

A Systematic Review of Intangible Cultural Heritage from the Perspective of Cultural Ecology

การศึกษาและทบทวนวรรณกรรมด้านมรดกภูมิปัญญาทางวัฒนธรรมอย่างเป็นระบบ ตามทฤษฎีนิเวศวิทยาวัฒนธรรม

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review**คำสำคัญ:** นิเวศวิทยาวัฒนธรรม,
มรดกทางวัฒนธรรมที่จับต้องไม่ได้,
การอนุรักษ์วัฒนธรรม, การทบทวน
วรรณกรรมอย่างเป็นระบบ**Abstract****Objectives:** This review aims to provide a theoretical framework and strategic support for the safeguarding of intangible cultural heritage (ICH) from a cultural ecology perspective by analyzing the research methodologies, aspects, and findings in the published literature.**Methods:** With reference to the methodology and structure of a systematic literature review, this review of 47 representative papers was conducted by screening the relevant literature in Chinese and English published in the last 12 years.**Results:** As a methodology, these articles either built the theoretical framework and methodology on an ecological method or a previous method of cultural ecology. Regarding research aspects, static and dynamic aspects were used to study the results of factor interaction and cultural diffusion, respectively. In terms of research conclusions, numerous empirical and case studies were conducted to promote the sustainable development of ICH for regional society, economy, and culture. Future scholarly research could focus more on clarifying terminological norms, integrating interdisciplinary approaches, and assessing the feasibility and sustainability effects of the findings.**Application of this study:** The study contributes insight into the methods of maintaining the authenticity and living heritage of its cultural genes from a new perspective, which is conducive to the search for a balanced scale between tradition and innovation, inheritance, and revitalization of ICH. Meanwhile, the study is beneficial to provide theoretical and practical references for communities and localities in ICH safeguarding and resource activation.**บทคัดย่อ****วัตถุประสงค์:** วัตถุประสงค์ของการทบทวนครั้งนี้คือการให้การสร้างกรอบทฤษฎีและการสนับสนุนเชิงประจักษ์สำหรับการรักษามรดกวัฒนธรรมที่จับต้องไม่ได้ (ICH) ตามทฤษฎีนิเวศวิทยาวัฒนธรรม โดยการวิเคราะห์วิธีการวิจัย มุมมองในการวิจัย และข้อสรุปของการวิจัยที่เกี่ยวข้องกับการอนุรักษ์และการกระตุ้นมรดกทางวัฒนธรรมที่จับต้องไม่ได้ (ICH) ในมุมมองของนิเวศวิทยาวัฒนธรรม**วิธีการศึกษา:** บทความนี้อ้างอิงวิธีการและโครงสร้างของการทบทวนวรรณกรรมแบบระบบ โดยการคัดเลือกวรรณกรรมที่เกี่ยวข้องภาษาจีนและภาษาอังกฤษที่ได้รับการเผยแพร่ในช่วง 12 ปีที่ผ่านมา และได้ทำการทบทวน 47 เอกสารที่มีความเป็นตัวแทน**ผลการศึกษา:** วรรณกรรมที่กล่าวถึงในที่นี้ได้ยึดติดกับกรอบทฤษฎีและวิธีการของนิเวศวิทยาอย่างแท้จริง หรือทำการวิจัยโดยใช้วิธีการวิจัยทางวัฒนธรรมในเวทีที่ถ่ายทอดมาจากผู้วิจัยรุ่นก่อน ในด้านของมุมมองการวิจัย มุมมองแบบคงที่และแบบไดนามิกได้ถูกนำมาใช้เพื่อศึกษาผลกระทบจากการปฏิสัมพันธ์ของปัจจัยต่าง ๆ และกระบวนการของการเปลี่ยนแปลงทางวัฒนธรรม ในด้านข้อสรุปของงานวิจัยมีการศึกษาเชิงเชิงประจักษ์และกรณีศึกษาจำนวนมากเพื่อส่งเสริมการพัฒนาที่ยั่งยืนของสังคม เศรษฐกิจ และวัฒนธรรมในระดับภูมิภาค จากผลการศึกษาดังกล่าวมีผู้วิจัยในอนาคต ควรมุ่งเน้นไปที่การกำหนดมาตรฐานการใช้คำศัพท์เฉพาะทาง มุ่งเน้นไปที่การบรรจบกันของวิธีการแบบสหวิทยา และประเมินความเป็นไปได้และผลกระทบต่อความยั่งยืนของข้อสรุป**การประยุกต์ใช้:** การศึกษานี้ช่วยให้มองเห็นจากมุมมองใหม่ในเรื่องวิธีการรักษาความเป็นแท้และการสืบทอดที่มีชีวิตของวัฒนธรรม มีประโยชน์ต่อการหาสมดุลระหว่างการรักษาความเป็นดั้งเดิมและนวัตกรรม การสืบสานและการทำให้มรดกทางวัฒนธรรมที่จับต้องไม่ได้ (ICH) มีชีวิตชีวา ในขณะเดียวกัน การศึกษานี้ยังเป็นประโยชน์ในการให้ข้อมูลแนะนำทั้งในทางทฤษฎีและปฏิบัติสำหรับชุมชนและท้องถิ่นในการอนุรักษ์ของมรดกทางวัฒนธรรมที่จับต้องไม่ได้ (ICH) และการทำให้ทรัพยากรมีชีวิตชีวา

Introduction

Cultural ecology, which originated in anthropology, and which Julian H. Steward proposed in the 1950s, is a theory that uses the concepts, theories, perspectives, and methodologies of ecological sciences to study cultural phenomena. Steward applied ecological views and methods to cultural evolution, arguing that cultural patterns and ecological environments were inextricably linked and that cultural change was an adaptation of cultures to their environments. (Julian et al., 2007 : 107-112). Cultural ecology studies the influence of the environment on culture, arguing that particular types of ecology determine the characteristics of people as carriers of culture (Zhang, 2009 : 85-90). These views were very forward-looking in the context of the era, when social ecology and human ecology favored the study of human biology and represented a significant breakthrough in anthropological research methodology. With in-depth research, it has gradually been acknowledged that the issue of ecological adaptation has a dominant influence on culture and is the key to cultural integration and change. However, the higher the degree of cultural evolution and the lower the degree of dependence on the environment, the more critical the roles of technological and spiritual factors become. A dialectical view of the relationship between culture and the environment has become vital to studying cultural ecology.

In the general trend of globalization research, it is held that every group has searched for and preserved its own traditional culture. The distinctiveness and plurality of culture comprise the cornerstone of the cultural soft power of a country or nation, both tangible and intangible. From the viewpoint of cultural connotation, intangible cultural heritage is highly exclusive, and dominates the core of a group's culture. The "intangible cultural heritage" (hereafter referred to as ICH) means the practices, representations, expressions, knowledge, and skills – as well as associated instruments, objects, artifacts, and cultural spaces – that communities, groups, and, in some cases, individuals recognize as part of their cultural heritage (UNESCO, 2003). In the context of rapid global modernization, the native cultural ecosystem is constantly being transformed (Liu & Wang, 2020 : 127-132), giving rise to multiple dilemmas in the protection and survival of traditional culture. The quest to realize the living inheritance of ICH has become a matter of great concern to society and the academy (Yang, 2021: 40-47). The main controversy over safeguarding and revitalizing ICH resources focuses on the issue of change and invariance in cultural heritage; this defines the dualistic interaction between ICH's authenticity and living character. Authenticity is "the exclusive property of a thing itself, a prescriptive measure of it that was not another thing, or that has not metamorphosed or transformed into another thing" (Liu, 2010 : 24-27). Liu argued that heritage conservation research can be reduced to safeguarding its authenticity. Meanwhile, Chen (2018 : 87-91) said that maintaining ICH authenticity can enhance its quality, which is the core and key to culture protection (Wen, 2022: 115– 124). In other words, authenticity ensures that such external changes do not alter the inherent cultural genes of ICH, which is the core value of safeguarding human cultural diversity and heritage preservation. However, some scholars argue that curing ICH with the criterion of authenticity will stifle its vitality (Liu, 2012 : 53-60). Since ICH is characterized as a living heritage passed down from generation to generation, its manifestations usually change – and should change -- with social development.

ICH should be placed in the context of social development, from the internal logic between it and the society and the inheritance mechanism, to see the perseverance and innovation in the inheritance (Zhu, 2018 : 61-68). With respect to cultural inheritance, culture undergoes constant construction and reconstruction in response to the natural and social environments. This is manifested in the living presentation and re-living of traditional historical culture in contemporary society (Nettleford, 2004 : 78-83). In such a process, projects adapted to the current environment are preserved, updated, modified, and sustained, while those that fail to adapt quickly are discarded (Zhang & Diao, 2021 : 124-129). Analyzing the cultural genes of ICH and seeking methods of cultural preservation in the process of living heritage allow for a more

positive role to be played in the sustainable development of culture (Gao, 2016 : 1-7). Therefore, from the cultural ecology perspective, studying the intrinsic relationship between ICH and the cultural, social, and natural environments in which it is situated can provide insight into how the authenticity and living inheritance its cultural genes can be maintained. At the same time, it is also beneficial to seek balance between tradition and innovation, inheritance and revitalization of ICH. Protecting the cultural space where the ICH is located has become an essential tool for the holistic preservation of the ICH from a cultural ecology perspective.

Therefore, this review is related to the preservation and revitalization of ICH under the cultural ecology perspective, including research methodology, research perspectives, and conclusions. It aims to provide theoretical construction and strategic support for protecting intangible cultural heritage under cultural ecology.

Systematic review: methodology, data, and research questions

The review refers to the methodology and structure of a systematic literature review (Manfredi et al., 2021 : 332-353) to identify and highlight the relevant literature in Chinese and English published over the past twelve years.

Therefore, the following research questions enunciate the main concerns when collecting literature data:

(1) What are the research trends?

(2) How was the cultural ecological theory grounded upon and adopted by ICH?

(3) What research methods were used? Were the findings of the study of theoretical and practical relevance?

(4) What were the typical entry points and perspectives for research? What was the type of data, and how was it collected?

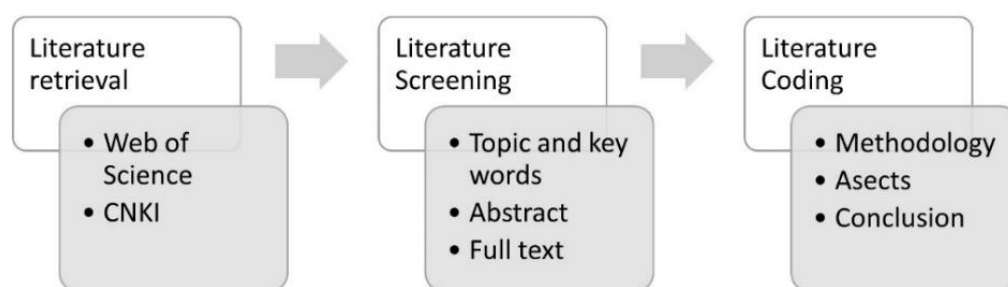


Figure 1 Steps for the systematic literature review

(Source : Ai, 2023a)

Literature data were collected and analyzed in three main steps (**Figure 1**).

The first step was literature search and retrieval conducted on WOS (Web of Science) and CNKI (China National Knowledge Infrastructure) platforms in Chinese and English. Google Scholar was used as a supplemental bibliography, and 205 articles were obtained (**Figure 2**). In 2019, China published a list of national-level cultural and ecological reserves, making ICH preservation research under this cultural ecology perspective a rapid hotspot. In the following three years, many theoretical and empirical research results were published. Therefore, a review of the Chinese literature can provide a basis for the current status and research trends in this field. At the same time, the English literature provides support for research from a broader perspective of research methods, research objects, and research ideas.

"Cultural ecology" and "intangible cultural heritage" were the core keywords of this study. In the course of the English-language search, according to the interpretation and customary use, "Cultural ecology" was associated with "Cultural Ecological Reserve", "cultural ecosystem", "Ecological Perspective", and "cultural environment" to expand the scope of the search and its results more comprehensively. Similarly, "intangible culture", "intangible heritage", "handicrafts", "crafts", and "costume" were associated with ICH. Finally, a keyword search was conducted using WOS to obtain 46 articles in English. Using ICH, cultural ecology, and cultural ecological perspective as keywords for the searches; limiting the journal sources to SCI, CSSCI, EI, Chinese core journals, and CSCD; and conducting a CNKI search for relevant literature in the last twelve years, 160 pieces of literature were obtained. Finally, Google Scholar was used to conduct additional searches, and 6 English documents with high relevance were identified using "cultural ecology" and "intangible culture" as keywords (Table 1).

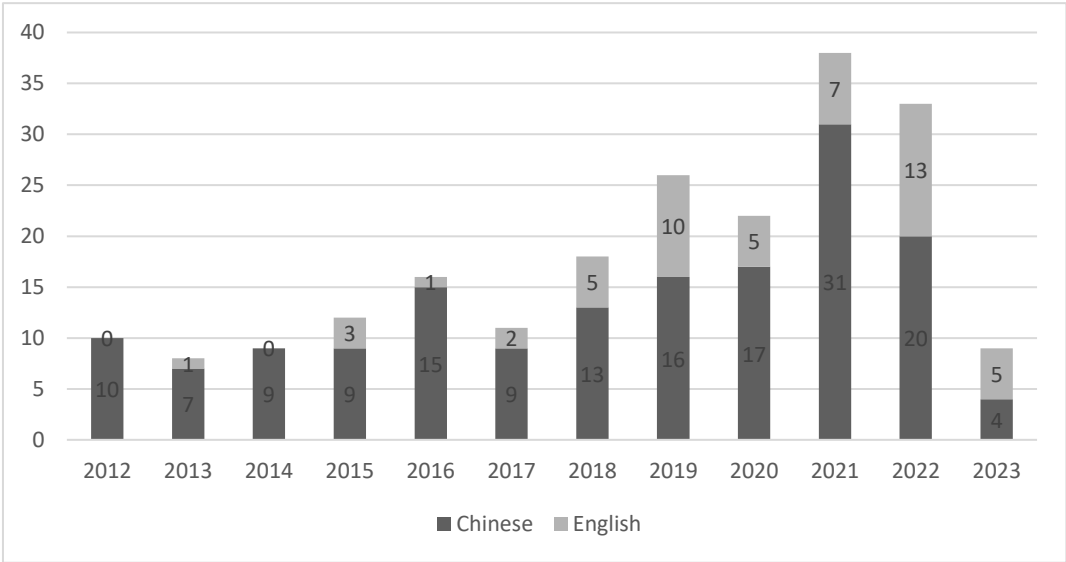


Figure 2 Annual Analysis of Journals
(Source : Ai, 2023b)

Table 1 Searching statement

Source	Statement	Limitation
www.webofscience.com/wos	("Cultural Ecological Reserve" or "Cultural ecology" or "cultural ecosystem" or "Ecological Perspective" or "cultural environment") AND ("intangible culture" or "intangible heritage" or "intangible cultural heritage" or "Handicrafts" or "crafts" or "costume" or ICH)	Year 2012-2023
www.cnki.net	"ICH ""cultural ecology + cultural ecological perspective"	SCI, CSSCI, EI, Chinese core journals, and CSCD, Year 2012-2023
scholar.google.com	"Cultural ecology" and "intangible culture"	Year 2012-2023

The second step was to screen the literature. This was divided into three stages (Table 1). The first was an initial screening of the literature based on keywords and topics to remove articles that did not fit into the scope of the review. After this, abstracts were read and articles were deleted if the content or perspective of the study did not align with the scope of cultural ecology or the subject of the survey was not intangible culture. Finally, the literature was read in its entirety and, again, articles that did not focus on the relationship between ICH and cultural ecology or those in which the subject of the study focused on ecological civilization or agroecology rather than intangible culture were deleted. In the end, the process yielded 47 articles from the reviewed literature (Figure 3).

The third step was constructing a literature matrix to code and analyze data from key literature in four dimensions: research methods, perspectives, conclusions, and characteristics. The content of the 47 articles was intensively read. Firstly, the paper was divided into three sections by reading the abstract with the content of the study. The main ideas of the literature were extracted during this intensive reading. Recorded keywords were used in terms of research methodology and research perspectives. Then, the above contents were organized in a table as a literature matrix that was used to classify and analyze the data. Afterward, the contents in the matrix were systematically summarized and concluded to complete the systematic literature review of ICH from the cultural ecology perspective. Finally, text of each original article was reviewed with respect to the content summarized to verify the semantic and content rationality.

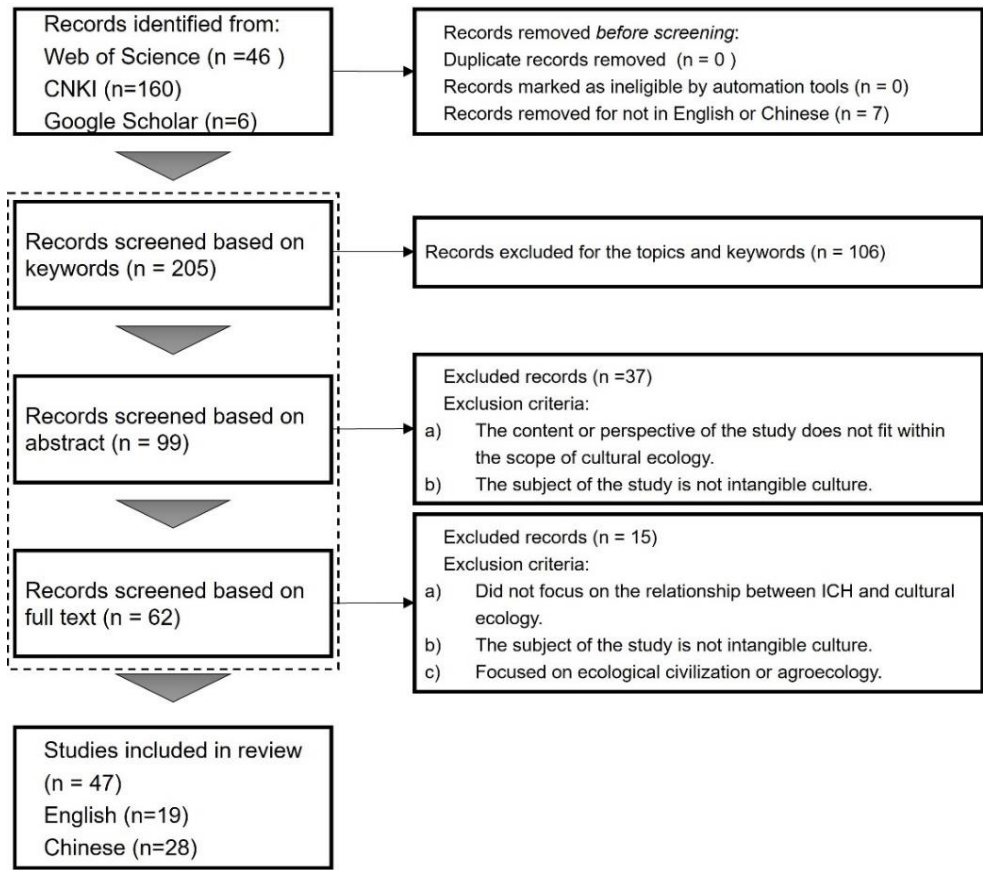


Figure 3 Literature Screening Process
(Source : Ai, 2023c)

Critical review of the literature

1. Research Methodology for Review of Intangible Cultural Heritage in the Perspective of Cultural Ecology

There were two primary sources of intangible cultural heritage research methods from the cultural ecology perspective.

Firstly, research methods and frameworks were learned from ecology based on the definition of cultural ecology (Table 2). The basic concepts and theoretical frameworks in ecology were combined with cultural research to construct the cultural ecosystem of ICH and provide a theoretical basis for its protection and inheritance. ICH energy transfer and recycling was based on the biological principle that "the life activities of organisms promote energy flow and material

recycling" (Zhang & Diao, 2021 : 124-129). Li analyzed tangible and intangible heritage with computer technology to construct and extract ICH's inheritance genes (Li et al., 2022 : 1-13).

Table 2 Commonly cited terminology and definition in ecology and cultural ecology

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.

Secondly, the process of reviewing the research methods of cultural ecology takes advantage of existing research methods and applies them to ICH conservation practices. The impacts of changes in the social, cultural, and natural environments on ICH are analyzed, the phenomena explained, and solutions sought. For example, Hwang conducted a comparative study examining the processes and outcomes of craft learning programs in native and urban communities. It was argued that the native was provided with a place for the cultural ecosystem, and the foreign urban learners became the motivation to stimulate the cultural awareness and learning of the natives. At the same time, it was said that they offered the possibility of restoring and rebuilding the cultural ecosystem (Hwang & Huang, 2019). Additionally, applying the cultural ecology theory to the study of Pattu craft, Rustagi argued that cultural change was first manifested in craftsmanship and pattern design, and that ICH can be activated when it receives attention from external buyers and organizations and is seen as a business opportunity. Nevertheless, when craft practitioners become an essential part of the production, they lose their recognizability, causing traditional crafts to lose their connection to traditional culture (Rustagi, 2021 : 238-262).

ICH research under the perspective of cultural ecology is an interdisciplinary and comprehensive study; thus, according to the attributes of the research object, ecology, anthropology, geography, ethnography, and other research methods were used in the study. Comparative research, fieldwork, literature research, sampling, and systematic synthesis are commonly used, while case studies and statistical analysis have become important aspects that supplement qualitative analysis. Interviews and questionnaires have become essential data collection methods due to the importance of human beings in cultural ecology. Content determines form, and the selection of specific research methods for ICH in cultural ecology is based on a study's particular objectives and contents, with resulting trends in interdisciplinary and comprehensive research.

2. Research Aspects of Review of Intangible Cultural Heritage in the Perspective of Cultural Ecology

From the cultural ecology perspective, the study of ICH is mainly conducted from static and dynamic aspects (Figure 4). From the static view, ICH's cultural and environmental factors and are studied and their composition and interrelationships are analyzed. From a dynamic standpoint, the mutual influence and adaptive relationships between cultural change and the local environment are explored.

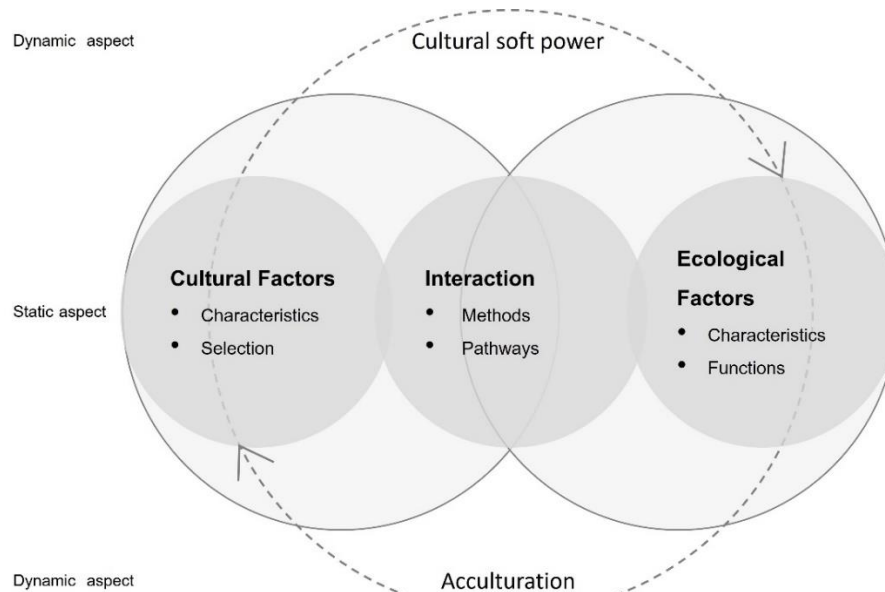


Figure 4 Diagram of static and dynamic research

(Source : Ai, 2023d)

From a static aspect, the self-elements and ecological elements affecting ICH are taken as separate factors (Liu et al., 2020 : 127-132). The aspects themselves are studied, as well as the interactions between them. On the one hand, taking cultural factors as an entry point allows for the "genes" of a culture, which were the key factors that distinguish one culture from others, to be analyzed by focusing on the characteristics and action pathways of a single or a few factors (Yang, 2021 : 40-47) and concentrating on dissecting the role of influencing factors on the inheritance and revitalization of ICH. For example, under the cultural ecology perspective, cultural gene mapping was constructed to analyze the cultural characteristics of ICH (Zhao et al., 2014 : 90-97; Liu & Lei, 2023 : 1-20). By creating the process of energy flow and circulation (Zhang & Diao, 2021 : 124-129), the influence route of cultural and environmental factors was explored. On the other hand, ecological factors were used as an entry point to study the influence of ecological environment factors on cultural communities in the region. Studies have shown that intra-regional ICH distribution and transmission were influenced by local cultural background, county population, natural conditions, and economic conditions (Hou & Wang, 2022 : 75-85; Nie et al., 2022 : 121), and the density of ICH distribution was found to be positively correlated with the development of the local tourism and cultural industries (Wang et al., 2022 : 115-124).

From a dynamic aspect, the phenomenon and law of mutual adaptation between ICH and the environment have been studied (Jiang, 2005 : 119-124), focusing on acculturation. For example, there has been research into how ethnic groups in a region form regional cultural traits and styles through perceiving and transforming the geographic environment and developing and utilizing natural resources in cultural production (Qu, 2021 : 32-40). The research methods and contents of geography can also be incorporated into cultural ecology since, on the one hand, it studies the influence of geography and ecological environment on the formation and change of cultural traits, and at the same time, it explores the role of culture on geography and ecological environment in the process of its generation and development (Zhou,

2016 : 120-127), and pays attention to the positive and negative impacts of the process of cultural and environmental change. For example, Nam Thanh Nguyen studied how ethnic groups in Northeast Vietnam adapted to the natural environment within the framework of cultural ecology, arguing that they creatively found ways to adapt to nature and obtain the maximum survival resources through nature (Nguyen, 2020 : 66-75). The emergence and development of ICH reflect the local people's understanding of the environment and embody the interconnectedness and interaction between human cultural systems and natural ecosystems (Yan et al., 2013). To survive and develop, humans need to interact with their surrounding natural environment and respond differently to their natural and biological environments, each forming their behaviors and lifestyles in a specific environment. Such differences in human activities, superimposed on the natural environment, are reflected in differences in cultural patterns. On the other hand, cultural heritage fosters cultural identity, a sense of belonging, and community tolerance and enhances the resilience of communities to environmental and social change (Dillon & Kokko, 2017 : 8-33; Sandra & Robbert, 2020 : 301-320; Donelli et al., 2019 : 52-63).

To summarize, cultural ecology advocates the study of cultural formation and change from an ecological point of view, focusing on the spatial environment in which culture is situated and examining how a variety of complex variables affect the shape and pattern of culture. This has led to a series of cultural concept interpretations and knowledge system established around the ecological principle, a collection of cultural spirit forms with ecology at the core, and a cultural research paradigm with fixed connotations and extensions.

3. Conclusion of Review of Intangible Cultural Heritage in the Perspective of Cultural Ecology

The current research on ICH from the cultural ecology perspective is oriented to benefit the sustainable development of regional society, economy, and culture (Yang, 2021 : 40-47). It is mainly used to provide decision-making references for communities and localities in resource utilization (Li et al., 2022 : 157-164), cultural construction (Tang, 2021 : 70-75), tourism development (Lin et al., 2021 : 1734-1748), and industrial planning (Zhou, 2021 : 120-127) to provide decision-making reference data. The study's conclusions are divided into three main components (**Figure 5**).

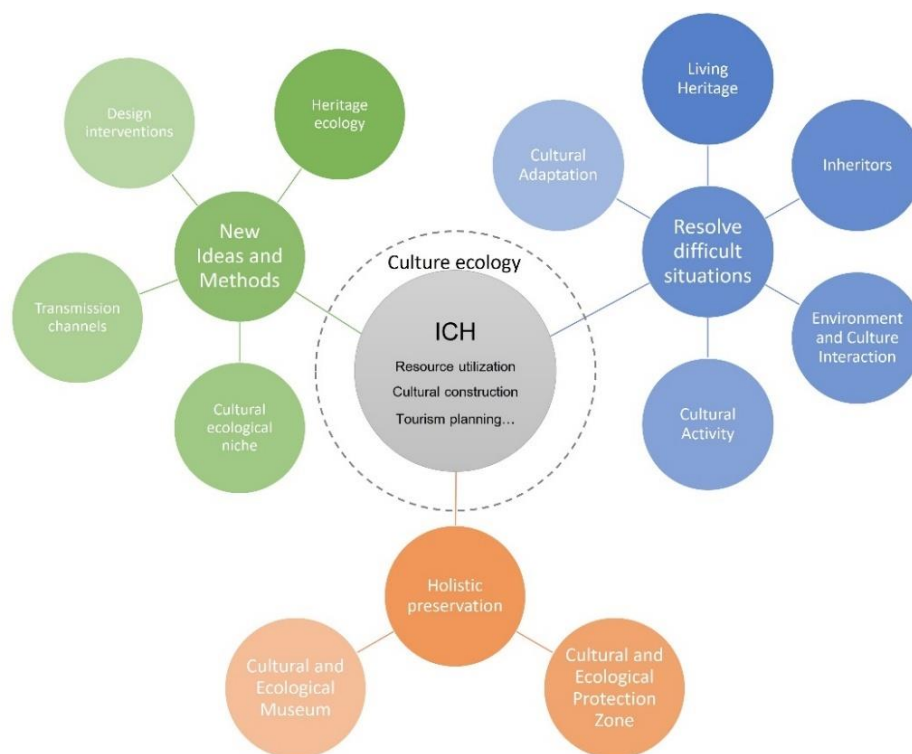


Figure 5 Diagram of keywords for conclusions

(Source : Ai, 2023e)

3.1. Study the critical ecological factors affecting the inheritance and revitalization of ICH from the cultural ecology perspective to solve the dilemmas faced by the conservation of ICH fundamentally.

When the development of ICH is be compatible with the living environment, it will face the problems of inheritance and evolution. By analyzing the key influencing factors, scholars are able to find the root causes and provide a theoretical and practical basis for solving the problems of ICH protection, inheritance, and development.

To recognize the relationship between ICH and the natural and social environment from the two-way interaction between environment and culture, changes in the natural environment and changes in human production and lifestyle will inevitably result in the transition and decline of the ICH culture that depends on the survival and development of its ecology (Lu, 2016 : 165-169). For example, in the face of drastic changes in the social production and economic environment, the ICH "master-apprentice system" of inheritance was ineffective and showed essential changes (Wang & Ma, 2018 : 144-149; Yang et al., 2022). However, due to the characteristics of ICH living inheritance, its inheritance body shows positive adaptability in response to environmental changes (Hwang & Huang, 2019)). Therefore, it should be proactively self-adapted and self-innovated to obtain the foundation's more profound meaning and power for its continued existence and development (Yang, 2021 : 40-47). For example, by taking the inheritor as the driving force of ICH development, forming energy flow through the public's purchasing behavior, and transforming cultural resources into cultural capital, ultimately, the energy is returned to the inheritor in the form of economic benefits and social status, forming a composite field cycle in which many groups in the society are involved (Zhang & Diao, 2021 : 124-129). Weak occupational attributes of ICH projects are more vulnerable to economic development and industrialization impacts, and for such ICH resources, living conservation around traditional scenarios is worth advocating. For ICH, resources with vital occupational attributes, such as traditional handicrafts, are more likely to benefit from economic development (Pullanikkatil et al., 2021 : 287-303). They are more suitable for productive conservation.

3.2. Cultural ecology research methods and perspectives provide new ideas and methods for ICH protection and development.

Cultural ecology implies a holistic, dynamic, and sustainable view of culture and dialectical methodology, which can promote the healthy development of ICH. (Liu, 2017 : 148-152). At this stage, scholars are more concerned about how to solve practical problems. Several scholars have studied ICH preservation cases through the lens of cultural ecology. For example, by virtualizing the ecological position and symbiotic relationship of ICH and mining the implicit cultural knowledge, cultural symbol systems, metadata systems, a resource knowledge base, and theme maps have been established (Zeng, 2013 : 92-96).

The main element affecting ICH inheritance is the disconnect between the inheritance model and the social environment, which is caused by changes in the inheritance environment and the mindset of the inheritors. It has been proposed that exploring the relationship with communication media, information, and other communication processes is conducive to balancing the cultural ecology of ICH (Yan & Li, 2019 : 48-54). Restricted dissemination channels make the original inheritance of intangible cultural heritage lack self-consciousness and make it difficult to cope with changes in the social and cultural environment. These problems can be solved by improving the management systems, cultivating creative talent, and developing cultural and innovative brands. Meanwhile, these measures can also promote adaptation of intangible cultural heritage with respect to the social and market environments (Yu & Wang, 2020 : 334-338). As a complement, some studies have argued that older people play an essential role in maintaining the cultural ecology of the ICH, as they have vivid memories of past socio-cultural environments and can be a source of information for sharing and transmitting knowledge to new generations (Morán et al., 2021 : 177-183). In terms of ICH resource revitalization, interlinking science, nature, and art (Lichtenberg et al., 2022), cultural ecology can provide a basis for design interventions in the renewal and utilization of ICH to select and discard cultural elements (Zhu & Liu, 2022 : 373-382).

3.3 To study the theoretical and practical aspects of the holistic conservation of the cultural ecology of the ICH.

UNESCO defines a cultural space as "a place identified as a concentration of folk and traditional cultural activities, but also identified as a period characterized by a cycle or an event. The existence of such a period and such a place depends on the existence of the cultural activities, which were carried out traditionally" (UNESCO, 1998). Cultural space is the spatial carrier of cultural landscapes, communities, and ecosystems, giving them essential characteristics through location, natural environment, and resource conditions. The living transmission, authenticity, and regional character of ICH determines that safeguarding intangible cultural heritage should adhere to the principle of wholeness, which is in line with the theory of environmental adaptation in cultural ecology. (Zhu, 2012 : 156-160). The construction of cultural eco-sanctuaries is based on the holistic attributes of intangible cultural heritage and offers a vital way to protect intangible cultural heritage. It mainly applies to those with a relative concentration of cultural items, rich historical and cultural deposits, in a good state of survival, and with essential values and distinctive features. The practice of cultural ecology in the holistic conservation of ICH is manifested in three main modes of practice: eco-museums (Liu & Tan, 2019 : 71-79), ICH community spaces (Ruchika, 2021 : 1038-1050), and cultural and ecological reserves (Zhou, 2021 : 120-127).

The central proposition of cultural ecology theory lies in discussing the forms of interaction, the processes of interaction, the effectiveness of interaction between culture and the ecological environment in which it was embedded, and, most fundamentally, the space and level of adaptation between culture and the environment (Yang, 2019 : 12-18). Its core comprises people, cultural and ecological reserves through the construction of historical and cultural heritage, and distinctive natural and humanistic space to realize the structure of the relationship between man and nature, man and society, man and history, and man and himself (Li, 2020 : 33-45) through the establishment of cultural reserves. It is possible to realize tourism development while carrying out cultural conservation. However, cultural ecology must be respected in this process, and over-commercialized development must be avoided (Du, 2018 : 210-213).

In conclusion, cultural and ecological reserves should be positively aligned with the historical and cultural development of the region, be close to people's lives, and maintain the continuity of traditions in contemporary living times. Furthermore, they should have reasonable boundaries based on the integrity of the cultural space, the effectiveness of administration and management, and they should encourage the promotion of exchange and mutual understanding while safeguarding cultural characteristics.

Discussion and conclusions

1. Discussion

The involvement of cultural ecology in the safeguarding of ICH began after the development of salvage conservation. After completing the research and preservation of primary data, scholars began to gradually pay attention to the sustainable development of ICH. At the same time, in the context of rapid globalization, changes in the social and cultural environment contributed to the multiple dilemmas affecting the safeguarding and survival of ICH. Therefore, the relationship between culture and environment can be dialectically viewed when intervening in the study of ICH from the cultural ecology perspective, and can provide a new motivation for safeguarding of ICH.

Scholars study the influence of ICH on ecological factors from dynamic and static aspects. The dynamic aspect focuses more on the processes and mechanisms of mutual adaptation between ICH and the environment (Qu, 2021 : 32-40). The static aspects, on the other hand, focus on the results of the influence of ecological factors on the characteristics of ICH. For example, by studying key ecological factors, ICH is better preserved and passed on based on its native environment (Liu, 2017 : 148-152).

In the above research, theories and methods of ecology have become significant elements of support for ecological research on ICH. The theories and methods of cultural ecology developed by previous generations were based on sociology and anthropology research methods that also serve as primary tools.

In ecology, the objects of study are divided into four dimensions: individual, population, biotic community, and ecosystem. Correspondingly, the study of ICH from the cultural ecology perspective should be conducted in four dimensions: the ICH itself, the multidimensional cultural research among the subjects of the ICH, the ecological relationship among different cultures in the region, and the ecosphere of the region's culture, society and environment. At present, the cultural ecology research of ICH in academia is conducted with ICH as the center, focusing on the research of its characteristics (Yan & Sun, 2021 : 127-145) and ecological reserves (Zhou et al., 2014 : 49-54). There is less theoretical research content on the definition of ecological elements or their role mechanisms and logical construction. There are also few studies on the impacts of different cultural group levels in the region.

In general, ICH studies under the cultural ecology perspective are mainly oriented toward the sustainable development of ICH for regional society, economy, and culture. They are intended to provide theoretical and practical references for communities and localities in safeguarding ICH and resource activation. The academic community is focusing on applying cultural ecology methods and contents in ICH development and is endeavoring to solve the real problems.

As a result, a large amount of empirical evidence and numerous case studies have enriched the multifaceted practical issues involved in ICH preservation from the perspective of cultural ecology. However, realizing the conclusions of these studies requires integrating the resources of various sectors such as the social government, enterprises, and communities.

2. Proposals for future research

Based on the above analyses, the following three proposals are made for future research.

Firstly, interdisciplinary cooperation should be prioritized in research, emphasizing integrating and updating multidisciplinary methods. The inheritance and development of ICH in a complex social and cultural environment, demonstrates a distinctive living nature. The methods and paradigms of ecology, geography, ethnography, sociology, and anthropology have been continuously incorporated into preservation research on ICH. Continued use of interdisciplinary approaches and research perspectives will bring a new driving forces to ICH preservation.

Secondly, a theoretical framework needs to be constructed and definitions and specification of terms clarified in the research. At present, there is variation in the research methods and contents of this field in the academic community. Constructing a relatively unified and logical theoretical framework can lead to more reliable and consistent methods, conventions and paradigms for later researchers to use in solving practical problems. By standardizing the terminology and norms related to cultural ecology and intangible cultural heritage research, scholars worldwide can better carry out academic interactions and where their achievements are. It will contribute to the formation of more creative achievements in this field.

Thirdly, the feasibility of the research conclusions and their sustainable effects should be issues of concern. Conservation strategy research should be conducted to consider the actual situation of the study object with respect to the feasibility of the strategies. After implementing these strategies, attention should be paid to sustainable impact on the region's natural, cultural, and social ecology, which will help promote the conservation of ICH and the sustainable development of cultural ecology.

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