

Original Paper

Research on International Promotion-Oriented Translation and Communication Pathways of Shandong's Intangible Cultural Heritage from the Perspective of Metaverse

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Abstract

Under the background of the deep integration of digital economy and meta-universe technology, the external communication of intangible cultural heritage (ICH) is faced with the need for scenario-based and multi-dimensional transformation. This study takes Shandong ICH as the object and explores the innovative path of meta-universe technology empowering ICH international promotion-oriented translation and communication. Firstly, virtual reality (VR) technology is used to realize the deep immersive display of ICH skills and the reconstruction of cultural IP virtual space; secondly, artificial intelligence (AI) technology is used to improve the accuracy and multimodal real-time translation of cultural symbols of ICH; thirdly, immersive interactive experience is constructed to shift ICH dissemination from "watching" to "participating". These paths aim at realizing the holistic scenario communication and multimodal translation innovation of ICHs through the technical characteristics of meta-universe, so as to effectively enhance the cultural soft power of Shandong and even the country.

Keywords

meta-universe, Shandong intangible cultural heritage, International Promotion-Oriented Translation, external communication

1. Introduction

General Secretary emphasized the importance of improving the cultural soft power of the country in realizing the goal of “Two Hundred Years” and the Chinese dream of great rejuvenation of the Chinese nation, and pointed out that the excellent traditional Chinese culture is the most profound cultural soft power of the country. As a representative of excellent traditional culture, the dissemination of intangible cultural heritage helps to promote foreign cultural exchanges and multi-level civilization dialogue. In the *Opinions on Advancing the Implementation of the National Cultural Digitization Strategy*, it is proposed to create a new type of digital cultural experience and promote the integration of online and offline. In the context of digital economy, metaverse, as a kind of virtual reality network application and society integrating new technologies, can provide empowerment and application for ICH international promotion-oriented translation and communication. Therefore, it is of great practical significance to study the ICH international promotion-oriented translation and communication from the perspective of meta-universe to enhance the cultural soft power of Shandong.

2. Overview of Domestic and International Studies

Research on meta-universe: as an emerging concept, meta-universe mainly involves (1) conceptual characterization research. Meta-universe is a comprehensive application aggregate of various new technologies, more like an advanced version of digital society. (Shi et al., 2022; Ren et al., 2022; Bowman et al., 2007). (2) Research on the characteristics of meta-universe: In 2022, KPMG published the research report *A First Look at the Meta-universe*, which summarized the characteristics of the meta-universe into six features: immersive experience, openness, virtual identity, continuous evolution, virtual-reality interaction, and new authorization mode. (3) Research on the application of meta-universe: meta-universe can be applied in the fields of tourism (Huawenyu, 2022), publishing (Yanhong et al., 2021), education (Liu et al., 2022), office (Imed, 2020), and urban construction (Pu Qingping et al., 2022), and so on. It can be seen that the characteristics of meta-universe, such as immersive experience, virtual identity and multi-dimensional interactivity, are compatible with the translation and dissemination scenarios of ICH, and can inject new vitality into the inheritance and development of ICH.

Domestic research on ICH international promotion-oriented translation and communication : the literature has been sorted out and analyzed mainly from three aspects: research direction, translation categories, and translation research focus. (1) Research direction: the research direction of ICH international promotion-oriented translation broadly includes “strategy research” (Hu, 2016). “Theoretical research” (Pang, 2020; Ji, 2020; Wang, 2019) “Macro research” (Wu, 2022) “Talent cultivation” (Liun, 2018; Bai, 2019) and other four directions. The shortcoming is that there are fewer research results on the translation of ICH international promotion-oriented translation under the guidance of interdisciplinary theories. (2) Translation categories: Gu (2021) analyzed 172 ICH international promotion-oriented translation literature and found that the proportion of translations for

each category was uneven, and most of the literature did not refine the ICH research objects. This is one of the difficulties in the translation research of ICH international promotion-oriented translation. (3) Focus of Translation Research: Researchers focus on the translation of ICHs as “introductory texts” (Li Meng, 2020), “ICH names” (Fang Jia, 2020) and “culturally specific items” (Ji, 2020). “(Ji, 2020).

The study of foreign ICH communication: the ways are news report communication, mass media communication (Gaitan, 2019, Md Saifuddin Khalid & Md Saiful Alam Chowdhury, 2018) and digital communication. Digital dissemination is becoming the mainstream of research. In addition, the governments of various countries have actively led the practice of ICH dissemination. 1994, the United States launched the “American Memory” project to digitize documents and materials, and in 2007, the French National Library cooperated with Google to optimize the “Gallica” project to support the digital preservation of ICH. In 2021, the Japanese government set up the “Digital Agency” to allocate funds to promote the digitization process of ICH. Through combing the literature, it can be found that foreign research on ICH communication focuses on the study of communication media and communication subjects. The shortcoming is that there is no integration of technology to build a holistic construction of ICH communication and create ICH communication scenarios.

Through the systematic combing of the meta-universe as well as the translation and international dissemination of ICH, two problems can be found: firstly, at present, there is no dissemination of ICH as a whole, and no highlighting that the essence of ICH dissemination is that of scenarios. Therefore, new digital technologies such as meta-universe are needed to realize the holistic scene communication of ICH. Secondly, the current translation environment has changed dramatically, and the information text not only contains multi-dimensions such as text, image and sound, but also contains a multi-threaded structure similar to network hypertext. As a result, the previous translation research on information texts with single dimension and single-threaded structure is facing new challenges in the way of thinking and research paradigm, and it is necessary to seek for innovative paths of ICH international promotion-oriented translation in the era of meta-universe in order to reshape the new development pattern.

3. The Innovative Path of International Promotion-oriented Translation and Communication of Shandong's ICH from the Perspective of Metaverse

3.1 Realize the in-depth Display of ICH Arts through virtual Reality (VR) Technology

3.1.1 Technical Empowerment: Breaking the Time and Space Limitations of Traditional Communication

Virtual reality technology can completely reproduce the details of Shandong's non-fraditional skills and cultural scenes into virtual space by building a three-dimensional dynamic environment. Taking Weifang kite making as an example, the traditional way of outreach is to show its process through documentary or atlas, but it is difficult for the audience to perceive the subtle skills of tying skeletons and drawing patterns. With the help of VR technology, users can wear a headset to enter the virtual

workshop and observe from a first perspective how the non-hereditary inheritors select bamboo, split gimlets, tie and tie, and even simulate the process of “hands-on” participation in the kite's gluing and painting process through the handle. This kind of immersive “hands-on” experience not only allows foreign audiences to understand the essence of the techniques intuitively, but also enhances cultural memory through interactive operation.

3.1.2 Scene Reconstruction: Creating a Virtual Space for Intangible Cultural IPs

Metaverse can break through the limitations of physical venues to build thematic virtual exhibition halls for NIC. For example, a “virtual NIC village” is designed for Shandong paper-cutting, where users can enter and discover different styles of paper-cutting works through free exploration - the roughness and boldness of Gaomi paper-cutting, and the subtlety and elegance of Binzhou paper-cutting. Each piece of work is accompanied by an AI-translated multilingual explanation, and clicking on it triggers a dynamic demonstration of the entire process of the virtual paper-cutting artist from paper folding, drawing to cutting and carving, supplemented by cultural background interpretation, such as the auspicious symbolisms of paper-cutting patterns like “Lian Nian You Yu” (Abundance Year After Year) and “Qilin Song Zi” (Kirin Delivering a Son). In addition, users can participate in the “virtual paper-cutting challenge”. The system awards digital badges based on the completion level of their creations, which can then be linked to social media platforms for sharing, fostering viral dissemination.

3.1.3 Case Extension: VR Taste Simulation of Lu Cuisine Culture

As one of the eight major cuisines in China, the publicity of Lu Cuisine has long been limited by the fact that it can only be seen but not tasted. Meta-universe technology can solve this problem through multi-sensory interaction. For example, in the VR environment to simulate the cooking scene of “nine-turned large intestine”: the user can not only watch the chef handle the knife work of ingredients, stir-frying sugar color of the fire control, but also through the wearable equipment to feel the heat of the stove, smell the aroma of onion and ginger popping pot. There are even cutting-edge technology attempts to combine electronic tongue and odor synthesizer, allowing users to “taste” virtual dishes of sweet and sour, salty and fresh. Although taste simulation is still in the experimental stage, its potential has opened up a new dimension for ICH international promotion-oriented translation and communication.

3.2 Utilizing Artificial Intelligence (AI) to Achieve Precision and Scenario-based Translation

3.2.1 Intelligent Recognition and Adaptation of Cultural Symbols

The core difficulty in translating NIC for promotion lies in the processing of culturally loaded words. For example, the “Cai Jiuzhou” ceremony in the “Duan Gong Opera” in Southwest Shandong, which involves the terminology of Taoism, can easily lead to cultural distortion when translated directly. AI translation systems can address this by constructing a specialized terminology database for ICH through knowledge graphs and automatically matching context-appropriate equivalents in the target language. For example, “Cai Jiuzhou” can be translated as “Ritual Dance Mapping the Nine Regions (a

Taoist-inspired performance symbolizing cosmic order)”, which not only retains the cultural meaning, but also makes it more effective. In addition, the AI can dynamically adjust the translation according to the audience's cultural background: when targeting Western users, “Lu brocade” is compared to “Shandong’s version of Scottish tartan”; when targeting East Asian users, its connection to the textile techniques of the Tang and Song dynasties is emphasized. When targeting East Asian users, it emphasizes its origins in the textile techniques of the Tang and Song dynasties.

3.2.2 Collaborative Application of Multimodal Real-Time Translation

Translation in the meta-universe needs to break through the limitation of text and integrate multimodal data such as voice, image, and motion. Taking the virtual performance of Liuzi opera as an example, when the audience wears AR glasses to watch it, the system can recognize the actor's singing and stance in real time and generate subtitle translation at the edge of the field of view. At the same time, AI speech synthesis technology can imitate the rhythms of opera singing in the target language, solving the dilemma of “translating words without translating tones”. For interactive scenes (e.g. the Shandong Express Script performance in the virtual teahouse), the audience can ask questions by voice, and the AI instantly translates and generates the virtual character's response, and even simulates the dialect accent to enhance the sense of realism.

3.2.3 Blockchain-empowered Translation Quality Tracing

To ensure the accuracy and cultural respect of translations, blockchain technology can be utilized to establish a “NIC translation certification chain”. After each translation (including text, voice, and video subtitles) is uploaded, it will be initially reviewed by AI, reviewed by experts, and the hash value of the approved version will be deposited on the chain. When overseas users visit, they can confirm the authority of the translation through on-chain verification. This not only prevents the arbitrariness of machine translation, but also attracts global sinologists and translators to participate in collaborative optimization through open nodes, forming a decentralized translation community.

3.3 *Constructing a New Paradigm of Immersive Translation Experience and Cultural Interaction*

3.3.1 From “Watching” to “Participating”: Virtual Inheritance of NIC Skills

Metaverse allows users to enter the NIC scene with a digital avatar to realize cross-cultural collaboration. For example, in a virtual ceramics workshop, a foreign user can be in the same room with a Chinese NIC practitioner, operate a billeting machine through hand gestures, and the AI translates the communication commands between the two parties in real time. The system will also give real-time feedback according to the standardization of the user's movements (e.g. “the thickness of the clay is uneven, it is recommended to adjust the rotational speed”), so that the learning process is both interesting and professional. Completed works can be transformed into NFT digital collections, which users can collect or give to their friends, forming a social currency for cultural dissemination.

3.3.2 Scenario-based Reconstruction of Intercultural Narratives

While traditional translation focuses on language conversion, meta-universe can reshape the spatial logic of cultural narratives. Taking the legend of Penglai fairy tale as an example, a “mirage” scene

can be constructed in the virtual space: the user sails on a boat and encounters a dynamic illusion generated by AI, with Chinese and English bilingual immortal dialogues ringing in his ears and holographic projections of poems floating in the mist. Through the combination of environmental narratives and interactive puzzles, users can naturally understand the spirit of Qilu marine culture behind the stories of “The Eight Immortals Crossing the Sea” and “Xu Fu's Eastward Journey” during exploration.

3.3.3 Emotion Calculation Enhancing Cultural Resonance

Through the implantation of emotion recognition algorithms, the system can analyze the user's expression, tone of voice and behavioral data in the virtual scene, and dynamically adjust the cultural output strategy. For example, when detecting the user's frustration with the Lu Ban lock disassembly, the AI assistant can switch to encouraging language and simplify the operation of the prompts; if the user is interested in the Confucian etiquette display, it will push the link to the relevant Confucian culture in-depth interpretation. This “emotion-content” adaptation mechanism can significantly enhance the empathy effect of cross-cultural communication.

4. Conclusion

Through the path of VR in-depth display, AI accurate translation, blockchain authentication, etc., meta-universe technology provides an immersive, multimodal, sustainable and innovative program for the international promotion-oriented translation and communication of Shandong ICH. However, it is necessary to balance technological empowerment and cultural authenticity, and establish an interdisciplinary collaboration mechanism in order to realize the leap from “cultural output” to “value resonance”. In the future, we can further explore the integration mode between the meta-universe and Qilu cultural characteristics, such as creating a “Confucius Institute meta-universe branch”, combining Confucian classics with NIC skills, and enhancing the localization of international communication.

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