The Review of Rural Cultural Landscape Protection Framework

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Abstract. With the rapid process of urbanization, the rural cultural landscape has been impacted, and there have been problems such as loss of biological and cultural diversity, cultural amnesia, aphasia of style and appearance, and abnormal values. It is urgent to carry out relevant research on the formulation of the protection framework of rural cultural landscape. On the basis of summarizing the concepts related to rural cultural landscape, this paper summarizes the hot research directions of the rural cultural landscape protection framework in recent years through literature analysis, including rural ecosystem protection, rural cultural heritage protection and rural population dynamics, and further sorts out the current related research. On this basis, discussions and prospects are put forward, including strengthening multi-temporal and spatial-scale research, deepening multi-disciplinary integration protection framework, promoting stakeholders to formulate protection framework and other suggestions. It aims ti provide new ideas for the follow-up rural cultural landscape protection.

Keywords: rural cultural landscape; protection framework; review.

1 Introduction

1.1 Definition of key term

1.1.1 Rural cultural landscape.

Early landscapes were mostly explored from the perspective of geographical disciplines. In the early 19th century, the German geographer Alexander von Humboldt interpreted landscape as the general character of an area. Friedrich Ratzel(1882) introduced the concept of cultural landscape in the book "Anthropogeographie" firstly. Otto Schluter(1906)argued that geography is central to the study of the visible landscape and uses the cultural landscape as an academic term. He proposed two landscape forms of the world, natural landscape (Urlandschaft) and cultural landscape (Kulturlandschaft). Then the American human geographer C.Sauer put forward the "cultural landscape", and the Russian geography school put forward the view of "interaction between nature and society"[1]. The notion of cultural landscape is dynamically changing accordingly.

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The 16th World Heritage Conference in 1992 included "cultural landscape" in the category of heritage. Traditionally defined cultural landscape refers to the rural land carrying specific regional cultural characteristics and a certain volume of historical features, as well as the spatial complex composed of people, things. With the advancement of science and technology, the concept and scope of cultural landscape have been further broadened. Cultural landscape has long been transformed from a purely geographical concept to multiple objects such as economic structure and rural society[2].

Compared with urban landscape, rural cultural landscape includes ecological environmental protection, biological diversity, history space, local knowledge etc. It covers traditional rural production and living related material and intangible heritage resources like natural or artificial landscape, architecture, social custom and cultural technology[2].

1.1.2Rural cultural landscape protection.

American landscape architect Ian Lennox McHarg compared the different living conditions of cities and villages in "Design with Nature", and proposed that natural phenomena are a process of interaction and dynamic development. In "Looking for Lost Spaces", Roger Trancik proposed a way to explore space design by integrating the three theories of map ground theory, connection theory and place theory. Ebenezer Howard proposed "Garden Cities of To-morrow". Traditional European and American researchers focus more on the research of ecology and environmental science. In recent decades, the direction of rural landscape research in Europe and the United States has shifted to the behavior of rural people and rural social governance. France experienced rapid urbanization after World War II, resulting in a large loss of rural population. In the 1990s, French Minister of Culture Jack Lang systematically promoted the research of rural culture and the improvement of the protection system. Scholars such as Chiva Isac have expanded rural cultural heritage into four parts: rural landscape, local architecture, characteristic products, and knowledge and technology.

At the same time, it proposes a protection framework and management system: historiques monuments, sites, site patrimonial remarquable protection system, and uses institutional norms and policy guidance to create better protection effects[3]. At present, the articles concerning the protection of rural cultural landscape mostly refer to the protection of rural cultural heritage. Some studies on ecosystem services (ES) have found that cultural heritage values are spatially aggregated, while aesthetics are spatially dispersed[4]. The difference in spatial form expresses that the protection of rural cultural landscape and the protection of rural cultural heritage cannot be generalized. Research on the protection of rural cultural landscapes emphasizes the relationship between ecology-landscape-culture[5]. Therefore, this study adopts the term rural cultural landscape protection, and further subdivides and expands it on the basis of the existing rural cultural heritage protection. The research content includes the space protection of rural ecological cultural landscape, the space protection of rural cultural heritage, and the space protection of rural life scenes.

1.2 Background

Unlike cities, villages are areas outside cities. The traditional definition refers to places where agriculture is the main source of livelihood and the population is scattered. It is often called rural areas or villages. It presents the characteristics that agriculture is the main production activity, the population is dispersed, and the pace of life is slow[2]. With the introduction of the concept of biodiversity and optimization of the rural human settlement environment, the countryside has become one of the human settlement environment models and spaces that coexist harmoniously with nature, taking into account natural ecology, human survival, social harmony, and sustainable development as a composite organic system. Rural settlements are the starting point of human gathering activities and carry the essence of traditional Chinese farming civilization for thousands of years. The culture created and formed in the long history of China is essentially a regional fundamental culture. People not only absorb nutrients from the naturally formed living environment and material homes to nourish their bodies and minds, internalize them as spiritual power, and at the same time, they are also used in interpersonal communication. Establish a connection with the social community level to build a spiritual and poetic habitat.

With the advancement of urbanization, urban problems such as high population concentration, natural environment pollution, and indifference of interpersonal relationships are gradually spreading. Compared with thousands of villages and thousands of faces, the excessively rapid economic development and urbanization process have brought about the same phenomenon of thousands of villages. These issues have a huge impact on the landscape of rural areas, including biodiversity, historical space, indigenous knowledge, etc. Under the impact of multiculturalism, China's rural cultural landscape has many problems, such as the lack of biological and cultural diversity, cultural amnesia, aphasia of style and appearance, and abnormal values. This rises to a certain degree of cultural crisis, and it is necessary to investigate and study the rural cultural landscape from a political, social and cultural perspective[6].

Facing these problems, China has started to make some change. In October 2005, China put forward the great task of building a new socialist countryside. Its requirements are production development, comfortable life, civilization, village appearance clean, democratic management. In July October 2007, China came up with coordinate urban and rural development and promote the construction of a new socialist countryside. In 2008, Anji, Zhejiang province came up with the beautiful countryside plan. In October 18, 2017, China came up with the rural revitalization strategy. In September, 2018, China released the rural revitalization strategy plan(2018-2022). The requirements are prosperous industry, livable ecology, civilized village style, effective governance, prosperous life. In February, 2023, China came up with the harmony countryside. These plans all focused on human settlements and public infrastructure.

In this context, it is urgent to conduct research on the current status of the rural cultural landscape protection framework in recent years. Based on the analysis of existing literature, this paper summarizes the hot research directions of the international rural cultural landscape protection framework in recent years. It further sorts out the

deficiencies in the relevant international research directions, and puts forward future research prospects on this basis.

2 Methodology of literature reviews

2.1 Research tools and steps

In the analysis and research of scientific computing in recent years, scientific knowledge graph has gradually emerged as a method of scientific computing and has become a commonly used research method. VOSviewer is a software tool for building visual bibliometric networks. This study uses the VOSviewer software version 1.6.18, based on the support of the Web of Science core collection database, to visualize the hot keywords of relevant literature, and combined with the analysis of downloaded literature, to analyze and summarize the recent research hotspots related to the rural cultural landscape protection framework.

2.2 Research data acquisition

Based on the Web of Science core collection database, the search subject terms are limited to "rural" AND "cultural" AND "landscape" AND "framework". The document type is "research article", and the time span is 5 years, that is, 2019-2023. The collection time is May 2023. Finally, 124 documents were obtained. There were 47 articles that matched the research field of the keyword and abstract evaluation, 21 articles were not retrieved, and finally 26 articles were included in the study.

3 Results and findings

By drawing the keyword map through VOSviewer, it is found that the keywords with high centrality include ecosystem, cultural heritage, agricultural landscape, community, etc., which to a certain extent reflects the existing hotspots of the recent international rural cultural landscape protection framework research. According to keyword analysis and literature analysis, it is found that hotspot research mainly focuses on three aspects: ecosystem framework, cultural heritage protection framework and population return strategy.

3.1 Rural ecosystems

Ecosystem conservation research has always been an inevitable part of rural landscape research in landscape architecture and related disciplines. Many researchers have attempted to associate ecosystem protection assessments with cultural landscapes, and the rural-based cultural landscape protection frameworks derived from them focus on agriculture, society, culture, and management. Gulay Cetinkaya Ciftcioglu designed the conceptual framework of the agro-ecosystem services (AESs) and used a combination of qualitative and quantitative evaluations to conclude that the landscape and natural

social values of AESs have important cultural values. They are also agricultural biodiversity, agricultural landscapes and the guidelines for the sustainable protection and management of agro-ecosystems[7]. It determines the coupling relationship between ecology-agriculture-culture-management. Researchers such as Marı´a Garcı´a-Martı´n combine landscape ecology with highly regional production landscapes[8], exploring the future possibilities of sustainable agricultural development landscapes from the perspective of food sex. The poorest and most populous hinterlands (rural areas around cities) are experts in food production, while the richer hinterlands are experts in mediating ecosystem production and culture[9]. The improvement of the economic level brought about by urbanization will subjectively promote the optimization of the ecological system in the surrounding rural areas at the social level, so our criticism of urbanization should not be too blind. Researchers such as Johanna Breyne tried to explore the relationship between Ecosystem services (ES) assessments and socio-cultural values[10] to demonstrate the potential of socio-cultural values in improving natural resource management. In addition to these key directions, there are also some studies that diverge on this basis, such as: The social–ecological system (SES) framework is used to evaluate tourism systems based on natural resources and cultural landscapes[11].

The number of articles in the direction of ecosystem framework occupies a dominant position in the existing research on the framework of rural cultural landscape protection. Most of the articles start from this angle, and recent articles have a variety of entry points. However, due to the wide coverage and strong professionalism of the subject of ecology, the author mostly targets researchers, managers, and land planners. This type of text creates a top-down view. It is impossible to give more accurate guidance and suggestions to some smaller-scale site protectors.

3.2 Rural cultural heritage protection

The issue of cultural heritage conservation is an integral part of the framework of rural cultural landscape conservation. Protecting rural cultural heritage and ecosystem services is as important as protecting the population associated with the territory and its quality of life[12]. On the one hand, rural cultural landscape heritage includes material cultural heritage such as ancient and famous trees, architectural forms, and rural farmland. On the other hand, it includes intangible cultural heritage such as craft inheritance, cultural value, and spiritual characteristics.

Researchers such as I. Pe´rez-Ramı´rez see the link between cultivated land and a sense of place as an important cultural service. Cultivated land presents a sense of place, and this connection has the potential to embed society in agricultural landscapes by establishing a cultural heritage conservation framework that links belonging, stewardship and care[13]. Agricultural landscape is not only a part of tangible cultural heritage, but also a narrative expression of rural intangible cultural heritage in traditional rural society. As for the protection of some cultural heritages that have historical gaps due to different reasons, researchers such as Antonio Monterroso-Checa have constructed narrative discourse, historical structure sequences, and animal and plant catalogs through three methods: earth observation, remote sensing technology, aerial collection, and archaeological exploration. In this way, topographic features are preserved and

watchtowers are created for historical and natural landscapes[14]. The application of new technologies can effectively reconstruct the relationship between the historical context and the natural scene. Researchers such as Weiwei Zhou quantified rural intangible cultural heritage by setting up an evaluation model framework[15]. Quantitative evaluation of the relevant content of rural intangible cultural heritage is the mainstream method of current researchers. When focusing on tangible cultural heritage and intangible cultural heritage separately, we should also pay attention to the connection between material and intangible cultural heritage in the protection of rural cultural heritage[16].

3.3 Rural population dynamics

Rural hollowing is the essential reason for the unsustainability of rural cultural landscape. The writer Mr. Yu Qiuyu (2019) summed up the definition of culture as "a lifestyle and spiritual value that has become a habit, and its final result is a collective personality." Rural culture and people are in a coexistent relationship. Many scholars have explored the protection of rural cultural landscape around the population issue. Researchers such as Deogkyu Kweon believe that village population is related to the sustainability of village forests[17]. Scholars such as Nora Fagerholm believe that in the suburbs with higher GDP and population density, the benefits related to cultural sustainability in the research area are more valued[4]. Scholars such as Javier Montalvo calculated and mapped the average population growth rate of each city in Spain from 2007 to 2016 through GIS and multivariate statistical methods. Analysis of variance identifies key trends associated with changes in population growth rates at local scales. Estimated and drawn the road accessibility maps of each city, and described the changes of the mean road accessibility of each city on the urban-rural gradient. Through regression analysis, the relationship between population growth rate, population average age and spatial variables is tested, and an intuitive hypothetical model framework of driving factors of local scale population growth rate is proposed. It is concluded that road accessibility and rural travel are important driving factors for the growth of rural local population. Population size change and local population aging are interdependent variables[12].

In related literature, more studies are made on the causes of population change and the relationship between population dynamics and some rural cultural landscapes, and few articles actually design practical strategies. How to solve the population problem through the protection and design of rural cultural landscape remains to be studied.

There are two important trends in the research on the protection framework of rural cultural landscape. On the one hand, more and more emphasis is placed on interdisciplinary quantitative analysis techniques with natural sciences such as ecology, environmental science, and forestry. Many scholars use assessment frameworks such as: ecosystem services (ES), agro-ecosystem services (AESs), cul-tural ecosystem services (CES), social–ecological system (SES)[7,10,11,18]try to connect and integrate rational sciences such as ecology and geography with perceptual concepts such as culture and aesthetics through interdisciplinary methods. These interdisciplinary quantitative analysis studies help to transform the perceptual rural cultural landscape into a practical rural

cultural landscape protection framework. On the other hand, researchers began to gradually pay attention to the application of new technologies in research. The combination of GIS, remote sensing technology, and virtual simulation can reconstruct some rural cultural situations that have disappeared, and contribute to the subsequent protection and future adaptive renewal of rural material and intangible cultural landscapes.

4 Discussion

Through the review of the current research progress, the following suggestions are drawn for the establishment of the future rural cultural landscape protection framework and research focus.

4.1 Strengthen research on multiple temporal and spatial scales

The historical changes of rural cultural landscape patterns, management methods and situational forms will have different changes due to differences in time and space. It follows that part of the protection framework is only applicable to a certain fixed time and space scale. At local scales, population growth rates are driven by the average age of the population and indirectly by spatial and rural gradients[19]. The Composite Indicator of Landscape Fragmentation (CILF) can adapt to larger-scale landscape fragments by expanding the considered indicator pool and evaluating a weighted version of the composite indicator[20]. In addition to this study, there are few studies on the temporal and spatial evolution. At the same time, it is generally difficult to obtain small and medium-scale high-precision measurement data in rural areas, and there is a lack of historical ecology[5]. Therefore, it is necessary to continuously improve the multi-level spatial scale analysis and strengthen the study of spatial heterogeneity. For example, (1) Combining drones, VR and other digital technologies with villagers' participatory mapping, further promote the improvement of small and medium-scale rural cultural landscape protection frameworks; (2) Use various historical landscape analysis techniques to improve the analysis of the temporal and spatial evolution of rural cultural landscapes; (3) Predict the spatial and temporal evolution of rural areas in the future, and accelerate the iteration of the rural cultural landscape framework to enhance its ability to respond to the future.

4.2 Deepening multidisciplinary integration into the conservation framework

The establishment of the rural cultural landscape protection framework should not be limited to design, landscape architecture and related fields of science and engineering. In the field of pedagogy, scholars such as Shenglin Elijah Chang established the KYRS framework. This framework facilitates intellectual linkages between rural communities and universities, resulting in the subsequent diversification of rural cultural heritage[21]. The framework puts forward a practical plan from the perspective of pedagogy, and has achieved good results in the actual operation process. Suzhou Jijiadun Village also cooperates with colleges and universities to provide a platform for entrepreneurs through

matchmaking, so as to attract foreign talents to start businesses in the village, retain local talents[22], and avoid the hollowing out of the village. On this basis, the following attempts can be made: (1) The combination of computer science, big data analysis and the formulation of the rural cultural landscape protection framework will promote the rapid formation and matching of existing protection methods; (2) Economics, law and other liberal arts majors and the integration of protection frameworks can further expand the coverage of protection frameworks; (3) Combining new and old theories and models of already integrated disciplines, such as using spatial regression models and spatial dynamic models to analyze the multi-temporal and spatial dynamic changes of biodiversity.

4.3 Facilitate stakeholder co-development of conservation frameworks

Stakeholders' opinions and suggestions are particularly important for the improvement of the rural cultural landscape framework. Interactions between resident populations and experts are the basis for co-generating analysis of landscape place construction and revealing the socio-ecological interactions of stakeholders with these places[23]. Considering its cultural aspects in management to maintain landscape identity is an important way to promote socio-ecological approaches to conservation planning and to achieve more sustainable management goals[24]. However, the content of stakeholder feedback is invalid and the inconvenience of stakeholder feedback makes many stakeholders unwilling to give feedback. On the one hand, we should establish a more complete stakeholder feedback mechanism to obtain more effective feedback. On the other hand, using a more relaxed stakeholder feedback method makes it easier for stakeholders to give feedback on the feasibility of the framework.

5 Conclusion

This paper summarizes the relevant concepts of rural cultural landscape protection, and summarizes the hot research directions of the rural cultural landscape protection framework. It summarizes the key content, methods and techniques of the research directions of the rural ecosystem protection framework, rural cultural heritage protection framework, rural population dynamics, etc., and further sorts out the main progress and deficiencies in related research. On this basis, several suggestions of the future protection of rural cultural landscape are put forward for the establishment of the framework, including multi-temporal-spatial scale research, multi-disciplinary integration into the protection framework and stakeholders' joint development of the protection framework. In the future, it is necessary to continue to absorb new technologies while maintaining a sense of awe for rural cultural landscapes, and to constantly explore new ideas for the protection of rural cultural landscapes that combine inheritance and innovation.

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