS | E |
| TABLE OF CONTENTS | F |
| LIST OF TABLES | J |
| LIST OF FIGURES | K |
| CHAPTER 1 INTRODUCTION | 1 |
| 1.1 Significance of the Problem | 1 |
| 1.2 Research Objectives | 2 |
| 1.3 Hypothesis | 2 |
| 1.4 Research Methodology | 3 |
| 1.5 Scope of the study and limitations | 4 |
| 1.6 Terminology | 4 |
| CHAPTER 2 LITERATURE REVIEW | 6 |
| Introduction | 6 |
| 2.1 Review of intangible culture heritage from the perspective of culture ecology . | 6 |
| 2.1.1 Cultural ecology | 6 |
| 2.1.2 Intangible Culture Heritage | 8 |
| 2.1.3 Research on intangible cultural heritage from a cultural ecology perspective | 8 |
| 2.1.4 Discussion | 11 |
| 2.2 Review of the Changning Miao Costume | 11 |
| 2.2.1 Ethnic Origin of the Changning Miao Ethnic Group | 12 |
| 2.2.2 Status of research on the culture of the Changning Miao Costume | 13 |
| 2.2.3 Status of research on inheritance and preservation for the Changning Miao Costume | 14 |
| 2.2.4 Discussion | 16 |
| 2.3 Stakeholder for Changning Miao Costume | 17 |

| | |
|---|----|
| 2.4 Research of Changning Miao Costume from the Perspective of Cultural Ecology | 18 |
| 2.4.1 Environmental factor analysis | 19 |
| 2.4.1.1 Location and geography | 19 |
| 2.4.1.2 Site of Settlements..... | 21 |
| 2.4.1.3 Cultural Spaces | 22 |
| 2.4.2 Social factor analysis | 23 |
| 2.4.2.1 Institutional factor | 23 |
| 2.4.2.2 Technologic factor..... | 24 |
| 2.4.2.3 Economic factor..... | 24 |
| 2.4.2.4 Cultural factor..... | 24 |
| 2.4.3 Explicit expression..... | 25 |
| 2.4.3.1 Style..... | 25 |
| 2.4.3.2 Material..... | 27 |
| 2.4.3.3 Craft..... | 28 |
| 2.4.3.4 Pattern | 30 |
| 2.4.3.5 Colour..... | 39 |
| 2.4.4 Implicit expression..... | 41 |
| 2.4.4.1 Customary..... | 41 |
| 2.4.4.2 Semantics..... | 42 |
| 2.4.4.3 Social Function | 43 |
| 2.4.5 Mechanisms of the Changning Miao Costume influenced by ecological factors..... | 45 |
| 2.4.5.1 Environmental factors affect expression in the Changning Miao Costume. | 45 |
| 2.4.5.2 Technological factors influence the external performance characteristics of the Changning Miao Costume..... | 45 |
| 2.4.5.3 Cultural, technological and economic factors combine to motivate the Changning Miao Costume's production..... | 46 |
| 2.4.5.4 The protection system affects the channels and content of the Changning Miao Costume's heritage..... | 47 |

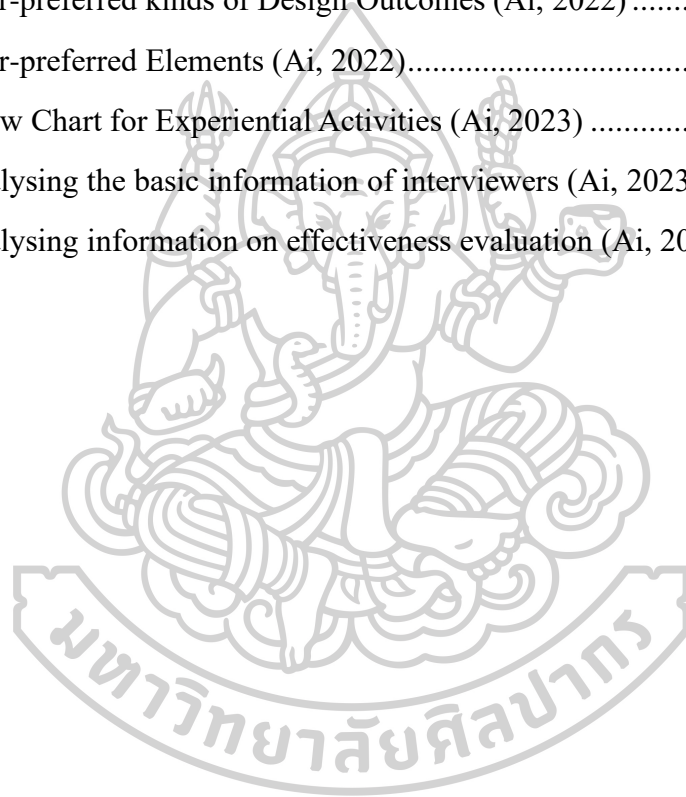
| | |
|---|----|
| 2.5 Analysis of Problems | 48 |
| Summary | 51 |
| CHAPTER 3 METHODOLOGY | 53 |
| Introduction..... | 53 |
| 3.1 Research Method | 53 |
| 3.2 Research Procedure..... | 55 |
| 3.3 Design Methods..... | 57 |
| Summary | 59 |
| CHAPTER 4 DESIGN | 62 |
| Introduction..... | 62 |
| 4.1 User Requirements Analysis | 62 |
| 4.2 Design Experiments..... | 64 |
| 4.2.1 Visual Information Design Experiments..... | 65 |
| 4.2.1.1 Vectorised design of graphics | 65 |
| 4.2.1.2 Colour design | 66 |
| 4.2.2 Product design experiments | 69 |
| 4.2.2.1 Encyclopedia design of Changning Miao costume | 69 |
| 4.2.2.2 Derivative product design..... | 74 |
| 4.2.2.3 Packaging design..... | 85 |
| 4.3 Evaluation Experiments..... | 86 |
| 4.3.1 Interactive Design Experiments..... | 86 |
| 4.3.1.1 Pattern Class and Embroidery Workshop..... | 86 |
| 4.3.1.2 Interaction Exhibition and Online Exhibition..... | 89 |
| 4.3.2 Evaluation system experiments | 92 |
| 4.3.2.1 Design of evaluation methodology | 92 |
| 4.3.2.2 Reliability and validity of evaluations..... | 93 |
| 4.3.2.3 Findings of the evaluation | 94 |
| Summary | 96 |
| CHAPTER 5 CONCLUSION..... | 98 |

| | |
|--|-----|
| Introduction..... | 98 |
| 5.1 Intangible cultural heritage inheritance mechanism from the perspective of cultural ecology..... | 98 |
| 5.2 CTEE systematic design method..... | 101 |
| 5.3 Discussion | 104 |
| 5.4 Implementation..... | 105 |
| 5.4.1 Implementation..... | 105 |
| 5.4.2 Limitation..... | 106 |
| 5.4.3 Suggestions for future research | 106 |
| REFERENCES..... | 107 |
| APPENDIX..... | 111 |
| VITA..... | 114 |



LIST OF TABLES

| | Page |
|---|-------------|
| Table 1 Commonly cited terminology and definition in ecology and cultural ecology (Ai, 2023)..... | 7 |
| Table 2 The Changing Miao Costume Code (Ai, 2022)..... | 41 |
| Table 3 Data on Materials and Crafts of Changning Miao costume (Ai, 2023) | 48 |
| Table 4 User-preferred kinds of Design Outcomes (Ai, 2022)..... | 63 |
| Table 5 User-preferred Elements (Ai, 2022)..... | 63 |
| Table 6 Flow Chart for Experiential Activities (Ai, 2023) | 87 |
| Table 7 Analysing the basic information of interviewers (Ai, 2023) | 94 |
| Table 8 Analysing information on effectiveness evaluation (Ai, 2023) | 95 |



LIST OF FIGURES

| | Page |
|---|-------------|
| Figure 1 Research methodology and framework (Ai, 2023) | 4 |
| Figure 2 Diagram of the stages of ICH preservation in China (Ai, 2023)..... | 8 |
| Figure 3 Annual analysis of journals (Ai, 2023) | 9 |
| Figure 4 Migration map of the Changning Miao ethnic group (Ai, 2022) | 13 |
| Figure 5 Stakeholder of the Changning Miao Costume (Ai, 2023) | 18 |
| Figure 6 Location map of the Changning Miao ethnic group (Ai, 2023)..... | 20 |
| Figure 7 Altitude Schematic of Changning Miao Natural Villages (Ai, 2023)..... | 20 |
| Figure 8 Map of the Changning Miao settlements (Ai, 2023)..... | 21 |
| Figure 9 Diagram of the spatial characteristics of the buildings (Ai, 2023)..... | 22 |
| Figure 10 Diagram of the family unit (Ai, 2023)..... | 23 |
| Figure 11 The Changning Miao Costume (Ai, 2022)..... | 25 |
| Figure 12 Pieces diagram of Changning Miao Costume 1 (Ai, 2023) | 26 |
| Figure 13 Pieces diagram of Changning Miao Costume 2 (Ai, 2023) | 26 |
| Figure 14 Pieces diagram of Changning Miao Costume 3 (Ai, 2023) | 27 |
| Figure 15 Changning Miao residents seeding and reaping non-toxic hemp (Ai, 2023) | 28 |
| Figure 16 Hemp Spinning Processes (Ai, 2022)..... | 29 |
| Figure 17 Wooden looms (Ai, 2021)..... | 29 |
| Figure 18 Spinning machines (Ai, 2021)..... | 29 |
| Figure 19 Flat embroidery | 30 |
| Figure 20 Patchwork embroidery | 30 |
| Figure 21 Lock embroidery (Ai, 2022)..... | 30 |
| Figure 22 Cross embroidery (Ai, 2022)..... | 30 |
| Figure 23 Chengchi pattern and Tongqian patterns in Miao costume in Guizhou..... | 31 |
| Figure 24 Huolian pattern and Kaoli patterns in Miao costume in Guizhou..... | 31 |
| Figure 25 Pattern composition (Ai, 2023) | 33 |

| | |
|--|----|
| Figure 26 Kaoli pattern (Ai, 2023)..... | 33 |
| Figure 27 Chengchi pattern (Ai, 2023)..... | 34 |
| Figure 28 Shizi pattern (Ai, 2023)..... | 34 |
| Figure 29 Bajiaohua pattern (Ai, 2023)..... | 35 |
| Figure 30 Huolian pattern (Ai, 2023)..... | 35 |
| Figure 31 Xingchen pattern in Changning Miao Costume (Ai, 2023) | 35 |
| Figure 32 Laozuo pattern (Ai, 2023)..... | 36 |
| Figure 33 Combination of Gongjian pattern and field pattern/copper money pattern (Ai, 2023)..... | 36 |
| Figure 34 Butterfly pattern (Ai, 2023)..... | 36 |
| Figure 35 Beibi patterns (Ai, 2023)..... | 37 |
| Figure 36 Tiandi pattern (Ai, 2023)..... | 38 |
| Figure 37 Yangtuhua pattern (Ai, 2023)..... | 38 |
| Figure 38 Tongqian pattern (Ai, 2023)..... | 38 |
| Figure 39 Shan and Shui patterns (Ai, 2023)..... | 39 |
| Figure 40 Colour extraction process for a single sample (Ai, 2023) | 40 |
| Figure 41 Colour clustering results before 1980 (clustered separately) | 40 |
| Figure 42 Colour clustering results before 1980 (overall clustering)..... | 40 |
| Figure 43 Colour clustering results for the 1980s-1990s (clustered separately)..... | 40 |
| Figure 44 Colour clustering results for the 1980s-1990s (overall clustering) | 41 |
| Figure 45 Colour clustering results from 2000 onwards (clustered separately) | 41 |
| Figure 46 Colour clustering results from 2000 onwards (overall clustering)..... | 41 |
| Figure 47 Miao dancing in Daping village on the third day of the Lunar New Year .. | 42 |
| Figure 48 Research methodology (Ai, 2022)..... | 54 |
| Figure 49 Research methods and tools (Ai, 2022)..... | 55 |
| Figure 50 Process of graphic database (Ai, 2022)..... | 55 |
| Figure 51 Research process (Ai, 2023)..... | 57 |
| Figure 52 A systematic design approach to the CTEE of the Changning Miao costume | 59 |
| Figure 53 Map of Design Solution (Ai, 2023)..... | 60 |

| | |
|---|----|
| Figure 54 Vectorised diagram of flat embroidery pattern (Ai, 2023)..... | 66 |
| Figure 55 Changning Miao costume vectorised pattern (Ai, 2023)..... | 66 |
| Figure 56 Colour extraction results of Changning Miao costume (Ai, 2023) | 67 |
| Figure 57 Schematic diagram of colour selection of Changning Miao costume (Ai, 2023)..... | 67 |
| Figure 58 Pattern drawn using directly extracted colours (Ai, 2023) | 68 |
| Figure 59 Colour scheme 1 (Ai, 2023) | 68 |
| Figure 60 Colour scheme 2 (Ai, 2023) | 68 |
| Figure 61 Design Process for Encyclopedia of Changning Miao Costume (Ai, 2023) | 70 |
| Figure 62 Schematic layout of chapter 1 (Ai, 2023) | 71 |
| Figure 63 Layout of clothing production information of chapter 2 (Ai, 2023) | 71 |
| Figure 64 Textile linen layout of chapter 3 (Ai, 2023)..... | 73 |
| Figure 65 Embroidery layout diagram of chapter 4 (Ai, 2023) | 73 |
| Figure 66 Pattern layout schematic of chapter 5 (Ai, 2023)..... | 74 |
| Figure 67 Rectangular scarf design 1 (Ai, 2023) | 75 |
| Figure 68 Rectangular scarf design 2 (Ai, 2023) | 75 |
| Figure 69 Rectangular scarf design 3 (Ai, 2023) | 76 |
| Figure 70 Rectangular scarf design 4 (Ai, 2023) | 76 |
| Figure 71 Rectangular scarf design 5 (Ai, 2023) | 77 |
| Figure 72 Rectangular scarf design 6 (Ai, 2023) | 77 |
| Figure 73 Rectangular scarf design 7 (Ai, 2023) | 78 |
| Figure 74 Rectangular scarf design 8 (Ai, 2023) | 78 |
| Figure 75 Square scarf design 1 (Ai, 2023) | 79 |
| Figure 76 Square scarf design 2 (Ai, 2023) | 79 |
| Figure 77 Square scarf design 3 (Ai, 2023) | 80 |
| Figure 78 Square scarf design 4 (Ai, 2023) | 80 |
| Figure 79 Square scarf design 5 (Ai, 2023) | 81 |
| Figure 80 Square scarf design 6 (Ai, 2023) | 81 |
| Figure 81 Square scarf design 7 (Ai, 2023)..... | 82 |

| | |
|--|-----|
| Figure 82 Square scarf design 8 (Ai, 2023) | 82 |
| Figure 83 Square scarf design 9 (Ai, 2023) | 83 |
| Figure 84 Square scarf design 10 (Ai, 2023) | 83 |
| Figure 85 Square scarf design 11 (Ai, 2023) | 84 |
| Figure 86 Square scarf design 12 (Ai, 2023) | 84 |
| Figure 87 Silk scarf label design (Ai, 2024) | 85 |
| Figure 88 Preparation of Activity Materials (Ai, 2023) | 87 |
| Figure 89 Sharing composition rules of Changning Miao costume (Ai, 2023)..... | 88 |
| Figure 90 Students experience embroidery (Ai, 2023)..... | 88 |
| Figure 91 Instant feedback of the class and workshop (Ai, 2023)..... | 89 |
| Figure 92 Art Exhibition of design outputs (Ai, 2023)..... | 90 |
| Figure 93 Art Exhibition of design outcomes 2 (Ai, 2023)..... | 91 |
| Figure 94 Photos of participants wearing silk scarves (Ai, 2023) | 91 |
| Figure 95 Photos of local Miao residents wearing silk scarves (Ai, 2023) | 92 |
| Figure 96 Statistical data map of designed outcomes (Ai, 2023)..... | 96 |
| Figure 97 The process of cultural adaptation of Changning Miao costume (Ai, 2023) | 100 |
| Figure 98 Social Factors Influencing Changning Miao costume (Ai, 2023)..... | 101 |
| Figure 99 CTEE Systematic Design Method (Ai, 2023)..... | 103 |

CHAPTER 1

INTRODUCTION

1.1 Significance of the Problem

The western part of Yunnan is located in the folded zone of the Hengduan Mountains, with large altitude differences, and mountainous and alpine landscapes that resulted in its transport difficulties in ancient times. The geographical isolation has given birth to the diversity of Yunnan's ethnic cultures. The Miao ethnic group of Yunnan is predominantly distributed in these areas. Besides, the Changning Miao ethnic group lives in the villages of Dapin and Tupitai in Changning County, Baoshan City, Yunnan Province, China. The attire they don, recognized as Changning Miao costumes, exhibits distinctive characteristics regarding patterns, colours, and symbolic meanings. On the one hand, the Changning Miao costume is inherited from the common ancestors of the Miao ethnic group and has comparable cultural characteristics to the Miao costumes of other regions. On the other hand, under the influence of the local environment and social factors in Changning, a costume culture system with independent characteristics has been formed.

As an art form, the Changning Miao costume is an expression of the psychology of Miao women. Nonetheless, it is also determined by the productive forces and relations of production of the Miao people. For generations, the Changning Miao ethnic group has upheld a subsistence smallholder economy centered around family-based production units. Hunting, farming, and weaving are the main elements of their lives, and embroidery and dressmaking are vital parts of women's work. After 2000, China's rapid economic and technological development led to dramatic changes in the social environment in which the Changning Miao costumes were found. The Changning Miao costume was selected as one of China's first intangible cultural heritage lists in 2006. Additionally, social and governmental attention and salvage protection have enabled the costume to retain its basic features. Nonetheless, the rapidly changing social environment continues to present significant challenges in the preservation and transmission of Changning Miao costume culture.

Firstly, it indicates a gradual replacement of traditional craft by modern techniques. Modern technology has made buying finished cotton as well as chemical fibre fabrics far cheaper than the labour costs of growing and weaving the hemp themselves. Consequently, modern industrially produced chemical fibre materials and machine embroidery pieces have been extensively employed in the crafting of Changning Miao costumes over the past two decades, while traditional embroidery techniques and hemp weaving techniques are rarely employed.

Secondly, it is facing an invalidation of self-identification and ethnic recognition based on the costume culture of the Changning Miao group. The attire serves as a potent means of affirming our ethnic and cultural identity. Within the traditional social framework of the Miao community, the crafting of garments holds profound significance—it embodies a cultural ceremony, an enduring ritual, and a mechanism through which individuals establish, preserve, and adapt their social connections over time. This system of social networks formed based on the costume-making process has strengthened their identity with the community to some extent. Nevertheless, as

the Changning Miao costume gradually fades away in everyday life, it is transformed into a costume worn during ceremonies including celebrations, festivals, religion, funerals, and weddings. Both the internal mechanisms for group identity and the external mechanisms for identification among the Miao community, centered around costume culture, have significantly diminished in effectiveness.

Finally, there is a lack of motivation to inherit the Miao costume culture in Changning. With the development of productivity, the refinement of the social division of labour has enabled the local Miao population to diverge from their traditional agrarian mountainous environment, participate in social development, and engage in a wider range of occupations. The majority of locals no longer make their costumes; dressmaking has evolved into a specialised occupation. It has left the Changning Miao costume culture without its most essential inheritors, and it has changed from a spontaneous, family-based way to a passive way of heritage promoted by the government.

From the perspective of cultural ecology, the cultural genes of the Changning Miao costume and the ecological factors of its culture are researched to explore the mechanism of cultural living inheritance. Besides, the purpose is to sort out and extract the core cultural genes of the Changning Miao costume and protect the authenticity of the culture. Simultaneously, by examining the cultural phenomenon, we can identify the challenges encountered by the Changning Miao costume and its underlying causes, thus exploring avenues for cultural preservation through design intervention. The protection of intangible cultural heritage is essentially a cultural intervention activity, the fundamental purpose of which is to pass on the culture thereby ensuring its inheritance within the contemporary context, either spontaneously or through the intervention of the living heritage. Additionally, the purpose of design intervention in Changning Miao costume design is to urge it to find the path of living heritage in the contemporary environment, which is in line with the purpose of cultural protection and provides a theoretical fulcrum for design intervention in Changning Miao costume. Consequently, the modern design method to promote the protection of traditional culture is conducive to the continuation and reconstruction of cultural genes, and the activation of its spontaneous dissemination and inheritance.

1.2 Research Objectives

1.2.1 To establish a textual image database, research was conducted on the status of the Changning Miao costume as a basis for research, preservation, and development.

1.2.2 To extract the cultural identity of the Changning Miao costume, this study will examine the process arising from the inheritance and evolution of their cultural identities in adapting to ecological factors.

1.2.3 To design intervention in culture preservation to provide a stimulus for the inheritance of the cultural identity of the Changning Miao costume. The study will explore sustainable paths for intangible culture in modern society.

1.3 Hypothesis

From a cultural ecology perspective, the cultural identity of the Changning

Miao costume is constructed. By investigating the channels and mechanisms through which social and environmental factors influence costume culture, efforts are made to devise design interventions aimed at cultural preservation. Design practices and methodologies will furnish inheritors with materials and techniques for cultural production, thereby facilitating the creation of culturally enriched products for both local and international visitors. The inheritors will receive both physical and spiritual feedback, promoting their motivation and interest in cultural heritage. Ultimately, this process will contribute to the revitalization of the cultural identity of Changning Miao costumes in response to the evolving social environment.

1.4 Research Methodology

The research on the Changning Miao costume follows a combination of qualitative and quantitative research methods. Besides, the research was conducted utilizing predominantly qualitative research methods. Quantitative research methods were adopted to analyse the data and provide a theoretical basis for the qualitative research. This research employs a grounded theory method to collect and code data within the context of cultural ecology, utilizing the Changning Miao costume as a case study. The objective is to offer a guiding framework for research on intangible cultural heritage facing similar cultural dilemmas.

The data collection for the study was subservient to the main objective of the study, which was to collect data for the construction of a database, cultural-ecological study as well as design intervention study of the Changning Miao costume. In the process of data construction, firsthand data was gathered through interviews, field notes, and observations. Additionally, supplementary information was collected from published literature, books, news sources, geographical data, and government documents. The logic of grounded theory requires that one must return to the data to enter the analysis, then return to the field to gather additional data, and keep going back and forth until a theoretical framework can be refined and constructed. Following this rationale, the data collection process for the study of Changning Miao costume was conducted gradually and iteratively. Moreover, respect for the research subjects was maintained throughout the entirety of the data collection process.

Subsequently, the study examines the induction and deduction of data through coding. Cultural gene expression, ecological factors, and cultural phenomena are used as core categories, and the logic of cultural ecology is employed to organise and structure the relationships between the main categories and categories of data within the core categories and to construct a theoretical framework for data coding.

Meanwhile, the design and study of the Changning Miao costume as a case study can provide an essential source of information for comprehending the complex relationship between culture and environment and provide a basis for the design practice of intangible cultural heritage in similar environments from a cultural ecology perspective.

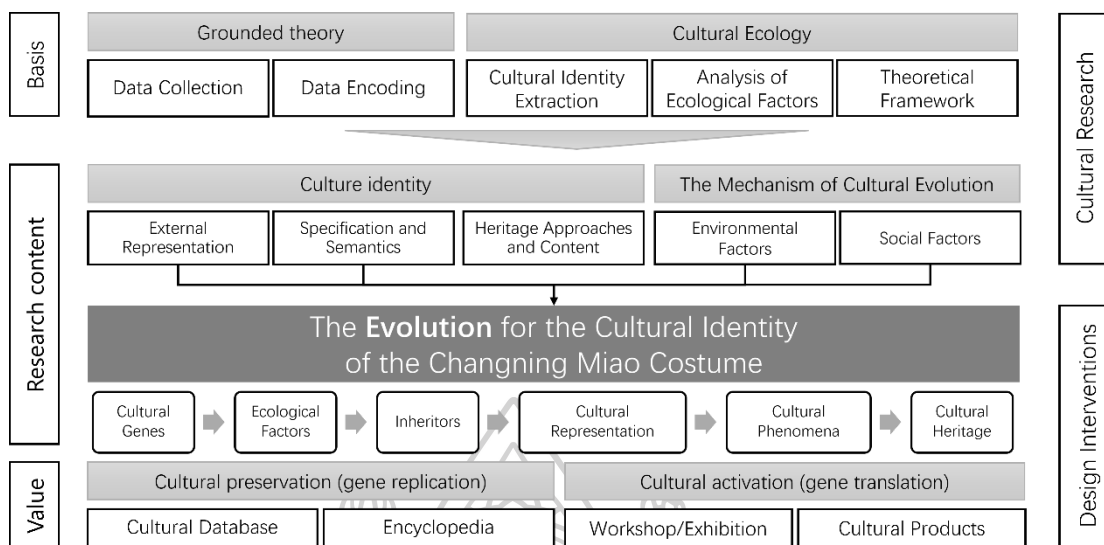


Figure 1 Research methodology and framework (Ai, 2023)

1.5 Scope of the study and limitations

The research is based on case studies and will focus on the cases themselves as well as on the safeguarding of intangible cultural heritage in comparable situations to the selected cases.

The Changning Miao attire holds the esteemed designation of being a national intangible cultural heritage of China. By delving into the distinctive patterns, craftsmanship, and cultural significance embedded within the Changning Miao costume, we discern the essence of its cultural identity. This process facilitates the meticulous organization of the Changning Miao attire system. The theoretical and practical results of the research will serve as a viable solution for the preservation and development of the Changning Miao costume.

1.6 Terminology

The Changning Miao ethnic group

The Changning Miao ethnic group is a Miao group that lives in Goujie Yi and Miao township, Changning County, Baoshan City, Yunnan Province, China. Moreover, there are 1,289 Miao people mainly in Daping and Tupitai villages.

The Changning Miao Costume

The Changning Miao costume refers to the traditional Miao costume worn by the Changning Miao ethnic group. In layman's terms, the Changning Miao costume primarily refers to the traditional attire worn by women, with the quintessential representation being the 18-piece ensemble.

Cultural Genes

Gene is an organism's genetic code, which enables intergenerational reproduction through base pairing. Comparable to biogenetic genes, scholars

commonly posit that cultural genes constitute the genetic blueprint of human cultural systems, predominantly manifesting through tangible mediums. They serve as dynamic mediators bridging ideology and material culture, with their fundamental elements encompassing thought patterns, values, uniqueness, and overarching influence.

Cultural Ecology

Cultural ecology is a multidisciplinary discipline founded and developed by American cultural anthropologist J.S. Toward in the mid-20th century. Besides, it adopts the concept of ecology and regards culture and its environment of survival and development as a cultural ecosystem that influences as well as constrains each other (Liu, 2017). It indicates the ecological significance of cultural existence and implies a holistic and dynamic view of culture and dialectical methodology, presenting a fresh academic justification for the preservation and utilization of intangible cultural heritage within the contemporary context of time and space.

Intangible Cultural Heritage

Intangible cultural heritage, hereinafter referred to as "ICH", is defined by UNESCO (2003). The "intangible cultural heritage" means the practices, representations, expressions, knowledge, skills – as well as the instruments, objects, artefacts and cultural spaces associated therewith – that communities, groups and, in some cases, individuals recognize as part of their cultural heritage. This intangible cultural heritage, transmitted from generation to generation, is constantly recreated by communities and groups in response to their environment, their interaction with nature and their history, and provides them with a sense of identity and continuity, thus promoting respect for cultural diversity and human creativity. For the purposes of this Convention, consideration will be given solely to such intangible cultural heritage as is compatible with existing international human rights instruments, as well as with the requirements of mutual respect among communities, groups and individuals, and of sustainable development.

CHAPTER 2 LITERATURE REVIEW

Introduction

As social productivity evolves and lifestyles undergo transformations, the adaptation of traditional culture to these changes has emerged as both a focal point and a challenging area of inquiry. The focus on intangible cultural heritage has shifted from the study of culture to the study of living culture as well as the revitalisation of culture, i.e. the continuity of culture. Moreover, cultural ecology studies the mutual influence between culture and its environment, Drawing upon the concept of ecology. This provides new academic research ideas for the preservation and utilisation of intangible cultural heritage (hereafter referred to as "ICH") under contemporary spatial and temporal conditions.

The literature review section will review the research in three predominant areas.

First, to review the relevant theoretical works of literature. Examine the pertinent theories and current research landscape using keywords associated with intangible cultural heritage and cultural ecology, with the objective of comprehending the academic community's progress, methodologies employed, and constraints encountered in these interconnected domains.

Second, summarise the research status of Changning Miao Costume. Examine the ethnic lineage of the Changning Miao community along with its cultural and historical underpinnings. Analyse the research themes and methodologies employed by scholars investigating the attire of the Changning Miao people, identifying both innovative approaches and research constraints.

Third, collect and analyse data from fieldwork. Collect data related to Changning Miao Costume through various methods including field investigations, interviews, and questionnaires. Classify and encode the data in the grounded theory. Summarise the core cultural identification characteristics of the Changning Miao Costume. The objective is to establish avenues and resources facilitating design interventions in cultural preservation efforts.

2.1 Review of intangible culture heritage from the perspective of culture ecology

2.1.1 Cultural ecology

Cultural ecology, which originated in anthropology, is a theory that employs the concepts, theories, perspectives and methods of ecological science to study cultural phenomena. Cultural ecology was introduced by Julian H. Steward (Julian et al., 2007) in the 1950s, and he invoked the ecological perspective to the process of cultural evolution, arguing that cultural forms and their ecological environments are inextricably linked to each other as cause and effect, and the cultural transformation reflects an adaptive response to environmental factors. The concept of environmental adaptation forms the basis of cultural ecology, in which comparable ecological environments give rise to similar cultural forms and their developmental threads, while distinct ecological environments create corresponding distinctions in cultural

forms and their developmental threads. Through in-depth inquiry, it becomes evident that ecological adaptation holds significant sway over cultural dynamics, serving as the linchpin for cultural amalgamation and evolution. Nevertheless, the more cultures evolve and the less dependent they are on their environment, the more essential the role of technological and spiritual factors becomes.

In the Chinese context, to comprehend the concept of cultural ecology, it is first necessary to clarify the concepts of cultural ecology and ecological culture. Cultural ecology is "a concept similar to that of natural ecology, in which the parts of human culture are viewed as an interacting whole" (Fang, 2001). Cultural ecology denotes the ecological framework shaped by the interplay of elements within the cultural realm. It's essential to note the distinction between cultural ecology and ecological culture: while cultural ecology pertains to the systemic interactions within culture, ecological culture, if interpreted broadly, encompasses traditional values and cultural expressions. Ecological culture in the modern knowledge system was widely comprehended and used in the middle of the 20th century, mainly from the European and American academics on the "anthropocentrism" reflection and the formation of a new ecological philosophical paradigm, including American scholars Leopold's "earth ethics", Ralston's "natural value theory" (Huang, 2021). Building upon this foundation, various knowledge systems such as ecological aesthetics and ecological literature art have emerged, contributing to the modern interpretation of ecological culture.

Table 1 Commonly cited terminology and definition in ecology and cultural ecology (Ai, 2023)

| Ecology | | Culture ecology | |
|--|--|--|---|
| Terminology | Definition | Terminology | Definition |
| Gene | A segment of DNA or RNA that codes for a specific protein or functional RNA molecule or regulates the expression of other genes. | Culture Gene /Culture identity | A unit of cultural information that can be transmitted and replicated by imitation, communication, or learning. |
| Ecological community | A group of organisms that live in the same area and interact with each other. | Cultural community | A group of people who share common cultural values, beliefs, practices, and identities. |
| Environmental factor /Ecological factor | Any aspect of the physical or biotic environment influences an organism's survival, growth, development, or behavior. | Environmental factor /Ecological factor | Any aspect of the social, cultural, and geographical environment that affects the survival or development of a culture. |
| Ecosystem | A system of interacting organisms and their environment in a specific area. | Cultural ecosystem | A system of interacting human groups and their environment in a specific area. |

In essence, cultural ecology promotes the examination of cultural development and transformation through an ecological lens, emphasizing the spatial context in which cultures evolve. It delves into the intricate interplay of diverse variables to understand how they influence the structure and dynamics of culture. In essence, it is a series of cultural concepts as well as knowledge systems constructed concerning the concept of ecology, a collection of ecologically centred cultural spiritual forms, and itself a cultural paradigm with fixed connotations and extensions.

2.1.2 Intangible Culture Heritage

Intangible Cultural Heritage denotes traditional cultural manifestations transmitted intergenerationally and regarded as components of cultural heritage, encompassing both the tangible artifacts and associated sites. Research conducted in the past three years has revealed several trends in the study of ICH worldwide. In the first place, there has been a shift from research on ICH itself to research on its conservation, development, and utilization. Secondly, there has been a shift from research focusing on heritage policy-based conservation to research on the interaction between experience and heritage conservation. Thirdly, there has been an increased emphasis on safeguarding the authenticity of ICH, prioritizing the preservation, transmission, and communication of its fundamental values. The three main aspects of the ICH conservation system are enhancing the legal and regulatory system, constructing a scientific organisational and management system, and constructing a heritage support system. In ICH preservation, China has developed concepts including salvage protection, productive protection, holistic protection, as well as digital protection (Figure 2). ICH is characterized by its inherent authenticity and dynamic nature as a living heritage, distinguishing it from tangible cultural heritage. These fundamental attributes offer theoretical feasibility for examining ICH through the lens of cultural ecology.



Figure 2 Diagram of the stages of ICH preservation in China (Ai, 2023)

2.1.3 Research on intangible cultural heritage from a cultural ecology perspective

This section reviews ICH research from a cultural ecology perspective over the past twelve years in both Chinese as well as English contexts. The objective is to furnish both a theoretical framework and practical assistance for the safeguarding of ICH through the cultural ecology perspective.

A literature search was conducted on WOS (Web of Science) and CNKI (China National Knowledge Infrastructure) platforms in Chinese and English, with a Google Scholar used as a supplemental bibliography, and 205 articles were obtained (Figure 3).

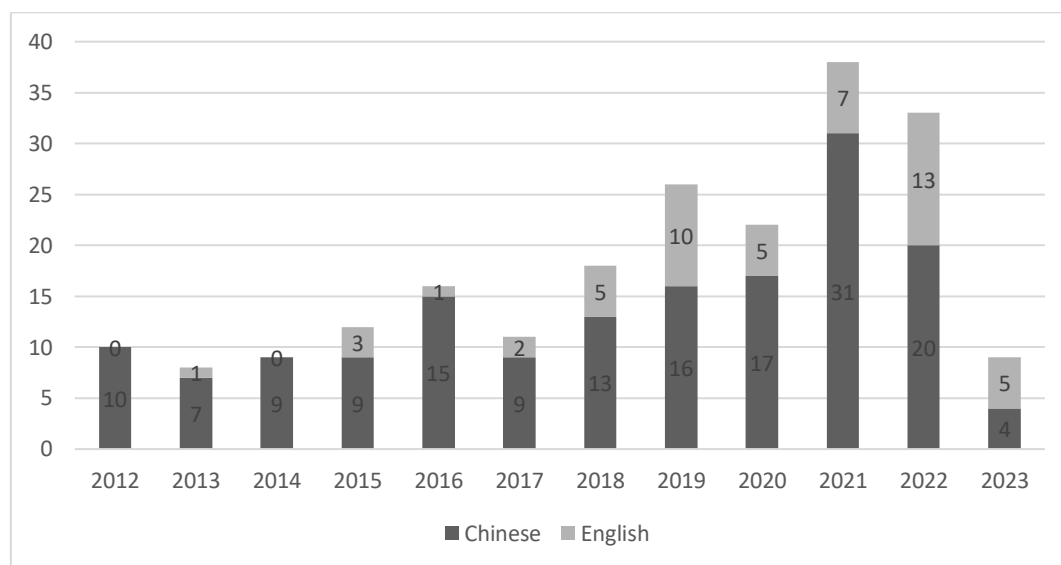


Figure 3 Annual analysis of journals (Ai, 2023)

Regarding research methodology, there are two main types, one aspect involves the construction of a research methodology and theoretical framework rooted in the fundamental concepts and theories of cultural ecology. For instance, drawing on the basic functional theory of ecosystems, the theoretical framework related to material circulation, energy flow, and information flow among organisms is employed as a basis to construct the process of ICH energy flow and circulation (Zhang, 2021). Utilizing the analogy of biological genes, computer technology is employed to analyse both tangible and intangible heritage, facilitating the construction and extraction of the inheritance genes inherent within ICH (Li et al., 2022). Secondly, by reviewing the research methods of cultural ecology, we draw on the research methods adopted by our predecessors in cultural ecology and apply them to ICH conservation practices. The analysis examines the effects of changes in social, cultural, and natural environments on ICH. explains the phenomena in the process and seeks ways and means to solve them. For instance, Hwang conducted a comparative study of the process and results of conducting handicraft learning programmes in two communities, the native and the urban, with comparative studies. The assertion is made that the indigenous area serves as the locus for the cultural ecosystem, while urban learners from foreign locales serve as catalysts to stimulate cultural awareness and learning among the natives. Together, these factors offer the potential for the restoration and reconstruction of the cultural ecosystem (Hwang & Huang, 2019). Rustagi applies the theory of cultural change to the study of the Pattu craft and argues that the cultural change first manifested in the craft and pattern design. Moreover, ICH can be activated on the condition that it receives attention from external buyers and organisations and is seen as a business opportunity (Rustagi, 2021). Nevertheless, when craft practitioners become an essential part of the means of production, they lose their identifiability, causing traditional crafts to lose their connection to traditional culture.

Regarding research perspectives, static and dynamic perspectives have been adopted to study the results of factor interactions and the process of cultural diffusion,

respectively. In the static perspective, the self and ecological elements affecting ICH are treated as separate factors (Liu et al., 2020), and the factors themselves as well as the interactions between them are studied. On the one hand, it focuses on the characteristics and pathways of an individual or a few factors (Yang, 2021), and concentrates on analysing the role of the influencing factors on the inheritance and revitalisation of ICH. For instance, from the viewpoint of cultural ecology, a mapping of cultural genes is established to analyse the cultural attributes of ICH (Zhao et al., 2014; Liu & Lei, 2023). By constructing the process of energy flow and circulation in ICH (Zhang & Diao, 2021), the influence pathways of cultural and environmental factors are explored. On the other hand, ecological factors were employed as an entry point to study the effect of ecological elements on cultural communities in the region. Studies have indicated that the distribution and transmission of ICH in the region are affected by the local cultural background, county population, natural conditions, and economic conditions (Hou & Wang, 2022; Nie et al., 2022), and the denseness of the distribution of ICH indicates a positive correlation with the development of the local tourism and cultural industries (Wang et al., 2022). From the dynamic perspective, the phenomenon and law of mutual adaptation between ICH and the environment (Jiang, 2005) are examined, focusing on the adaptive research of ICH. For instance, to explore how ethnic groups in a given region develop distinct regional cultural traits and styles, researchers investigate the perception and transformation of the geographical environment. They examine how these groups engage in cultural production by developing and utilizing natural resources (Qu, 2021). Both the creation and development of ICH reflect the residents' understanding of the environment, and embody the interconnectedness and interplay between human cultural systems and natural ecosystems (Yan et al., 2013). The distinctions in human activities superimposed on the natural environment are reflected in the distinctions in cultural patterns. Cultural heritage, on the other hand, fosters cultural identity, a sense of belonging, and community inclusion, and enhances the resilience of communities to cope with changes in the environmental as well as social context (Sandra & Robbert, 2020; Donelli et al., 2019).

Research on Intangible Cultural Heritage within the framework of cultural ecology is primarily focused on promoting the sustainable development of regional society, economy, and culture (Yang, 2021). This approach is predominantly utilized to offer informed decision-making support for communities and localities in various domains, including resource utilization (Li et al., 2022), cultural development (Tang, 2021), tourism promotion (Lin et al., 2021), and industrial planning (Zhou Jie, 2021), among others. Additionally, there is ongoing research dedicated to exploring both the theoretical underpinnings and practical applications of holistic conservation approaches for ICH within the cultural ecology context. The construction of a cultural ecological reserve is based on the holistic characteristics of intangible cultural heritage and is an essential way to protect intangible cultural heritage. It is predominantly applicable to areas with a relative concentration of cultural items, rich historical and cultural deposits, excellent survival status, and essential values and distinctive features. The application of cultural ecology in the comprehensive conservation of Intangible Cultural Heritage primarily manifests through three modes of practice: eco-museums (Liu & Tan, 2019), ICH communities (Ruchika, 2021), and cultural ecological sanctuaries (Zhou, 2021). The core proposition of cultural ecology

theory lies in discussing the interactive forms, interactive processes, and their interactive effectiveness in the relationship between culture and the ecological environment in which it is situated, and most fundamentally, the space in which culture adapts to the environment and the level of adaptation (Yang, 2019). At its core lies the human element, where a cultural ecological reserve is established through the preservation of historical and cultural heritage, alongside the creation of distinct natural and humanistic environments. This endeavour aims to cultivate and enhance the interconnections between human beings and nature, society, history, and self-awareness (Li, 2020). Through the establishment of cultural reserves, tourism development can be realised while cultural protection is conducted. Nevertheless, in this process, cultural ecology must be respected, and over-commercialised development must be avoided (Du, 2018).

2.1.4 Discussion

In the context of rapid globalization, changes in the social and cultural environment can contribute to the multiple dilemmas facing the conservation and survival of ICH. Under this opportunity, intervening in the study of ICH conservation from the cultural ecology perspective can dialectically view the relationship between culture and environment and provide a new motivation for ICH conservation.

In general, it was a research hotspot to explore the reasons faced by ICH preservation from the perspective of cultural ecology. The academic community focuses on applied cultural ecology research in ICH conservation and development and endeavours to solve the problems. They argue that constructing cultural and ecological reserves can effectively protect ICH. However, Chinese scholars have focused more on studying strategies that must be realized by integrating the strengths of the social government, enterprises, and communities. Therefore, the research was mainly in the theoretical stage.

Meanwhile, a large number of empirical evidence and case studies have enriched the multifaceted practical issues involved in ICH preservation from a cultural ecology perspective. Nevertheless, the academic community needs more theoretical research on the definition of ICH's cultural and ecological factors, as well as its role mechanism and logical construction. Some scholars were thinking and researching, trying to build the cultural ecosystem of ICH (Hwang & Huang, 2019). However, due to the diversity of intangible cultures and their regional environments, the study of the ICH cultural ecology perspective needs to synthesize the research frameworks and methods of various disciplines and select and use them in a targeted manner.

2.2 Review of the Changning Miao Costume

Western Yunnan is part of the folded zone of the Hengduan Mountains, a mountainous and alpine landscape with substantial altitude differences that made ancient Yunnan inaccessible and made it more challenging for the various ethnic groups that inhabited it to communicate. Besides, the Changning Miao Costume epitomises the history of the Miao's migration over thousands of years, and its patterns, colours, meanings, as well as artistic features. These customs have been transmitted through generations to the common ancestors of the Miao people and share certain similarities with Miao costumes from other regions. Following the

Changning Miao migration to the Changning, their exchanges with other Miao clans decreased, and influenced by the local social and natural environment, over time, they have evolved a distinct costume culture system characterized by their unique traits. As the Changning Miao Costume differs substantially from the Miao costumes of other clans, this section of the literature review will focus on papers, books, and archival materials related to the Changning Miao Costume, there are 22 papers and two books on the Changning Miao Costume. The basic information on the Changning Miao comes from the archives of the village committees of Taping and Tupitai villages in Guojie Township, Changning County, and the Changning County Journal.

2.2.1 Ethnic Origin of the Changning Miao Ethnic Group

In ancient times, the Miao lived in the middle and lower reaches of the Yangtze River and parts of the Yellow River basin and were intricately linked with the Jiu Li and San Miao of ancient times. (A Brief History of the Miao People, 1985,1). In the long history of the Miao people, they have been the most essential group in the world. Throughout much of their extensive history, the Miao did not establish their governing authority. Instead, they endured oppression from ruling elites, were impacted by warfare and calamities, and experienced five significant migrations (Shi, 1995). The migration has resulted in a pattern that is currently concentrated in southeastern Guizhou and scattered in Hunan, Hubei, Sichuan, Yunnan, Guangxi, Guangdong, Shaanxi, Beijing, and even Southeast Asia. Moreover, the dispersion resulting from this long migration has resulted in great diversity in the development of Miao society. Regarding language, costume, customs, festivals, weddings, funerals, culture, and art, on top of having standard features, they exhibit notable disparities owing to their diverse geographical dispersion. The long and substantial migratory movements have greatly hindered the development of Miao society. As a result of the necessity for safeguarding, the majority of locations inhabited by the Miao following their migration were remote, mountainous regions characterized by rugged natural terrain. The geographical and transport isolation isolated the Miao from each other in the various places they migrated to. Due to their distinct geographical and social environments, the scattered Miao interacted with other ethnic groups in their settlements, resulting in the Miao becoming more and more distinct from one another, eventually creating the phenomenon of numerous Miao branches, a wide range of dialects and diverse types of costume (A Brief History of the Miao, 1985, 14). Other ethnic groups have influenced the Miao in the region.



Figure 4 Migration map of the Changning Miao ethnic group (Ai, 2022)

The Miao people primarily inhabit high-altitude mountainous regions within Yunnan Province, China, earning them the moniker of "high mountain people." The Changning Miao are a group of Miao living in the villages of Taping and Tupitai in Goujie Township, Changning County, Baoshan City, Yunnan Province, China. Besides, the Changning Miao migrated to Yunnan in the late Qing Dynasty (Figure 4). Another group, the Xiong Miao, who live in the village of Tupitai, are thought to have migrated from the Sichuan area. Before the founding of China in 1949, the Changning Miao rarely interacted with the local Han and Yi due to poor transportation and language and cultural difference (Compilation Committee of Changning County, Yunnan Province, 1990, 642). This circumstance enabled Miao communities to undergo a relatively autonomous development trajectory subsequent to their migration to this region. Following their settlement in Changning, interactions with other Miao subgroups diminished, leading to a greater influence from the local social and natural milieu. Consequently, they gradually cultivated a cultural system imbued with distinctive characteristics unique to their region.

2.2.2 Status of research on the culture of the Changning Miao Costume

There exists a diverse array of Miao costume styles, with Guizhou province alone boasting over 100 distinct variations. The Changning Miao Costume is made of white hemp, with red, green, blue, and yellow as the five predominant colours, and has red-orange and red-pink tones, maintaining the tradition of the Miao ancestors of five-coloured costume. Moreover, the Changning Miao Costume is mainly worn by Miao women in Changning and is divided into "first-class costume" and "second-class costume". "The Changning Miao Costume is mainly worn by Miao women in Changning." In 2006, the Changning Miao Costume was designated as one of China's inaugural entries on the national Intangible Cultural Heritage list. Specifically, it was

assigned the serial number "Folklore-IX-65". The Changning Miao Costume holds paramount significance within Miao culture, serving as a manifestation of their shared aesthetic sensibilities. Beyond its utilitarian purposes as attire, it also plays a culturally enriching role by facilitating individuals to assume various roles during social engagements (Xiong, 2012). It is an essential part of the Miao culture and reflects their collective aesthetic consciousness. The utilisation of motifs and colours is consistent with Chinese culture and reflects the simple materialist ideology of the Changning Miao. The utilization of patterns and colours in Changning Miao costumes aligns with traditional Chinese cultural norms and embodies the straightforward materialist ideology of the Changning Miao community (Cui, 2010).

Cai Hongyan conducted an in-depth study of the Changning Miao Costume culture between 2012 and 2017, publishing six papers that explored the cultural symbols and symbolism of the Changning Miao Costume, the utilization of patterns and colours in Changning Miao costumes aligns with traditional Chinese cultural norms and embodies the straightforward materialist ideology of the Changning Miao community (Cui, 2010). She focuses on individuals in inter-ethnic marriages, observing their choice and presentation of body costume, and argues that the low rate of inter-ethnic marriages among the Changning Miao reflects their conscious cultural maintenance but that analysis from an individual perspective indicates unconscious cultural borrowing (Cai, 2012). The shape, colour, and pattern of the Changning Miao Costume collectively constitute its visual identity system. Meanwhile, symbols representing totems, religion, and identity contribute to its behavioural identity system. Additionally, symbols embodying concepts of reproduction, life, aesthetics, and philosophy contribute to its cultural identity system. Collectively, these elements form the symbolic system of the Changning Miao Costume (Cai, 2014). The Changning Miao Costume culture is the ethnic emblem of the Changning Miao group, carrying their ethnic memory, and is the key to maintaining their ethnic boundaries and ancestral heritage (Cai, 2015a). Obeying the aesthetic rules of costume design, the selection of colours reflects the Changning Miao people's commitment to transforming both the objective and subjective worlds following aesthetic principles (Cai, 2015b). The Changning Miao Costume, a form of costume, is an expression of the communication between the humans and the gods, as well as the worship of the hemp gods, nature worship, ancestor worship, and witchcraft worship of the Miao people through the materials, patterns, and colours of the costume (Cai, 2015c). They employ costume symbols as a figurative language, and the language of costume is interconnected with local Miao oral history and community memory (Cai, 2017). Additionally, the educational value of costume is a way to pass on the community's memory. The educational value of costume is to perpetuate the cultural heritage of the community, with local knowledge as the content and practical humanism as the basis, serving the belonging and identity of the Changning Miao community. It can enhance the community's awareness of the cultural costume transmission process (Cai, 2016).

2.2.3 Status of research on inheritance and preservation for the Changning Miao Costume

The heritage and preservation of the Changning Miao Costume can be divided into two stages, the first of which occurred prior to its inclusion on the Chinese Intangible Cultural Heritage List. The first was the need for raw materials, as hemp

cultivation in Changning was banned in 1984 according to national regulations, resulting in a severe shortage of materials for clothing among the local Miao population. 2008, after considerable effort, permission was granted for each household to cultivate 2 mu of land. Subsequently, 6.7 hectares of detoxified fire hemp were planted annually in the county for the purpose of weaving. During the 24-year ban on hemp, the Miao weaving process in Changning was close to being lost, as a large number of spinning and weaving machines were left idle and destroyed due to the fact that there needed to be a raw material for weaving. According to research conducted in 2015, over 95% of young women in Tupitai and Daping villages no longer mastered the weaving process (Xiong & Yang, 2015). The weaving process had been discontinued and the equipment destroyed. However, following the resolution of the raw materials issue, the government of Goujie Township undertook the rescue and restoration of 135 wooden spinning machines and wooden looms. In 2015, the government issued custom-made looms and spinning machines to the inheritors and organised regular training to restore the spinning and weaving techniques. The subsequent stage followed the inclusion on the Chinese Intangible Cultural Protection List in 2006. The Changning County government and scholars from civil society organisations have taken several measures to protect the Changning Miao Costume "ICH". At the government level, funding, projects, as well as policies have been employed to establish archives of projects and inheritors, collect written, photographic, and video material, and fund and train inheritors. The government has implemented certain measures to safeguard the heritage.

The Changning Miao Costume has been in the hands of scholars from Baoshan College since 2011 on the condition that the ban on hemp cultivation in the villages of Tupitai and Daping in 1984 led to a severe resource, technical, and cultural dilemma for the Changning Miao Costume's heritage. Despite the fact that the government as well as civil society organisations have conducted rescue conservation after being selected for the Chinese Intangible Cultural Protection List in 2006, completing the collection of materials, the establishment of archives and institutions, training and acquisition, and the integration of canonical texts, the issue of its cultural habitat still needs attention. With the advancement of the modern economy, the original ecological surroundings and the production and living circumstances associated with Miao traditional attire have transformed. Consequently, the values and aesthetics embraced by the Miao community have experienced notable shifts. Influenced by mainstream culture, local inhabitants no longer incorporate traditional Miao costumes into their everyday attire. Instead, they reserve them for ceremonial occasions such as celebrations, festivals, religious events, funerals, and weddings. As a result, these costumes have come to symbolize a sense of nostalgia for traditional culture. The development of the Changning Miao Costume craft is constrained by the complexity of the costume-making process, the long production cycle, the lack of raw materials, the loss of technology, the single form of the product, and the aesthetic disconnect. Besides, the need for more raw materials constrains the development of the Changning Miao Costume Craft, the loss of techniques, the single form of the product, and the aesthetic disconnect (Qi, 2019). Simultaneously, owing to the dwindling number of successors, the local Miao community has not adequately preserved the cultural essence of their attire and lacks a spirit of innovation. This has led to the gradual commercialization of the local traditional Miao costume and a

diminishing of its ornate style. Additionally, craft techniques have begun to deteriorate (Wang & Su, 2020).

In Yunnan, the conservation and development of the ICH are currently predominantly based on the replication and presentation of a tourist perspective, with the government and the organisers being the primary beneficiaries of the economic benefits of tourism. Moreover, the Changning Miao Costume's geographical and transportation conditions do not allow it to have the basic qualities of tourist development. Productive conservation is a method of safeguarding and transmitting ICH that goes beyond the scope of tourism-centric perspectives. Using the Changning Miao Costume elements and its traditional craft techniques for conservation development research, design, and production of handicrafts and household items, can stimulate the motivation for conservation and heritage preservation, while also enabling local Miao residents to derive economic benefits. (Wang & Qu, 2011). The Miao people can also enjoy economic advantages. The sustainable development of the Changning Miao Costume can be guaranteed by establishing an efficient heritage mechanism, enhancing publicity and training efforts, and identifying markets, consumers, and products (Qi, 2019). The Changning Miao Costume is a sustainable product that establishes an effective heritage mechanism and promotes and trains its market, consumers, as well as products. At a time on the condition that the preservation of cultural diversity is advocated, the inheritance of Miao costume culture is not about pushing the boundaries of what's new, but rather about preserving its cultural authenticity, taking modern aesthetics and needs as the guide, and using traditional craftsmanship and cultural content as the core for inheritance and development. Establish a platform to facilitate effective communication and collaboration between heritage inheritors and societal groups. Utilize Intangible Cultural Heritage inheritors and skilled craftspeople workshops as a means of transmission, with the primary objective of educating and perpetuating the inheritance of ICH. Additionally, the focus on developing and innovating the Changning Miao Costume into marketable and practical products geared towards tourism, home textiles, apparel, and daily necessities (Wang & Su, 2020). In this process, particular attention is paid to the economic and social aspects of the Changning Miao Costume. Meanwhile, particular attention should be paid to economic benefits flow. Only when local Miao people are profitable can the local narrative of culture be fundamentally ensured and cultural heritage be driven by productive conservation.

2.2.4 Discussion

As a representative national ICH in the Baoshan region, the Changning Miao Costume has been the subject of long-term data collection and academic research by local authorities and scholars, and significant progress has been made. Current research on the Changning Miao Costume involves the analysis of costume culture, heritage, and conservation strategies, and craft research. Nonetheless, on the whole, it indicates more records and accounts with a single research perspective and no system. Considerable research remains to be conducted on the Changning Miao Costume, particularly in the realm of data collection. The Changning Miao Costume, located in a remote area, has very few records of their culture and life in the past. Secondly, further scientific research is required. Based on current research, the majority of cultural content investigations rely on local oral histories and necessitate greater

alignment with documentary records. For the study of motifs, the content is frequently based on textual descriptions, needing corresponding photographs of motifs and artistic, theoretical analysis. Thirdly, basic and practical research is conducted systematically, and archives and databases have been established to conduct practical research on the Changning Miao Costume.

2.3 Stakeholder for Changning Miao Costume

There are three main categories of stakeholders in the Changning Miao costume (Figure 5). The core circle is predominantly the inheritors and future inheritors of the Changning Miao costume. Next are other residents and potential consumers of the costumes and their derivatives. And again, the practitioners of ICH cultural preservation.

The inheritors of the Changning Miao costume include two categories, the first being the inheritors of the costume culture among the Miao residents living in the Daping and Tupitai villages. The main focus is on those who have an essential influence on the inheritance of costumes, including older and skilful inheritors, village rights holders, and those who are engaged in related cultural work. They serve as both inheritors and representatives of culture, exhibiting a strong sense of cultural identity. The Changning Miao costume is embroidered and sewn by local Miao women, intensively reflecting their aesthetic concept and group consciousness. Moreover, the design needs to be in line with their interests, and the outcomes should be entrusted to them for fabrication and production to ensure alignment between the design intervention pathway and the expression of cultural heritage, thereby also providing them with economic and spiritual benefits. Additionally, the Miao residents in Daping and Tupitai villages, comprising Miao children attending Tupitai Primary School, local Miao adolescents, and young inheritors, are the focal points of cultural dissemination and preservation efforts. They are the key stakeholders in whether the Changning Miao costume can be passed on. Their identification with the culture and their mastery of the costume skills will determine the future transmission and dissemination of the Changning Miao costume culture.

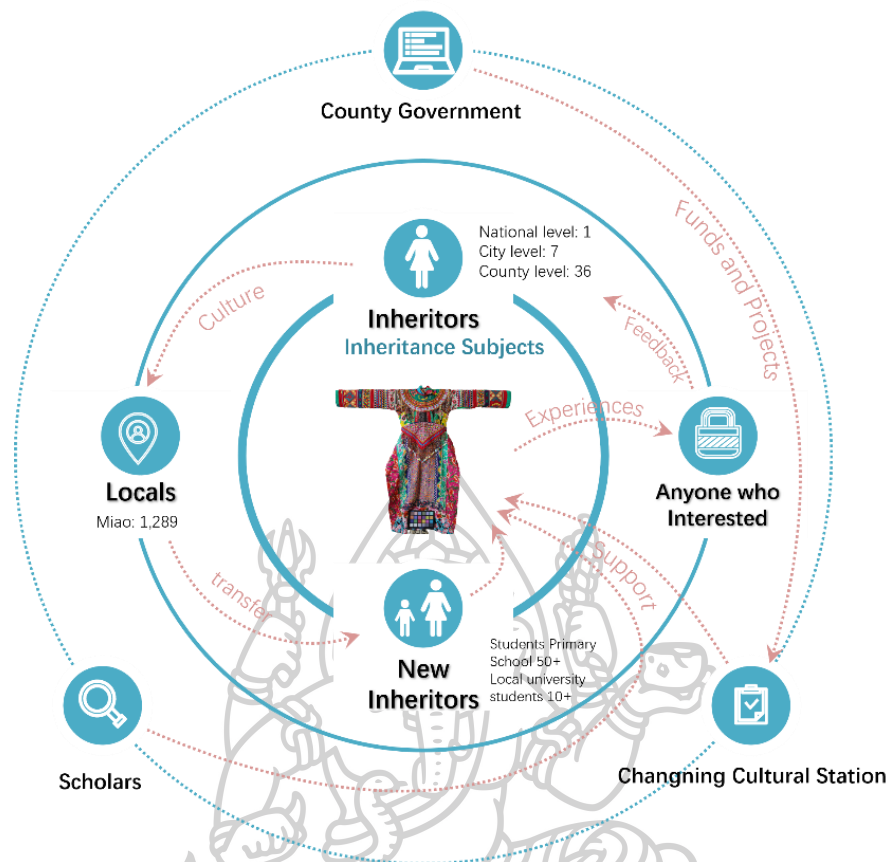


Figure 5 Stakeholder of the Changning Miao Costume (Ai, 2023)

Potential consumers of the costume and its products are likewise the target users of the results of this design, which predominantly include residents of Goujie and visitors interested in the local costume culture. Through interviews with the inheritors of the products selling the Changning Miao costume, we learnt that the customers who buy the products are mainly divided into two categories. Customers from outside the region demonstrate a preference for purchasing hand-embroidered pieces. Residents, including Miao, Han, and Yi ethnic groups residing in the vicinity, constitute the primary consumer base and display a penchant for purchasing embroidered bags and other functional small items.

Practitioners of ICH conservation predominantly includes members of local cultural organisations and scholars who conduct relevant research. They serve as intermediaries for the advancement of the Changning Miao costume, and their sustained research efforts can offer valuable support and guidance for the project's research endeavours. Furthermore, they can assist in obtaining policy and financial backing for the Changning Miao costume. Their attentive focus on study has also bolstered the project's rigor in drawing conclusions and implementing practices.

2.4 Research of Changning Miao Costume from the Perspective of Cultural Ecology

In the inheritance of culture, the uncertainty resulting from individual

influence and the revision of consciousness from the group exist simultaneously, and the interaction of the two forms the driving force of the living inheritance of ICH. In the inheritance of Miao craftsmanship and culture, all Miao women serve as both the producers and designers of Miao costumes, as well as the creators of their costume culture. The Miao people have been migrating for thousands of years and have spread widely, without writing for a long time. Nonetheless, the Miao costumes of all clans have preserved the cultural characteristics of the same lineage. In this process, costumes have played an essential role in the transmission of Miao culture.

From the perspective of cultural ecology, analysing the cultural and ecological factors of their regions and studying their mechanisms of action can resolve the problems faced by the Changning Miao costume and its root causes. Besides, the ecological factors of the Changning Miao costume are categorised into environmental factors and social factors. Environmental factors encompass geographical location, settlement site selection, and cultural space. Social factors encompass institutional, technological, economic, and cultural aspects.

2.4.1 Environmental factor analysis

2.4.1.1 Location and geography

The Changning Miao primarily resides in the valley and its surrounding areas on the eastern side of the Lancang River. Administratively, they belong to the Daping and Tupitai villages within the Goujie Yi Miao Township of Changning County, Baoshan City, Yunnan Province. The land area of the wrinkled Street township is 358 square kilometres, with an average temperature of 15.9°C, annual rainfall of 775.8mm, and an altitude of 1100-2858m. Besides, there are 11 administrative villages under its jurisdiction, with a total population of 23,633, including 1,289 Miao, predominantly in the villages of Daping and Tupitai. Additionally, the village of Daping is located 5 km from the township government and is divided into 25 groups of villagers according to their natural settlements. There are 695 Miao inhabitants in the area.¹, primarily living in seven settlements: Dachunshu, Xianshuidong, Dalongtan, Longtan, Shangmiku, Yangbabalin, and Dashuitang. Based on field research findings, four households consisting of 18 Miao individuals in Xiamiku village, and one household with 2 Miao individuals in Goujie Town, were not included as a sample for the Miao community analysis due to their scattered residence and small population size. Tupitai village is 13 km away from the township government, with 10 village groups and 545 Miao inhabitants², mainly living in 3 settlements: Qimulin, Niutoushan, and Xiongjia (Figure 6).

¹ From: Basic information about the Miao ethnic group in Daping Village

² From: Village Profile of Tupitai Village



Figure 6 Location map of the Changning Miao ethnic group (Ai, 2023)

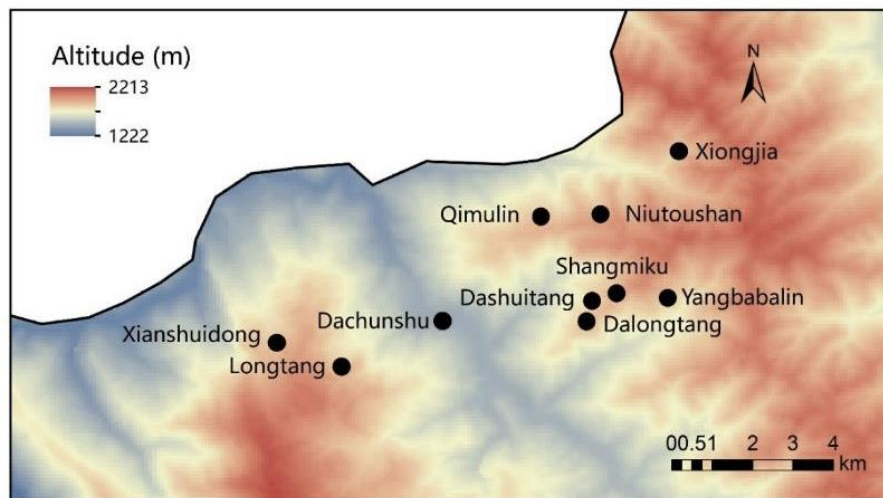


Figure 7 Altitude Schematic of Changning Miao Natural Villages (Ai, 2023)

Regarding climate, Changning County has a subtropical monsoon climate in

general. Notwithstanding, due to the effect of altitude and the direction of the mountains, the weather varies with the altitude. Besides, the whole area is divided into low tropical, temperate, cool, and alpine zones according to altitude.

2.4.1.2 Site of Settlements

The choice of site for a settlement is generally linked to the natural environment in which it is located, and the adaptation needs of the people to survive. The Miao's history of migratory challenges, coupled with social factors, has instilled in them a cautious approach towards selecting settlement locations. Moreover, the study maps the location of 10 villages (Figure 8) based on map data and field research and analyses the location of the Miao settlements in Changning regarding vertical and planar spatial characteristics. The location of settlements dictates the natural resources and environmental conditions accessible to the Changning Miao community.

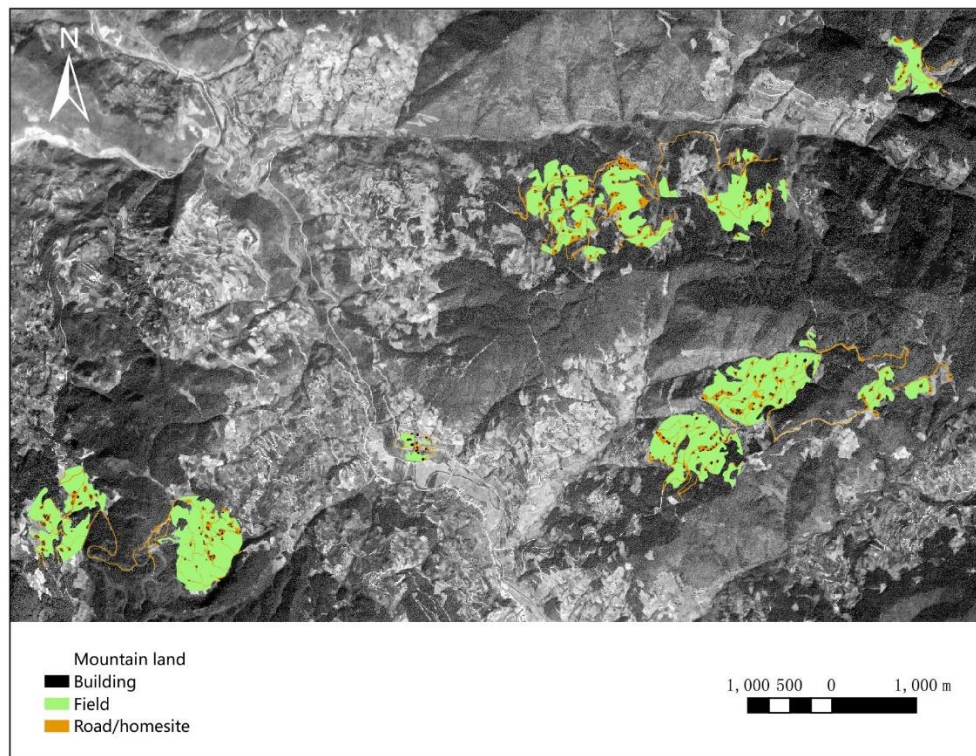


Figure 8 Map of the Changning Miao settlements (Ai, 2023)

Vertically, the Miao settlements are all in mountainous alpine areas, with substantially higher elevation data than their Han and Yi counterparts in the same region. Moreover, the average altitude of the Daping and Tupitai village areas is approximately 1600m, with the highest altitude in the region's mountains being 2500-2600m. There are 10 Miao settlements in the Changning Huweijie area, all situated amidst the high-altitude mountainous terrain. The altitudes are 1550m at Dachunshu, 2050m at Xianshuidong, 2000m at Dalongtan, 2000m at Longtan, 2000m at Shangmiku, 2100m at Dashuitang and 2250m at Yangba Balin in Tapitai village, and 2000m at Qimulin, 2050m at Niutoushan and 2200m at Xiongjiazhai in Tupitai village. The majority of these settlements are located in areas with altitudes of 2000-2300m, in the high-altitude zone of settlements in the same region. The village of

Dachunshu is the only settlement at a slightly lower altitude of 1500-1600m. The majority of settlements are situated on slopes ranging from 10 to 20 degrees, with some located on steeper slopes of 20 to 30 degrees.

Horizontally, the Miao settlement is centred on the river valley area of Daping village, following the topographic elevation of the Hengduan Mountains as well as extending outwards in parallel along the contours.

2.4.1.3 Cultural Spaces

In a broad context, transmission refers to the comprehensive process by which individuals acquire culture and pass it on. Therefore, all spaces where individuals interact with each other, and society can be considered transmission sites. The traditional community of the Changning Miao is the site of its cultural transmission, which manifests itself in the form of the Changning Miao colony. Furthermore, the fields, family yards, activity squares, and cultural heritage houses in the settlements are all spaces for transmitting and disseminating culture. Meanwhile, studying the spatial structure of the settlements enables a better comprehension of the Changning Miao Costume's place and influence in its traditional culture. In the course of their prosperity, the Miao colonies gradually expanded, forming scattered but orderly architectural clusters. Changning Miao settlements were built on a family basis, with several brothers of a family frequently living near each other, forming a cluster of buildings.

The majority of buildings in the settlement are positioned along the ridge of the hill, ascending the hill to optimize indoor lighting and heating. Due to their placement against the ridge, these houses typically lack a fixed orientation and are predominantly oriented towards the open valley, following the principle of facing the sun. The clusters of buildings in the settlements move up the hillside in steps, generally with three gradients (Figure 9, Figure 10). Besides, the lower platform space retains the traditional Miao two-storey dry-pen building function, with the bottom floors housing livestock including cattle, chickens, and geese, and the upper floor being semi-open. Additionally, the middle platform is generally the same height as or slightly lower than the upper level and is employed chiefly as a courtyard for drying cereals, hemp sticks, and clothes. Except for that, the higher platforms are for the 2-3 storey residential main house. Some families also add functional rooms including kitchens and toilets to the side.



Figure 9 Diagram of the spatial characteristics of the buildings (Ai, 2023)

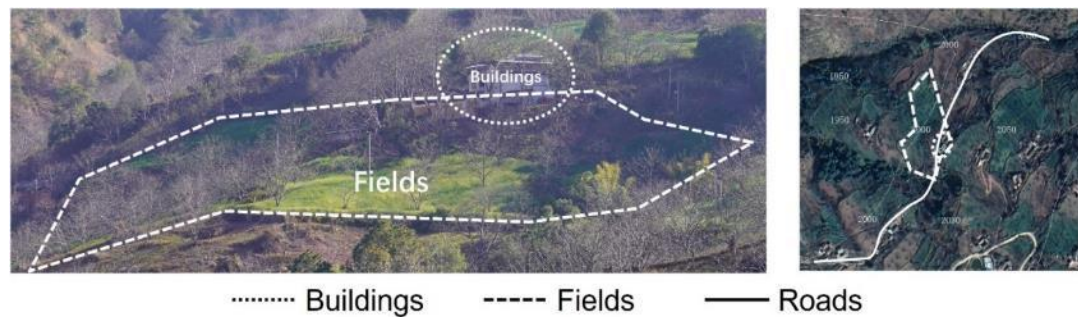


Figure 10 Diagram of the family unit (Ai, 2023)

The culture of Changning Miao Costume is intricately linked to their spatial production. They documented the aspects of their lives and production through the patterns depicted on their costumes, and these associated activities influenced the production of space. In the past, hemp growing, hemp making, garment making, and embroidery constituted the primary occupations of Miao women, occupying a significant portion of their daily productive life. In the Changning Miao family unit space, hemp was cultivated in a field close to the house. Moreover, production activities related to dressmaking, including hemp-making, weaving and embroidery, were mainly carried out indoors in semi-open spaces. The space of the settlement creates a site for the Changning Miao Costume to be passed on. Simultaneously, its functional layout is likewise influenced by the costume activities, giving a cultural character to the spatial production of the Changning Miao settlement.

2.4.2 Social factor analysis

2.4.2.1 Institutional factor

The process of crafting the Changning Miao Costume is not merely a task but a cultural event and ritual that unfolds over an extended period. It involves individuals in the production, maintenance, and adjustment of their social networks. Each Miao woman serves as a node within the small, close-knit community, playing a significant role in society. Through activities including dressmaking, they frequently interact with relatives, friends, and clansmen, forming a social network system centred on the community. Besides, the skill of dressmaking determines to some extent the status of women in Miao society, and the more skilled individuals gain prestige by imparting dressmaking skills, while those with lesser expertise seek collective refuge through learning dressmaking skills and receiving guidance in the craft. Each person in the group has the dual role of helper and beneficiary and helping each other transforms into an obligation fulfilled collectively. Moreover, this intra-community cooperation is not an exchange of goods for the benefit of individuals but rather a group identity based on a collective personality. This concept nurtures a universally acknowledged principle of value and fosters a sense of collective belonging. In essence, within local communities, the structured establishment of social relations in dressmaking serves as the linchpin for maintaining stability. This is particularly true for the migrating Miao groups, where the social and cultural functions assigned to costume are employed to record history and increase group cohesion so that the group does not fall apart and

disintegrate due to changing circumstances as it continues to migrate. This traditional social system is undergoing rapid transformation. An administrative village-based management system has replaced the original community-based social system.

2.4.2.2 Technologic factor

The Changning Miao Costume, as an art form, is an expression of Miao women's psychology and is also determined by the productivity and production relations of the Miao people. Geographical constraints have contributed to the relatively independent and distinctive development of the Changning Miao Costume over the past few centuries.

Notwithstanding, after 2000, machine-embroidered products in modern craft production techniques and their low prices and vibrant colours attracted the attention of Miao women. Additionally, the traditional weaving craft was abandoned, and the emergence of cross embroidery and machine embroidery squeezed out the living space of other embroidery crafts in Changning Miao costume.

2.4.2.3 Economic factor

Since ancient times, the Changning Miao has led a long, closed, and conservative life, maintaining a subsistence smallholder economy with the family as the unit of production and a low level of production and productivity, with hunting, farming, and weaving being the main elements of their lives, and embroidery and dressmaking being essential elements of women's labour. From the year 2000 onward, economic development has precipitated changes in local Miao production methods. Moreover, frequent exchanges with the outside world have altered the traditional way of life among the local Miao people. The cultivation of cash crops including roasted tobacco and walnuts, organised and led by the government, local Miao villagers increasingly relied on it as their main source of income, and the initiative of the local young generation opted to seek employment outside their villages to generate income instead of engaging in the repetitive field and textile work. With the development of social productivity, traditional production methods are no longer adapted to productivity. Additionally, the refinement of the social division of labour has made commodity exchange and labour exchange the most essential way of solving the livelihood problems of the Changning Miao.

2.4.2.4 Cultural factor

For thousands of years, Miao costumes have carried the history, culture, and folk traditions of the ethnic group, reflecting the aesthetic sensibilities and aesthetic emotions of the people. In the vision of globalisation, cultures frequently exist in competing forms, with one culture attempting to gain a dominant position over another. The effects of modernization and globalization have resulted in the dissemination of dominant cultural forms from society to regions where traditional culture is prevalent, competing with the native culture in several dimensions including ideology, values, and outlook on life. In this context, Miao costume, akin to other minority ICHs, has unavoidably encountered the influence of dominant foreign cultures. While modern industrial civilisation has altered the way of life for the Miao people, it has also reshaped their ideology and aesthetic sensibilities. The influence of mainstream culture on the new generation of Miao in Changning is manifested in the

gradual Sinicization of costume and wear. During conversations with local Miao, when queried about their preference for their ethnic costume, almost all expressed a strong affinity for it. Despite the fact that they believe their garments to be aesthetically pleasing, Han Chinese costume is the preferred choice of the local Miao for everyday wear due to its wide range of styles, low cost, and ease of wear and cleaning.

2.4.3 Explicit expression

2.4.3.1 Style

The Changning Miao Costume is divided into distinct costumes according to gender and age. The men's costume is either short or long with a long lapel, mainly black and white, with embroidery around the waist and collar. Moreover, the eighteen-piece set of women's costumes is the most representative costume, which consists of a loop hat, long sleeve blouse, collared garment, shawl, large square apron, small square apron, small triangle apron, ribbon, pleated skirt, girdle, as well as leg wrap.

A description of each piece and a diagram of the layouts are located in Chapter 2 of the Encyclopaedia of Changning Miao costume in the Appendix.



Figure 11 The Changning Miao Costume (Ai, 2022)



Figure 12 Pieces diagram of Changning Miao Costume 1 (Ai, 2023)

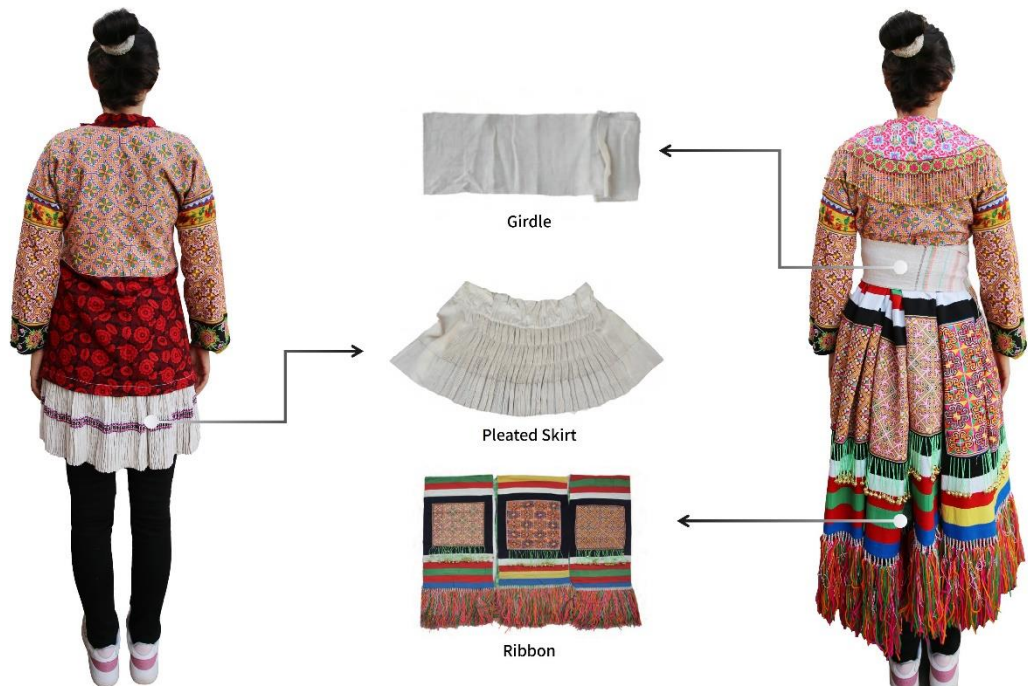


Figure 13 Pieces diagram of Changning Miao Costume 2 (Ai, 2023)

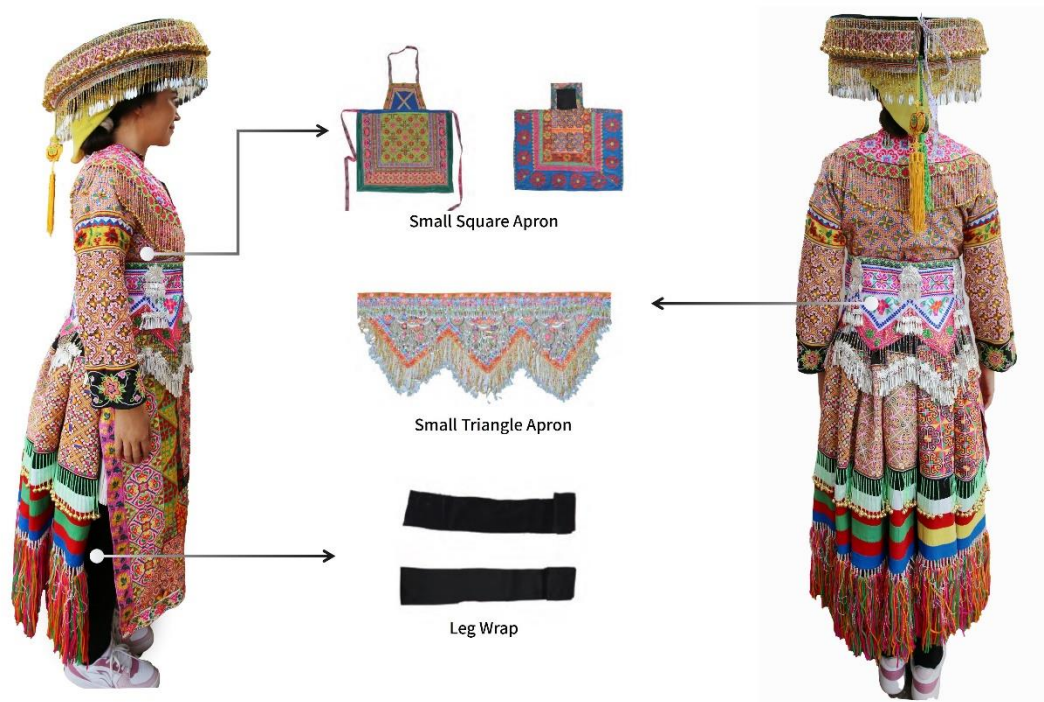


Figure 14 Pieces diagram of Changning Miao Costume 3 (Ai, 2023)

2.4.3.2 Material

The Miao song sings, "There is no hemp in the world without the Miao family" and "Where the Miao is, they bring hemp with them". Hemp refers to *Cannabis sativa L. subsp. sativa*. Cultivation and handling of it is an essential part of the genetic expression of the Changning Miao Costume culture. For the Miao community, hemp culture is deeply ingrained in their cultural heritage and history, serving as one of the core elements of their cultural identity. For the Changning Miao group, the influence of hemp culture is evident in their dressmaking practices, way of life and production space. Hemp costumes the 'costume' part of their 'costume, food, housing and transport'. Moreover, the Miao of both Daping and Tupitai villages grow hemp and believe hemp costume can protect them. During periods of limited access to medicine, Miao individuals would wrap their wounds with hemp cloth, believing that it would help prevent inflammation and ward off evil spirits. They also wore hemp clothing to ensure smooth and fortunate days. Additionally, upon passing away, they would be consumed in traditional hemp attire to facilitate the return of their souls to their homeland and be acknowledged by their ancestors.

The Miao people of Changning mainly grow hemp as a raw material for weaving. Notwithstanding, for the past 20 years or so, during the Changning anti-drug campaign, the Miao people of Changning have been instructed to refrain from cultivating fire hemp due to the addictive properties of its seeds. In 2008, thanks to the concerted efforts of numerous individuals, the Miao residents of Renhu Street in Changning resumed the cultivation of non-toxic hemp. Notwithstanding, for reasons of convenience and economy, numerous Miao women remain using chemical fibre fabrics to make their clothes. Traditionally, the Changning Miao Costume utilized silk

thread for embroidery. They did not rear silkworms to produce silk thread; instead, most of the silk thread used for embroidery was obtained through purchase or exchange with the Han group at the market. With the spread of chemical wool threads, most embroidery is now done with cross embroidery cotton threads or cashmere threads.



Figure 15 Changning Miao residents seeding and reaping non-toxic hemp (Ai, 2023)

2.4.3.3 Craft

The Changning Miao Costume retains its whole production process, divided into the hemp spinning process and the Miao embroidery process. The hemp spinning process entails several steps, including cultivating hemp, harvesting it, cutting it, retting it, spinning it, bleaching it, drawing thread, and finally weaving it (Figure 16). The Miao embroidery process includes embroidery techniques, ornamental patterns and colour matching of ornaments.

The Changning Miao Costume predominantly employs flat embroidery (Figure 19), patchwork embroidery (Figure 20), lock embroidery (Figure 21), and cross embroidery (Figure 22) techniques. Among these, cross embroidery is the most prevalent and serves as an entry-level embroidery skill that nearly all Changning Miao women can adeptly master. Patchwork embroidery, also referred to as cut embroidery, involves assembling pieces of fabric onto a base cloth to form a design. It is a challenging technique, but when mastered, it is very fast and is mostly employed to model plant motifs and working tools. Lock embroidery is adopted to embroider botanical and animal designs and demands a solid understanding of composition and drawing principles. Flat embroidery stands out as one of the most challenging techniques employed in the Changning Miao Costume, forming an integral part of the traditional Miao counted yarn embroidery. The flat embroidery uses the warp and weft grid that naturally forms on the condition that the hemp is woven as the unit of graphic composition. Consequently, most of the Changning Miao patterns are geometric in character. They pre-calculate the required number of grids for each pattern and subsequently delineate the pattern using black silk thread along the warp, adhering to the predetermined grid count. Once the outline is finished, the flowers are started along the warp or weft lines, with the whole piece of embroidery indicating just the black thread on the back and the colourful thread on the front.

For detailed process and description of weaving hemp fabric refer to Chapter 3 of the Encyclopaedia of Changning Miao costume in the Appendix. For the process and craft of embroidery, refer to Chapter 4 of the Encyclopaedia of Changning Miao

costume in the Appendix.



Figure 16 Hemp Spinning Processes (Ai, 2022)



Figure 17 Wooden looms (Ai, 2021)



Figure 18 Spinning machines (Ai, 2021)

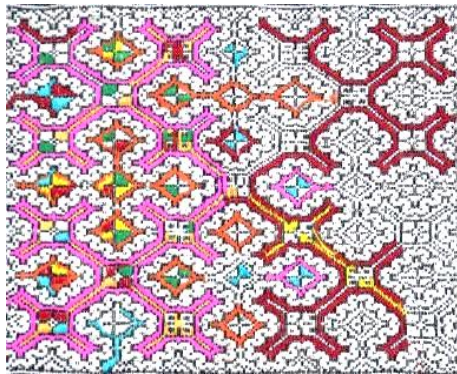


Figure 19 Flat embroidery
(Ai, 2022)



Figure 20 Patchwork embroidery
(Ai, 2022)



Figure 21 Lock embroidery (Ai, 2022)



Figure 22 Cross embroidery (Ai, 2022)

2.4.3.4 Pattern

The Miao call embroidery patterns that have been handed down for a long time and that can be passed on in the costumes of multiple clans "mother flowers". On the condition that making traditional costumes, Miao women record the history of their community and their own observations of life in their embroidery patterns, as well as those patterns that are recognised by women within the community are passed on. Despite the fact that the Miao have a history of migration that has lasted thousands of years and are now scattered and settled all over the world, the common cultural genes inherited from their ancestors persistently manifest in their costumes. These genes are the "mother flowers" of the Changning Miao costumes. When extracting the patterns of the "mother flower," it is imperative to select patterns that have consistently appeared across samples from various time periods and are widely acknowledged by the Miao women of Changning. These patterns primarily fall into the following two categories:

Firstly, the patterns inherited from the traditional culture and history of the Miao people can be found in comparable samples of Miao costumes from other clans. By combing the pattern data of the collected samples of Changning Miao costumes, and subsequently comparing and filtering them with the patterns in the collections of Miao costumes in Yunnan Museum of Ethnic Minorities, Guizhou Museum of Ethnic Minorities, and Museum of Ethnic Costumes of Beijing Institute of Fashion

Technology.

Secondly, the patterns are widely recognised and then passed down by the Changning Miao community. They represent the culmination of the wisdom acquired through the observation and practical experiences of Changning Miao women in their daily lives, stemming from their keen observations and reflections on life, nature, and society.



Figure 23 Chengchi pattern and Tongqian patterns in Miao costume in Guizhou
(Photo credit: North Costume Ethnic Costume Museum, 2020)



Figure 24 Huolian pattern and Kaoli patterns in Miao costume in Guizhou
(Photo credit: North Costume Ethnic Costume Museum, 2020)

After the initial extraction of the "mother flower" samples, a focus group was organised with three people related to Changning Miao costumes. Besides, the focus group consisted of one inheritor, one Miao scholar, and one local resident. The three members were initially tasked with selecting what they deemed to be typical patterns of Changning Miao costumes from the pool of 223 extracted patterns, and subsequently, the selected patterns were classified and compared. Finally, the patterns of Changning Miao costumes were categorized into three groups, specifically composition patterns, standalone patterns, and supplementary patterns. Following the organisational law of the same composition pattern, the flexible and adaptive filling of various independent patterns and auxiliary patterns, along with clever colour matching, finally form the ever-changing patterns in Changning Miao costumes.

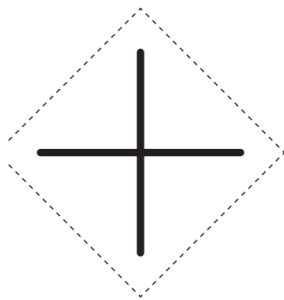
Simultaneously, there are a large number of patterns in the samples that cannot be deciphered and categorised. These distinctive pattern designs were crafted by Changning Miao women based on their personal preferences and aesthetic sensibilities during the garment-making process, representing the embodiment of their collective wisdom. Nevertheless, due to the fact that they are not typical, they are not included in the core inheritance gene map of Changning Miao costume.

For pattern analysis and more samples refer to Chapter 5 of the Encyclopaedia of Changning Miao costume in the Appendix.

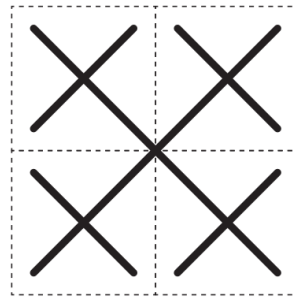
(1) Composition pattern

The pattern of a cross-unit of Changning Miao Costume usually occupies 50-90 frames, In the construction of a cross-unit pattern in the Changning Miao Costume, two threads intertwine to create one frame. This indicates that each cross-unit pattern typically spans 50-90 frames, requiring a total of 100-180 threads per unit. Additionally, considering the seam edges, a complete set of patterns typically encompasses 4–8-unit patterns in width. Such composition patterns have become the most representative patterns in Changning Miao costumes (Figure 25).

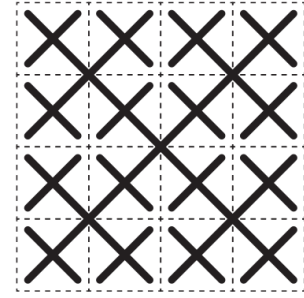
In Changning Miao's narrative about their ethnic groups, the patterns in their costumes are considered to be "maps" that can guide their souls back to the home of their ancestors. Besides, the "road" in the map is primarily in the form of an "X", and there are flexible ways of connecting them according to the embroidery width. Based on the X-shaped composition, the pattern is decorated and varied with a variety of auxiliary patterns, including the shell pattern, coin pattern, flower pattern, etc. Additionally, the "road" in the map is predominantly in the shape of an X, and there are flexible ways of connecting them according to the embroidery. Based on the X-shaped composition, the pattern is decorated and diversified with an assortment of supplementary patterns, including the shell pattern, coin pattern, flower pattern, etc., so that the pattern indicates a variety of colours and decorations have evolved, including the Kaoli Pattern, Chengchi Pattern, and Shizi Pattern.



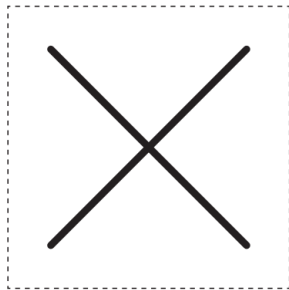
Shizi pattern composition



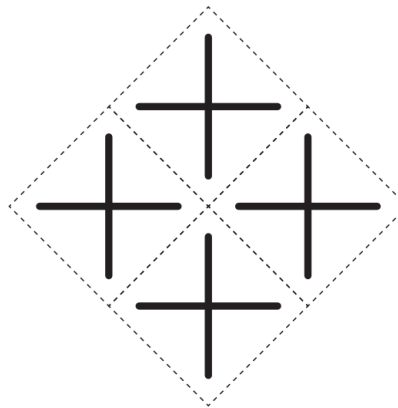
Kaoli pattern composition



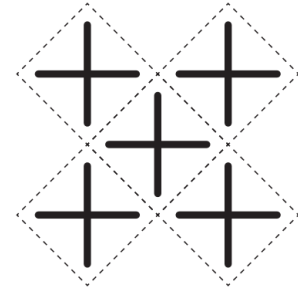
Quadripartite composition



Chengchi pattern composition based on single X



Chengchi pattern composition based on four X



Chengchi pattern composition based on five X

Figure 25 Pattern composition (Ai, 2023)



Figure 26 Kaoli pattern (Ai, 2023)



Figure 27 Chengchi pattern (Ai, 2023)



Figure 28 Shizi pattern (Ai, 2023)

(2) Independent Patterns

Independent patterns frequently have a fixed pattern organisation, adhere to the principles of rhombus and square composition, and employ bipartite continuous or quadripartite continuous composition forms in pattern construction. The majority of the organic patterns in Changning Miao costumes can be categorized as independent patterns. Moreover, most of the organic patterns in Changning Miao costumes can be categorised as independent patterns. Among the geometric patterns, the frequency of appearance is high and representative of the Bajiaohua pattern, Huolian pattern, and Xingchen pattern.

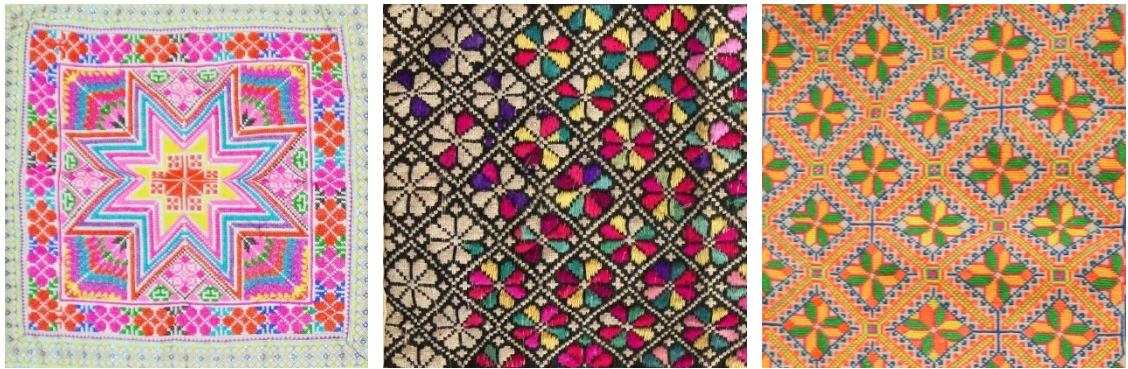


Figure 29 Bajiaohua pattern (Ai, 2023)



Figure 30 Huolian pattern (Ai, 2023)



Figure 31 Xingchen pattern in Changning Miao Costume (Ai, 2023)



Figure 32 Laozuo pattern (Ai, 2023)

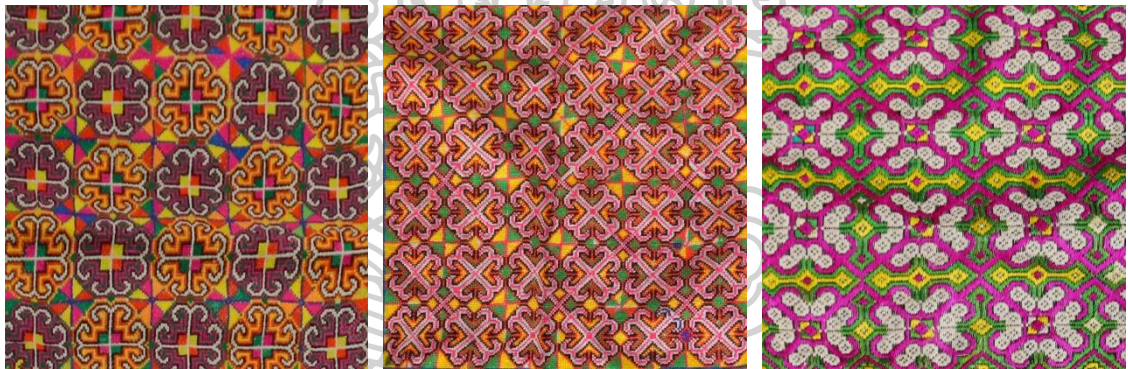


Figure 33 Combination of Gongjian pattern and field pattern/copper money pattern (Ai, 2023)



Figure 34 Butterfly pattern (Ai, 2023)

(3) Subsidiary Pattern

The subsidiary patterns in Changning Miao costumes are inherited from the traditional patterns of Miao costumes, and the same composition of auxiliary patterns can be identified in the costumes of numerous branches of the Miao. The subsidiary patterns found in Changning Miao costumes largely inherit traditional patterns from Miao costumes, with similar compositions of auxiliary patterns observed in costumes across various Miao branches.

The traditional patterns include the shell coin pattern, the button pattern, the field pattern, the dog's paw pattern, the sheep's hoof pattern, the bow and arrow pattern, etc. Moreover, with the popularity of cross embroidery throughout the country, geometric flower patterns and heart patterns are also employed. With the popularity of cross embroidery throughout the country, geometric flower patterns and heart-shaped patterns have also appeared in embroidery pieces.

There are two types of subsidiary patterns: one is used in conjunction with the composition pattern and is adaptively filled based on the conformity to the composition pattern. There are two types of subsidiary patterns, one is adopted together with the composition pattern and is adaptively filled on the basis of conforming to the composition pattern, while the other is employed as a lace, using the law of bipartite continuity for locking decorations which tend to appear relatively fixed collocation, including Tongqian pattern and Beibi pattern, and Tongqian pattern, and its collocation form is relatively fixed.



Figure 35 Beibi patterns (Ai, 2023)

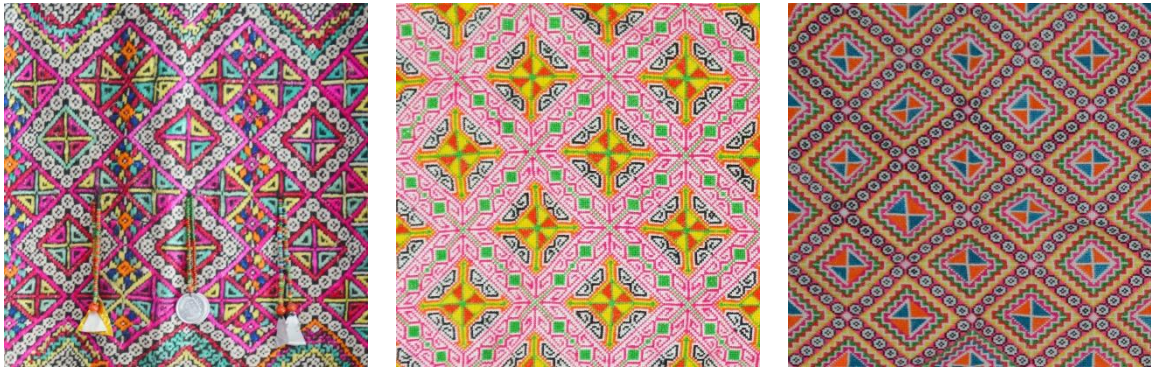


Figure 36 Tiandi pattern (Ai, 2023)



Figure 37 Yangtuhua pattern (Ai, 2023)



Figure 38 Tongqian pattern (Ai, 2023)



Figure 39 Shan and Shui patterns (Ai, 2023)

2.4.3.5 Colour

The colour of costume is a unique symbolic expression, and the core expression carrier of national cultural characteristics and aesthetic interests, which plays an essential role in the inheritance of costume culture. (Zhao & Yin, 2020). Changning Miao costume is known as the most essential costume of the Miao people in China. Changning Miao attire is commonly referred to as the "colourful costume," with the inheritor Tao Meiyuan describing the colours as symbolic of Miao history. The "mother flower" pattern does not dictate the selection of colours; instead, Changning Miao women follow their individual aesthetic preferences when choosing colours. Nevertheless, the colours of Changning Miao costume indicate relatively consistent features: the primary colours of linen, plus red, green, blue, black and yellow are the main colours, with red-orange and red-pink tones overall. This indicates that on the condition that making clothes, they still follow a potential rule for colour selection, and this rule of choosing and employing colours determines the expression of the colours of Changning Miao costumes. Consequently, finding and clarifying this rule, which is the colour gene of Changning Miao costumes, can facilitate cultural inheritance and development more effectively, while also providing material and a foundation for design tasks.

The colours of Changning Miao costumes are expressed through embroidery, and they tend to embroider all parts of their costumes that are displayed to the outside world. Thus, the embroidery patterns in Changning Miao costumes were chosen as the original material for analysis, and the embroidered patterns were extracted from the collected coded costume samples, and following classifying them according to the time on the condition that the costumes were made, the K-means cluster analysis was quantified separately for each pattern. The K-value of 7 was chosen through the analysis of embroidery patterns. The colour gene map of Changning Miao costumes was obtained by separately clustering analysis of over 270 extracted patterns. Moreover, the basic steps of the study are as follows: in the first place, the completed coded samples were classified according to the production time and costume parts, and the classified samples were pre-processed for colour correction, and then the

embroidery patterns were extracted. Subsequently, the K-means cluster analysis procedure programmed in Python was applied to complete the colour data of individual samples. Finally, based on the classification, the results of the quantitative analysis were visualized as data to generate the colour gene map of Changning Miao costumes.

In this process, the study obtained two sets of visualisation data, one is the colour analysis mapping of individual patterns, which was adopted for the presentation of patterns. Moreover, the second is the colour mapping of quantitative analysis of Changning Miao costumes, which was employed to conduct data analysis and colour gene mapping research on the evolution of Changning Miao costumes.

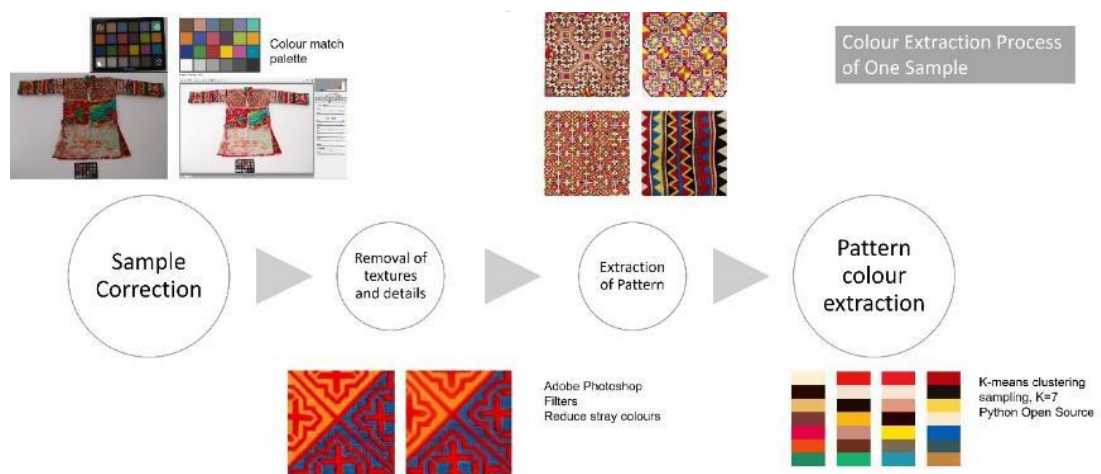


Figure 40 Colour extraction process for a single sample (Ai, 2023)



Figure 41 Colour clustering results before 1980 (clustered separately)



Figure 42 Colour clustering results before 1980 (overall clustering)

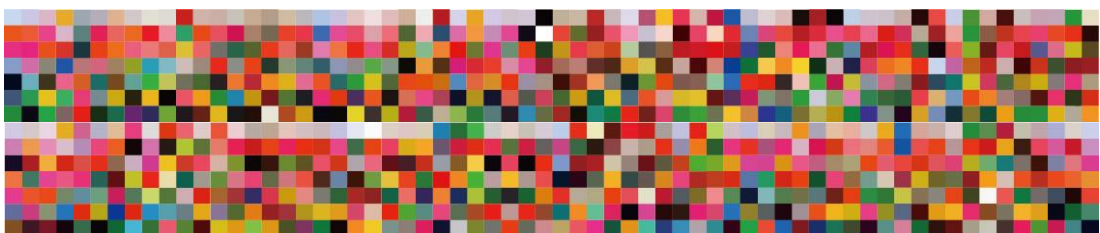


Figure 43 Colour clustering results for the 1980s-1990s (clustered separately)



Figure 44 Colour clustering results for the 1980s-1990s (overall clustering)



Figure 45 Colour clustering results from 2000 onwards (clustered separately)



Figure 46 Colour clustering results from 2000 onwards (overall clustering)

2.4.4 Implicit expression

2.4.4.1 Customary

Miao women in Changning choose to costume differently according to the occasion and are divided into traditional, second-class, and first-class costumes. On the condition that they go out and work, they wear the regular costume, a simple blouse, a pleated skirt, a small waist and belt, and a simple wrap, which facilitates mobility and also possesses aesthetic allure. The second-class costume is worn when visiting relatives, accompanying guests, going to the market, attending family gatherings, and participating in ceremonial events. Moreover, the first-class costume consists of a complete set of eighteen pieces, and in the past, the complete attire was solely worn upon marriage or death. Nonetheless, the current scenario of wearing first-class costume extends to participation in essential festive events. Every year, during the second, third, and fifteenth days of the Chinese New Year, the Miao community from Daping and Tu Pi Tai villages convene at a square located at the village entrance to perform musical pieces. During these gatherings, some Miao women don the first-tier costume, while others opt for the second-tier attire, and some choose not to wear traditional clothing at all.

Table 2 The Changning Miao Costume Code (Ai, 2022)

| category | name | | quantity | Daily Wearing | Ceremony (8-12 pieces) | Own wedding/ funeral |
|----------|------|------------------|----------|---------------|------------------------|----------------------|
| head | 裹圈 | wrap | 1 | | √ | √ |
| Put | 长袖上衣 | Long-sleeved top | 1 | √ | √ | √ |
| | 领褂 | Collar | 1 | | √ | √ |
| | 披肩 | Shawl | 1 | | √ | √ |
| Lower | 百褶裙 | Pleated skirt | 1 | √ | √ | √ |

| | | | | | |
|-------|----------------|---|---|---|---|
| 大围腰 | Large waist | 1 | | √ | √ |
| 小围腰 | Small waist | 1 | √ | | √ |
| 三角小围腰 | Triangle waist | 4 | | √ | √ |
| 腰带 | Waistband | 1 | √ | √ | √ |
| 飘带 | Ribbon | 4 | | √ | √ |
| 绑腿 | gaiter | 2 | | | √ |



Figure 47 Miao dancing in Daping village on the third day of the Lunar New Year
(Ai, 2023)

2.4.4.2 Semantics

Changing Miao costumes are termed "unwritten historical records", recording their history and culture. In Changning Miao costume culture, the interpretation of patterns and colours predominantly comes from the following three aspects:

Firstly, it is the worship and love of nature. The Miao community exhibits adeptness in employing colours to represent the beauty found in nature, and the Changning Miao population has historically inhabited areas characterized by significant altitude variations and diverse vegetation species. The natural surroundings serve as a wellspring of inspiration for their decorative endeavours.

Secondly, it is a memorial to ancestors and history. The Miao costumes record the migration history of the Miao ancestors over thousands of years in numerous dimensions, including patterns, colours, and meanings. Besides, the black line represents the historical memory of the former expulsion from the middle plains, and symbolizes the indivisible unity of the Miao people; the red colour demonstrates the endless wars of the Miao people, and symbolizes auspiciousness and festivity; the yellow colour indicates the Yellow River, which they have once travelled, and symbolizes their heart's concern for the middle plains, where the ethnic group originated; the blue colour symbolizes their past proximity to water, while traditional head wraps and shawls adorned with shells, bones, and pearls serve as reminders of their former aquatic habitat. The blue colour represents the waterfront where they used to live, and their traditional head wraps and shawls are decorated with shells, bones, and pearls, which is a nostalgic reminiscence of their former life; the green line

demonstrates the mountains where they live, and simultaneously, it symbolizes their faithful love.

Thirdly, it is a symbol of folk culture. Costume runs through the life of the Miao people in Changning, being an essential part of their marriage culture and funeral culture. Young girls learn to embroider and make clothes from childhood, and they need to complete a set of " five-coloured costumes" before marriage, and the aesthetics and skills indicated in this set of clothes will become an essential factor in evaluating young girls. Whenever there are major festivals or essential occasions, the Miao people of Changning will costume up. After death, they also don costumes crafted from burlap, guided by embroidered maps, to return to their homeland and reunite with their ancestors.

2.4.4.3 Social Function

Culture is the product of human society's necessities, with each culture serving a distinct purpose, whether it manifests as an abstract social construct or a tangible material entity. The arrangement of each individual's social status and the fulfilment of his or her role in society depend to a large extent on the distinction of the costume. In this manner, attire culture transcends ordinary social and cultural phenomena, assuming roles and representations that dictate societal norms and behaviours. Thus, the notion of costume, already solidified in the general cultural psyche, enters the realm of institutional culture as a potential institutional form. Moreover, this social norm generally consists of two aspects. These social norms generally consist of two elements: tangible norms, including the style of costume and architectural patterns, and intangible norms, including traditional concepts, feelings, and the influence of the collective and subconscious mind. Additionally, the Changning Miao Costume cultural genes have been passed down and evolved to form a unique costume culture, which is functional in its social and cultural makeup.

Group Identity Function of the Changning Miao Costume

Each ethnic group has its own cultural identity. In foreign exchange, "recognising their ethnic group by their costume" is an essential marker to distinguish and identify them. To the Miao community, attire serves as a marker of identity, facilitating mutual recognition among various Miao branches and fostering unity within the broader Miao population. "One of the social functions of the art of traditional ethnic costume, which cannot be ignored, lies in its cohesive effect on the clan". This bond of collective consciousness, formed by cultural inheritance, strengthens the cohesion among the different branches of the Miao people. For the Miao, who are constantly on the move and scattered in their gathering places, it is this cohesion that enables the Miao to survive, thrive, and maintain their sense of identity. The Miao elders of Changning mentioned many times in interviews that "if we don't costume like this, we are not our Miao; if we don't hurry to wrap ourselves in Miao clothes on the condition that we are born, we will be claimed by foreign spirits; if we don't wear these when we get married, we will be carried away by lustful spirits; if we don't wear our own costume when we die, our ancestors will not recognise us". Within the community, the Miao consistently underscore the challenges their ancestors faced during migration through various means such as costume symbolism, mountain chants, and oral traditions. They also emphasize the practice of wearing hemp garments embroidered with maps after death to guide the soul back to the ancestral

homeland. These elements constantly shape the ideology and values of the Miao people, and the transmission of this ideology and ideas is the core to what makes the Miao what they are. Under the increasing influence of the dominant culture due to greater interaction with the Han Chinese and other ethnic groups, the everyday attire of young Changning Miao individuals has gradually modernised and assimilated into mainstream fashion trends.

Historical heritage function

The colours, patterns, and styles of the Changning Miao Costume are closely related to their historical situation and serve to transmit and preserve their history and culture. Besides, among the Changning Miao Costume patterns, some patterns have a common representation and implication with other Miao groups termed "mother flowers", which have been inherited from their historical heritage. For instance, the Changning Miao live by farming and hunting in Changning Goujie, and yet among their inherited patterns are the 'river pattern', which refers to the life their ancestors once experienced in the Poyang Lake generation, as well as the 'bird pattern', which demonstrates their descendants who are pecked by birds with human faces and wings and can fly. According to legend, they are believed to be the descendants of Chi You, who possessed the ability to fly.

Folklore Heritage Function

The traditional costumes that the Changning Miao must wear on essential days including festivals, weddings, and funerals are an essential way for the Changning Miao to show the importance they attach to rituals and are an essential part of the Changning Miao folk culture. The Miao focus on "ritual culture", and there are common conventions regarding costume for essential birth, coming-of-age, wedding and funeral ceremonies, as well as other festive rituals, which are part of the Miao folk culture. During various events, the Miao of Changning adhere to specific costume codes, with first-class attire reserved for weddings and funerals, and second-class attire worn during festive occasions. The number of garments worn may vary depending on the significance of the event. Folklore activities serve as cultural arenas where Miao costumes are showcased and utilized, with folklore acting as the conduit for Miao costume culture. It is a bridge between the deeper and outer expressions of Miao folk culture, social psychology, religious beliefs, as well as other spiritual forms.

Faith Transmission Function

The Changning Miao Costume reflects the ethnic beliefs of the Changning Miao, which are centred on the worship of nature and ancestors, which carries on the many historical, cultural, and legendary stories of the Miao people, and the depiction of the costume is intricately intertwined with the beliefs of the Changning Miao. During the interview, an elderly man narrated a detailed account of the origins of the pleated skirt worn by the Changning Miao. "In ancient times, our Miao people did not wear skirts; women instead wore trousers made from rough fabric," he explained. He recounted how the Miao community faced threats from mischievous monkey spirits residing in the nearby woods' caves. The beautiful Miao Douhua girl is caught and tortured by the monkey spirit. Under the guidance of a godly man with a white-bearded eunuch, she fights the monkey spirit wisely, and following the great battle, her clothes and trousers are torn, consequently she dismantles her umbrella to make a pleated skirt. The two lines in the story are one bright and one dark, and the bright line is a Miao girl making a skirt out of the pleats of the umbrella, forming a pleated skirt,

while the dark line represents the Miao girl's indomitable spirit in the face of life. In this narrative, the depiction of the 'white-bearded eunuch' aligns with the local deity associated with hemp. Moreover, the hemp god is an essential part of Changning's Miao beliefs, and the song of creation states that hemp is a gift from heaven and earth and is an essential material for costume to warm the body.

2.4.5 Mechanisms of the Changning Miao Costume influenced by ecological factors

2.4.5.1 Environmental factors affect expression in the Changning Miao Costume.

Most Changning Miao settlements are on mountain slopes 2,000 metres above sea level. The average annual temperature here is below 14°C, and the fields are generally less productive due to the lower temperatures. The majority of their dwellings are located on slopes of 10-20 degrees, with some in areas with slopes of 20-30 degrees. In comparison with the gentle and comfortable geographical conditions of the dam area, the cold and poor resources of the area where the Changning Miao live have to a certain extent, the limited economic development of the Miao has allowed them to maintain a relatively independent evolution of their costume culture for a long time. The Changning Miao Costume has 18 sets of first-class costumes, and one Miao woman in the village of Daping holds the belief that wearing a complete set of costumes in winter is extremely effective in keeping warm and even in summer, as long as she is not out at noon, she wears costumes at all other times. Even during the summer, wearing Miao costumes is not overly uncomfortable as long as they avoid being outdoors during the hottest part of the day. However, the colder temperatures in Tupitai and Daping villages contribute to the richness and distinctiveness of Miao costumes there compared to those in the Yongping area. The insufficient resources have likewise enabled the Changning Miao women to master the whole dressmaking process, starting with the sowing of hemp seeds for the fabrics and dyeing their threads for embroidery, which has allowed the Changning Miao Costume genes to be passed on relatively intact.

2.4.5.2 Technological factors influence the external performance characteristics of the Changning Miao Costume.

Technical factors are the main reason for the change in the external appearance of the Changning Miao Costume. In the past, the Changning Miao Costume was typically crafted from locally grown and handwoven hemp, complemented by silk and cotton threads that were dyed using homemade natural dyes. Following 80 years, the ban on hemp cultivation left the Changning Miao needing more raw materials to make hemp. Besides, the lack of raw materials for weaving hemp cloth resulted in the rapid replacement of hemp cloth with printed cotton and chemical fibre cloth on the market. The industrial production of vibrantly coloured cotton and cashmere threads, renowned for their colour retention, emerged as the primary material for embroidering the Changning Miao Costume. The 1990s witnessed the formation of a Miao garment industry cluster in the Wenshan region of Yunnan as well as the flow of machine-embroidered pieces from the Wenshan and Guizhou regions to Changning. Following 2000, the prevalence of cross embroidery introduced the Changning Miao to the more accessible cross-stitch technique. They favoured chemical fibre fabric for its tidy warp

and weft threads and grid-like pattern, as it significantly boosted embroidery efficiency. The younger generation favoured the more straightforward and faster cross embroidery stitch, with the mainstream flat stitch declining and the more challenging lock embroidery technique close to being lost. The shift in materials has brought about a significant transformation in the colour and texture of the Changning Miao Costume. Traditionally dyed silk threads yield designs with a relatively soft and lustrous appearance, reflecting the aesthetic heritage of the Miao. Industrial cotton threads are dyed in more saturated colours and appear in eye-catching shades including fluorescent pink and yellow. Patterns embroidered with industrially dyed cotton and wool threads have more colour contrast and visual conflict.

2.4.5.3 Cultural, technological and economic factors combine to motivate the Changning Miao Costume's production.

The Changning Miao Costume is caught in a complex cultural dilemma to extricate itself from due to the impact of mainstream culture and the disintegration of traditional ethnic institutional culture. Since the 1980s, the lifestyle of the Changning Miao has experienced profound changes, as new information, culture, and art have rapidly and extensively penetrated the once-isolated Miao communities through diverse communication channels and forms of information dissemination. A diverse and inclusive mainstream culture has been indicated to the Miao through radio, television, and the internet, substantially influencing their values and orientations. Besides, traditional social production methods must find a way to provide them with adequate material conditions. The younger generation of Miao aspires to improve their economic situation by seeking employment, engaging in business ventures, and pursuing education. Unlike their mothers, grandmothers, and ancestors who were willing to dedicate two or three years to craft a traditional costume as a means of asserting group identity, Miao girls today exhibit less enthusiasm for this traditional practice. In the past, the changes in productivity resulting from alterations in Miao costume unfolded over centuries, evolving gradually over time. Due to the rapid development of productivity and information technology, the new generation of Changning Miao has experienced a completely distinct way of life and changes in production relations in merely a few decades than in the past, and this change has affected their changing perceptions in many aspects of life, values, and aesthetics.

The shift in perspective initially surfaced in the motivation of Changning Miao women to engage in clothing production, influenced by a blend of cultural, technological, and economic factors. Economic advancement has hastened the delineation of social labour divisions, with embroidery and costume making progressively transitioning into professions demanding meticulous oversight. Under the constant influence of the market economy, for the select few Miao women possessing superior costume making skills, crafting traditional attire has emerged as a means of generating income. There are two Miao costume shops in Daping and Tupitai, both on Changning's Backward Street, where the owners are local Miao costume inheritors, and their daily work is to embroider and make clothes. One of the shop owners stated, " Local residents from neighbouring areas flock to purchase garments, particularly the hand-embroidered ones, which command a higher price ranging from 500 to 2000 RMB per piece. These intricately crafted pieces are often sought after by foreign buyers as well". The interviews with local young people said that women born after 1990 rarely embroider their clothes or costume including Han

Chinese and that their wedding clothes are either embroidered by family members or bought directly from local heirs. The majority of Miao costumes sold locally are made from machine-embroidered sheets and sell for a few dozen to a few hundred yuan a set. Concurrently, the hand-embroidered Changning Miao Costume fetches a significantly higher price, ranging from 30,000 to 50,000 yuan per set. This considerable price gap has prompted local Miao women to increasingly prefer industrially produced alternatives. Additionally, the motivation for the heirs to actively make the clothes comes from the economic value they hold in the market, and the clothes are made in the hope that they will be sold to help solve their livelihoods. Motivated by economic incentives, rational considerations supersede emotional ones as the primary determinant in their decision-making process regarding clothing production. Specifically, in the past, Changning Miao women made clothes for themselves and their families, as well as the level of quality and fineness of the garments was directly proportional to their recognition within the community, accordingly they were willing to spend a great deal of time and effort making them and demanded perfection in both craftsmanship and symbolism. The incentive for Miao women in Changning to engage in clothing production has shifted, with many now viewing it primarily as a means of generating income. Efficiency and effectiveness are the primary considerations guiding their approach to garment making. "It is rare to make fully embroidered clothes now, it's too time-consuming, cross embroidering and cloth piecing is faster to make when you are skilled". Machine-embroidered fabric pieces and woven hemp are purchased for product making. A bag can be sewn in half an hour using these materials. If it were hand embroidered, completing it within a day might not be feasible".

2.4.5.4 The protection system affects the channels and content of the Changning Miao Costume's heritage.

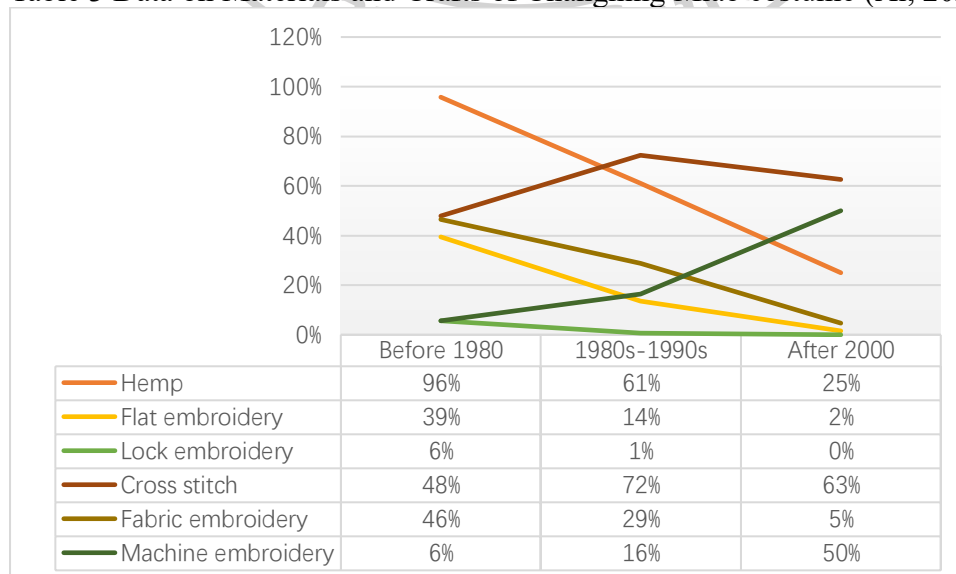
The official system of protecting inheritors has shifted towards prioritizing funding and training, placing increased emphasis on official certification. Higher ranks signify access to more funding and resources. Evaluation criteria for inheritors predominantly focus on weaving and embroidery skills, often placing less emphasis on substance and more on technical proficiency in their training. Consequently, the inheritors focus more on refining their skills in the process of self-improvement, resulting in the loss of the cultural semantics of the Changning Miao Costume to a large extent. For instance, the butterfly is a pervasive motif in Miao embroidery, particularly for the Miao of Yunnan, who migrated from southeastern China and referred to the Miao's ancestor. Moreover, the Miao of the Wenshan generation in Yunnan also recognises this mother butterfly. Nonetheless, for the Changning Miao, despite the fact that they migrated from the Wenshan Miao and followed the butterfly motif during their migration, the symbolic interpretation of the butterfly motif has been lost, and the Miao people regard the butterfly as a beautiful symbol recorded by their ancestors during their migration journey and as an object of worship representing nature. Secondly, the existing cultural semantics present a boilerplate interpretation. Luo Jinrong (2011), a scholar of the Changning Miao Costume, mentioned that he had collated and taught numerous of the motifs' semantics to the inheritors, who clearly comprehended the motifs' semantics before then. On the condition that the national heir, Tao Yuan, explained the history and culture of the Changning Miao Costume on

a CCTV programme, comparable information was gathered from several other heirs during the interviews, which did not appear in the first interview. Many custodians require further education on the migration history and cultural background of the local Miao community, as well as an understanding of the cultural significance behind the symbols present in the Miao costumes, of which they may only be familiar with a few common ones. Thirdly, the patterns borrowed originally did not have cultural semantics. With the increased exchange of information with the outside world, Miao women have acquired a deeper understanding of the materials used for embroidery patterns, and they will buy books on embroidery patterns or learn and imitate new patterns online. Furthermore, they no longer rely exclusively on patterns learned from their elders, nor do they need to draw from nature and life to manipulate them according to their aesthetic experience. These actions have resulted in a change in the cultural heritage of the Changning Miao Costume.

2.5 Analysis of Problems

The cultural evolution of the Changning Miao costume is divided into two stages. For more than 100 years before 2000, the factors affecting the genetic evolution of the Changning Miao costume in this stage were mainly local environmental factors. To adapt to the local environment, the genes of the Changning Miao costume evolved slowly and steadily over a long period after they migrated to this area, which made the Changning Miao costume have relatively complete genetic characteristics that are different from those of the Miao costumes in other regions. In the second stage, after 2000, the drastic changes in economy, technology, system, and cultural factors contributed to the rapid evolution of the genes of Changning Miao costume. Nonetheless, this evolutionary process is not benign, and the loss of multi-dimensional genetic fragments including visual image, cultural content, and semantics in the traditional Changning Miao costume has also caused the Changning Miao costume to face many problems.

Table 3 Data on Materials and Crafts of Changning Miao costume (Ai, 2023)



Firstly, traditional production processes are gradually being replaced by modern ones. Advances in technology have made the cost of purchasing finished cotton and chemical fibre fabrics much lower than the labour cost of growing and weaving their linen. Furthermore, modern industrially-produced chemical fibre materials and machine-embroidered embroidery sheets have been widely used in Changning Miao costumes made in the last two decades, while traditional embroidery techniques and linen weaving techniques are rarely employed. By coding and analysing 294 costume samples collected in Tupitai and Daping villages, the results, shown in Table 3, presented in the table below were obtained. It can be seen that the use of linen has indicated a gradual decline over time, with linen being the main raw material for Changning Miao costumes before 1980, with 96 percent of the costumes made with linen. Between the 1880s and the 1990s, this figure dropped to 61 percent. And only 25 percent of the costumes made after 2000 used hemp cloth as the raw material. Regarding embroidery, lock embroidery, a technique that requires considerable skill, is not commonly observed in Changning Miao costumes. Approximately 6% of the costume samples made before 1980 employed lock embroidery, while only 1% of the costumes made after 1980 adopted this process, and the costumes made following 2000 did not use this process. According to interviews with the inheritors, only a few of them currently possess the skills required for lock embroidery, indicating that the technique is nearly lost. Similarly, due to the difficulty of the process and the inefficiency of the embroidery, flat embroidery and cloth piecing have also indicated a clear decline with the coordinates of time. Before 1980, flat embroidery, cloth piecing, and cross stitch were commonly employed in Changning Miao costume, constituting 39 percent, 46 percent, and 48 percent respectively. Between the 1880s and 1890s, when cross stitch became popular throughout China, the utilisation of cross stitch in Changning Miao costumes reached 72 per cent, implying that nearly three quarters of the costumes were cross embroidered. The usage rate of flat embroidery and cloth quilting is squeezed by the cross-stitching process and declined. Following 2000, the widespread adoption of machine-embroidered pieces rapidly marginalized the traditional embroidery, with the prevalence of large-area machine-embroidered pieces soaring from 6% to 50%. Moreover, half of the samples from 2000 onwards employed machine-embroidered embroidery pieces, while flat embroidery and cloth quilting were merely found in a few samples. The cross-stitch process also indicates a decreasing trend, and yet it remains the dominant embroidery process in Changning Miao costumes, with 63% of the costumes using the cross stitch process. After 2000, both machine-embroidered patchwork and cross embroidery processes began utilizing stiff chemical fibre fabrics, leading to a notable decline in the use of linen.

Secondly, there is a failure of Miao group identity and ethnic identification centred on costume culture. Costume serves as an effective means of ethnic and identity identification. Within the traditional social framework of the Miao community, costume-making embodies a cultural event, representing a ritual sustained over time. It is a process through which individuals actively produce, uphold, and adapt their social connections and networks. This social network system formed based on the process of costume making enhances their identification with the ethnic group to a certain extent. From interviews with elderly members of the Goujie community in Changning, it was discovered that prior to the 1980s, the traditional

attire of the Changning Miao community experienced a shift, wherein men predominantly adopted Han Chinese attire while women and the elderly continued to adhere to traditional costume norms. Subsequently, following the implementation of reform and opening-up policies in the 1980s, coupled with advancements in transportation infrastructure and heightened external interactions, the clothing customs of the Changning Miao community underwent a significant transformation. The author interviewed Yang Chunmei's team, which has been conducting continuous research on Changning Miao costume since 2006, and they contend that since the 1990s, the majority of locals have largely abandoned the wearing of ethnic costumes in their everyday attire, opting instead for Chinese garments or Western-style suits, a trend particularly pronounced among the younger demographic. This situation is especially prominent among the young people. Besides, men wear Han clothes completely, older women wrap their heads in black buns and wear simple ethnic costumes, middle-aged women, young women, as well as little girls wear ethnic costumes only during weddings, funerals, and grand festivals, and the traditional Changning Miao costume indicates a functional shift from daily clothes to festive costumes. Only a few middle-aged and elderly women over 45 years old still wear ethnic costumes in their daily lives. The younger generation, especially those who have ventured outside their communities for work or schooling, are more inclined to adopt Han Chinese attire as a means of fostering a sense of belonging when away from their native environment. In their communication with the outside world, the notion and practice of "wearing the same clothes to gain the same position as the other side" is spontaneously formed out of the need for self-protection. Additionally, under this general trend of wearing normal clothes, the traditional textile, garment-making, and embroidery techniques of Changning Miao costume have been declining. Currently, the local Miao people in Goujie seldom wear the traditional Miao costume in their daily life, and this trend diminishes the space for the survival of the Changning Miao costume. The colourful Changning Miao costume has gradually faded out in daily life and has been transformed into a costume worn by people in ceremonies including celebrations, festivals, religions, funerals, weddings, etc. The traditional costume of the Changning Miao has undergone a functional transformation. The costume culture, which once served as a central mechanism for internal group identity and external identification among the Miao, has lost much of its effectiveness.

Finally, there is insufficient motivation for cultural inheritance. Besides, the traditional way of inheriting the Changning Miao costume tradition is based on family inheritance, supplemented by the community inheritance mode. Family inheritance refers to the transfer of cultural practices within a family, typically involving older generations passing down skills and knowledge to younger members. In Goujie Tupitai Village, Changning, interviews revealed that villagers learnt embroidery from their mothers, usually between the ages of 6 and 13. Some also learnt from other female elders within the family. When they are older, if they show a love for embroidery, their families will often send them to the village to learn from a better embroidery master. In the inheritance of the Changning Miao costume, the way of inheritance within the tribe reflects more of the Miao's sense of community. That is to say, the inheritance of culture, way of life and skills is conducted by the community as a unit, and the elders within the community will spontaneously pass on their life skills

and techniques to their juniors, without hiding anything because they are not their immediate family members. This method of inheritance has established a robust and streamlined mechanism, facilitating the continuous transmission of Changning Miao costume culture and skills in a vibrant manner up to the present day. Along with the changes in the social function of the Changning Miao costume, the inheritance method based on the community unit is gradually covered by the inheritance method based on the family unit. Moreover, with the gradual differentiation of the social division of labour in the family unit, the path of family inheritance of Changning Miao costume has also begun to fail gradually. The concept of inheriting the Changning Miao costume remains intact, with a strong belief in the preservation of costume culture. However, there are shortcomings in terms of actual behavioural manifestation. The majority of young people are not willing to spend time learning and refining their costume-making skills. The way of inheritance of the Changning Miao costume has typically changed from spontaneous inheritance on the basis of the community structure to passive inheritance that requires external incentives.

Summary

The literature review begins with a review of the three main elements of cultural ecology, ICH, and the Changning Miao Costume. Currently, the research on intangible cultural heritage from the perspective of cultural ecology focuses on practice and application, whereas the research on the basic theory and framework is relatively feeble. Scholars are directing their attention towards applying cultural ecology in the protection and development of ICH. They are particularly focused on costuming the practical challenges encountered by ICH and believe that the construction of cultural-ecological reserves can effectively preserve and develop ICH. As for the conclusions of the research, Chinese scholars have focused more on the study of strategies and methods of transmission and development, and yet these strategies often require the integration of the strengths of all sectors of society, including government, enterprises, and communities, and are more challenging to realise. Due to the diversity of intangible culture and the differences in its cultural ecology, the study needs to synthesise the research frameworks and methods of various disciplines, select and employ them in a targeted way, and analyse specific issues in concrete terms. Current research on the Changning Miao costume encompasses the analysis of costume culture, inheritance and protection strategies, and craft research. However, it predominantly offers records and accounts from a singular research perspective.

Cultural ecology advocates the study of cultural formation and evolution from the theory and methodology of ecology, focusing on the area and environment in which culture relies on, and studying how a wide variety of complex variables have an impact on the appearance and model of culture. In cultural ecology, cultural genes are the basic factors and essential elements that determine the inheritance and variation of cultural systems. And the concept of ecological factors is expanded to include all the factors in the region that have an impact on the survival of culture. These include both physical and natural environmental factors, as well as non-physical factors such as social, structural, institutional, technological and economic aspects that influence culture. These factors will directly or indirectly influence the

expression and inheritance of cultural genes.

The genes determine the identity of Changning Miao costumes, which is the fundamental content to maintain the difference with other cultures in the living heritage. The original genes of Changning Miao costumes are inherited from the traditional Miao culture. After the group migrated to Changning, the expression and inheritance of culture genes were influenced by the ecological factors in the region, which made the costumes different from other Miao costumes. And when the ecological factors in the region, such as economy and technology, changed drastically, it was difficult for the cultural genes to complete their self-evolution in a short time, which made the culture face many problems.

In detail, after 2000, the drastic changes in the economy, technology and cultural factors contributed to the rapid evolution of the genes of the Changning Miao costume. Nevertheless, this evolutionary process is not benign, leading a loss of multi-dimensional genetic fragments including visual image, cultural content, and semantics in the traditional costume. Changning Miao costume is facing the problems of substitution of traditional crafts, invalidation of cultural functions and insufficient motivation for inheritance.

Nevertheless, the inheritance of cultural genes is different from biological genes, and the expression of cultural genes is realised through people. The change of social factors firstly influenced the cognition and conception of Changning Miao people, and then changed their motivation to make costumes and the action spontaneously. Besides, the mobility of people enables us to have the feasibility of revising and maintaining the sustainable development of cultural genes under the condition of challenges to change the ecological factors.

The essence of culture preservation practices is the question of dealing with the interrelationship between people, culture, society and nature. It arises from the production and living practices of traditional farming civilisation, and represents national, regional and vernacular culture. And modern design accompanied by industrial civilisation, is a product of modern technology, aesthetics and economy. Both of them have consistency in objectives, so the combination of the two is logically reasonable. Therefore, the integration of modern design methods and ideas into the preservation of ICH allows its reorganisation to form new functions and values in keeping with modern lifestyles.

CHAPTER 3 METHODOLOGY

Introduction

Variations in social and cultural environments lead to multiple dilemmas for ICH. In this occasion, intervening in culture preservation and taking a dialectical view of the relationship between culture and the ecological factors provide new perspectives and dynamics for culture preservation.

The Changning Miao costume is crafted by local Miao residents, and its cultural inheritance is perpetuated through their actions. Consequently, when conducting research on Changning Miao costume culture, it is essential to consider the human dynamics and recognise that people are the medium for the transmission and expression of cultural genes. In the research process, it's crucial to prioritize community participation and focus on the behaviours of local people, along with their understanding and knowledge of their culture. By integrating design concepts and methods into the preservation of ICH, we can reorganize it to create new functions and values that align with modern lifestyles.

Therefore, this chapter will discuss the basic methodology of research and design of Changning Miao costume from the cultural ecology perspective and apply it to design and cultural preservation practices.

3.1 Research Method

This study employed a mix-methodology of qualitative and quantitative method. Qualitative research methods from cultural ecology were adopted to analyse the problems for the Changning Miao costume, the mechanisms of inheritance and evolution, and the intervention channels for design. Moreover, qualitative research methods from rootedness theory were applied to data collecting and coding. The preservation and development of the ICH were informed through the use of case study methods. Meanwhile, quantitative research methods were also used in the study, predominantly focussed on the analysis of the costume samples and the questionnaire. The data obtained through quantitative analysis can enhance the credibility and validity of the analyses by providing support for qualitative research on the inheritance mechanism of Changning Miao costume, analysis of design users' preferences, and evaluation of design outcomes.

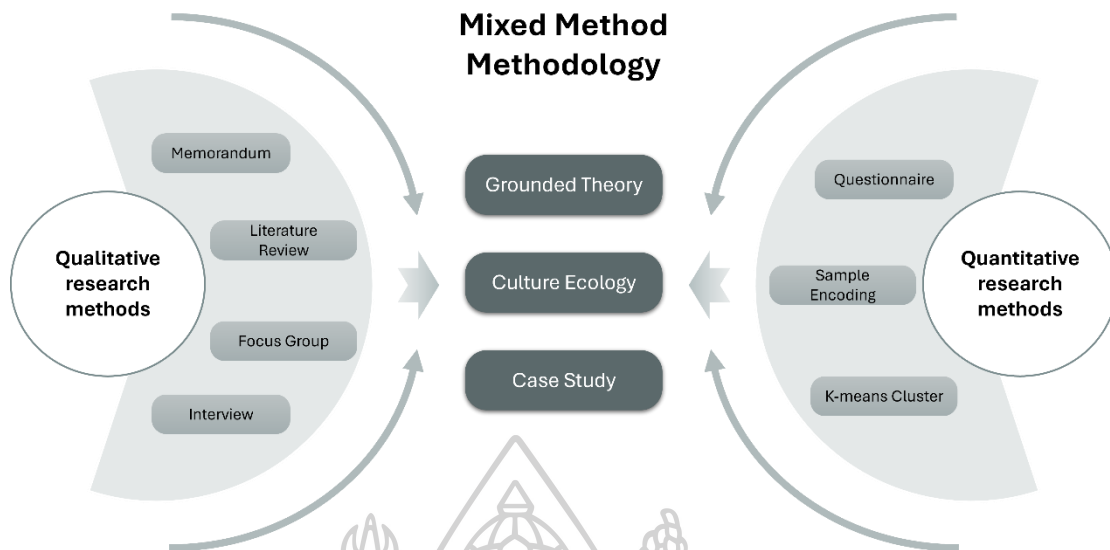


Figure 48 Research methodology (Ai, 2022)

Specifically, the text database was collected and analysed primarily using qualitative research methods. The study adopted a literature survey, interviews, image capture and focus groups for data collection. In conducting the data construction, interviews, field notes and observations constructed primary data, which were supplemented by the collection of texts and information including published literature, books, news, geographical data and government documents. Following repeated data collection and construction of the theoretical framework of cultural ecology, 22 categories were established, falling within six primary categories under the three core categories.

Graphic database involves two main aspects (Figure 50). The first step involves collecting costume samples, while the second step involves gathering photographs of culturally significant scenes and individuals. Costume sample collection should coincide with the coding of image data. In the second chapter of the study, 29 sets comprising 296 costume samples were coded and processed, resulting in the extraction of 223 embroidery pattern samples. When coding, the first thing is to classify the sample collection folder with the collection time and collection object, and the coding formula of the samples is "collection place + collection time + serial number". Furthermore, the sample coding formula is "collection place + collection time + serial number", in which the collection place is Tupitai T or Taiping D, the collection time corresponds to the time filled in the information table, and the serial number corresponds to the sample of the costume set collected on the same day. Moreover, the picture of the sample collection is coded employing the information corresponding to it, and the coding formula is "collection place + costume production time + kit number + material number + craft number". Once the coding was completed, the sample coding data was quantitatively analysed for material, colour and craftsmanship of samples from different eras. These data were used to support the qualitative analysis of cultural phenomena. On the other hand, the extraction and analysis of embroidery patterns was carried out. Using a focus group method, the selection and categorisation of motifs was completed. The colour of each motif was extracted analytically using the K-mean clustering method of quantitative research as

design material and research data.

The main research tools used in the user demand analysis were interviews and questionnaires. A questionnaire of demand and preference was developed for locals and visitors.

In the evaluation stage of design, focus groups and questionnaires were the main research tools. Focus groups included local Miao residents, inheritors, and scholars of Miao studies. were used for quality verification and impact evaluation of the design outputs.

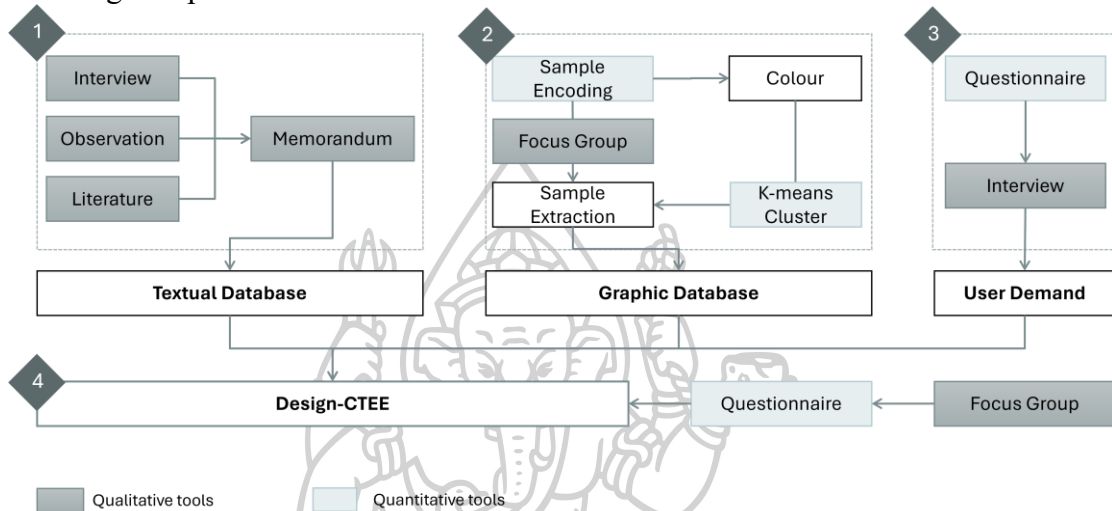


Figure 49 Research methods and tools (Ai, 2022)



Figure 50 Process of graphic database (Ai, 2022)

3.2 Research Procedure

Grounded theory prioritises the study of phenomena or processes rather than descriptions of the environment (Charmaz, K, 2009, 29). The data collection process

for the Changning Miao Costume adhered to the principles of Grounded Theory, where data was coded and analyzed iteratively. Subsequently, additional fieldwork was conducted to further enrich the dataset, allowing for the refinement of the theoretical framework. The initial phase of textual and field data collection occurred in January 2021, with a focus on literature review and interviews with key stakeholders. Subsequently, the next phase of research themes was identified through the collection of texts and analysis against interview transcripts.

Geographical information on the settlements inhabited by the Changning Miao was collected through interviews and field observations in December 2021, and interviews were conducted with local officials and residents. Moreover, initial coding and classification of information were completed at this stage, and additional supplementary data collection was considered necessary during the analysis of the categories to further enhance the depth and breadth of the study. The next phase of information collection was themed on space and samples, focusing on cultural spaces and samples of Miao residents' costumes outside of the inheritors, as well as a data collection plan was developed.

In January-February 2022, a detailed data collection of spatial and costume samples of the Miao settlements in Changning was conducted. During the memo writing process, the initial stages of constructing the theoretical framework were contemplated. Grounded theory suggests that pre-formed ideas and theories should not be imposed directly on the data and that the theoretical framework construction must adhere closely to the paths delineated by the data. Additionally, the cultural ecology perspective intervenes in the third stage of the study. Meanwhile, through the first two stages of the research, the author conducted a preliminary analysis of its current situation and social phenomena and concluded that Changning Miao Costume's social function had changed. On the condition that writing the theoretical framework memo, the research perspective of cultural ecology was introduced to carry out an intrinsic logical interpretation of its cultural change. In this process, information coding underwent refinement. In grounded theory, theoretical sampling entails seeking additional pertinent data to refine and advance a theory for the study. Its primary objective is to iterate through sampling to develop and elaborate on the properties of the class until no new properties emerge (Charmaz, K, 2009,122). Applying a theoretical sampling approach, the next information-gathering stage was developed with a systematic literature review, in-depth interviews on cultural content as well as case studies.

In February 2023, the fourth phase of data collection and coding took place. Through the data collected, from a cultural ecology perspective, a theoretical framework for the study was established, synthesizing the gathered information within the theoretical constructs of cultural genetics and cultural ecology. This framework sought to identify avenues for designing interventions in the preservation and conservation of the Changning Miao Costume's heritage.

In October 2023, following completing the design of the encyclopedia, two design evaluations and a practical exercise were conducted on the design. Firstly, the design content was revised by collecting feedback from key people, and subsequently the evaluation was extended by means of a questionnaire to evaluate the effectiveness of the design.

In the period spanning from February to March 2024, subsequent to finalizing

the design of the silk scarf, our team conducted a field visit to the local region. During this visit, Miao residents were invited to don the scarf, and their feedback on the design was gathered through interviews. Concurrently, an exhibition showcasing the culture and design of Changing Miao costumes was curated.

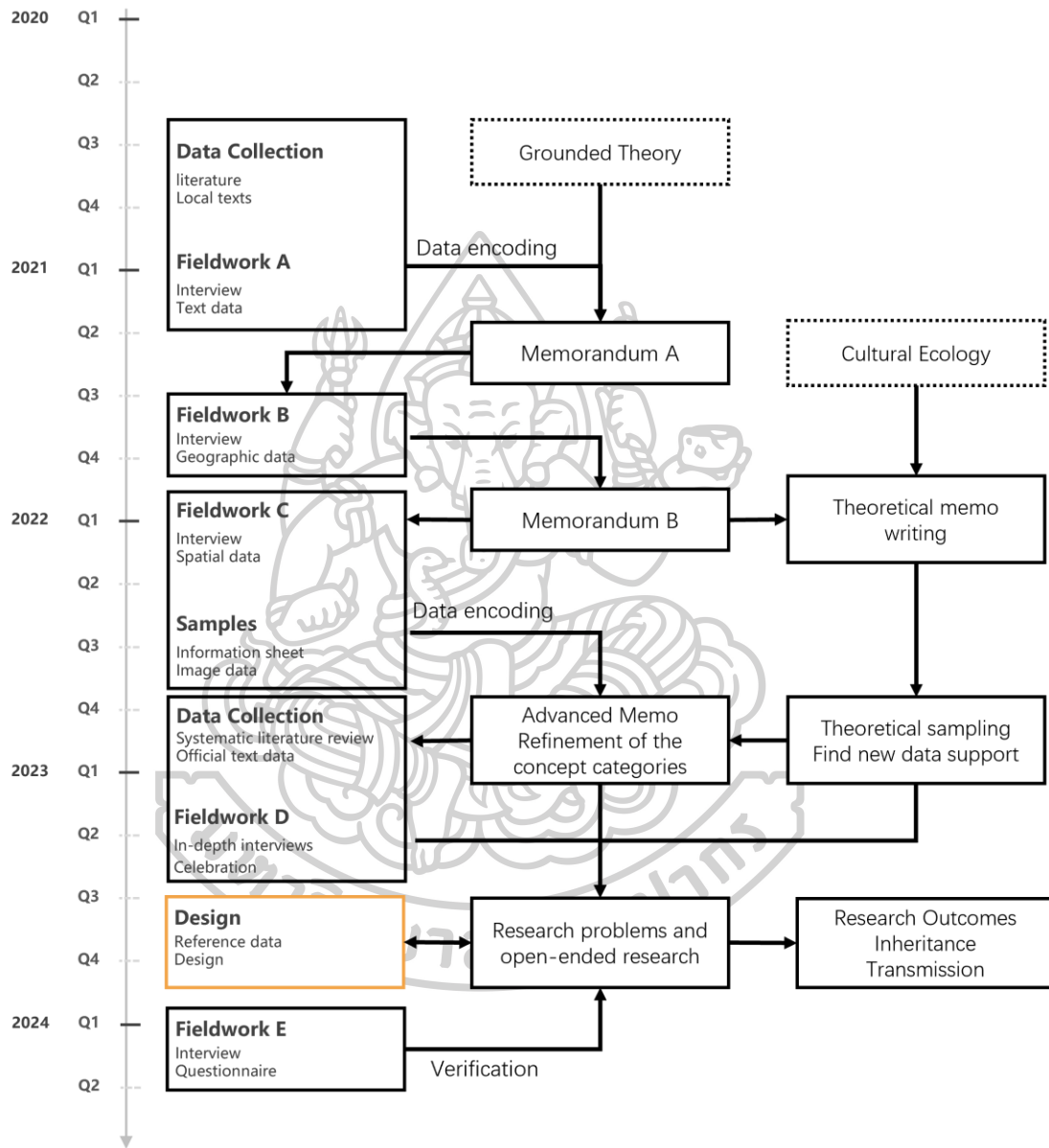


Figure 51 Research process (Ai, 2023)

3.3 Design Methods

Richard Buchanan's (2001) concept of the "Four Orders of Design". Buchanan's concept of the Four Orders of Design identifies four categories of design: symbols, things, action, and thought. These four categories are deemed pertinent to the fields of graphic design, industrial design, interaction design, and environmental

design, respectively. Designers employ symbols to convey messages, construct objects to fulfil uses, interact through practices, and build systems to integrate relationships. Nevertheless, the things included in each category these four categories may be interchanged to develop a more systematic, effective, and sustainable design (Wang et al., 2023). The design of the space is on the basis of the spatial structure of the culture. In turn, in accordance with the level of application of the spatial structure of culture in design, it can be segmented into the outer tactile layer, the intermediate behavioural layer, and the inner perceptual layer. By synthesising the above concepts, this paper divides the scope of application of design in ICH into four levels, i.e. visual symbols, product design, interactive experience design as well as perceptual evaluation level. From the cultural ecology standpoint, the design activities concerning Changning Miao costume culture are categorized into four stages: cultural identity screening, cultural gene translation, cultural interactive experience, and adaptive evaluation.

The first stage is the stage of cultural gene selection of Changning Miao costume. Symbols, as an essential content of the inheritance of Miao costume, are the main object of design in this stage. Besides, the first is the extraction of visual information of Changning Miao costume, and the core visual and cultural symbols in Changning Miao costume are extracted as the primary content of information communication design. During this stage, the primary objective is to finalize the selection of cultural core genes. Thus, the focal point of this phase is the analysis and screening of the core genes of Changning Miao costume culture.

The second stage is the stage of translation of cultural genes, that is, the design of tangible objects. Besides, the carrier and way of cultural translation determine the effect of cultural gene expression. Consequently, in this stage, it is necessary to analyse the needs of stakeholders and the problems of Changning Miao costume and propose design solutions. In this stage, the primary design focus is on the tangible representation of information. Products serve as the medium for conveying information, facilitating the seamless integration of cultural genes into the living environment of the local community. Furthermore, the suitable functional carrier can activate the translation of Changning Miao costume genes and integrate the inheritance of cultural genes into the production and living environment in the way of living inheritance.

The third stage is the cultural interaction and experiential phase, where cultural translation carriers are practically implemented in reality. Information interaction is carried out through the design of practical activities, and feedback and evaluation of the interaction is completed. In this stage, it is necessary to focus on the selection of the subject objects of the practical activities, and the designs should align with the core stakeholders of the thesis. The aim is to indicate the information and work through the practical activities, and to collect users' evaluations and opinions, which will be employed as a reference for programme evaluation and optimisation.

The fourth stage is the evaluation of the adaptability of the results of cultural gene translation in the environment. In the preceding stage, we received prompt feedback on the design. However, the diffusion and transmission of culture and cultural genes constitute a protracted and ongoing process. Thus, in this stage, systematic attention will be paid to the design and the environment in which the Changning Miao costume culture is located, for the purpose of exploring the impact

and mechanism of the design on its continuity, and validating its channels of action and effects on the inheritance of Changning Miao costumes, which will make the design conclusions more universal, sustainable and scientific.

Design encompasses the human capacity to conceptualize, plan, and make products that serve people to achieve their individual and collective goals. Nonetheless, as design philosophy has evolved, the object of design has shifted from products in a narrow sense to products in a broader sense, services. The objective of design has transitioned from problem-solving to delivering an enhanced user experience. Consequently, this design experiment covers design object analysis, product design, interaction design, as well as feedback mechanism design. Through systematic observation and evaluation, it assesses the process and outcomes of design practice interventions in the cultural heritage of Changning Miao costume. This approach serves a dual purpose: promoting the living heritage of Changning Miao costume within the evolving social and ecological landscape while utilizing design methodologies. On the other hand, by studying the whole process of design intervention in the research of Changning Miao costume inheritance, we will explore its mechanisms of action and apply the insights and methodologies from design in research on the inheritance of ICH.

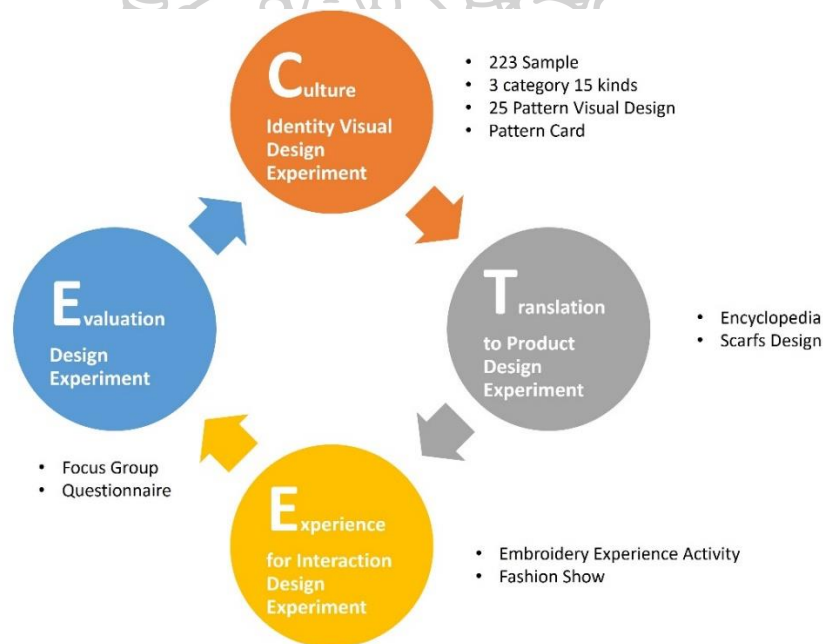


Figure 52 A systematic design approach to the CTEE of the Changning Miao costume (Ai, 2023)

Summary

The research on Changning Miao costume was conducted using a combination of qualitative and quantitative research methods. The study mainly employed qualitative research methods and partially adopted quantitative research methods to analyse the data and provide a theoretical basis for the qualitative research. In this study, data were collected and coded utilising Grounded Theory methods under the

perspective of cultural ecology, and a case study of Changning Miao costume was conducted adopting the theoretical framework of cultural ecology.

The design of Changning Miao costume is mainly based on "CTEE" systematic design method, which is divided into four steps. The first is information visual design, which analyses the core factors of ICH, and it distils the essential identifying information and implements visual design for communication. The second is information carrier design, i.e. product design in the broad sense. On the basis of systematic research as well as analysis of the environment in which ICH is located, the appropriate carrier is selected for the design and translation of culture to ensure the rationality of the design. Thirdly, developing an interaction design grounded in design practice involves engaging with the cultural subject to convey information and receive feedback. The aim is to bolster the audience's acceptance of the design-translation product and obtain direct, effective feedback. Additionally, designing an evaluation system is crucial. The design product is placed in the local environment of ICH, and the evaluation and feedback mechanism throughout the process is formulated to serves as a foundation for assessing both the process and outcomes of the design, as well as the correction of the design content.

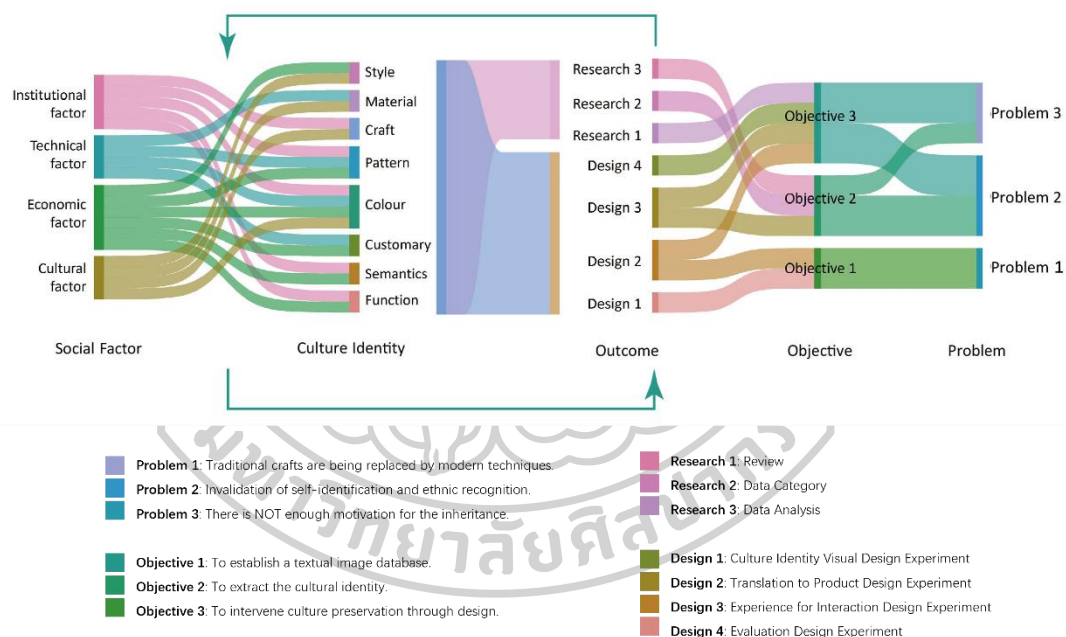


Figure 53 Map of Design Solution (Ai, 2023)

In summary, this research is guided by the cultural phenomenon of Changning Miao costume and analyses several challenges: the substitution of crafts, the failure of social function, and insufficient motivation for inheritance. The theoretical study of cultural ecology, along with the field survey on Changning Miao costume, further examines the underlying reasons and mechanisms behind these issues. Subsequently, three objectives were formulated: creating a basic database, extracting cultural identity, and designing interventions. After completing textual and graphic data analyses, the study explores how social factors influence cultural identity. The research concludes that both inheritors and the new generation play a crucial role in the genetic inheritance of Changning Miao costume culture. Based on this insight, the study proposes channels and methods for design intervention, following the steps and

strategy of the CTEE method to achieve its research objectives.

Firstly, the completion of cultural identity extraction and translation design leads to the establishment of a text and graphic database for Changning Miao costume. This database serves as the foundation for the design of the Changning Miao costume encyclopedia. The encyclopedia aims to enhance local residents' cultural knowledge, improve their understanding of traditional costumes, and enhance their mastery of crafts. To some extent, it also addresses the issue of substituting traditional crafts.

Secondly, through database analysis, the extraction of cultural identity, referred to as the core genes, of Changning Miao costume was completed, verified, and disseminated in the design of interactive experiments. This initiative aims to enhance the group cohesion of Changning Miao and restore the social function of Changning Miao costume.

Finally, the design outputs are directly employed for cultural preservation. Large-scale knowledge dissemination occurs through the publication of the encyclopedia. Evaluation and revision of design outputs are conducted via questionnaires, focus groups, and interviews. A series of cultural activities and exhibitions are organized to facilitate the interaction of cultural identity information. The integrated process aims to directly impact the locals and inheritors, rapidly enhancing their skills and cultural awareness related to traditional costume. By fostering their motivation, it encourages the sustainability of this intangible culture heritage.

Based on the design solution map (Figure 53), the study proceeded with a series of design experiments across four dimensions, the CTEE design experiments discussed in the next chapter.



CHAPTER 4 DESIGN

Introduction

Before the design experiments, we conducted research on the stakeholders of Changning Miao costume. Besides, the main research methods were questionnaires and semi-structured interviews. From 2020 to 2024, interviews with relevant stakeholders were conducted several times through telephone calls, information, as well as field communication. The interviewee group comprises an active and dynamic population, consisting primarily of Miao costume inheritors across various levels, local Miao and Han residents, local government officials, cultural management authorities, and scholars involved in related research.

The design experiments in this chapter will follow the "CTEE" methodology mentioned earlier. Moreover, the design experiments are divided into four parts, visual information design experiments, product design experiments, design interaction experiments and evaluation system experiments.

4.1 User Requirements Analysis

As a medium of culture, the value of the design outcome itself comes from the user's recognition of the culture and emotional demands. Additionally, the design outcomes' users are mainly divided into two categories, geographical users and non-geographical users. Geo-users are motivated by their identity and confidence in their national costume culture, driving their demand for the design results. The non-geographical users, on the other hand, are mostly motivated by cultural curiosity as well as commemorative significance.

Geo-users include the inheritors and potential inheritors of Changning Miao costume, whose core demand is cultural inheritance. Besides, the reference content related to the design of Changning Miao costume is collectively gathered from local inheritors, who are the main body of cultural inheritance and directly determine the effect and content of cultural inheritance. Local children and youth under 25 years old represent the potential inheritors of Changning Miao costume. While they possess some knowledge of their own costumes, they lack comprehensive skill mastery and cultural awareness. Due to the need to spend long periods of time in school, they are not able to acquire the craft and knowledge from their elders in accordance with tradition. Local residents mentioned in interviews that the younger generation in the area displays a low inclination to acquire traditional skills, expressing concerns about potential skill loss. Additionally, the preservation of traditional patterns is also a topic of concern, given that old garments are naturally subject to damage or sale over time. Consequently, the core objective of the design is the preservation of cultural content and the establishment of new channels of transmission.

Non-geographical users include visitors and scholars who are interested in Changning Miao costumes. They are the recipients of Changning Miao costume culture dissemination. Through a combination of online surveys and field interviews, a survey was conducted on the demand for derivative products of Changning Miao

costume, and 117 valid questionnaires were collected. Moreover, the results of the questionnaire demonstrated that they preferred to buy pattern-printed products as well as embroidered decorations, accounting for 57.3% and 52.1% respectively (Table 4). Regarding spending amount, users willing to spend less than 100 yuan accounted for 42.7 percent, and those between 100-500 yuan accounted for 41 percent. Their primary concerns revolve around the practicality, features, and pricing of the products.

Table 4 User-preferred kinds of Design Outcomes (Ai, 2022)

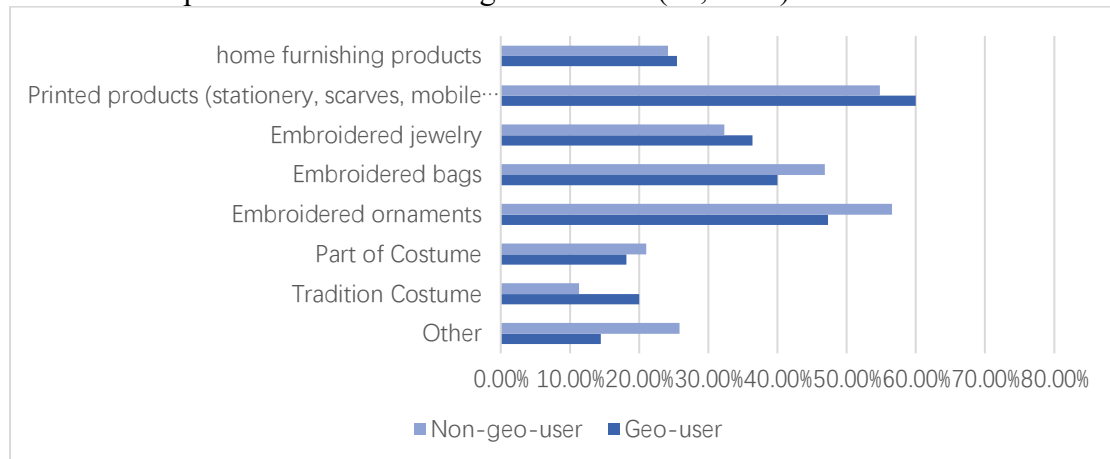
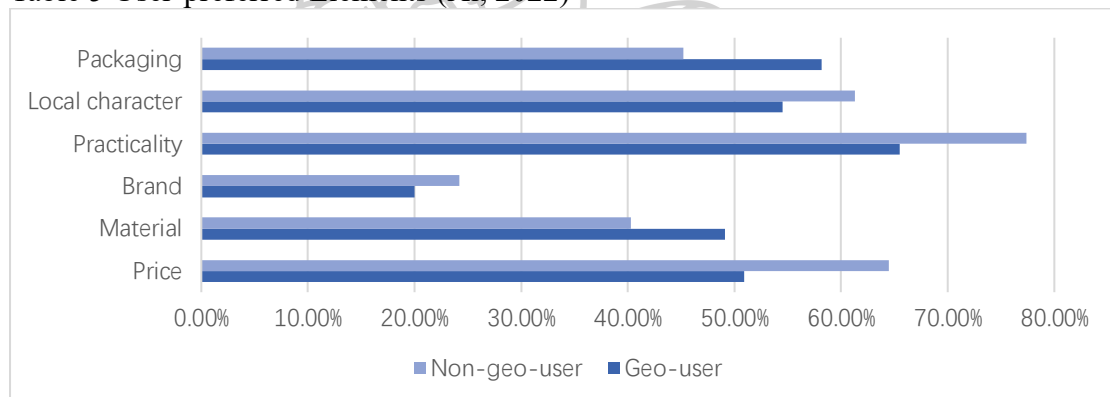


Table 5 User-preferred Elements (Ai, 2022)



Based on the above analysis of user requirements, the design outcome is determined as an encyclopedia of Changning Miao costume and accessory design. Besides, the primary purpose of the encyclopedia design is to complete the data collection of core genes of the Changning Miao costume and form a database. The embroidery patterns and techniques are systematically organized after fully interpreting the core genes of Changning Miao costume culture. Provide basic research data for the living heritage and adaptive use of the Changning Miao costume. Provide a theoretical and practical basis for the recovery and reconstruction of a sustainable cultural gene inheritance system to maintain the authenticity of their costume culture in the new social environment.

Secondly, the encyclopedia is designed to translate the core genes of the Changning Miao costume, offering local inheritors and the new generation of inheritors accessible references for learning crafts and patterns in an easily

understandable format. The completed encyclopedia will be given to residents in the form of cooperation, which will have a guiding effect on the expression of cultural genes of the Changning Miao costume. The encyclopedia will actively contribute to the process of gene translation, which is of great significance in maintaining the originality of their cultural genes.

Finally, the encyclopedia's validation and practice process is an exploration of the inheritance path of Changning Miao costume. Books facilitate users in deepening their comprehension of diverse aspects concerning the craftsmanship, culture, and significance of the Changning Miao costume. They enable residents to augment their understanding of Changning Miao costume culture, progressing from perceptual and practical knowledge to more rational cognition. This process aids in achieving a level of insight into the fundamental essence and underlying principles of Changning Miao costumes.

Conversely, the design will extract the core genes from the Changning Miao costume and employ the silk scarf, an accessory for daily wear, as the medium. In this case study, the design explores the way of applying the cultural symbols of traditional costumes to daily wear. The objective is to activate the role and transmission channels of culture within the present social ecosystem, while also seeking avenues to preserve the cultural essence of Changning Miao costumes in a dynamic manner.

4.2 Design Experiments

The main information of the information visualisation design of the Changning Miao costume comes from the analysis and screening of its core genes, which mainly consists of two parts, explicit and invisible, i.e., the external manifestation and cultural context of the Changning Miao costume. The first is the visualisation of the information on the representational content of the Changning Miao costume including patterns, colours, craftsmanship, materials, and styles. Through systematic research on Changning Miao costumes, photos, and the production process are collected. The pattern part is analysed and categorised, and representative patterns are selected for direct vector drawing, which serve as the basis for pattern exhibition in the encyclopedia and will also inform the material selection for product design. The way of pattern composition is extracted and employed to analyse the characteristics of Changning Miao costume patterns and comprehend the meaning of their patterns. Extract the colours in the Changning Miao costume and use them as a design material for the encyclopedia. Extract the process characteristics of costume making and visualise the design. Extract the process flow of costume-making as the material and reference for design. Secondly, the cultural content of the Changning Miao costume, including its cultural characteristics, wearing customs, cultural semantics, etc. These contents are extracted and classified, and the text combing and information visualisation design is applied in the design and production.

The main source of information visualisation design of the Changning Miao costume comes from the analysis and selection of its core genes, which primarily comprises explicit and implicit components, representing the external appearance and cultural substance, respectively. The first is the visualisation of the information of the representational content of Changning Miao's costume including pattern, colour, craftsmanship, material, and style. Through systematic research on the Changning

Miao costume, photos, and production processes are collected. The pattern part is analysed and categorised, and representative patterns are selected for direct vector drawing, which will be adopted for pattern display in the encyclopedia as well as material for product design. Extracting the method of pattern composition enables an analysis of the distinctive features of Changning Miao costume patterns and facilitates a deeper comprehension of their symbolic significance. Extracting the colours in the Changning Miao costume and employing them as design material for the encyclopedia. Extracting the procedural characteristics of costume making facilitates the visualization of the design process. Additionally, extracting the workflow of costume production serves as a valuable material and a reference for design. Secondly, the cultural content encompasses its distinctive cultural traits, wearing customs, cultural semantics, and other related aspects. These contents are extracted and classified, and the text combing and information visualisation design is applied in the design.

4.2.1 Visual Information Design Experiments

4.2.1.1 Vectorised design of graphics

The majority of the patterns in the Changning Miao costume are done utilizing the processes of flat embroidery and cross stitch, accordingly in the process of vectorising the patterns, the mosaic squares are mainly employed to represent them. With flat embroidery, two parallel stitches are one square; with a cross stitch, one cross is one square. The initial step after completing the extraction and categorisation of the patterns involved analysing their compositional principles to ascertain the rules governing their arrangement. The aim was to be able to enable the reader to recognise the category of the pattern accurately by indicating the most basic bodies and features. On this basis, a visual analysis of colour was carried out. Subsequently, the more typical patterns in each category were screened out, vectorized, and drawn employing Adobe Illustrator software, and finally typeset with information including the meaning of the pattern and how it is applied.

Select typical patterns in each category to vectorise the design using Adobe Illustrator. The main steps are as follows: firstly, use the grid tool to make a base grid of 100 cells to create a dynamic fill network. Accordingly, a 7-colour swatch is made based on the extracted colours of the pattern, which is used to fill the grid. Finally, a one-unit grid pattern is drawn based on the pattern employing the Dynamic Fill tool, and successive quadratic replications are made according to the pattern's compositional rules. The vectorised pattern indicates the skeleton, structure and colours of the pattern. The goal is to provide local individuals with diagrams they can use as a guide for embroidering the motifs.



Figure 54 Vectorised diagram of flat embroidery pattern (Ai, 2023)



Figure 55 Changning Miao costume vectorised pattern (Ai, 2023)

4.2.1.2 Colour design

There are two main ways to use the colours of the Changning Miao costume, one is to use the extracted colours directly. In Chapter 2, the colours in the Changning Miao costume patterns were extracted using K-means clustering. Besides, by clustering the sample patterns of various ages once and then clustering the obtained results twice, the results were obtained as indicated in Fig. The primary clustering of patterns' colours is generally believed to represent the colours selected by Changning Miao women for the current patterns during embroidery. Subsequently, the secondary clustering of the primary clustering results signifies the colour preferences of Changning Miao women during embroidery, with its percentage indicating the frequency of colour selection. It is an intensive reflection of their collective aesthetics, which is in line with the visual colour laws of the Changning Miao costume.

Consequently, this will be used as the main basis for the extraction of colours in the visual information design of the Changning Miao costume.

Excluding black and white, the Changning Miao costume colours are five. According to the frequency of occurrence of the colours to determine the dominant colour, a colour map was obtained as indicated in Fig. These colours will be used for visual design and derivative design.

In addition to the direct use of extracted colours, distinct colour schemes can also be used together. The selection and application of colours in Changning Miao women's embroidery are dictated by their inherent aesthetic sensibilities. Different colour choices can yield varying visual impacts for the same pattern. Therefore, applying the law of colour application in Changning Miao costume to visual design can enrich the visual senses of the design based on maintaining the unity of its visual information.

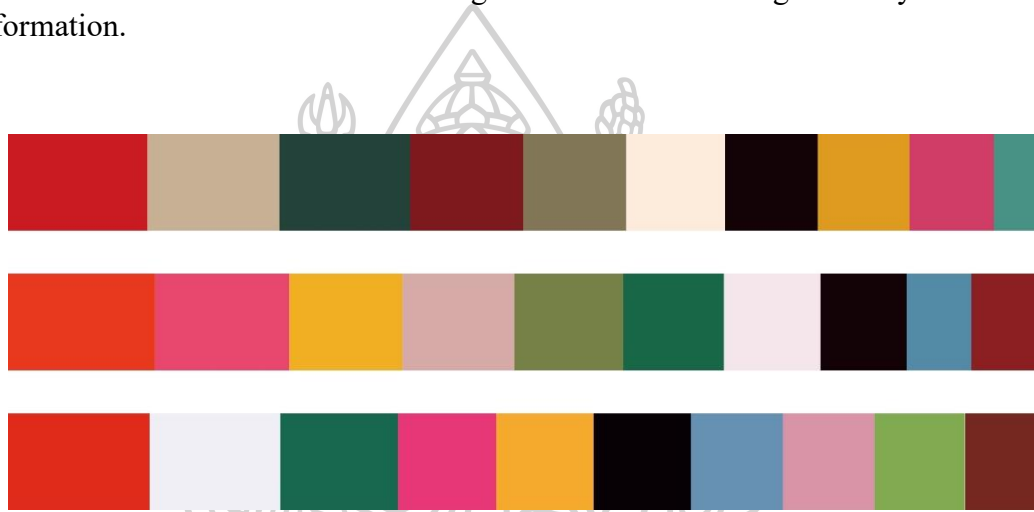


Figure 56 Colour extraction results of Changning Miao costume (Ai, 2023)



Figure 57 Schematic diagram of colour selection of Changning Miao costume (Ai, 2023)



Figure 58 Pattern drawn using directly extracted colours (Ai, 2023)



Figure 59 Colour scheme 1 (Ai, 2023)



Figure 60 Colour scheme 2 (Ai, 2023)

4.2.2 Product design experiments

Product design is also the design of the productization of visual information. Giving the visual information usability is enough to make the cultural genes better integrated into the living environment of the local people. Notwithstanding, tangible products are bound to the intangible culture, so the design of an information carrier is mainly divided into two parts. Firstly, the encyclopedia design, which is mainly based on science popularisation, aims to record the cultural genes of Changning Miao costume objectively and efficiently. The second aspect involves designing derivative products with everyday themes, intending to stimulate the expression of Changning Miao costume genes and incorporate cultural elements into the fabric of daily life through living inheritance. Changning Miao costumes are seldom worn in daily life, and the social functions of the costumes are ineffective. Consequently, returning to the essence of design, products with the theme of "daily use" have a more essential significance for both the culture itself and the users. In essence, it aims to meet the practical requirements for clothing, sustenance, shelter, and transportation, while also accustoming potential spiritual aspirations.

4.2.2.1 Encyclopedia design of Changning Miao costume

The visualisation of the Changning Miao costume patterns follows the three design principles of the encyclopedia and is rely on a comprehensive analysis and synthesis of the gathered data. Adobe Illustrator software was used for pattern production and typography design. Besides, the designs are text design and information visualisation design. Each pattern consists of four types of information, explanatory text, typical feature symbols, typical vectorised patterns, as well as pattern colour schematics. Additionally, the information layout needs to follow the reader's visual habits while taking into account the reading experience of readers who cannot read text. The encyclopedia is bound in A4 format with wire binding, and the layout is therefore A3 across the page.

Firstly, the design of encyclopedia needs to follow the principle of authenticity. Authenticity records and reacts to the core genes and attributes of the Changning Miao costume. This principle is mainly realised through two channels, the first being the rigour of the data collection process. The project will engage inheritors in the screening and consolidation of core content through focus group discussions, aiming to mitigate any bias from the participants and uphold the local narrative of Changning Miao costume. Secondly, the design process adheres to the craft characteristics, composition, and aesthetic elements of the Changning Miao costume, ensuring an authentic translation of its genes.

Secondly, it follows the principle of comprehensiveness, and it is a genetic database of Changning Miao costume, and consequently, it must provide a comprehensive overview encompassing all its facets. Its comprehensiveness is mainly reflected in two aspects, namely, the comprehensiveness of the scope of data collection and the systematicity of the content layout logic. Besides, the image data of the Changning Miao costume encyclopedia mainly comes from the Miao residents of the Daping and Tupitai villages, and over 6,000 photographs, images, and video materials have been gathered in total. On this basis, from the perspective of cultural ecology, these data were systematically organised and interpreted, and typeset according to the principle of visualisation, to comprehensively present the culture of Changning Miao costumes and the surrounding environment in the area.

Thirdly, it follows the principle of popular science. Popularising science involves presenting various knowledge and facts to readers in easily understandable language and format through the design carrier, aiming to enhance people's scientific literacy and cultural awareness. The popularity of the Changning Miao costume encyclopedia is embodied in two aspects, on the one hand, it can let different categories of readers access the knowledge and information they require from it. For new inheritors and visitors, the encyclopedia provides a comprehensive description as well as knowledge of the Changning Miao costume. Meanwhile, they can also use it as a reference to learn in-depth skills in costume-making, embroidery and patterns. For those inheritors who have already acquired these skills, the encyclopedia primarily serves as a reference for patterns and colours, comprising 37.5% and 31.3% of their usage, respectively. Moreover, since a majority of residents aged over 50 may not be able to read, the encyclopedia contains a higher proportion of illustrative content. On the other hand, the information of encyclopedia can be disseminated and presented through the real and Internet media to enhance the scope as well as efficiency of their science popularisation.

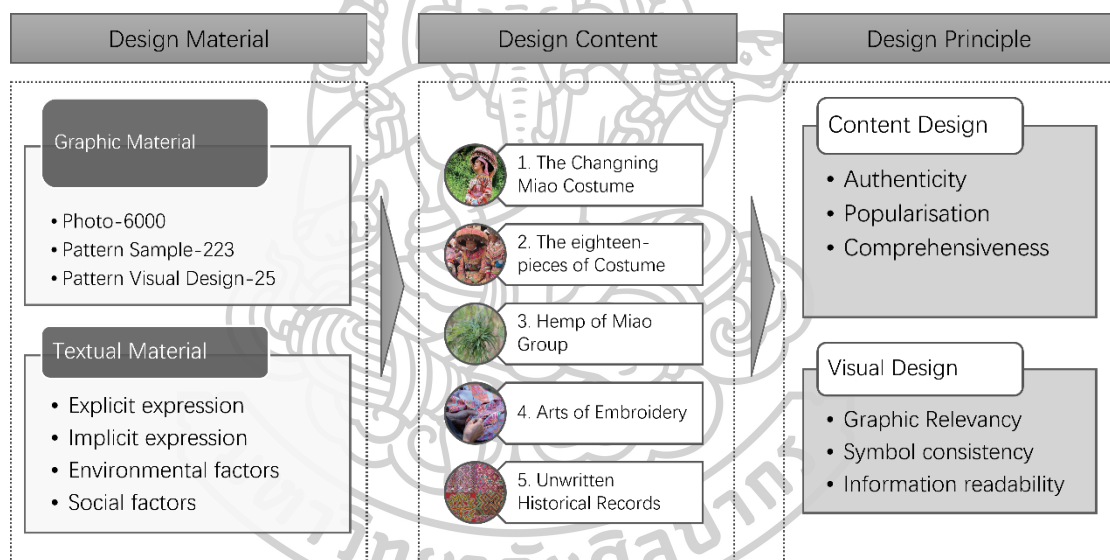


Figure 61 Design Process for Encyclopedia of Changning Miao Costume (Ai, 2023)

The text of the Changning Miao costume encyclopedia is divided into two parts. The two paragraphs prior to and following each chapter are mainly employed to introduce the cultural content related to the content of the chapter, i.e. the invisible gene of Changning Miao costume. The text within the chapters is adopted to assist in explaining the content of the pictures and drawings, i.e., the explicit genes of the Changning Miao costume. The whole text is divided into five chapters, an appendix, and an epilogue.

The first chapter is an overview of Changning Miao's costume. Initially, it presents the lineage and evolution of Miao attire, followed by an exposition on Changning, encompassing the ethnic lineage of the Miao, geographical context, and the foundational elements of Changning Miao apparel. The dissemination of this information primarily relies on photographs, illustrated maps, and textual descriptions.

The second chapter "eighteen Flowers". This chapter introduces each of the eighteen pieces of the Changning Miao costume from the culture, wear, and clothing production method in detail, aiming to provide a reference for the Changning Miao costume production. Each costume introduction comprises a concise depiction of the attire, accompanied by a photograph showcasing the costume, and an illustration displaying its pattern. The textual overview facilitates a swift comprehension of the costume's fundamentals, while the photographs provide a visual portrayal of its style and presentation. Additionally, the layout drawings serve as valuable references for further examination and replication of the costumes.

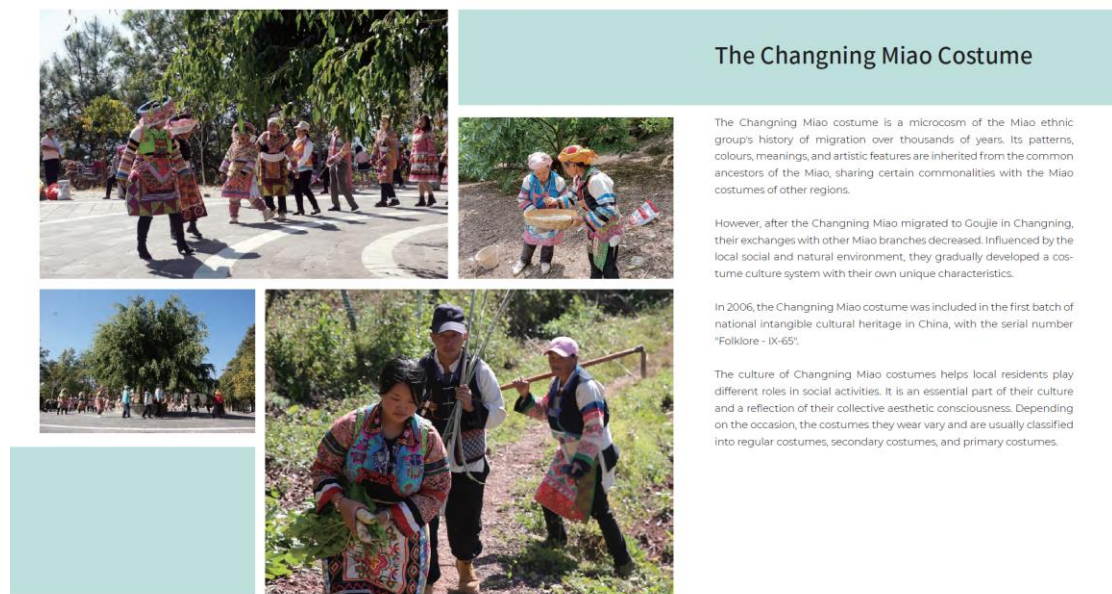


Figure 62 Schematic layout of chapter 1 (Ai, 2023)

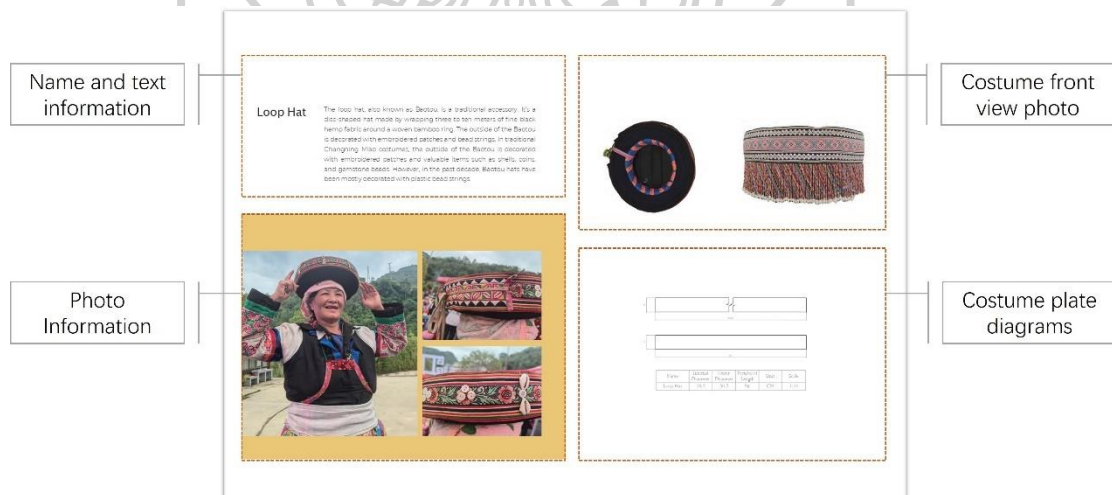


Figure 63 Layout of clothing production information of chapter 2 (Ai, 2023)

The third chapter, "no hemp, no Miao family", explains in detail the steps of the Changning Miao from hemp planting to hemp production and subsequently to hemp cloth weaving through a combination of illustrations and texts. This chapter offers readers insights into the craftsmanship and cultural significance of hemp

production in Changning Miao culture. For the Changning Miao, hemp is closely related to their lives. Additionally, Miao in Daping and Tupitai villages are employed to grow fire hemp, and in the past, every family could spin hemp cloth.


The fourth chapter, "The Art of Embroidery", introduces in detail the four kinds of embroidery techniques in the Changning Miao costume through schematic diagrams. The chapter covers four main embroidery techniques: flat embroidery, cross embroidery, lock-stitch embroidery, and cut-stitch embroidery. Each technique is introduced with three components: a textual overview, visual examples of finished samples, and schematic diagrams illustrating the embroidery method. This comprehensive approach enables readers to grasp the cultural significance of embroidery in Changning Miao costume and provides practical guidance for learning embroidery through detailed diagrams.

The fifth chapter, "The Book of History without Words", contains more than one hundred embroidery patterns in the Changning Miao costume, which are categorised and summarised, to provide the local Miao with a reference atlas of embroidery. The content of this chapter builds upon the research and analysis conducted in Chapter 2 of the thesis. It integrates the images and textual data extracted from the core genes of Changning Miao costume and organizes the content into three categories: constituent motifs, independent motifs, and auxiliary motifs. Each pattern includes several components such as the pattern name, cultural context, basic design, representative vector diagrams, collected embroidery samples, and colour analysis. Moreover, the detailed analysis and documentation of pattern-related information in this chapter are intended to enable the reader to understand the culture and meaning of the pattern through the content of the book, and simultaneously to be able to reproduce the type of pattern through pictures and colours, and ultimately to be able to understand the patterns of the pattern composition, and to use them as a basis for organising and constructing new patterns.


In the appendix of the encyclopedia, vectorised Changning Miao costume patterns are also indicated to provide a reference for dressmaking. Some of these patterns could not be clearly categorized because they lacked a distinct pattern identity. However, they were still included in the appendix due to their high frequency of occurrence.

Hemp Waving


The Changning Miao use Hemp as a raw material and use looms to weave the fabric. The width of the woven hemp is about 30 centimetres, while the length ranges from five to ten metres, depending on the need. The traditional hemp weaving process consists of cutting hemp, performing, spinning, bleaching, drafting and weaving. After Spring Festival, the hemp seeds are broadcasted. In the autumn when the hemp leaves are yellowing, the hemp poles are harvested.




The woven hemp fabric has a natural yellowish-brown colour and needs to be boiled again for 12 hours with green ash and crushed back and forth with a stone mill to bleach the hemp fabric and make it more uniform and dense.




Cutting Hemp: Hemp peeling, also called scraping hemp, is the process of stripping the hemp stalks and the hemp skins used for spinning. After the hemp skin is cut, the debris attached to the hemp skin is pounded off by pounding the hemp, and then rolled into small smooth balls to be dried in




Twining Hemp: This is the process of joining the processed hemp threads together and twisting them to form the hemp rolls. When twining, pay attention to the even thickness of the twine, if you want to weave a fine linen, you need to make the twine very thin




Spinning Hemp: Using a spinning wheel to spin the spliced hemp threads together by rotating them evenly, the spun hemp threads are tight and not easy to break.



Bleaching Hemp: The grass ash is put into a pot and boiled with the twine, boiled for an hour and then dried, after more than ten repetitions, the twine takes on a beige colour.



Drawing: The warp threads are usually drawn in 700-800 strands, and in the process of drawing the threads, each strand is arranged parallel to the other, and the two neighbouring strands are passed through the twisted threads tied to different bamboo bars.



Weaving: Hemp fabric is woven by lifting the warp threads and using shuttles to pass back and forth.

Figure 64 Textile linen layout of chapter 3 (Ai, 2023)

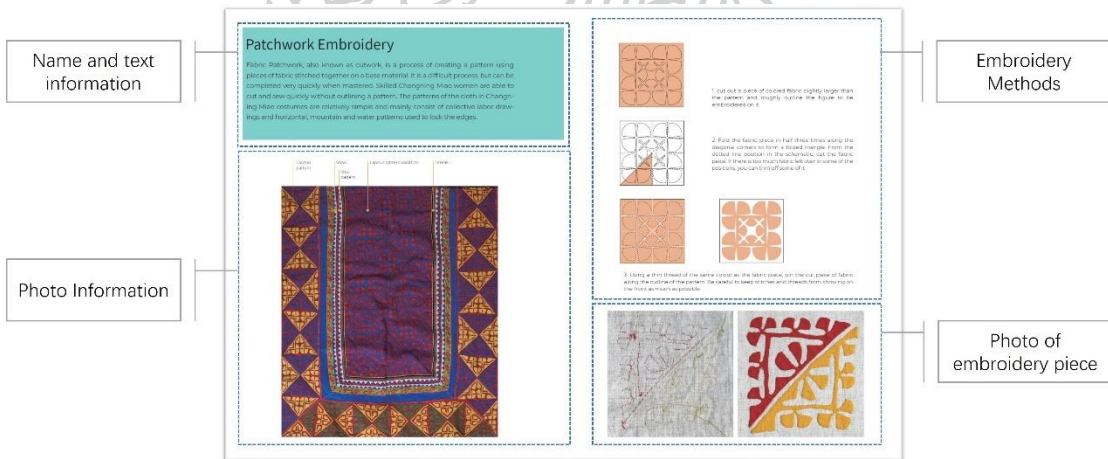


Figure 65 Embroidery layout diagram of chapter 4 (Ai, 2023)



Figure 66 Pattern layout schematic of chapter 5 (Ai, 2023)

4.2.2.2 Derivative product design

According to the research, at present, the Changning Miao costume is worn as a costume for special ceremonies. Since the local Miao no longer wear traditional costumes in their daily lives, this design will focus on extracting the core representational genes from Changning Miao costumes and incorporating them into daily worn accessories as the medium for design. Using this as a case study, we will explore the way of applying the cultural symbols of traditional costumes to daily wear. Besides, the aim is to activate the communication path of culture in the current social ecology and to explore the way of living inheritance of Changning Miao costume cultural genes.

As the Miao residents of Changning live in the alpine mountains, there is a large temperature distinction between day and night in the region. Consequently, residents often need to add clothing in the morning and evening. Scarves and shawls can be used as temporary warmth. The design of the scarf adheres to the pattern, composition, and colour characteristics of the Changning Miao costume. There are two main sizes of silk scarves: the rectangular scarf measures 500mm in width and 1750mm in length, while the square scarf measures 1100mm in width and 1100mm in length.

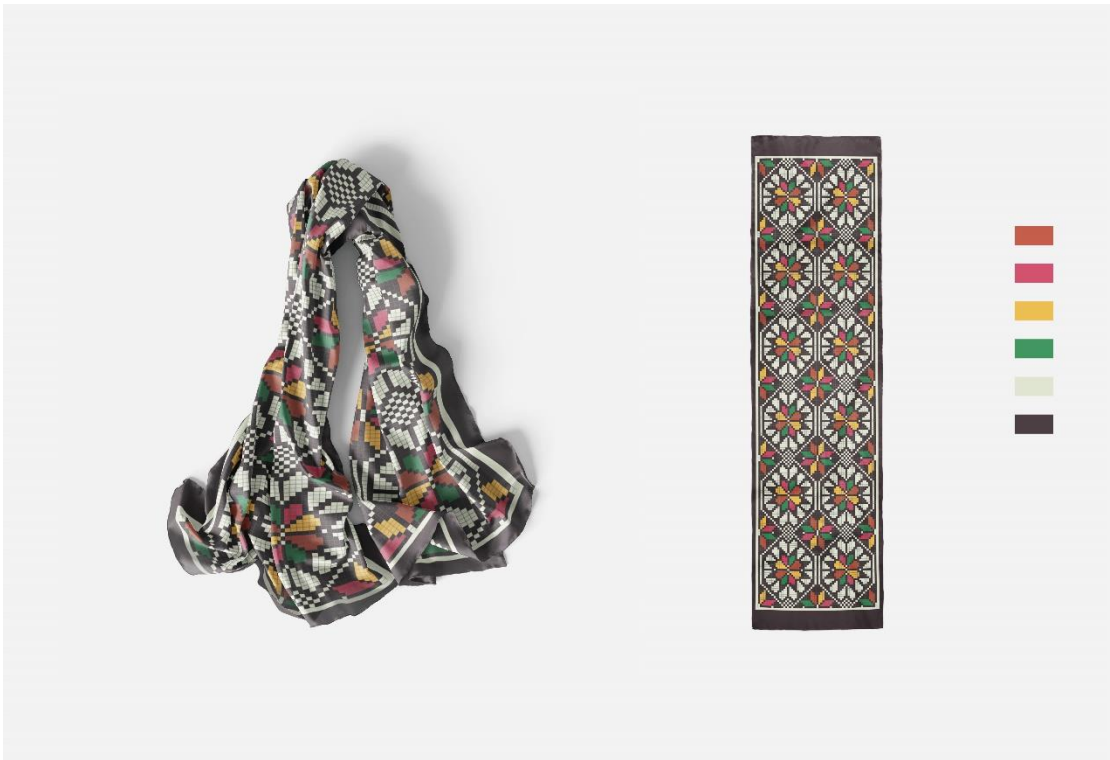


Figure 67 Rectangular scarf design 1 (Ai, 2023)

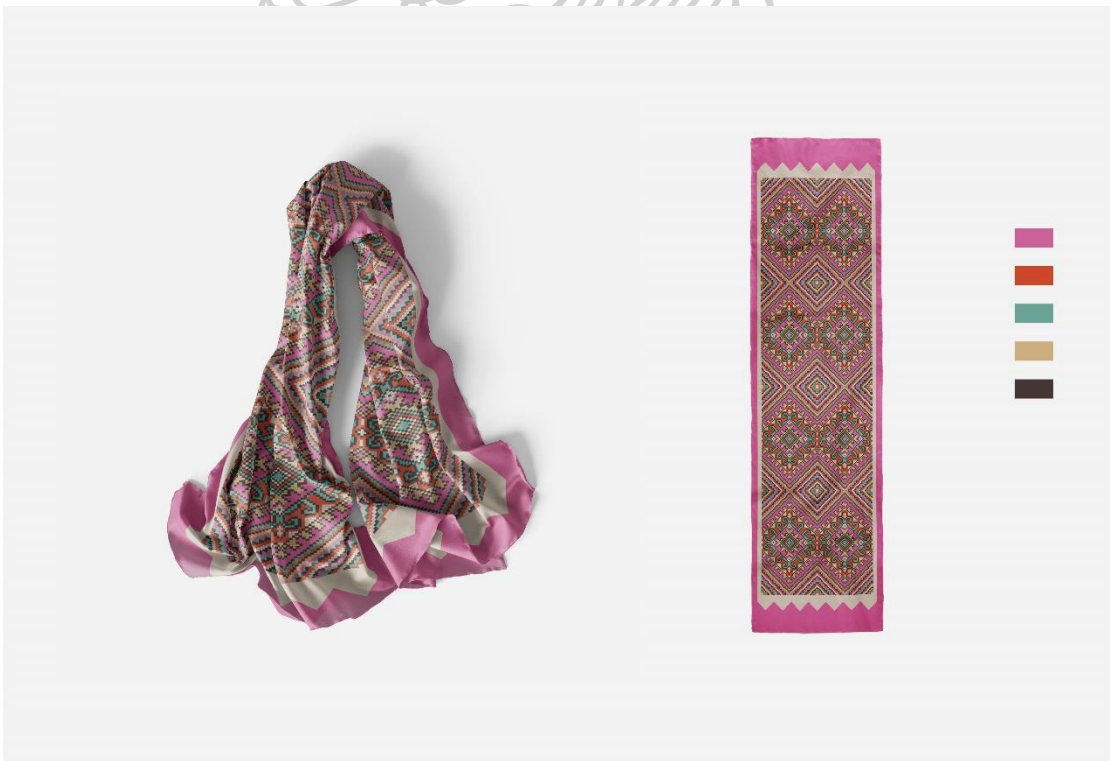


Figure 68 Rectangular scarf design 2 (Ai, 2023)

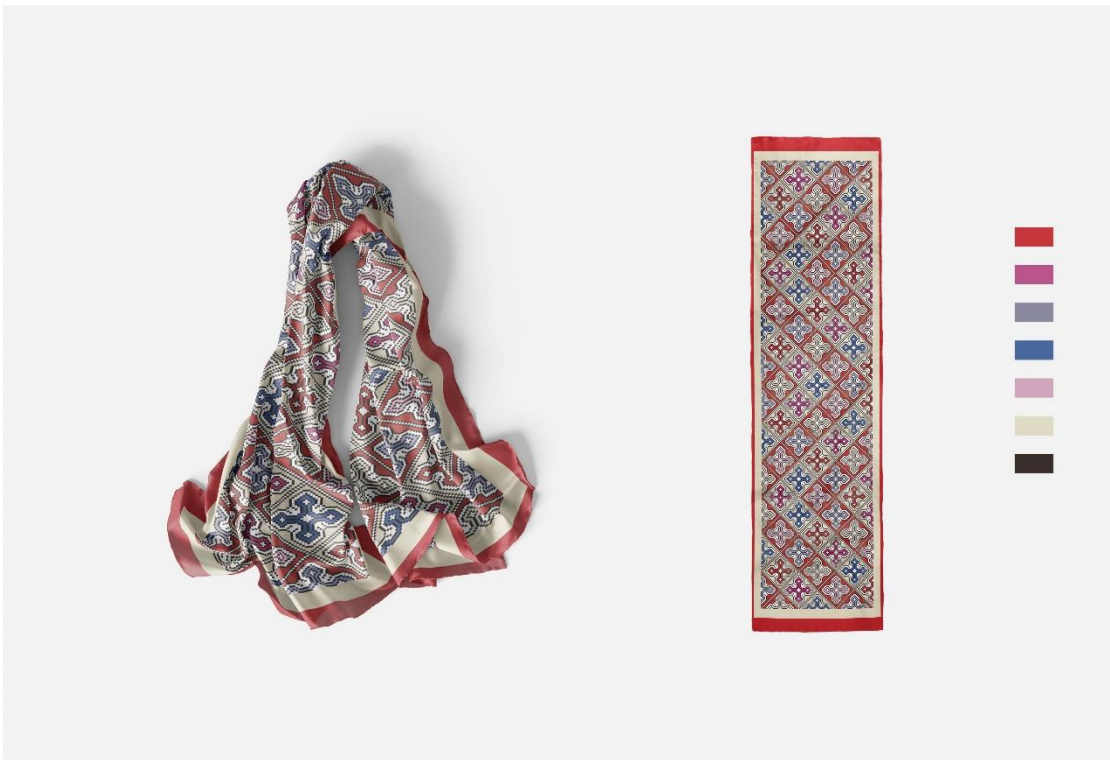


Figure 69 Rectangular scarf design 3 (Ai, 2023)

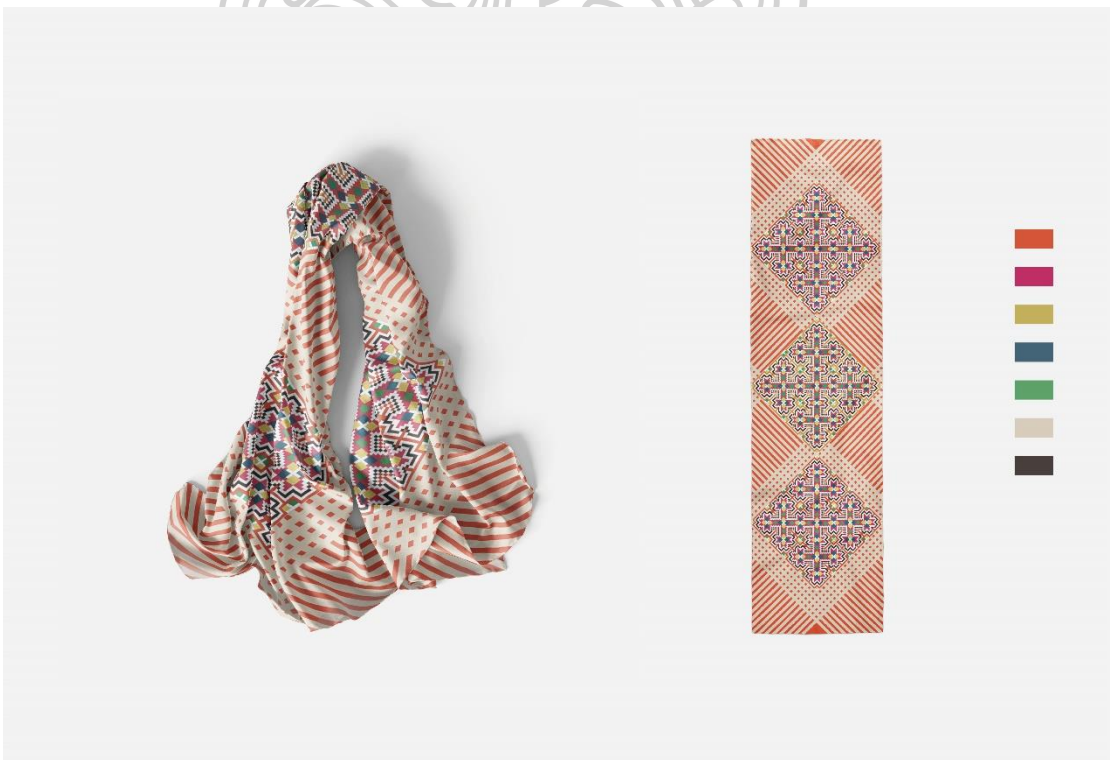


Figure 70 Rectangular scarf design 4 (Ai, 2023)



Figure 71 Rectangular scarf design 5 (Ai, 2023)

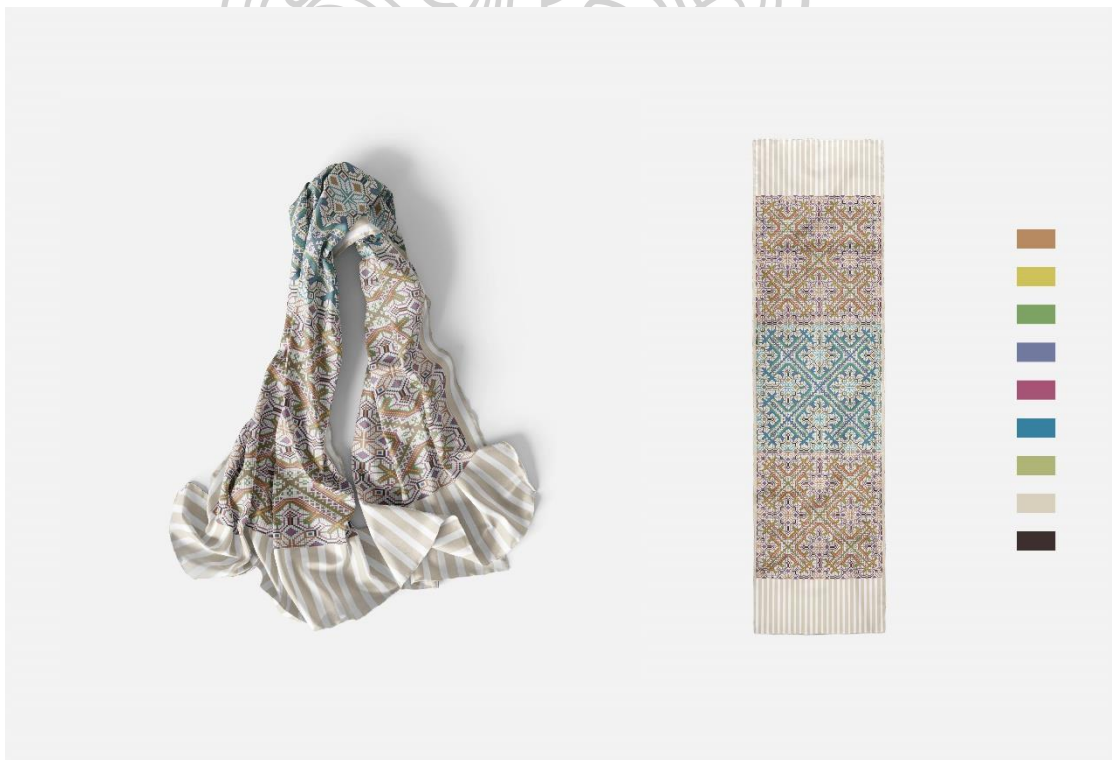


Figure 72 Rectangular scarf design 6 (Ai, 2023)

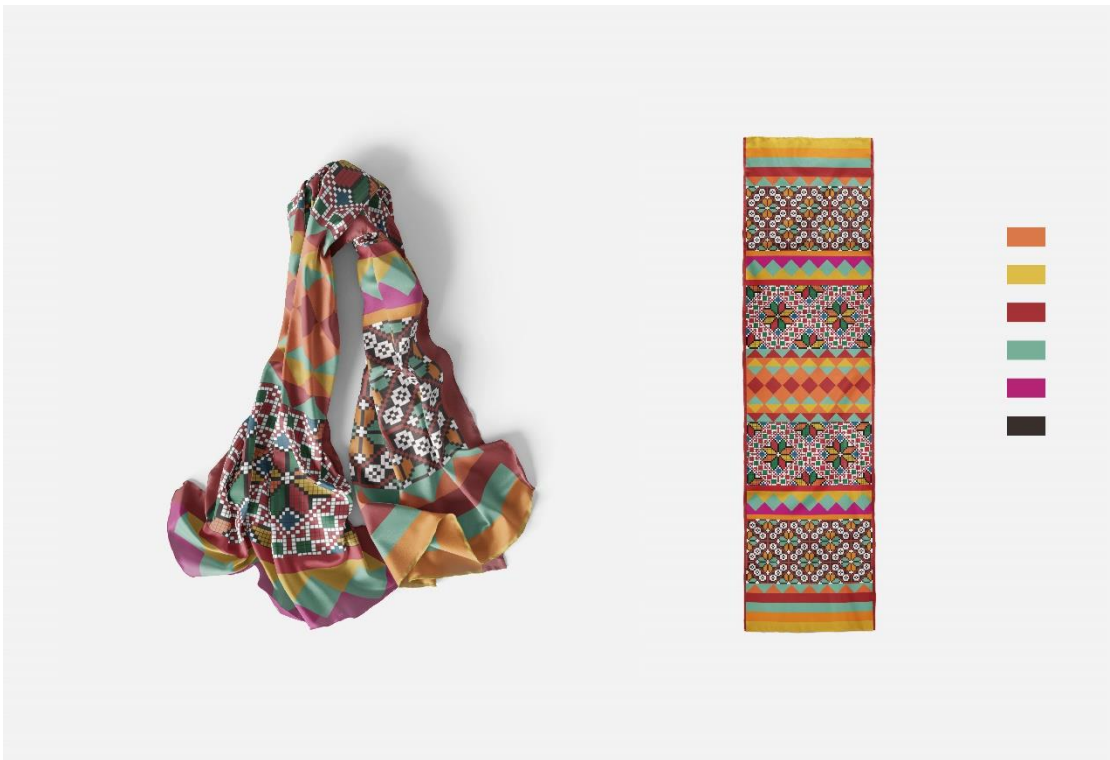


Figure 73 Rectangular scarf design 7 (Ai, 2023)

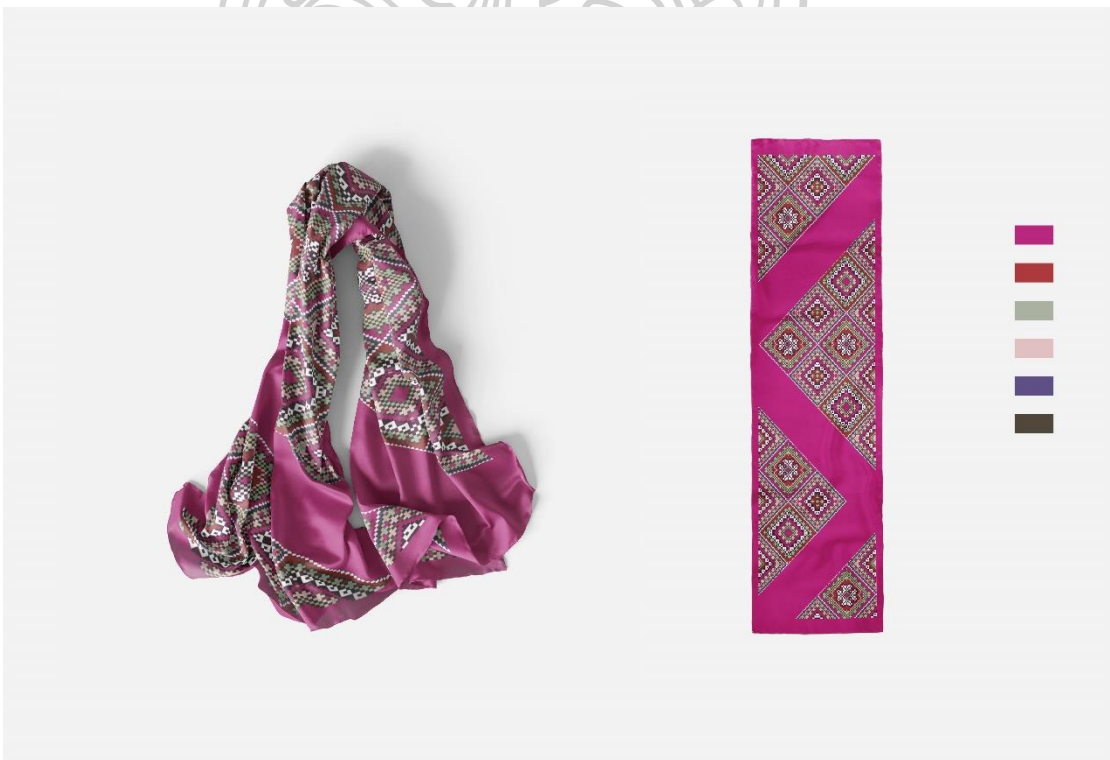


Figure 74 Rectangular scarf design 8 (Ai, 2023)



Figure 75 Square scarf design 1 (Ai, 2023)

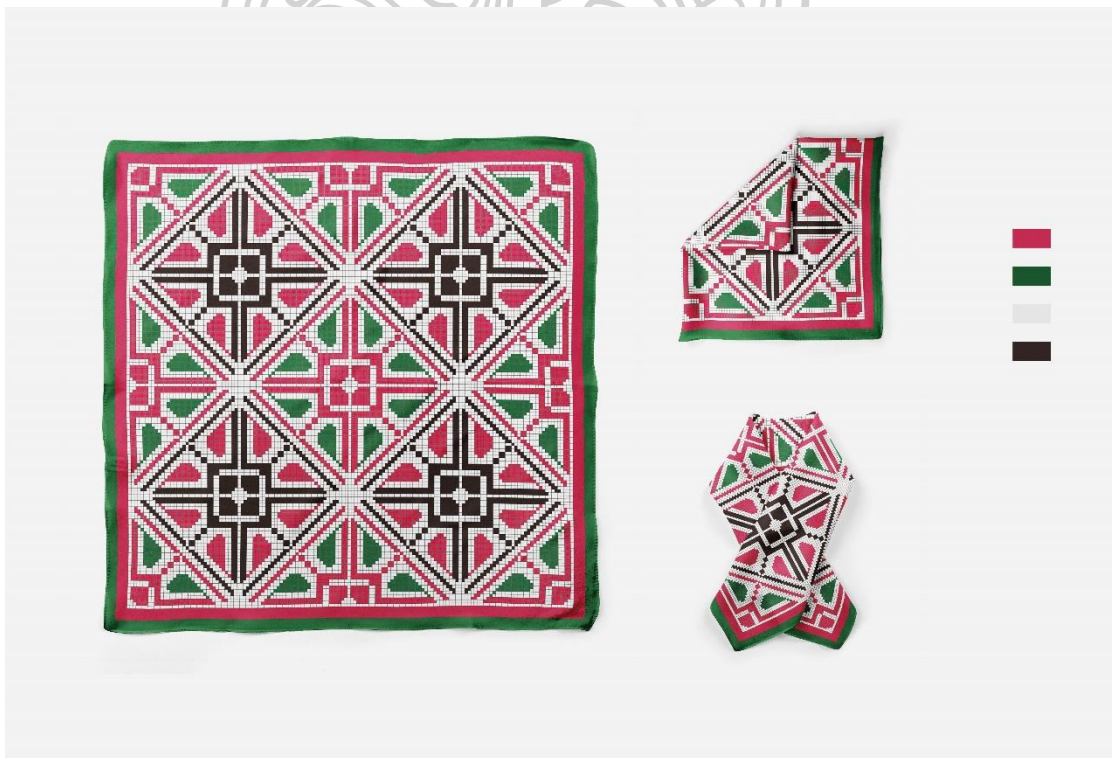


Figure 76 Square scarf design 2 (Ai, 2023)



Figure 77 Square scarf design 3 (Ai, 2023)



Figure 78 Square scarf design 4 (Ai, 2023)



Figure 79 Square scarf design 5 (Ai, 2023)



Figure 80 Square scarf design 6 (Ai, 2023)



Figure 81 Square scarf design 7 (Ai, 2023)



Figure 82 Square scarf design 8 (Ai, 2023)



Figure 83 Square scarf design 9 (Ai, 2023)



Figure 84 Square scarf design 10 (Ai, 2023)



Figure 85 Square scarf design 11 (Ai, 2023)

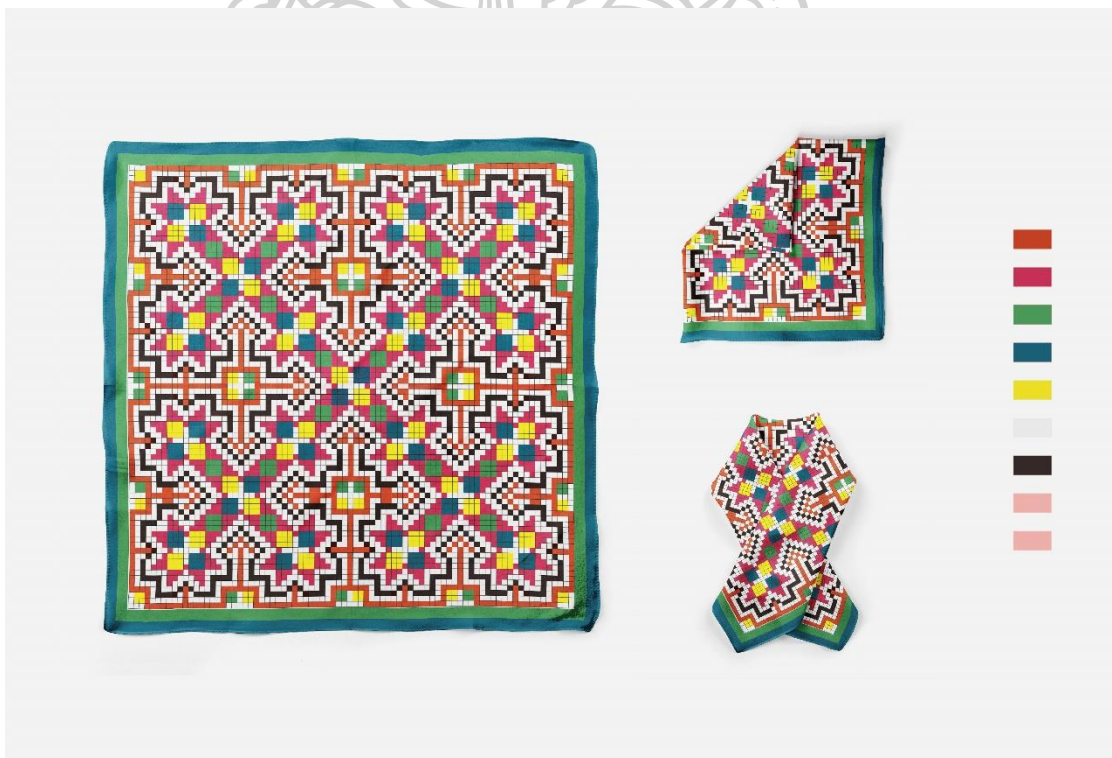


Figure 86 Square scarf design 12 (Ai, 2023)

4.2.2.3 Packaging design

In the design of derivative products, the emphasis is mainly on the design of the explicit expressions of the Changning Miao costume. However, the communication of cultural implicit information requires further interpretation based on visual elements. The purpose of cultural information design is to enhance users' understanding of cultural implicit traits. As carriers of cultural content, cultural derivative products derive their high additional value precisely from users' acceptance of culture and emotional connection. The cultural elements embedded in the design serve as one of the primary motivations for users to make purchasing decisions. On one hand, users' emotional connection to culture adds significant value to culturally derived products. On the other hand, when users engage with the purchased items, they also deepen their understanding of culture.

While interpreting the cultural information related to the Changning Miao costume, reliance primarily rests on encyclopedia sources. However, recognizing that not all silk scarf users have access to these references, the packaging of the silk scarf serves as a medium for cultural information design. This approach combines both online and offline elements. After purchasing the product, users can scan the QR code on the silk scarf label to learn about the Changning Miao costume patterns and cultural context, thereby enhancing their knowledge of this traditional attire.

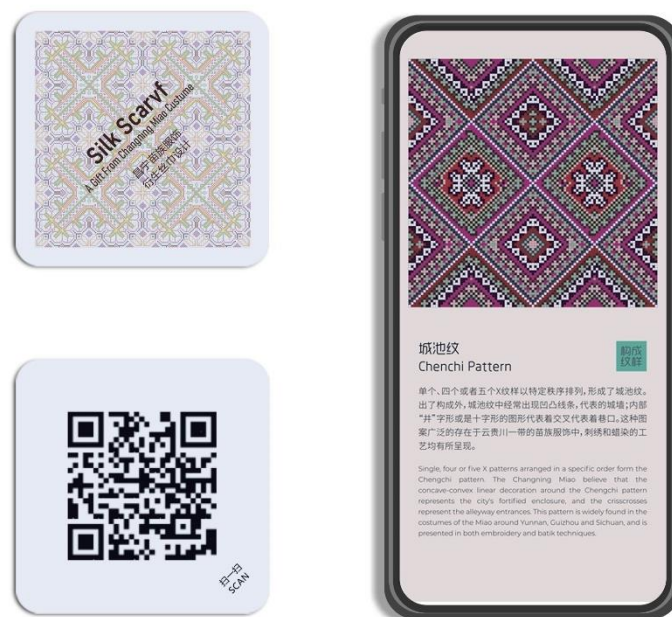


Figure 87 Silk scarf label design (Ai, 2024)

4.3 Evaluation Experiments

4.3.1 Interactive Design Experiments

During the phase of information interaction and practice, the primary aim is to engage with information through design activities and to subsequently assess and evaluate the outcomes of this interaction. By orchestrating various activities, direct and effective communication and collaboration with key stakeholders are sought, encouraging their active involvement and participation. To a certain extent, the design results can get more effective feedback and suggestions and enhance the relevance and impact of the design. Nevertheless, at the same time, we also need to pay attention to balance the design principles and user feedback, to avoid losing the design concept and value due to too much catering and compromise. During this phase, practical activities were devised for both encyclopedia and derivative products, each tailored to engage the primary stakeholders of this research.

4.3.1.1 Pattern Class and Embroidery Workshop

Use the patterns in the encyclopaedia (Chapter 5 of the encyclopaedia in the Appendix) and parts of the embroidery process (Chapter 4 of the encyclopaedia in the Appendix) to conduct a popular culture class on the knowledge of the composition of Changning Miao costume patterns. And use this as a basis for designing the embroidery experience sets.

The purpose of the activity is to enable the experiential subjects to be able to master the embroidery craft in Changning Miao costume to a certain extent and to comprehend the knowledge of pattern composition through the activity and the actual operation. For the study, the purpose of organising this activity is mainly twofold, in the first place, to test whether the content setting and expression form in the encyclopedia can achieve the purpose of knowledge dissemination through the activity. The second objective is to investigate the application methods and roles of the encyclopedia in the implementation of Changning Miao costume cultural heritage, thereby offering a practical foundation for the theoretical findings of the study.

This hands-on activity was designed to experience the encyclopedia, which contains a set of 20 cards with Changning Miao costume patterns and instructions, including four cards with embroidery instructions as well as 16 cards with pattern instructions; a paper bracelet with Changning Miao costume patterns; a needle and thread kit, which contains six colours of silk thread and embroidery needles; and a blank card for feedback.

Date: 24 November 2023

Venue: Tupitai Primary School

Target: Primary school students from Grades 2 to 4

Number of participants: 57

Table 6 Flow Chart for Experiential Activities (Ai, 2023)

| Serial number | Time | Activities |
|---------------|-------------|---|
| 1 | 13:30-13:40 | Introduction to the event: purpose and flow of the event |
| 2 | 13:40-14:20 | Changning Miao pattern composition rule briefly described |
| 3 | 14:20-15:00 | Cross Embroidery Experience |
| 4 | 15:00-15:15 | Showcase of experience results |



Figure 88 Preparation of Activity Materials (Ai, 2023)



Figure 89 Sharing composition rules of Changing Miao costume (Ai, 2023)



Figure 90 Students experience embroidery (Ai, 2023)



Figure 91 Instant feedback of the class and workshop (Ai, 2023)

Local children are the future inheritors of the Changning Miao costume, and they have a long time of perceptual knowledge of the Changning Miao costume. Notwithstanding, because of the longtime exposure, they are employed to the culture of this ethnic group and lack the interest and motivation to pass it on. Besides, the activity is designed to show the complex pattern rules in a simple way, and at the same time let them experience and learn the craft of cross embroidery and make bracelets in a playful way. The objective is to accomplish aesthetic education objectives through accessible methods, thereby enhancing their rational comprehension of Changning Miao costume culture. The ultimate aim is to boost their confidence in their cultural heritage and stimulate their motivation to pass it on.

Overall, the activities achieved the expected results. After the practical activities concluded, participating children were invited to evaluate the activities by writing cards. Additionally, interested children were interviewed to gather their feedback and insights. Most of the participants were interested in the activity and were able to gain some comprehension of the patterns of the Changning Miao costume in the course of the activity. Additionally, as for the experience of the embroidery process, only about one-third of the students were able to embroider the patterns using the cross-embroidery process due to the time constraints of the experience. Two of these students had already learnt embroidery from their elders. Meanwhile, through subsequent visits to the three students, it was learnt that the majority of the students had completed the embroidered bracelets either independently or with the help of their elders under the guidance of their elders. About one third of the students displayed interest in the Changning Miao costume over the following 2-4 weeks and furthered their understanding of it by studying cards and actual embroidery pieces under the guidance of their elders.

4.3.1.2 Interaction Exhibition and Online Exhibition

This interactive design exhibition is an online exhibition and an offline exhibition. The purpose of the exhibition is to promote the transmission of Changning Miao costume culture. As a result, the exhibition is divided into two parts: offline and online. The offline exhibition primarily targets geo-users, allowing Changning Miao individuals and residents in the surrounding areas to showcase design outputs and raise awareness of local culture. Conversely, the online exhibition caters to non-geo users, with the primary goal of spreading awareness about Changning Miao costume culture to residents in other regions. By utilizing a multi-dimensional platform for

cultural transmission, we can attract attention and foster awareness among diverse groups. Ultimately, this approach helps cultural subjects enhance their self-confidence and encourages the continuation of their own cultural heritage.

The offline output exhibition was held from the 23rd to the 27th of April 2024 at the local art gallery, Baoshan Gallery. The exhibition was visited by about 1,000 people, of which 657 people scanned the QR code in the poster to view the online e-book, of which 9.1 % shared the e-book. Along with the exhibition, visitors as well as Changning Miao residents were invited to participate in wearing silk scarves. After inquiring about the willingness to be photographed, 27 villagers, and 16 visitors were photographed wearing the silk scarves.

The online e-book is published on the social media outlet "Little Red Book". As of 25 May 2024, it has received 6,235 views, 319 likes, 234 likes and 69 shares.

In general, local Miao people have high recognition of the silk scarves, believing that the motifs of local costumes are better applied in the design of the silk scarves, and they hope to have a stable channel to buy them. In interviews with visitors, we learnt that they thought the exhibition was very intuitive for them to understand the patterns of Changning Miao costumes, while the online e-book was able to provide a clearer understanding of the cultural content of Changning Miao costumes.



Figure 92 Art Exhibition of design outputs (Ai, 2023)



Figure 93 Art Exhibition of design outcomes 2 (Ai, 2023)



Figure 94 Photos of participants wearing silk scarves (Ai, 2023)



Figure 95 Photos of local Miao residents wearing silk scarves (Ai, 2023)

4.3.2 Evaluation system experiments

The fourth stage of design is sustainable feedback and attention to design results and design practice, i.e., design experimentation of evaluation systems. Besides, the derivation of culture and the inheritance of cultural genes is a process that lasts for a long time. Hence, in this phase, careful consideration will be given to the Changing Miao costume and its cultural ecosystem through the design outcomes, aiming to investigate the impact and mechanism of the design on its sustainability. The construction of the evaluation system can more objectively observe and assess the effect of the design results and the way of action, with a view to subsequent continuous optimisation and improvement, to enhance the design's value and significance. In this process, it is necessary to focus on the measurement and analysis of data and indicators on the one hand, and conversely, it is also necessary to focus on balancing the emotion and experience of the design to avoid over-reliance on qualitative data analysis.

4.3.2.1 Design of evaluation methodology

The evaluation of the design is mainly divided into three stages. In the second chapter, theoretical analyses were conducted based on literature and field data research, adopting a cultural ecology perspective. This approach allowed for the identification of challenges encountered by the Changing Miao costume and the formulation of initial solutions. After completing the preliminary needs research, the first draft was designed and produced. Subsequently, the first stage of design

evaluation, i.e. the correction of the first draft of the design, began. Moreover, the evaluation was conducted in the form of a focus group, which was organised with Miao scholars, local inheritors, as well as local residents to systematically sort out and evaluate the contents of the encyclopedia. Inaccurate and controversial elements were revised, and the form of the presentation was modified.

The second stage was the evaluation of the encyclopedia regarding content, form and effectiveness. The evaluation was conducted through questionnaires (Appendix for details) to villagers of Tupitai and Daping villages as well as local visitors and scholars, 200 questionnaires were distributed, and 199 valid questionnaires were returned. The primary objective of setting up the questionnaire was to comprehensively evaluate the content and effectiveness of the encyclopedia. The questionnaire was divided into three sections, as indicated in the table, the first section contained basic information about the respondents, including their identity as well as age information. The second section focuses on assessing the content of the encyclopedia, covering its intended purpose, content, and information presentation format. The third section assesses the impact of utilizing the encyclopedia, encompassing five aspects: culture, craftsmanship, patterns, colours, and inherited beliefs.

The third stage is based on the interviews and evaluations after the interaction practice. On the condition that the interaction activity practice was conducted, the participants were interviewed to get relevant evaluation and feedback on the design.

4.3.2.2 Reliability and validity of evaluations

Reliability indicates the degree of random error in measurement, whereas validity pertains to whether the instrument accurately measures what it is intended to measure. The study emphasizes four key areas to enhance the reliability and validity of the evaluation.

First, the concepts to be measured were clearly defined, and the content of the questionnaire was designed around the purpose of the survey. According to the objectives of the evaluation, the content evaluation was divided into three dimensions: purpose, content, as well as form; and the effect evaluation was divided into five dimensions: culture, craftsmanship, motifs, colours, and inherited beliefs. The concepts to be measured were assessed across multiple dimensions. Each measurement question accustomed a single dimension, ensuring clarity regarding the dimension that the collected data pertained to. This approach minimized the interactions between measurements of different dimensions, thereby reducing potential impacts on the reliability and accuracy of the measurement results.

The second is the utilisation of multiple indicators to measure variables. Multiple indicators allow the researcher to measure the concept or variable more broadly and comprehensively, and naturally, the measurements will be more accurate and consistent. The study established five distinct levels of indicators for measurement: strongly agree, agree, uncertain, disagree, and strongly disagree.

Thirdly, pre-testing was conducted to identify problems in advance. The questionnaire was first pre-tested on a 20-person scale before it was released in bulk. During the process, certain questions were revised to enhance their accuracy, clarity, and comprehensibility. Additionally, the scope of information to be collected was adjusted to restrict the number of questions to 10.

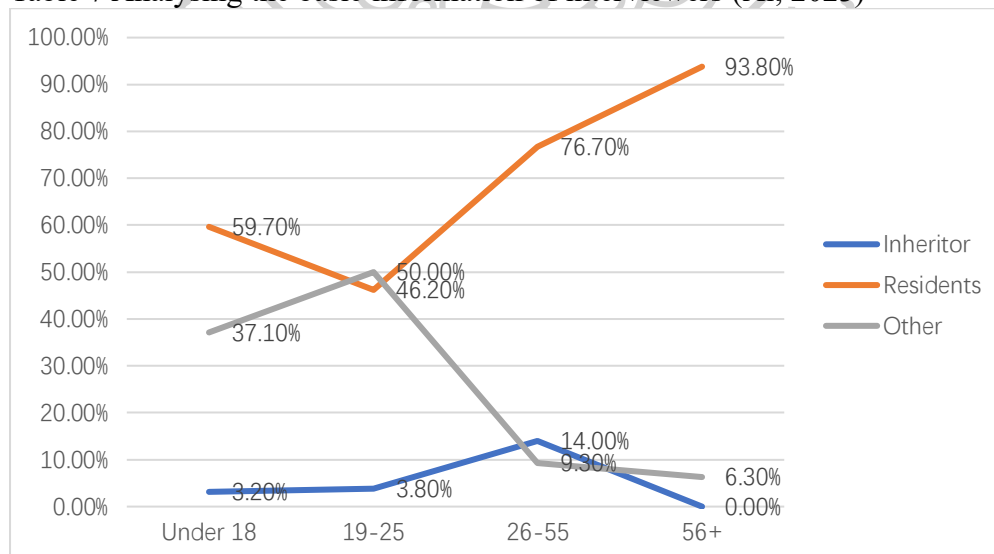
Fourthly, the operation of the investigators was standardised, and the team was trained and required before the questionnaire was conducted. The questionnaire was completed by the author herself and the team on the ground together, and the period for completing the questionnaire was 2 weeks. To conduct a more thorough evaluation of the encyclopedia, it was necessary to allocate 10-15 minutes for the respondents to read the book upon receiving it. and subsequently fill out the questionnaire with the assistance of the investigator. The questionnaire was completed along with interviews with some of the sampled groups, which provided further basis for the subsequent design of the derivatives as well as the completion of the theoretical conclusions of the thesis.

Fifth, the representativeness of the sample was ensured. The evaluation surveyed a sample of about 10 percent of local villagers as well as some out-of-town visitors. Moreover, the questionnaire was completed by visiting households and distributing books and questionnaires at activity gathering points. The basic data of the sample is essentially aligned with both the local age distribution and the setup of inheritors in the community, and the sample is representative.

4.3.2.3 Findings of the evaluation

The questionnaire was distributed to a total of 67 local visitors and 132 villagers from Tupitai and Daping villages, among whom 11 were inheritors of Changning Miao costume, constituting 5.5 percent of the sample. Regarding the age distribution of the respondents, 31.2 percent were under 18 years old, primarily comprising students from local primary schools in Tupitai and Daping as well as Goujie Secondary School. Meanwhile, 39.2 percent fell between the ages of 19 and 25, consisting mostly of visitors and residents. Additionally, 21.6 percent were aged between 26 and 55, while 8 percent were over 56 years old.

Table 7 Analysing the basic information of interviewers (Ai, 2023)



Regarding the purpose of using the encyclopedia, 66.3 percent used the book to learn about the culture of Changning Miao costume, and 35-41 percent used the

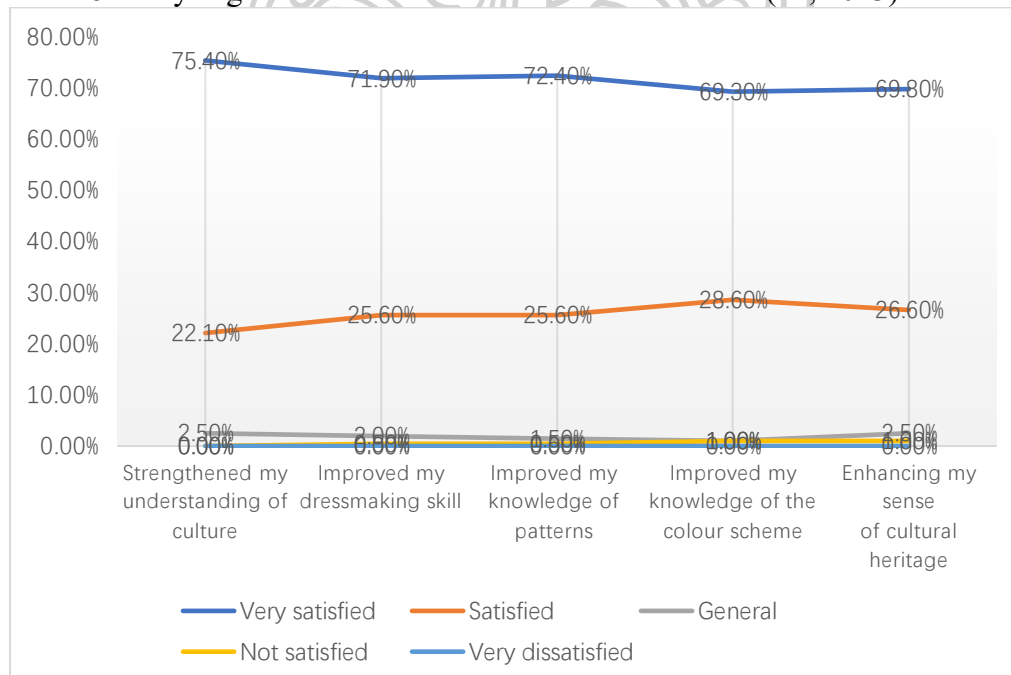
book to learn about dressmaking techniques, pattern styles and colour schemes.

Regarding satisfaction with the content and form of the books, more than 70 percent of respondents were very satisfied, with the content being 71.9 percent and the form in which the information was presented 74.4 percent. Another 25.1 percent and 23.1 percent were satisfied with the content and form. Merely 3 percent and 2.5 percent demonstrated an average, dissatisfied, or very dissatisfied attitude.

Regarding the evaluation of the effectiveness of the book, most of the people agreed that the book improved their knowledge in four areas, namely, costume culture, production process, pattern understanding, and colour matching, with 75.4%, 71.9%, 72.4%, and 69.3% illustrating strongly agreeable attitudes, and 22.1%, 25.6%, 25.6%, and 28.6% respectively demonstrating agreeable attitudes. Only 2-2.5% indicate a neutral or dissatisfied attitude. Another 96.4% presumed that the book strengthened their belief in passing on their culture, with 69.8% strongly agreeing and 26.6% agreeing. Only 3.5 percent had a neutral or negative attitude. The specific results are indicated in the table below.

In summary, respondents mainly use the encyclopedia to learn about the culture of Changning Miao costumes and also believe that the book can be employed to learn about costume making techniques, pattern styles and colour matching. Regarding the content of the book and the form in which the information is indicated, over 90 percent of the respondents presented a positive attitude. Regarding evaluating the effectiveness of the book, over 90 percent believed that the book had improved their knowledge of costume culture, costume making techniques and pattern comprehension, and strengthened their belief in passing on the culture.

Table 8 Analysing information on effectiveness evaluation (Ai, 2023)



Summary

The recipients of the designed output for Changning Miao costume predominantly fall into two categories: those residing within the geographical area (geo-users) and those outside of it (non-geo-users). Following an investigation into the requirements of both groups, the design outcomes were identified as the Changning Miao costume encyclopedia and the creation of silk scarves. These design results are rooted in the fundamental genes of Changning Miao costume, and through design experimentation, they aim to document, invigorate, and transmit cultural genes.

The design follows the process of CTEE systematic design method. Firstly, it is the information visualization design of Changning Miao costume cultural genes. 25 kinds of costume embroidery patterns were extracted and used for the information carrier design experiment. Subsequently, the design of the Changning Miao costume encyclopedia and 20 silk scarves were completed. Based on these, local Miao children were invited to have an embroidery experience activity and an online and offline synchronous design exhibition was held. Engage in hands-on activities to foster communication and collaboration with users, facilitating the gathering of feedback and suggestions. Finally, focus groups and questionnaires were used to focus on and evaluate the design results and the continuity of the practice.

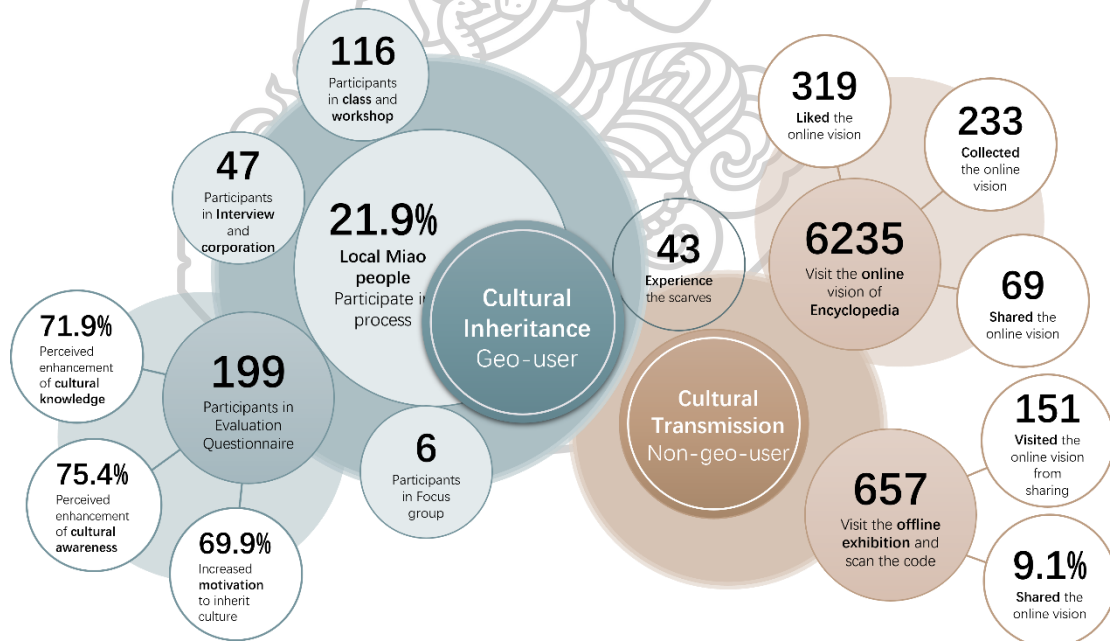
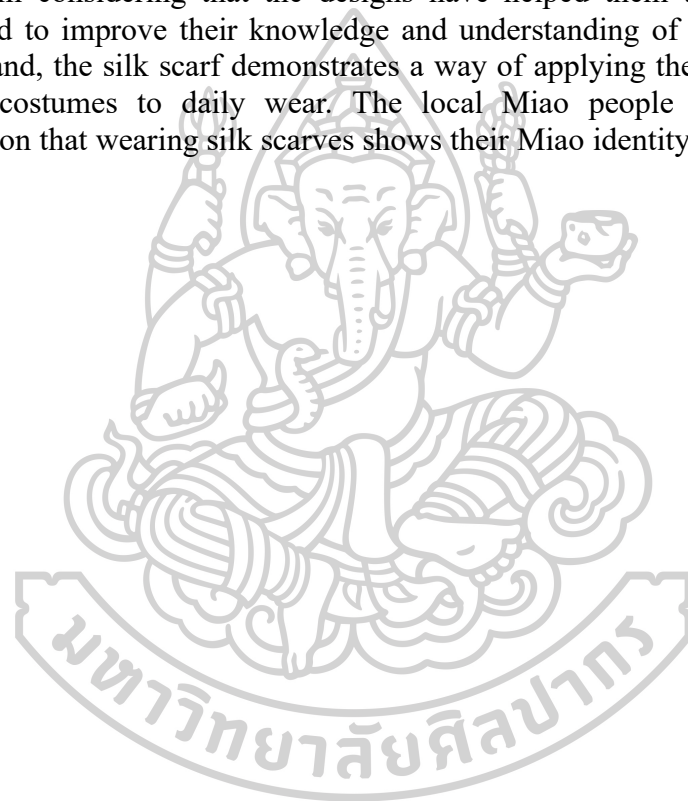


Figure 96 Statistical data map of designed outcomes (Ai, 2023)

The design outcomes primarily contribute to the inheritance and transmission of Changning Miao costume culture. Regarding cultural transmission, the main focus is on non-geo users. The experiments successfully popularized Changning Miao costume culture among nearly 7,000 people, approximately 10% of whom expressed their appreciation by liking and sharing the content. In terms of inheritance, the

primary audience comprises locals (Geo-users). Approximately 21.9% of local residents actively participated in the program, with over 160 individuals engaging in the experience of these cultural products. Additionally, nearly 200 people provided feedback through questionnaires, of which more than 70% offered very positive comments. They acknowledged that the results increased their knowledge of the culture and strengthened their commitment to passing it on.

The design experiments and practical outputs related to Changning Miao costume culture in this chapter provide valuable insights. We believe that the CTEE method can effectively address the inheritance challenges associated with this cultural heritage. The results show that the design outcomes have greatly enhanced the local people's knowledge and belief in traditional costume culture, with more than 90 per cent of them considering that the designs have helped them to learn the craft of costume and to improve their knowledge and understanding of costume culture. On the other hand, the silk scarf demonstrates a way of applying the cultural symbols of traditional costumes to daily wear. The local Miao people consider it a good demonstration that wearing silk scarves shows their Miao identity.



CHAPTER 5 CONCLUSION

Introduction

Cultural ecology advocates the study of cultural formation and change from the ecology perspective, focusing on the spatial environment in which culture exists and examining how a variety of complex variables affect the shape and pattern of culture. In essence, it represents a series of cultural concepts and knowledge systems centred around ecology, a collection of cultural and spiritual forms with ecology as the core; from the standpoint of cultural ecology, it is perceived as a cultural paradigm with established connotations and extensions. By examining ICH's cultural genes and their ecological factors in their surroundings, we can lay the groundwork for cultural preservation and design intervention strategies.

The conclusions are divided into two main aspects in the theoretical framework of cultural ecology. Firstly, the genetic inheritance mechanism and core features of the Changning Miao costume culture have been analysed. Research gathers data and systematically sorts out the Changning Miao costume, collating and inducting its cultural core symbols. Moreover, it provides basic research information for the living heritage and adaptive use of the Changning Miao costume. The goal is to provide a theoretical and practical basis for maintaining the authenticity of their costume culture in the new social environment.

Secondly, research on a systematic design method based on design intervention in ICH is proposed. By analysing the inheritance mechanism of genes in their environment, a systematic design method acting on the cultural subject can be adapted. The challenges facing the Changning Miao costume can be addressed through systematic design outputs, potentially leading to the restoration and reconstruction of a sustainable inheritance system. It can be achieved by promoting recognition and fostering a sense of identity among critical stakeholders.

5.1 Intangible cultural heritage inheritance mechanism from the perspective of cultural ecology

In the process of biological derivation, genes for traits that are better suited to the environment and easier to survive are known as good genes. On the contrary, those genes that cause lead to genetic lesions are made malignant genes. Comparably, cultural genes, including biological species, will face the natural selection of superiority and inferiority: invasion of heterogeneous cultures, competition of cultural species, evolution of cultural factors and mutation of cultural genes, etc., and the mutation of genes serves as the fundamental driving force for the inheritance and evolution of culture. Alterations in the environment and societal factors often trigger corresponding shifts in culture. The culture of ICH inherently possesses the trait of living inheritance, allowing it to adapt to environmental changes to some extent. Notwithstanding, this degree of tolerance to the environment is limited, along with the rapid development of modern science and technology, economy and culture, the majority of the ICH culture also presents the problem of not adapting to the environment, so that it faces the double dilemma of inheritance and development.

The Changning Miao are mainly located in the valley and surrounding areas on the east side of the Lancang River, administratively belonging to the Daping and Tupitai villages in Goujie Yi Miao Township, Changning County, Baoshan City, Yunnan Province. Located in the alpine mountains at an altitude of 2,000-2,300 metres over sea level, the settlements are built based on family production units. Each family unit comprises a building, a field, and a road, where all means of production converge to create a cultural space dedicated to the preservation of Changning Miao costume heritage. With the development of the economy, the traditional self-sufficient small farm economy based on the family unit of production has been typically abandoned, and the Miao inhabitants of Changning have begun to participate in the modern social division of labour. The effects of modernisation and globalisation have resulted in the spread of mainstream cultural forms to the region where the traditional culture is located, competing with the local culture regarding ideology, values, outlook on life and other dimensions.

Over a century ago, the Miao community began a gradual migration to the region encompassing Goujie, Daping, and Tupitai villages in Changning, eventually establishing permanent settlements there. The core gene of Changning Miao costume "mother flower" began to take root and evolve in this area. The expression of the gene was affected by the ecological factors of the region and indicated different expression characteristics from those of other Miao clans. This process of influence is accomplished through the behaviour and practices of the local Miao community. Consequently, the Changning Miao residents are the fulcrum of cultural transmission and continuity, and their concepts and behaviours have had a significant impact on the transmission of culture within the Miao community.

Through an itemized analysis of the cultural genes and environmental factors influencing the Changning Miao costume, the current state and mechanisms of its inheritance are examined, using cultural phenomena as guiding indicators. This paper argues that the gene that dominates the expressive traits of the Changning Miao costume is its cultural identity, which is affected by the ecological factors of the region in which it is located and indicates different traits and characteristics. These characteristics are primarily categorized into dominant and recessive expressions. Explicit manifestations predominantly encompass the external features of the Changning Miao costume, such as style, material, craftsmanship, pattern, and colour. Implicit manifestations encompass traditional customs, cultural symbols, and social functions.

It is recognised in ecology that organisms have certain adaptations to the environment in which they live that elicit the necessary response when they are subjected to environmental stress. Nevertheless, this adaptability is not unlimited. On the condition that the natural evolution of organisms fails to adapt to the magnitude and speed of changes in ecological factors, the survival of the population is threatened. Since 2000, China's economy has embarked on a period of rapid growth, precipitating significant changes in the environment surrounding the Changning Miao costume. Much like the Changning Miao costume culture, the evolution of most intangible cultural heritage undergoes two phases: a stage characterized by stable cultural gene development, followed by a period of rapid evolution.

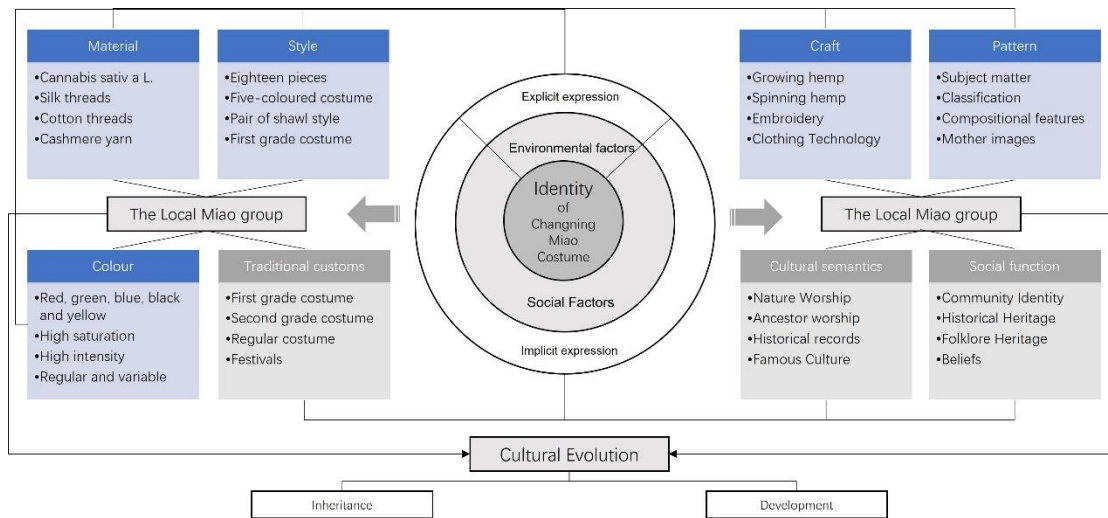


Figure 97 The process of cultural adaptation of Changning Miao costume (Ai, 2023)

The first stage before 2000 is the stage of stable evolution of Changning Miao costume culture. Besides, the style of their costumes was inherited from the Miao costumes in Wenshan, and simultaneously slowly changed under the influence of environmental factors. In this stage, geographical location, village site and cultural space are the predominant influencing factors. The cold climate and limited resources in the region where the Changning Miao reside have somewhat constrained the economic progress of the Miao community. Consequently, they have preserved a relatively independent evolution of their costume culture for an extended period. This uniqueness has endowed the Changning Miao costume with distinctive and comparatively comprehensive genetic attributes that set it apart from Miao costumes found in other regions. The lack of resources made it necessary for Changning Miao women to master the full range of costume-making processes and contributed to the formation of a social network centred on garment-making and embroidery activities. Costume culture has emerged as a central component of Changning Miao society and culture.

The second stage is after 2000, due to the rapid development of the society and the dramatic changes in economic, technological, institutional and cultural factors, which contributed to the rapid genetic evolution of the Changning Miao costume. Nevertheless, this evolutionary process is not always benign. Moreover, there are multi-dimensional gene fragments including visual image, cultural content and semantics in the traditional Changning Miao costume that are lost in this process. For instance, it indicates that social factors have influenced all aspects of the Changning Miao costume culture (Figure 98). This influence is accomplished, on the one hand, in the form of direct substitution through the convenience of economic and technological dimensions. For instance, for the materials used to make costumes, modern cotton and chemical fibres have directly replaced the original linen and silk threads. On the other hand, it is done through influencing cultural subjects. For instance, the wearing of the Changning Miao costume has shifted due to changes in lifestyle and the dominant culture's aesthetics. It's now perceived as inconvenient and limited in style, no longer serving as daily attire, leading to alterations in their wearing customs.

With the change in social factors, and the lifestyle of Changning Miao inhabitants, the concepts and motives of costume-making have changed, and this change directly works with the expression of Changning Miao costume genes. This process has given rise to a series of cultural phenomena and challenges. Analysing these cultural phenomena and problems will assist us to understand the content of the evolution of the Changning Miao costume culture, the process of adapting to the environment, and the problems that exist. Exploring the root causes and intervening through conservation efforts can facilitate the preservation and continuation of the inheritance process, evolution and sustainable development of the Changning Miao costume. Furthermore, the expression of cultural genes is distinct from biological genes, which is realised through the subject of culture. Besides, the change of social factors firstly affects the cognition and conception of Changning Miao costume inhabitants, and subsequently changes their motivation to make costumes as well as their spontaneous action to inherit the culture. Human mobility offers us the opportunity to adjust and sustainably develop the cultural genes of ICH, particularly in circumstances where altering social factors proves challenging.

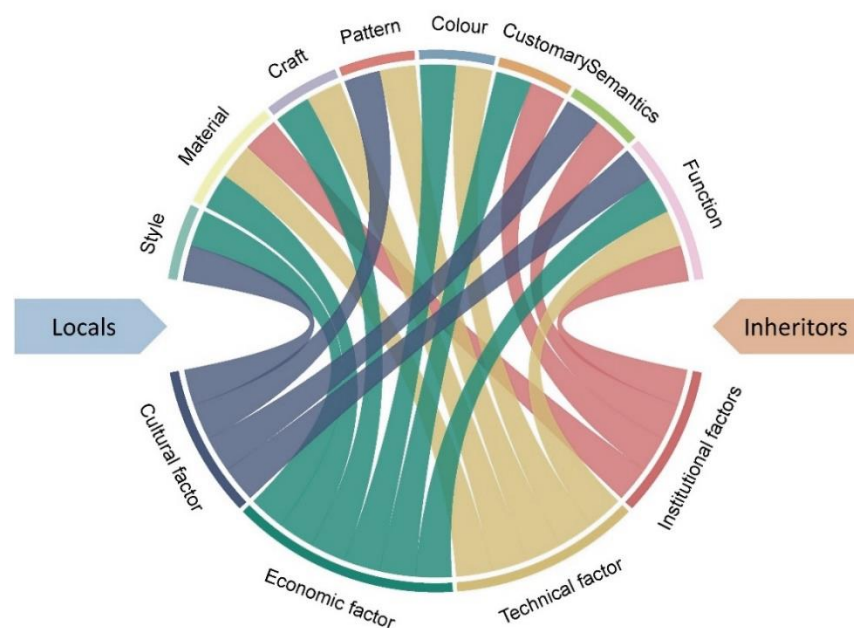


Figure 98 Social Factors Influencing Changning Miao costume (Ai, 2023)

5.2 CTEE systematic design method

Design is a method of dealing with problems within the structure of modern industrial civilisation. Design directs its attention towards the challenges individuals face in both production and daily life, offering remedies to these issues through various design methodologies. ICH, on the other hand, frequently represents the wisdom and expression of dealing with the interrelationships of environment, society and culture that were developed in the past based on farming culture. Moreover, ICH preservation is essentially a cultural intervention activity, the fundamental purpose of

which is to pass on culture. In other words, in the context of the contemporary era, spontaneous or intervention is used to carry on the living heritage. The aim of design intervention in ICH culture is to facilitate its adaptation to contemporary contexts while maintaining its living heritage, aligning with the objectives of ICH preservation and offering a theoretical framework for design interventions in ICH inheritance. Therefore, driving the protection of traditional ICH culture with modern design thinking and methods is conducive to the continuation and restructuring of cultural genes.

The systematic design approach of CTEE is a systematic design and evaluation method that takes intangible cultural heritage as the object of research and design under the perspective of cultural ecology, intending to promote its living heritage. It is characterised by parsing the genetic factors in ICH from the perspective of cultural ecology and designing the translation on this basis to ensure the authenticity of the translation of ICH. Additionally, the systematic design and evaluation system, guaranteeing the involvement and perspectives of cultural stakeholders throughout the design process minimizes the impact of the designer's personal preferences and biases.

The underlying logic of CTEE's systemic design approach follows the four categories of design: symbols, tangibles, behaviours and ideas. In the traditional categorisation of design categories, there are graphic design, product design, interaction design and environmental design. This paper analyses the scope of design from the perspective of cultural ecology, taking ICH as the object, and gives a more precise definition of the four categories, i.e. cultural identity, design translation, interactive experience and system evaluation. Consequently, the middle structure of the CTEE method is completed. Moreover, cultural identity corresponds to symbols, which are the core content of ICH cultural heritage, the core feature that distinguishes it from other cultures and can also be regarded as the genes of ICH inheritance. In contrast, tangible objects represent the outcomes of gene expression and serve as vessels for ICH genes. Behaviour encompasses the interaction and utilization of these tangible objects, acting as carriers of the gene, within the environment and among cultural subjects. The inherited content of ICH comes from the subject of its culture, and following being translated through design, the cultural subject experiences the cultural content again. In this process, the cultural subjects gain a more profound understanding of the cultural essence, and their knowledge and evaluation of the designed tangible objects is the content analysis at the ideological level.

The surface construction, on the other hand, follows the behaviour and process of design, which is mainly divided into four steps. The initial step involves information visual design, which entails analysing the essential components of ICH, identifying key characteristics from textual data, and then proceeding with information visualization design. The second is the carrier design of information, i.e. product design in a broad sense. Based on systematic research and analysis of the environment in which ICH is located, the appropriate carrier is selected for the design and translation of culture to ensure the rationality of the design. Third, interaction design is based on design practice. Interact with the cultural subject through design practice to convey information and feedback. Meanwhile, the purpose is to enhance the audience's acceptance of the design-translation product and get direct and effective feedback. Fourth, the evaluation system design, and the design product are

placed in the local environment of ICH, and the evaluation and feedback mechanism throughout the process is formulated to provide a basis for the evaluation of the process and results of the design, and to make corrections to the content of the design.

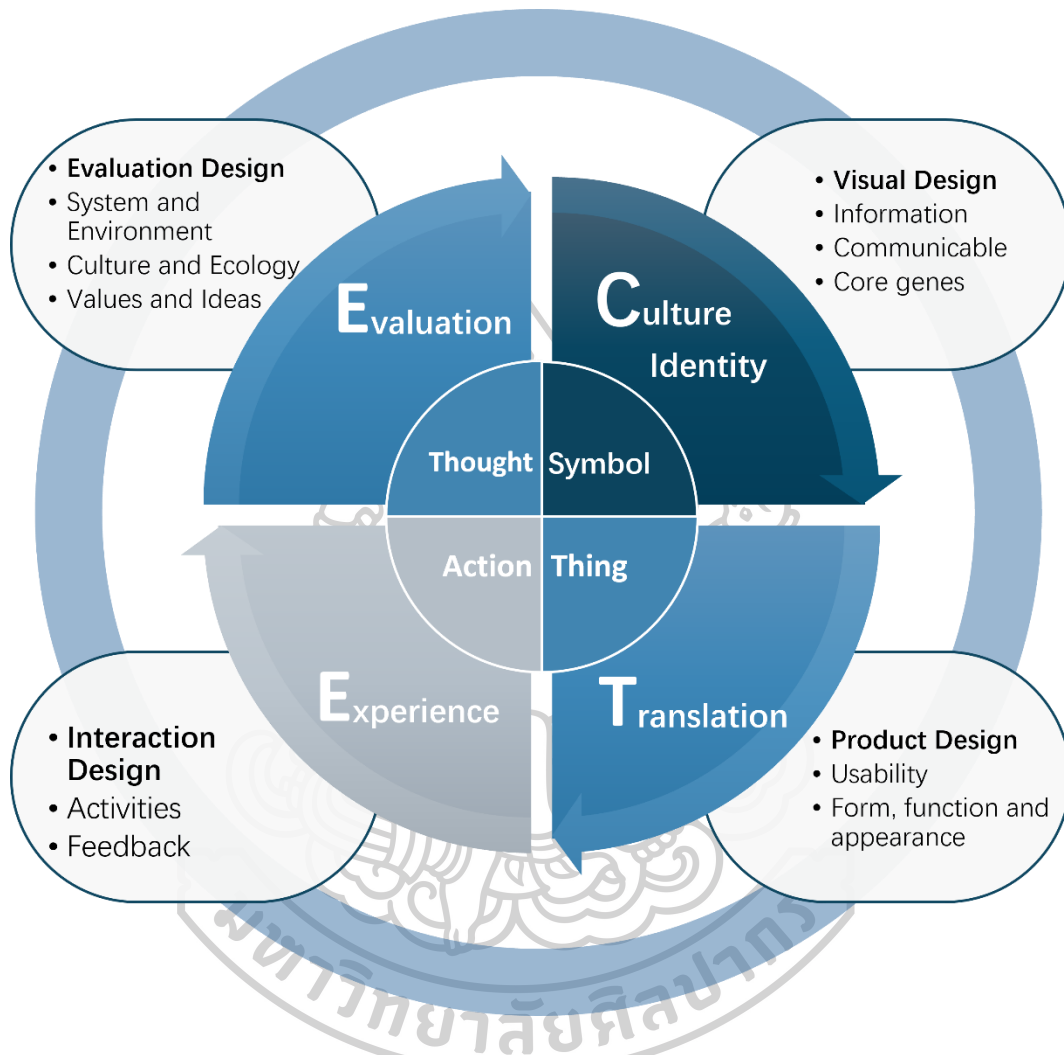


Figure 99 CTEE Systematic Design Method (Ai, 2023)

In the design intervention study of Changning Miao costume culture, the core gene of Changning Miao costume is employed as the basis to explore the information visualisation design of Changning Miao costume, which is adopted as the basis to record, activate and pass on its cultural gene. In response to the problems faced by the Changning Miao costume, two kinds of information carriers were designed, one is the encyclopedia which focuses on science popularisation, and the other is the silk scarf with clothing accessories. Information interaction practice activities such as embroidery experience sessions and fashion shows were utilized to engage with core stakeholders, facilitating knowledge exchange while soliciting feedback and suggestions. Through focus groups and questionnaires, we pay attention to and evaluate the continuity of the design results and design practice and explore the mechanism and value significance of the design products in the local environment. Besides, the design product conveys the genetic information of culture and enhances

the user's awareness of the cultural ontology. The design products serve to deepen cultural subjects' understanding of their heritage, eliciting resonance with their own culture and bolstering their cultural confidence and pride. This, in turn, acts as a catalyst for cultural subjects to autonomously engage in cultural inheritance behaviours. Ultimately, it provides support for the inheritance of cultural genes of the Changning Miao costume and provides the driving force for its adaptation to the ever-changing social factors.

5.3 Discussion

Under the theoretical framework of cultural ecology, the study analyses culture's genetic inheritance mechanism and core features. It proposes the "CTEE" systematic design method as a solution for ICH inheritance. It takes Changning Miao costume as a practical case study, which confirms that the CTEE method provides an internal motive force for ICH inheritance by promoting the inheritor's concept. The study aims to facilitate the cultural genes' ability to cope with constantly fluctuating ecological factors.

Based on the above, the study proposes three objectives. Firstly, to establish a textual image database, research was conducted on the status of the Changning Miao costume as a basis for research, preservation, and development. The research has completed the experiment of vectorised design of patterns and encyclopedia design of Changning Miao costume, which included 223 patterns, four embroidery techniques, the production process of 11 parts, as well as the process of treating and spinning hemp fabric. Meanwhile, the patterns were classified and interpreted, the embroidery culture, hemp culture and costume culture were interpreted, and the core gene database of Changning Miao costumes was constructed.

Secondly, to extract the cultural identity of the Changning Miao costume, this study will examine the process arising from the inheritance and evolution of their cultural identities in adapting to ecological factors. After completing the cultural gene pool of Changning Miao costume, the cultural phenomenon was taken as a clue to encode and analyse the data through Grounded theory. Then, the inheritance mechanism of Changning Miao costume was analysed based on the method of cultural ecology. The fundamental reasons for the substitution of traditional crafts, the invalidation of cultural functions, and the ineffectiveness of inheritance dynamics that it faces are explained, i.e., the dysfunction of cultural self-adaptation mechanisms after drastic changes in social factors. Simultaneously, it is proposed that the concepts and knowledge of the inheritors, especially the new generation, are the key elements of cultural inheritance. In this way, the hypothesis of design intervention in cultural inheritance is put forward, with the "CTEE" systematic design and evaluation methodology proposed.

Thirdly, to intervene in culture preservation through design to provide a stimulus for the inheritance and dissemination of the cultural identity of the Changning Miao costume. The study will explore sustainable paths for intangible culture in modern society. Using the gene pool of Changning Miao costume culture as the design material, a series of outputs were designed using the "CTEE" method. 21.9 % of the local people were invited to read and evaluate the encyclopedia, which resulted in positive feedback while completing the knowledge transfer. Pattern

knowledge-sharing classes and embroidery craft experience workshops were organised for new inheritors to enhance their knowledge and interest in their culture. In addition, an exhibition of outputs was held, and visitors and locals were invited to try out the designed products, which were well evaluated during the interactive process.

Design practices based on the CTEE method have been shown to enhance local people's cultural knowledge and heritage beliefs, which help to provide internal motivation for cultural heritage to cope with the changing social environment. A long-term and effective evaluation and feedback mechanism can prolong design interventions' effectiveness and contribute to culture's sustainable development.

5.4 Implementation

5.4.1 Implementation

The academic research on ICH focuses on developing the cultural tourism industry, emphasising the excavation of the economic value. Changning Miao costume belongs to the handicraft category of intangible cultural heritage. It is located in an underdeveloped region in terms of tourism and transport, which is manifested by the fact that the region is far away from the main transport arteries, there is almost no tourism-related industry, and the economic income is lower than the average level of the city. For ICH in similar conditions, it is challenging to produce results by driving cultural inheritance with the cultural tourism industry and cultural output with economic development. Due to the lack of economic transformation value, research on this type of ICH primarily focuses on the study of cultural ontology, and research on its inheritance and revitalisation has yet to be explored.

Consequently, for the Changning Miao costume, a comprehensive collection and study of its primary data and the preservation of research information can provide a reference for other scholars who study the craft and culture of the Miao in the future. Besides, the design intervention in the process of cultural inheritance can be analysed from multiple perspectives, including cultural ecology and semiotics, to understand the collective consciousness of the Changning Miao group at a deeper level and to analyse the elements of their core cultural genes. Ultimately, it provides the theoretical basis and practical reference for the Changning Miao costume to maintain its cultural authenticity and restore and reconstruct the sustainable cultural inheritance system under the current social environment.

Changning Miao costume faces similar dilemmas regarding the transmission, protection, and development of intangible cultural heritage, as many intangible cultural heritages are in underdeveloped tourism regions. Hence, employing it as a case study can furnish theoretical feasibility analyses for preserving and advancing intangible cultural heritage in other similar minority regions. Cultural diversity is an essential element in maintaining the sustainable development of the cultural ecology of the whole society, and multiculturalism can enable distinct groups to be respected and recognised in society. At this juncture, delving into methods to safeguard the inheritance of ICH cultural genes can aid in upholding cultural diversity in the region and bolstering social cohesion and stability.

5.4.2 Limitation

The limitations of the study are mainly in the universality of the case. The main object of the study is ICH, which has no commercial and tourism development value. Some ICHs in areas with developed tourism are commonly developed as tourism experience resources. As ICH is suitable for production, much capital and workforce are spontaneously invested. The economic value brought by the market helps to encourage local people and other people in business to research and develop it and helps to solve the problem of its adaptability in modern society. Research conclusions on these items can have a specific effect on preserving authenticity, but they provide no noticeable enhancement.

5.4.3 Suggestions for future research

Changing Miao Costume is expected to establish a long-term design input and evaluation feedback mechanism through cooperation with local Miao and attention to the continuous impact of design products on the living heritage of Changing Miao Costume. For example, the shops of local inheritors and culture-related organisations are authorised to sell the products of the design, and the economic benefits generated will be used as a reserve fund for the inheritance and preservation of the Changing Miao costume.

Currently, ICH's research is mainly focused on the development of the cultural tourism industry, emphasising its economic value. Changing Miao costume belongs to the handicraft category of ICH. Its original region is an underdeveloped area for tourism and transport, which is far away from the main traffic arteries, has almost no tourism-related industries, and has lower economic income than the average level of the city. For this kind of ICH in areas with similar conditions, it is distinct to produce effects on cultural heritage through cultural and tourism industries and economic development. Research on this type of ICH frequently centres on exploring cultural ontology due to its perceived lack of economic transformation value, resulting in comparatively less attention being paid to its inheritance and revitalization. Therefore, it is expected that the academic community should pay attention to the intangible cultural heritage comparable to the Changing Miao costume and put forward multi-perspective and diversified solutions.

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APPENDIX

Interaction between Art and Craft – Encyclopedia of Changning Miao Costume

Please scan the QR code to view the document.



Market Questionnaire for Products Derived from Changning Miao costume

1. What is the purpose of your visit to Baoshan? [Multiple choice questions]
A. Local people B. Tourism C. Tourist transit D. Business activities
E. Study and training F. Others
2. How much can you accept to spend on buying cultural products? [Single choice question]
A. Less than 100 yuan B. 100-500 yuan C. 500-1000 yuan D. More than 1000 yuan
3. Which of the following qualities do you pay more attention to when buying derivative products? [Multiple choice questions]
A. Price B. Material C. Brand D. Practicality E. Whether it has local characteristics
F. The beauty of packaging and appearance G. Others
4. What is the purpose of your purchase of derivative products? [Multiple choice questions]
A. Collecting and displaying B. Giving to others C. Practical life D. Others
5. What is the function you require the product to have? [Multiple Choice]
A. Practical B. Memorial C. Decorative D. Other
6. Do you know the national intangible cultural heritage Changning Miao costume?
A. Know very well B. Know better C. Heard of D. Don't know
7. From what channels did you learn about Changning Miao costume?
A. TV programmes B. News reports C. Introduced by friends, relatives and colleagues
D. Video platforms such as Jitterbug, Shutterbug, etc.
E. Microblogging, WeChat and other online platforms F. Books
G. Others H. Don't know
8. If there are products for Changning Miao costume, what is the product category you prefer to buy?
A. A set of costumes B. Some costume parts C. Embroidered decorations
D. Embroidered bags E. Embroidered jewellery
F. Printed pattern cultural and creative products (stationery, scarves, etc.)
G. Furniture and household products H. Others
9. Your gender is? [Single choice question]
A. Male B. Female
10. Your age is? [Single choice question]
A. Below 18 years old B. 18-24 years old C. 25-44 years old D. 45-64 years old
E. Above 65 years old

Questionnaire of the Changning Miao Costume Encyclopedia

1. Basic information (Written by Interviewer)

| | | | | | |
|-----------------|------------------------------------|--------------------------------|------------------------------------|--------------------------------|--------------------------------|
| Identity | <input type="checkbox"/> Inheritor | | <input type="checkbox"/> Residents | | <input type="checkbox"/> Other |
| Age | <input type="checkbox"/> Under 18 | <input type="checkbox"/> 19-25 | <input type="checkbox"/> 26-35 | <input type="checkbox"/> 36-55 | <input type="checkbox"/> 56+ |

2. What is the purpose of reading the encyclopedia?

- A. Learn about Changning Miao costumes B. Learn about craftsmanship
C. Learn about pattern D. Learn about colour scheme
E. Other

3. How satisfied are you with the content of the Changning Miao Costume Encyclopedia?

- A. very dissatisfied B. not satisfied C. general D. satisfied E. very satisfied

4. How satisfied are you with the format of the Changning Miao Costume Encyclopedia?

- A. very dissatisfied B. not satisfied C. general D. satisfied E. very satisfied

5. How has the encyclopedia influenced you? Please choose the most appropriate answer.

5.1 Strengthened my understanding of culture.

- A. Disagree B. Uncertainty C. Agree D. Very agree

5.2 Improved my dressmaking skills.

- A. Disagree B. Uncertainty C. Agree D. Very agree

5.3 Improved my knowledge of patterns.

- A. Disagree B. Uncertainty C. Agree D. Very agree

5.4 improved my knowledge of the colour scheme.

- A. Disagree B. Uncertainty C. Agree D. Very agree

5.5 Enhancing my sense of cultural heritage.

- A. Disagree B. Uncertainty C. Agree D. Very agree

6. Do you have any other comments or suggestions about the encyclopedia?

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