

DIGITAL NARRATIVE AND TOURISM VALUE SYMBIOSIS OF ZHEJIANG EAST TANG POETRY ROAD: A CROSS-CULTURAL PERSPECTIVE

RuoNan Dong, Wei Xia*

School of Applied Foreign Languages, Zhejiang Yuexiu University, Shaoxing 312000, Zhejiang, China.

Corresponding Author: Wei Xia, Email: 20172256@zyufl.edu.cn

Abstract: In the context of accelerating globalization, the international dissemination of high-context cultural heritage faces persistent challenges, including cultural discount and semiotic misinterpretation. This study explores the Zhedong Tang Poetry Road—a quintessential embodiment of Tang Dynasty literary and philosophical traditions—as a case to examine how digital technologies, such as digital twins, generative AI (AIGC), and blockchain, enable adaptive translation of cultural genes and foster symbiotic relationships between cultural preservation and tourism economies. Through a mixed-methods framework integrating digital ethnography, computational text analysis, and neuroaesthetic experiments, the research validates that multimodal narratives (e.g., LiDAR-scanned landscapes, AR-enhanced poetry) significantly enhance cross-cultural empathy, evidenced by a 35% increase in θ -wave activation and a 41.2% rise in cultural identity scores. Economically, blockchain-driven models, including NFT-based IP monetization and smart contracts, demonstrate an 18% growth in international tourist spending and a 15% increase in derivative revenues. Theoretically, the study advances a "Three-Phase Cultural Meme Translation Model" and a "STEAM Synergy Framework," offering scalable strategies for globalizing high-context heritage while addressing technological and ethical constraints. These findings provide actionable insights for bridging cultural depth with global accessibility, supporting rural revitalization, and advancing sustainable tourism ecosystems.

Keywords: Cross-cultural communication; Digital twin; Neuroaesthetics; NFT; Zhedong Tang Poetry Road

1 INTRODUCTION

In an era of deepening globalization, the international dissemination of cultural heritage has become a critical arena for soft power competition. The Zhedong Tang Poetry Road, a poetic crystallization of Chinese civilization, embodies the spiritual pursuits and natural philosophy of Tang Dynasty literati through its unique "landscape-poetic-heart" cultural genes[1]. However, as a high-context cultural artifact, its transmission to low-context audiences faces persistent challenges, including cultural discount and semiotic misinterpretation. Traditional methods—reliant on textual translation and static exhibitions—struggle to evoke emotional resonance or translate cultural value into economic benefits. Against this backdrop, the maturation of digital technologies such as digital twins, generative AI (AIGC), and the metaverse offers revolutionary tools to "sensibilize" heritage and bridge cross-contextual gaps. These innovations not only redefine cultural expression but also foster integrated "narrative-experience-consumption" ecosystems, prompting urgent inquiries into adaptive translation of cultural genes and sustainable value symbiosis.

Hall's high-/low-context theory elucidates the core challenge: Tang poetry's symbolic clusters (e.g., "solitary boat," "moonlit peaks") rely on shared historical and philosophical contexts, creating cognitive asymmetry for global audiences. A 2022 survey revealed that only 12% of Western respondents grasped Tang poetry's metaphors, while 68% engaged merely through "visual novelty." This exposes the limitations of unidirectional translation and static displays in conveying cultural depth or meeting demands for immersive interaction[2]. Digital twins, however, enable precise reconstruction of cultural-physical contexts. For instance, LiDAR-scanned replicas of Shaoxing's Jian Lake revive Li Bai's poetic landscapes, while AR transforms abstract symbols like "fishing fires at midnight" into multisensory installations. Neuroaesthetic research further validates that multimodal narratives activate θ -wave oscillations (4–8 Hz), directly enhancing cross-cultural empathy.

This study addresses three questions: (1) How can digital tools deconstruct Tang poetry's cultural genes for cross-media translation? (2) Through what neurocognitive mechanisms do immersive narratives enhance cultural identity and behavioral engagement? (3) How can tourism integration synchronize cultural dissemination with economic value creation? Theoretically, we propose a "Three-Phase Cultural Meme Translation Model" (image extraction, semiotic deconstruction and zontextual reconfiguration), redefining digital twins as "cognitive infrastructure" and integrating Appadurai's cultural landscapes with Lefevere's rewriting theory. Practically, strategies like "gradient narrative design," NFT-smart contract models, and DAO governance are tested through cases such as Ningbo's Dongqian Lake, where NFT-based monetization boosted international tourism revenue by 18%[3]. These findings advance scalable pathways for globalizing high-context heritage while supporting rural revitalization and cultural economy transitions.

2 THEORETICAL FRAMEWORK AND LITERATURE REVIEW

Research on the globalization of cultural heritage has long been constrained by the unidirectional perspectives of traditional cross-cultural communication theories and an overemphasis on technological instrumentalism. While existing studies have advanced our understanding of semiotic decoding and cultural adaptation mechanisms, they inadequately explain how digital technologies reshape cognitive schemas or systematically reveal the symbiotic logic between cultural identity and economic value in tourism-integrated contexts[4]. To address these gaps, this study critically integrates cross-cultural communication theories with cutting-edge digital humanities scholarship, proposing a "Cultural Gene Translation–Emotional Resonance–Value Loop" framework. This analytical model transcends the explanatory boundaries of traditional paradigms, offering new theoretical tools for the global dissemination of high-context cultural heritage.

2.1 Critical Reconstruction of Cross-Cultural Communication Theory

Traditional cross-cultural communication research, anchored in Hall's high-/low-context model, emphasizes the deterministic impact of cultural differences on information encoding and decoding. High-context cultures (e.g., China, Japan) rely on shared background knowledge and implicit symbols to convey meaning, whereas low-context cultures (e.g., the U.S., Germany) prioritize explicit, direct expression. While this theory explains Western audiences' difficulties in decoding Tang poetry's symbolic clusters (e.g., "a solitary boat in moonlight"), it suffers from three limitations: Over-simplification of cultural dynamism: It neglects technology's role in reconstructing semiotic systems[5]. For instance, digital twins transform abstract symbols like "solitary boat" into interactive 3D models via AR, converting high-context imagery into multisensory experiences that partially mitigate context dependency.

Underestimation of agency in cultural adaptation: Berry's acculturation theory outlines four strategies (integration, assimilation, separation, marginalization), but its assumptions remain rooted in physical migration contexts, failing to account for digital natives' virtual co-creation of cultural symbols (e.g., Genshin Impact players reinterpreting Liyue's cultural motifs). Lack of empirical validation for emotional resonance: Neuroaesthetic studies demonstrate that multimodal narratives activate theta waves (4–8 Hz) in the prefrontal cortex and limbic system, correlating strongly with cultural identity—a mechanism absent in traditional frameworks. To overcome these limitations, this study proposes a Three-Phase Cultural Meme Translation Model, redefining cross-cultural communication as a technologically mediated system of symbolic reproduction: Phase 1: Image Extraction: Core cultural symbols are identified through computational text analysis (e.g., BERT models). For the Zhedong Tang Poetry Road, lexical clusters like "moonlight," "verdant peaks," and "fishing fires" are recognized as carriers of "reclusion," "Zen philosophy," and "wandering" through vector clustering and co-occurrence networks. Phase 2: Semiotic Deconstruction: Digital twins convert abstract symbols into multimodal objects. For example, Li Bai's "moonlit lake shadows" at Shaoxing's Jian Lake are reconstructed as an AR-navigable space using LiDAR scans and dynamic lighting, with haptic feedback simulating river breezes (5–10 Hz) to stimulate somatosensory responses. Phase 3: Contextual Reconfiguration: Translated symbols are embedded into target cultural contexts. At the GLOW Light Festival in Eindhoven, "fishing fires at midnight" became an interactive light installation responsive to audience movement, fused with Nordic nautical symbols (e.g., Viking ships)[6], achieving cross-cultural semantic regeneration. This model positions technology as "translation infrastructure" bridging physical, digital, and cognitive spaces.

2.2 Digital Narrative and Tourism Integration: Theoretical Frontiers

Digital technologies not only alter cultural transmission forms but also reshape the value-generation logic of cultural tourism. Early tourism studies, dominated by Pine and Gilmore's "experience economy" theory, emphasized passive consumption (e.g., museum visits). However, digital twins and generative AI have catalyzed a paradigm shift toward participatory creation. For example, players of Black Myth: Wukong reinterpret mythological symbols through modding tools, fostering bidirectional cultural flows via social media. This "produsage" model demands redefined host-guest relationships, positioning tourists as co-creators of cultural meaning.

Neuroaesthetic research further quantifies digital narratives' efficacy[7]. fMRI experiments reveal that multimodal narratives (visual-auditory-tactile) increase activation in the prefrontal cortex and amygdala by 40% compared to text-only engagement. This provides physiological evidence for mitigating cultural discount: immersive experiences bypass linguistic barriers to directly trigger emotional resonance. At Ningbo's Dongqian Lake, an AR-based "Poetry Trail" game elevated participants' theta-wave intensity (4.3 μ V vs. 3.1 μ V for non-participants, $t = 4.78$, $p < 0.001$) and social media sharing rates to 87%.

Blockchain technologies, particularly NFTs and smart contracts, are redefining cultural economies. NFTs enable digital heritage derivatives (e.g., Wang Wei's Mountain Dwelling in Autumn dynamic scrolls) to acquire scarcity and investment value, while smart contracts automate revenue distribution among creators, local tourism funds, and communities. For instance, 30% of Shaoxing's Jian Lake NFT proceeds fund heritage preservation, establishing a "creation-dissemination-profit". Such "technology-institution" synergies mark a shift from resource-dependent to innovation-driven cultural tourism.

2.3 Theoretical Integration: the STEAM Synergy Model

Building on these critiques and integrations, this study proposes a STEAM Synergy Model (Storytelling–Technology–Emotion–Action–Monetization) to frame the symbiotic relationship between cultural dissemination and tourism

economies. The model comprises five interconnected dimensions: **Storytelling**: Nonlinear narratives centered on cultural genes[8]. For example, tourists on the Zhedong Tang Poetry Road AR tour choose between "Du Fu's Wanderings" or "Wang Wei's Zen Retreat," each offering distinct symbols and emotional experiences. **Technology**: Integrated use of digital twins, AIGC, and neural interfaces. Unreal Engine constructs high-fidelity scenes, AIGC generates multilingual content, and brain-computer interfaces dynamically adjust parameters (e.g., lighting, music) based on real-time emotional feedback[9]. **Emotion**: Neuroaesthetic mechanisms (e.g., theta-wave activation) that enhance cultural identity. **Action**: Behavioral engagement driven by gamification (e.g., virtual poetry collection tasks). **Monetization**: Blockchain-enabled value loops (e.g., NFT royalties, DAO governance). This model bridges digital humanities, cross-cultural communication, and tourism economics, offering a holistic framework for globalizing high-context heritage.

3 RESEARCH METHODOLOGY AND DESIGN

To systematically analyze the cross-cultural dissemination mechanisms of the Zhedong Tang Poetry Road, this study employs a mixed-methods approach, integrating qualitative tracking, quantitative analysis, and experimental validation. This framework ensures scientific rigor and ethical compliance across the entire research process—from data collection to processing and analysis—while uncovering the intrinsic logic of cultural translation and tourism symbiosis under digital empowerment.

3.1 Mixed-Methods Design

The research follows an explanatory sequential design, structured in three phases: **Qualitative hypothesis generation**: Digital ethnography captures naturalistic tourist behaviors. **Quantitative hypothesis testing**: Controlled experiments validate emotional and behavioral outcomes. **Triangulation**: Cross-validation synthesizes findings from multiple data sources.

Phase 1: Digital Ethnography. A research team embedded in the Zhedong Tang Poetry Road AR Guide System conducted six months of naturalistic observation on 320 international tourists at key sites like Shaoxing's Jian Lake and Ningbo's Dongqian Lake. Data collection utilized: Tobii Pro Glasses 3 eye-trackers (120Hz sampling rate) to record visual attention duration. High-precision GPS ($\pm 0.1\text{m}$ error) to map movement trajectories. Haptic feedback logs (e.g., virtual poetry scroll interaction frequency, mean = 2.3 clicks/minute). API-crawled player reviews (2,150 entries) from Poetry Journey (Steam Beta), analyzed via SnowNLP for sentiment polarity (positive/neutral/negative). Qualitative data were coded using NVivo 14, yielding three themes: semiotic comprehension barriers, technological interaction preferences, and emotional resonance thresholds.

Phase 2: Computational Text Analysis. A corpus of 1,000 Tang poems associated with Zhedong was compiled from the Complete Tang Poems digital database. Using a BERT multimodal model (batch size=32, epochs=50), semantic vectorization identified core cultural memes. Gephi 0.10.1 visualized co-occurrence networks, revealing clusters such as "moonlight–solitary boat–verdant peaks" (287 co-occurrences, weight=0.76), which were linked to "reclusive philosophy." TF-IDF algorithms further prioritized 20 high-frequency symbols (e.g., "fishing fires," "temple bells," "wandering") to guide digital twin design.

Phase 3: Controlled Experiment. A double-blind experiment recruited 150 Western participants (50% female, aged 18–45), randomly assigned to: Experimental group ($n=75$): Experienced Shaoxing's Jian Lake digital twin (AR poetry projections + haptic feedback). Control group ($n=75$): Received traditional text-based guides. Outcome measures included: PANAS affective scales (Watson et al., 1988) for subjective cultural identity. Emotiv EPOC X EEG recordings (θ -wave: 4–8Hz; α -wave: 8–12Hz). Data preprocessing involved Butterworth filtering (30Hz cutoff), followed by ANCOVA (controlling for age, gender, cultural familiarity). Results showed the experimental group's θ -wave activation (mean=4.5 μV) exceeded the control group (3.3 μV) by 36.4% ($F=12.67$, $p<0.001$), with cultural identity scores rising 41.2% ($t=5.89$, $p<0.001$).

3.2 Data Sources and Processing

Data integration and standardization leveraged Python 3.10, Tableau 2023.2, SPSS 28.0, and R 4.2.1: **Behavioral data**: Encrypted user IDs, eye-tracking heatmaps, GPS trajectories, and 6,450 filtered social media posts (from #TangPoetryRoad) analyzed via LDA topic modeling ("cultural cognition," "tech experience," "emotional expression"). **Text data**: 52,000-character corpus tokenized into 12,345 tokens, with Word2Vec 300D embeddings. GPT-4 multilingual narratives underwent BLEU scoring (mean=0.62) and manual validation. **Experimental data**: EEG power spectral density (PSD) and Likert scores normalized as Z-scores, excluding outliers ($\pm 3\sigma$).

3.3 Ethical and Validity Safeguards

The study adhered to the Declaration of Helsinki and was approved by Zhejiang University's Ethics Committee (ZU-IRB2023-0456). Participants provided informed consent, with anonymized data stored on encrypted servers accessible only to the research team. ISO 9001-certified devices (eye-trackers, EEG) ensured measurement validity.

3.4 Methodological Innovations

This mixed-methods design pioneers the integration of neuroscience and computational humanities in cultural heritage research. By combining digital ethnography with EEG, the study reveals both observable behaviors and neurocognitive mechanisms of cultural identity. BERT modeling and blockchain integration further enable quantifiable cultural gene analysis and economic translation. Limitations include high hardware costs (e.g., LiDAR scanners) and interdisciplinary coordination demands. Future studies could adopt open-source tools (Unity ML-Agents) and crowdsourcing (Amazon Mechanical Turk) to enhance replicability.

4 CASE ANALYSIS: CROSS- CULTURAL PRACTICES OF THE ZHEDONG TANG POETRY ROAD

The digital dissemination practices of the Zhedong Tang Poetry Road provide empirical validation for the feasibility and innovation of the theoretical framework proposed in this study. Focusing on two core sites—Shaoxing’s Jian Lake and Ningbo’s Dongqian Lake—this section examines how digital twin technology reconstructs cultural gene translation pathways, supported by neuroaesthetic experiments and blockchain economic models, to systematically demonstrate the dual efficacy of immersive narratives in enhancing cultural identity and fostering tourism symbiosis.

4.1 Digital Twin Scenarios: Physico-Digital Cultural Experiences

At Shaoxing’s Jian Lake, a pivotal node of the Zhedong Tang Poetry Road, the primary challenge lies in translating the abstract imagery of Li Bai’s *Dreaming of Tianmu Mountain*—such as “the lake moon illuminates my shadow, guiding me to Shanxi”—into perceptible cross-cultural experiences[10]. Utilizing a Leica BLK360 LiDAR scanner (0.6mm precision), the research team generated a 1.2TB point cloud dataset of the Tang-era water system. Through Unreal Engine 5.2’s Lumen global illumination system, dynamic scenes were rendered, while AR glasses projected poetic verses, and haptic vests simulated river breezes (5–10Hz frequency), enabling visitors to embody Li Bai’s creative context. Data revealed that international tourists spent an average of 14.3 minutes in this augmented environment—a 120% increase compared to traditional exhibitions (6.5 minutes)—with 73% reporting “intuitive access to the poet’s mindset.” EEG monitoring further confirmed a 35% rise in θ -wave activation ($4.7\mu\text{V}$ vs. $3.5\mu\text{V}$ for text-only engagement, $t = 4.12$, $p < 0.001$), underscoring the role of multimodal narratives in bridging high-context cognitive barriers.

4.2 Cultural Gene Translation: from Symbols to Behavioral Engagement

Guided by the BERT-derived “symbol priority matrix”, 20 core cultural genes—such as “fishing fires at midnight” and “solitary return to green peaks”—were selected for translation. Taking Zhang Ji’s *Night Mooring at Maple Bridge* as an example, the translation process involved: Image Extraction: Identifying the emotional core of “solitude” and “wandering” via word vector clustering[11]. Semiotic Deconstruction: Converting “fishing fires” into an interactive light installation responsive to visitor proximity (0–1000 lumen brightness). Contextual Reconfiguration: Embedding the symbol into the GLOW Light Festival (Eindhoven) alongside Nordic maritime motifs (e.g., Viking ships). Neuroaesthetic trials revealed a 37% increase in θ -wave intensity ($4.7\mu\text{V}$) among Western participants, with PANAS scores for “resonance with solitude” rising significantly ($M = 4.2/5$ vs. $3.1/5$, $t = 5.67$, $p < 0.001$). These results demonstrate that technologically mediated symbol reconstruction can transcend cultural boundaries while expanding the adaptability of cultural genes through contextual hybridization.

4.3 Tourism Synergy: Dual Circulation of Cultural and Economic Value

At Ningbo’s Dongqian Lake, the economic potential of the STEAM model’s “monetization layer” was tested through NFT-based cultural IP activation. A limited-edition NFT collection of Wang Changling’s *Lotus-Picking Song* (1,000 units) was launched on OpenSea, with smart contracts allocating 30% of sales to local tourism funds. By June 2023, secondary market premiums reached 35%, and 12% of NFT holders participated in offline poetry festivals, forming a “virtual collection–physical engagement–cultural dissemination”. Economically, international tourist spending rose by 18% (from ¥520 to ¥614 per capita), while derivative revenues grew from 8% to 15% of total income. Social media analytics revealed over 5.2 million exposures for TangPoetryRoad, with 87% of AR task participants sharing content voluntarily, catalyzing a viral “dissemination–consumption–redissemination” cycle[12]. This model not only enhances cultural IP value but also incentivizes global co-creation through DAO governance—for instance, open-source algorithms for poetic symbol translation have attracted contributions from developers in 23 countries.

4.4 Constraints on Cross-Cultural Efficacy

Despite technological advancements, two critical constraints emerged: Technological Dependency: 7% of Western tourists reported AR-induced motion sickness (SSQ scores ≥ 15), while younger audiences prioritized technological novelty (LiDAR interest: $4.5/5$) over cultural depth (“Zen landscape” comprehension: $2.8/5$). Cultural Oversimplification: AIGC-generated summaries (e.g., reducing “unity of heaven and humanity” to “harmony with nature”) improved readability (BLEU=0.62) but diluted philosophical nuance. To address these, a “gradient narrative” strategy was implemented: offering academic annotations for enthusiasts and gamified AR tasks (e.g., “Poetry Trail”).

for casual visitors[13]. Testing showed gradient narratives significantly improved cultural comprehension ($M = 4.1/5$ vs. $3.3/5$, $t = 3.89$, $p < 0.001$) and reduced motion sickness to 3%.

5 CONCLUSIONS AND FUTURE DIRECTIONS

The rapid evolution of digital technologies has fundamentally reshaped paradigms for cultural heritage dissemination. This study, centered on the Zhedong Tang Poetry Road, systematically elucidates the mechanisms of cross-contextual cultural gene translation, the neuroaesthetic foundations of emotional resonance, and the techno-economic logic of tourism value symbiosis through interdisciplinary theoretical construction and mixed-methods validation. Findings demonstrate that digital twin technology, via dynamic mapping across physical, digital, and cognitive spaces, effectively mitigates cultural discount while triggering "cultural value-added" effects[14]. Furthermore, the synergistic integration of immersive narratives and blockchain economies offers innovative pathways for globalizing high-context heritage and advancing rural sustainability. These contributions expand the technological dimensions of cross-cultural communication theory and provide methodological insights for digital humanities and tourism economics.

5.1 Key Findings

The study confirms that digital twins' efficacy in translating high-context cultural genes stems from their capacity to reconstruct symbolic systems multimodally. At Shaoxing's Jian Lake, LiDAR-scanned 3D models and AR-projected verses transformed Li Bai's abstract imagery into interactive experiences, while haptic feedback simulating river breezes (5–10Hz) activated visitors' somatosensory cognition, enabling embodied engagement with poetic contexts. Neuroaesthetic trials quantified this process: experimental groups exhibited 35% stronger θ -wave activation ($4.7\mu V$ vs. $3.5\mu V$, $t = 5.89$, $p < 0.001$) and 41.2% higher cultural identity scores, proving that immersive narratives bypass linguistic barriers to enhance cross-cultural empathy. Economically, Ningbo's NFT-driven model achieved an 18% increase in international tourist spending and a 15% rise in derivative revenues through blockchain-enabled value loops, demonstrating the viability of "cultural dissemination–economic growth–heritage preservation" symbiosis.

5.2 Theoretical Contributions

This research advances scholarship in three ways: **Cultural Gene Translation Model:** The proposed three-phase model (image extraction → semiotic deconstruction → contextual reconfiguration) repositions technology as "translation infrastructure" bridging physical, digital, and cognitive spaces, transcending the static perspectives of Hall's and Berry's frameworks. **Neuroaesthetic Validation:** By quantifying θ -wave activation (+35%) as a biomarker of cultural identity, the study provides neuroscientific evidence for cultural discount theory, challenging Appadurai's assumption of technology as a passive cultural vector[15]. **STEAM Synergy Framework:** The narrative-technology-emotion-action-monetization model reveals five-dimensional interdependencies between digital storytelling and tourism economies, offering a cross-disciplinary lens for analyzing techno-cultural ecosystems.

5.3 Practical Implications

Three actionable strategies emerge: **Gradient Narratives:** Deploy AIGC to generate tiered content—academic annotations for enthusiasts and gamified AR tasks (e.g., "Poetry Trail") for casual visitors. Trials showed gradient designs improved cultural comprehension ($M = 4.1/5$ vs. $3.3/5$) and reduced AR-induced motion sickness to 3%. **Wearable Poetic Interfaces:** Develop flexible e-skin sensors to simulate natural sensations described in Tang poetry (e.g., humidity for "drizzle dampening robes"), enhancing accessibility for children and elderly audiences. **DAO-Driven Co-Creation:** Leverage blockchain to incentivize global users in building cultural gene repositories. For instance, open-source algorithms for Tang poetry translation have received contributions from developers in 23 countries, fostering decentralized innovation.

5.4 Limitations and Future Research

Three limitations warrant attention: **Geographic Bias:** Samples focused on Western audiences; efficacy in African, Latin American, and Islamic contexts remains untested. **Cost Barriers:** High expenses of LiDAR scanners ($>¥300,000$) may hinder adoption in low-income regions. **Ethical Risks:** AIGC's oversimplification of cultural symbols (e.g., reducing "unity of heaven and humanity" to "harmony with nature") risks diluting philosophical depth. **Future directions include:** Developing metaverse-native narrative engines that adapt to users' cultural schemas (e.g., generating "hero's journey" or "mono no aware" storylines via GPT-4 and real-time emotion tracking). Expanding cross-cultural neuroaesthetic comparisons to quantify how symbols like "Zen landscapes" resonate within Sufi or African philosophical frameworks. Establishing Cultural Fidelity Indices (CFI) to evaluate AIGC outputs, requiring expert validation and BLEU scoring to prevent cultural distortion. Advocating policy innovations, such as national "Digital Twin Heritage Funds" and NFT copyright regulations, to balance technological empowerment with ethical stewardship.

5.5 Concluding Remarks

The digital humanities era has inaugurated a new paradigm of "translation-resonance-symbiosis" for cultural heritage globalization. The Zhedong Tang Poetry Road exemplifies how technology can dismantle high-context barriers while embedding emotional and economic value into cultural transmission. Yet, as technologies like neural interfaces and blockchain accelerate, we must vigilantly balance innovation with cultural fidelity. The future of heritage dissemination lies in "intelligent mediation" and "emotional connectivity," but its soul remains rooted in preserving the humanistic essence that technologies strive to translate. This interplay of technological rationality and cultural authenticity will define the next frontier for scholars and practitioners alike.

COMPETING INTERESTS

The authors have no relevant financial or non-financial interests to disclose.

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