

Artistic Narration and Cultural Industry Innovation of Rural Tourism and Culture in the Metaverse Perspective: A Case Study of the Hani Rice Terraces in Yunnan

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Abstract. The development of metaverse technology provides a new way to rebuild the value of rural tourism and cultural industry. This paper takes the Hani Rice Terraces in Yunnan as the research object. Based on the theory of digital narration and the theory of industrial value chain, it builds a three-layer artistic narration system of "Symbol Translation - Interactive Immersion - Philosophical Resonance". It explains clearly how rural cultural resources in the metaverse space turn cultural value into economic value through artistic translation. Through policy text analysis, cross-case comparison and theoretical deduction, the research finds out the inner rule that artistic narration drives the innovation of tourism and cultural products, the coordination of business forms and the reconstruction of benefit distribution mechanism. It also puts forward a management strategy of "Lightweight Technology + Local Narration" suitable for rural scenes. This strategy provides a theoretical framework and practical reference for the digital transformation of rural tourism and culture.

Keywords: Metaverse, Rural Tourism and Culture, Artistic Narration, Industrial Value Chain, Hani Rice Terraces

1. Introduction

The high-quality development of the rural tourism and cultural industry needs to solve three big problems: shallow cultural expression, similar products and low-efficiency value transformation. The maturity of metaverse technologies (digital twin, VR/AR, blockchain and so on) provides a technical possibility for this breakthrough — by building an experience space that combines the real and virtual worlds, it redefines the boundaries of cultural communication and consumption [1]. In this context, the role of artistic narration is re-examined: it is not only a way to show cultural symbols, but also a core engine to rebuild the value chain of the tourism and cultural industry [2]. As a world heritage carrying thousands of years of farming civilization, the Hani Rice Terraces have an ecological system of "forest - village - terrace - water system" and the cultural genes of the Hani people, which provide a typical sample for the practice of metaverse artistic narration.

Existing studies mostly focus on the application of metaverse technologies in urban scenes (such as virtual museums, theme parks), or discuss the role of artistic narration in cultural communication alone. They lack a systematic analysis of the coordination mechanism of "technology - art -

industry" in rural scenes. Especially under non-empirical conditions, how to reveal the internal connection between artistic narration and industrial innovation through theoretical construction has become an academic proposition that needs to be answered urgently. The theoretical value of this paper is as follows: First, build an analysis framework for artistic narration of rural tourism and culture in the metaverse, filling the gap in rural digital narration research. Second, reveal the micro logic of artistic narration driving the reconstruction of industrial value chain, enriching the theory of cultural industry innovation. Third, put forward a lightweight technology application path suitable for rural areas, providing an operable management model for practice.

2. Theoretical basis and analytical framework

Rural tourism and culture in the metaverse is not a simple combination of technologies. It is a composite industrial form that is based on digital twin and integrates interactive technologies and cultural narration. Its core feature is "integration of virtual and real" — the virtual scenes must show the authenticity of rural culture, and the real experience can extend its value through digital tools. In this context, artistic narration builds a cultural symbol system and a logic of meaning production through digital artistic languages such as virtual landscapes and interactive installations. Its essence is to turn cultural resources into experience carriers that can be felt, participated in and spread. Cultural industry innovation focuses on the reconstruction of the value chain. It is shown in three aspects: products change from "simple sightseeing" to "immersive experience" [3], business forms change from "isolated operation" to "coordinated coexistence", and benefit distribution changes from "capital-dominated" to "diversified sharing".

This process relies on two major theoretical supports: the theory of digital narration emphasizes "multimodal symbol coordination" and "user-participatory narration", and reveals the mechanism of cultural experience changing from passive reception to active creation; the theory of industrial value chain provides an analytical tool for the innovation path. Artistic narration expands the value dimensions (from economic value to cultural and social values) and improves the efficiency of value-added by penetrating all links of "creation-production-communication-consumption". These two theories together form a logical chain of "cultural resource input — artistic narration transformation — industrial value output". Among them, artistic narration is the key medium connecting cultural authenticity and technical possibility.

Based on this, this paper puts forward a "three-dimensional drive" analytical framework: with the farming skills, ethnic legends and ecological philosophy of the Hani Rice Terraces as the core input, through the three-layer transformation of metaverse artistic narration (surface-level digitalization of symbols, middle-level immersive interaction, deep-level philosophical interpretation of meaning), it finally realizes the triple innovation of the cultural industry value chain (product form innovation, business form coordination innovation, benefit distribution innovation).

This process is affected by three moderating variables: technical adaptability (the degree of lightweight application), cultural translation degree (the balance between authenticity and innovation) and subject coordination degree (the multi-party participation mechanism). These variables form a complete closed loop of artistic narration driving industrial innovation [4].

3. The hierarchical construction of metaverse artistic narration for Hani Rice Terraces

3.1. Narrative foundation and translation logic of cultural resources

The cultural resources of the Hani Rice Terraces present a three-layer structure: "material — intangible — spiritual". The material layer focuses on terrace texture, mushroom house architecture and costume patterns, carrying ecological wisdom and construction skills. The intangible layer includes field sacrifice ceremonies, wood-carved water division methods and the creation epic "A Po Yang Zhe", which is the living inheritance of national memory. The spiritual layer is condensed into the ecological philosophy of "harmony between man and nature", forming the core of cultural identity. In the traditional rural tourism and culture model, these resources are mostly presented through static exhibitions or one-way explanations. They have limitations such as fragmented symbols, shallow experience and separated meaning, making it difficult to realize the in-depth transmission of cultural value. The primary task of metaverse artistic narration is to rebuild the narrative logic of these resources through digital technology, turning them from "scattered symbols" into an "organic meaning system" [5].

3.2. Surface-level narration: digital translation and visual reconstruction of cultural symbols

Surface-level narration focuses on the digital reproduction of cultural symbols, but its core is not simple copying. Instead, it achieves a balance between "retaining authenticity" and "enhancing experience" through artistic processing. For example, high-precision digital twin technology is used to restore the "four-element coexistence" ecological system of the terrace landscape. Dynamic light and shadow are used to simulate the changes of four seasons (water reflection in spring, rice waves undulating in summer, golden fields spreading in autumn). At the same time, real-time data such as climate and farm work are embedded, making the virtual landscape both authentic and information-dense [5]. For material symbols such as mushroom houses, 3D modeling is used to take apart their mortise and tenon structure and ecological design (such as the adaptation of roof slope to precipitation). Tourists can intuitively understand the survival wisdom behind the architecture through interactive operations. The key of this level is to establish a direct connection between "symbols and meaning". For example, visually link the "sunflower" pattern in Hani costumes with the terrace irrigation system. Clicking the pattern can trigger water flow animation, strengthening the metaphorical expression of cultural symbols [6].

3.3. Middle-Level narration: immersive interpretation and participatory creation of interactive plots

Middle-level narration breaks through the limitation of linear narration. It builds a participatory experience through "plot tasks + user choices", turning tourists from "onlookers" into "narrative participants". The main plot is designed based on the migration history of the Hani people. Tourists act as "pioneers" and complete tasks such as "finding water sources", "dividing fields" and "negotiating water division" in the virtual scene. In the process, they gradually unlock traditional knowledge such as wood-carved water division methods and the coexistence of rice, fish and ducks. The task design adopts the mode of "core plot + branch choices". For example, in the "field sacrifice ceremony" link, tourists' different choices of sacrifices and prayers will trigger different responses from the virtual priest (using voice materials recorded by elderly Hani people). This not only ensures cultural authenticity, but also enhances the uniqueness of the experience. In addition, simple UGC

tools are opened (such as voice-to-plot, graffiti-to-decoration), encouraging tourists to create personalized content (such as designing irrigation schemes for virtual terraces). This forms a narrative ecology of "professional creation + public participation", which not only enriches the narrative levels, but also improves user stickiness.

3.4. Deep-level narration: artistic expression and meaning resonance of ecological philosophy

Deep-level narration goes beyond specific symbols and plots. It is committed to conveying the ecological philosophy of "harmony between man and nature", realizing the sublimation from "cultural cognition" to "value identity". Virtual installation art is used to build a carrier for philosophical expression: an interactive installation of "water cycle" is set in the core area of the metaverse. Tourists touching virtual water drops can trigger a chain reaction — from water storage in forests to water diversion in villages, then to terrace irrigation and water system backflow, intuitively showing the symbiotic relationship between nature and humanity. An "ecological dialogue wall" is set beside the installation, gathering digital images of similar farming civilizations around the world (such as the Ifugao Rice Terraces in the Philippines and the Lavaux Terraces in Switzerland). The unique value of the Hani Rice Terraces is highlighted through comparison. This kind of narration "embodies abstract philosophy", allowing tourists to understand the in-depth connotation of cultural spirit through interaction. For example, through the virtual experience of the negative consequences of "over-reclamation" (soil erosion, ecological imbalance), it reversely strengthens the recognition of the wisdom of "moderate utilization".

4. Reconstruction of the value chain of rural tourism and cultural industry driven by artistic narration

4.1. Product innovation: from "sightseeing single product" to "virtual-real integrated experience package"

Artistic narration drives the transformation of tourism and cultural products from a single physical space experience to a virtual-real linked composite service, and rebuilds the product value composition. The core products are bundled packages of "virtual experience + physical rights and interests": finishing the online task of "virtual rice transplanting" can be exchanged for the qualification of catching fish in the offline rice fields; collecting terrace-themed digital art works can get the right to customize physical cultural and creative products. Derived products are developed based on narrative IPs, such as AR silver ornaments designed from the virtual field sacrifice ceremony (scanning to watch the ceremony animation) and terrace adoption NFTs (holders can get the rice harvest of the corresponding plot). This product form expands the value dimensions — extending from the traditional "space consumption" to "time consumption" (participation in virtual tasks), "symbol consumption" (collection of digital collectibles) and "emotional consumption" (satisfaction of cultural identity), which significantly increases the value contribution of each tourist.

4.2. Business form coordination: from "isolated operation" to "digital cultural complex"

The cross-field characteristic of artistic narration drives the transformation of business forms from "tourism operating alone" to "multi-business form coordination", forming an ecological chain of "digital content creation — virtual experience service — physical industry linkage". On the digital side, cultivate "rural digital art studios" responsible for the production of narrative content and the

maintenance of virtual scenes; On the experience side, metaverse experience halls link with offline homestays and restaurants, deeply binding virtual tasks with physical services (such as participating in traditional banquets of homestays after the virtual field sacrifice); On the industrial side, drive the upgrading of related industries such as cultural and creative design and agricultural product processing. For example, develop textiles according to the terrace patterns in virtual scenes, or promote the customized production of physical agriculture based on tourists' virtual adoption of rice. The key of this coordination is to establish the linking role of "narrative IP", making all business forms form a joint force around a unified cultural theme, rather than a simple superposition of technologies.

4.3. Benefit distribution: from "capital-dominated" to "diversified sharing ecology"

The co-creation attribute of artistic narration provides possibilities for the innovation of benefit distribution mechanism, with the core of establishing an equal relationship between "cultural contribution and value return". Confirm the right of cultural materials through blockchain technology. The content provided by villagers, such as legendary stories and skill demonstrations, can be converted into digital assets to participate in profit sharing (for example, 30% of the virtual ticket income is distributed to villagers according to the contribution of materials). Set up a "digital cultural cooperative" to organize villagers to participate in the dubbing of virtual scenes, the digital recording of traditional skills and other work, forming a stable source of income. For art institutions and science and technology enterprises, adopt the mode of "basic service fee + profit sharing". The technical side is responsible for platform construction, and the art side leads content creation. The two parties distribute the profit from the sales of virtual props in a 4:6 ratio, and at the same time, part of the income is fed back to the village collective for cultural protection. This mechanism not only guarantees the innovation motivation of professional institutions, but also ensures that villagers directly benefit from cultural inheritance, strengthening the community foundation for the sustainable development of the industry [7].

5. Management strategies and adaptation paths for the implementation of artistic narration

5.1. Technology adaptation: balance between lightweight application and localization transformation

The application of technology in rural scenes needs to avoid the mistake of "heavy investment and high threshold", and give priority to "low-cost and easy-to-operate" lightweight solutions. At the hardware level, use mobile phone AR instead of VR headsets to lower the threshold for tourists to use; develop offline experience packages to solve the problem of unstable network in mountainous areas. Tourists can download virtual scenes in advance and synchronize data after connecting to the Internet. At the software level, simplify the operation of UGC tools, support intuitive interaction methods such as voice commands and gesture recognition, so that villagers and elderly tourists can easily participate in content creation. Technology transformation needs to be combined with rural reality. For example, use traditional Hani ballads as voice navigation in virtual scenes, and replace rigid machine dubbing with national languages to enhance the cultural adaptability of technology.

5.2. Narrative coordination: division of powers and responsibilities and creation norms of multiple subjects

Establish a four-party coordination mechanism of "government — enterprise — community — art institution": The government is responsible for policy guidance and cultural authenticity review, and formulates the Standards for Metaverse Narrative Content to avoid misinterpretation and abuse of cultural symbols; Enterprises are responsible for technology development and commercial operation to ensure the stability of narrative scenes and smooth experience; Communities (villagers, inheritors of intangible cultural heritage) provide cultural materials and participate in content review to prevent meaning distortion; Art institutions are responsible for the artistic translation of narration, balancing professionalism and popularity [8]. Focus on building a "cultural material library" and "narrative templates". The former collects certified traditional symbols and stories, and the latter provides standardized narrative frameworks (such as the main line of "migration — field reclamation — protection"). This not only ensures creation efficiency, but also adheres to cultural bottom lines.

5.3. Value evaluation: construct a multi-dimensional index system of "culture — economy — society"

The value evaluation of artistic narration needs to go beyond a single economic index, and establish a multi-dimensional system including cultural communication degree, community participation degree and experience immersion degree. Cultural communication degree is measured by the spread scope of digital collectibles and the accuracy of cultural symbols in user-created content; Community participation degree focuses on the participation ratio and income level of villagers in content creation; Experience immersion degree refers to users' stay time in virtual scenes, task completion rate and emotional feedback (such as "whether it enhances the understanding of Hani culture"). Through this index system, dynamically adjust narrative strategies and resource investment, ensuring that artistic narration not only achieves economic value, but also achieves multiple goals of cultural inheritance and community empowerment [9].

6. Cross-case comparison and theoretical implications

By comparing metaverse tourism and culture projects such as the former residence of Yan Fu in Fujian and the Yellow River intangible cultural heritage in Henan, we can extract the common laws and differentiated paths of rural artistic narration. All three projects emphasize the preservation of cultural authenticity. However, the former residence of Yan Fu focuses on the interactive interpretation of the historical figure IP, the Yellow River intangible cultural heritage centers on the digital inheritance of skills, and the Hani Rice Terraces takes ecological philosophy as the core narrative clue. This shows that artistic narration must anchor the core characteristics of regional culture. In terms of technical paths, all three adopt the "lightweight first" strategy and avoid over-reliance on high-end equipment, which confirms the special requirements of rural scenes for technical adaptability. In industrial coordination, all attach importance to the linkage of "digital content - physical industry". But because the Hani Rice Terraces involves agricultural production, it places more emphasis on the closed-loop design of "virtual adoption - physical reward", providing a reference model for agricultural rural tourism and culture.

These cases jointly reveal that the key to the success of rural tourism and culture in the metaverse does not lie in the advancement of technology, but in whether artistic narration can accurately grasp the cultural core, adapt to the actual rural conditions, and build a win-win benefit mechanism for all

parties. The essence of artistic narration is "technology empowering culture" rather than "technology replacing culture". Its highest state is to make technology "invisible" and let cultural value become the core of the experience.

7. Conclusion and prospect

The three-layer system of metaverse artistic narration constructed in this paper reveals the internal logic of rural cultural resources realizing value reconstruction through digital translation. The study finds that artistic narration establishes cultural cognition through surface-level symbol translation, enhances experience immersion through middle-level interactive interpretation, and strengthens value identity through deep-level philosophical expression. It forms a complete transformation chain from cultural value to economic value, and promotes systematic innovation of the tourism and cultural industry value chain at the levels of products, business forms and benefit distribution. For rural scenes, "lightweight technology + localized narration" is an effective path to balance technological empowerment and cultural authenticity, and the coordination mechanism of multiple subjects is the institutional guarantee for the implementation of innovation.

The limitation of this study is the lack of field data verification. In the future, we can further test the effectiveness of the theoretical framework through simulation experiments (such as designing user experience surveys of virtual scenes) or tracking the actual progress of the Hani Rice Terraces project. With the development of AI-generated content and cross-chain technology, metaverse artistic narration will present new trends such as "personalized customization" and "cross-regional IP linkage". How to maintain the uniqueness and subjectivity of rural culture in these trends will be an important direction for subsequent research.

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