

Immersion and Empathy: Exploring Communication and Identity Pathways of Intangible Cultural Heritage Creative Products in the Context of Digital Narrative

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Abstract

Driven by digital technologies such as AIGC, virtual reality (VR) and metaverse, digital narrative has become a core pathway for the inheritance, innovation and communication of intangible cultural heritage (ICH) creative products. However, against the backdrop of the experience economy and pan-entertainment, many ICH-themed digital projects suffer from superficial content, homogenized expression, and short-lived online popularity, failing to achieve deep emotional empathy and sustained cultural identity among audiences. Drawing on narratology, Peircean semiotics, symbolic interactionism and flow theory, this paper constructs a multi-level analytical framework for digital narrative-driven ICH communication. It first elaborates how digital narrative builds immersive narrative fields through three pathways: symbolic translation, spatiotemporal reconstruction and subject empowerment. It further unpacks the triggering mechanism of emotional empathy from the perspective of narrative communication, consisting of mediated narrative presence, immersive narrative tasks and multi-dimensional interactive narrative. The findings indicate that digital narrative breaks the one-way linear mode of traditional ICH communication, promotes the transformation of audiences from passive recipients to cultural co-creators, and realizes progressive cultural identity through the layered process of cognitive integration, emotional projection and cultural understanding. This study reveals the internal mechanism of digital narrative in ICH communication, and provides practical references for balancing cultural authenticity and innovative digital expression in ICH creative practices.

Keywords: Digital Narrative; Intangible Cultural Heritage (ICH); Cultural and Creative Products; Immersion; Empathy; Cultural Identity

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1. Introduction

China is endowed with abundant intangible cultural heritage resources that carry the essence of fine traditional Chinese culture. In recent years, the rapid development of artificial intelligence, VR, AR and other digital technologies has given rise to a wave of digital transformation of ICH creative products. Digital narrative, as a new narrative form integrating multi-media interaction and virtual simulation, has gradually become an important approach to ICH inheritance and communication. It breaks the spatial-temporal limitations of traditional offline communication, and realizes the integration of virtual and reality with diversified, popularized and fragmented information delivery.

Nevertheless, the combination of digital narrative and ICH creative products still faces prominent practical dilemmas. A large number of cultural tourism promotion projects are characterized by superficial content, low quality and homogeneous forms, and many ICH IPs only

gain transient online popularity rather than sustained public attention. Even with technological empowerment, it is still difficult to achieve genuine emotional empathy between ICH creative products and audiences, and to deliver authentic immersive experiences that enhance user stickiness.

Against this background, this study addresses three core questions: (1) How does digital narrative construct immersive fields for ICH communication? (2) What is the internal mechanism by which digital narrative triggers emotional empathy and promotes cultural identity? (3) How to balance cultural authenticity and innovative expression in digital narrative practices? This paper systematically sorts out relevant theoretical foundations, constructs a theoretical framework of “immersive field construction – empathy triggering mechanism – identity formation”, and verifies the framework with typical cases, so as to provide theoretical support and practical guidance for the digital communication of ICH creative products.

2. Literature Review

2.1 Digital Narrative and ICH Cultural and Creative Products

Narratology was first proposed by Tzvetan Todorov, a prominent French structuralist semiotician, in 1969. It is an academic discipline developed on the basis of narrative practices to explore the nature, forms and functions of narrative¹. In the digital age, scholars have found that new media technologies have greatly diversified narrative methods and expressive means, among which interactivity is the most prominent feature². Interactive narrative refers to narrative expression realized through human-computer interaction technologies: users interact with information visualization through narrative mechanisms, and thus obtain immersive experiences of entering virtual story worlds³.

With the advancement of digital technologies, numerous projects have applied VR, AIGC and metaverse technologies to ICH creative products, forming new characteristics of diversified, popularized and fragmented information transmission. For example, as a national-level intangible cultural heritage, Suzhou embroidery faces dilemmas such as intergenerational inheritance discontinuity, low marketization and single communication channels. Scholars have proposed to build an immersive experience platform through VR and other digital technologies, realize digital preservation and innovative exhibition of Suzhou embroidery craftsmanship, and promote its transformation into cultural IP⁴. Meanwhile, research based on metaverse technology has promoted the transformation of red-themed creative product communication from traditional “embodied on-site experience” to “digital disembedding”, and constructed a future-oriented and systematic communication framework⁵. Accordingly, constructing digital communication systems based on interactive narrative theory has gradually become a multi-dimensional continuation strategy for mature ICH inheritance.

2.2 The Emotional Empathy Crisis of ICH Creative Products

However, the integration of digital narrative and ICH creative products still faces severe challenges. Many cultural tourism promotion contents are superficial and low-quality, and ICH IPs struggle to sustain long-term popularity beyond transient internet fame⁶. Under the background of the “pan-entertainment” era, the communication of creative products also suffers from homogenization, single form and insufficient communication power⁷. These phenomena indicate that technological empowerment alone is far from enough to realize genuine empathy between ICH creative products and audiences, or to provide truly immersive experiences. It is difficult to enhance consumer stickiness and make ICH creative products receive long-term public attention instead of short-term viral popularity.

2.3 Research Gaps and Objectives

Existing studies have accumulated rich achievements in digital technology application, emotional design and communication modes of ICH creative products, but there are still obvious research gaps.

First, most studies focus on technological application or single links such as design and marketing, and lack in-depth exploration of the internal mechanism between digital narrative and cultural identity formation. Second, research on the empathy triggering mechanism of digital narrative is not thorough enough. Existing achievements mostly stay at theoretical deduction or single case analysis, and lack empirical verification integrated with multidisciplinary theories⁸. Third, the specific path for digital narrative to balance cultural authenticity and innovative expression is still unclear, and research on risk prevention of cultural distortion caused by excessive technologization or entertainmentization needs to be strengthened⁷.

To fill these gaps, this study integrates narratology, semiotics, symbolic interactionism and flow theory, and systematically explores the immersive field construction path and empathy triggering mechanism of ICH digital narrative.

3. Constructing Immersive Fields: Scenario-Oriented Pathways for ICH Digital Narrative

In the context of deep integration between digital technologies and ICH creative products, digital narrative undertakes the historical mission of constructing stories and transmitting culture. In the process of integrating ICH elements with digital technologies, it builds immersive fields based on digital narrative through three interrelated dimensions: symbolic translation, spatiotemporal reconstruction and subject empowerment.

3.1 Symbolic Translation: Intelligent Encoding and Contemporary Activation of Cultural Genes

In manuscripts such as *Foundations of Semiotics* published in the early 20th century, American philosopher Charles Sanders Peirce put forward the proposition that “all human thought is signs”, and thus formed the general semiotic theory. Peircean semiotics is a sign system centered on “triadic relations”, which breaks the static structure of traditional dualistic sign theory. It explains the process by which signs generate meaning for human beings through the dynamic connection among sign, object and interpretant⁹.

In the communication of contemporary ICH, each form of intangible heritage has its irreplaceable iconic symbols, whether Peking Opera facial makeup or Dragon Boat Festival dragon boats, which have become the communication carriers of ICH creative products. The spiritual connotation carried by cultural symbols is the “object” in Peirce’s triadic relation. The process of guiding the public from “sign” to “object” itself constitutes the “interpretant”. Digital media represented by AIGC provide the public with a “digital narrative mode” different from the traditional narrative mode based on this logic. Through digital technologies, the connotation of visual symbols is intelligently encoded, and the generation logic of traditional symbols is parsed through algorithmic tools and converted into an interactive digital pattern library, realizing the translation from entity to data and from static to interactive.

In practical application, the participation of digital technologies not only helps realize the dynamic reproduction and multi-dimensional interpretation of ICH symbols, but also endows them with new semantic growth points in virtual space. By integrating multi-modal symbols such as text, image, sound and interactive actions, digital narrative takes digital technology as its carrier, breaks the linear time limit of traditional narrative, strengthens the three-dimensional presentation of cultural symbols, and endows users with narrative subjectivity in interaction.

Current symbolic translation mainly falls into two categories:

- Visual symbol translation: It focuses on patterns, colors, shapes and other elements for “semantic” presentation. The “Butterfly Mother” motif in Miao embroidery is a typical case of visual symbol digitization. The research team uses AIGC technology to modularize

different pattern structures of butterfly wings, with each module corresponding to different cultural semantics. The system interprets the patterns according to users' drag-and-drop combinations, realizing the simultaneous transmission of visual symbols and cultural cognition.

- Sonic symbol translation: Sonic symbols often face greater challenges than visual symbols, requiring cultural accuracy in the digitization of traditional music and ballads. The digital project of Xi'an drum music gongche notation is representative in this regard. Through spectrum analysis technology, the team allows users to personally experience the cultural charm of traditional musical instruments in virtual performance scenarios.

3.2 Spatiotemporal Reconstruction: Recreating Narrative Fields Beyond Physical Boundaries

In Peircean semiotics, Peirce classified signs into three types based on the relationship between signs and objects: icons, indexes and symbols, which correspond to three internal processes of linking signs and their meanings: resemblance, causal association and socio-cultural consensus respectively. In traditional ICH communication, communicators or communication forms usually can only choose one type of sign to realize the connection between the audience and the internal meaning of ICH culture. However, in digital narrative, digital technologies transform ICH symbols into interactive and perceivable digital forms, allowing all three types of signs to convey the spiritual connotation of ICH to audiences through different transformation paths. In the process of experiencing ICH culture, audiences become users of digital technologies and involuntarily enter the narrative field built by digital technologies.

The core characteristics of digital narrative are interactivity, immersion and user initiative¹⁰. In the construction of digital narrative fields, the most typical example is VR scene simulation. In VR worlds, digital technologies realize "temporal compression" and "recentralization" through 3D modeling and multi-sensory simulation, solving the problems of geographical restrictions and historical discontinuity in traditional ICH communication. This non-linear temporal structure and granular historical presentation also greatly expand the spatial boundaries of ICH communication. Such immersive experiences promote practical activities that form deep cognitive processes for creators, and deliver authentic experiential feelings to audiences through design.

In the Dunhuang mural digitization project, for example, users can freely switch between mural creation scenes of different dynasties such as the Northern Wei, Tang and Song dynasties through a timeline, and even participate in the mural painting process as an "apprentice". The flow of virtual time and space helps users establish a complete understanding of the historical evolution of intangible cultural heritage.

3.3 Subject Empowerment: Identity Transition from Narrative Audience to Cultural Co-creator

Whether lectures or exhibitions, traditional ICH communication mostly follows the one-way linear mode of output. Audiences have long been in the passive position of cultural reception. Over time, this communication mode has created an insurmountable "interpretation gap" between ICH culture and public cognition, which seriously restricts the formation of cultural identity. Digital narrative reconstructs the power relationship in ICH communication through digital technologies, shifting audiences from passive onlookers to active explorers, with the core logic of cultural empowerment through interactive mechanisms.

In the Palace Museum's Digital Cultural Relic Restorer project, users can choose multiple virtual identities such as Qing Dynasty court painters or ancient ceramic restorers, and participate in tasks such as repairing peeling pigments in A Thousand Li of Rivers and Mountains or restoring crackles of Song Dynasty celadon. During the restoration process, different operation steps trigger different historical narrative feedback. This deep coupling between operational behavior and cultural cognition strengthens users' in-depth understanding of ICH culture. It can be seen that digital technologies can also generate rich emotional experiences when narrating ritual-oriented

traditional cultural objects, and have the effect of arousing spontaneous emotional effects in memory behaviors¹¹.

George Herbert Mead's symbolic interactionism holds that individual social behavior and cultural identity often originate from the interactive interpretation and creation of symbolic meanings. In the digital narrative of ICH, users participate in the interpretation and re-creation of symbols through motion interaction, and realize cultural dialogue through interaction. This dialogue helps users integrate their own life feelings and experiences into the in-depth interpretation of symbols, enabling ICH symbols to cross time into contemporary contexts and establish individual emotional bonds on the basis of shared cultural resonance. In this digital narrative field, digital technology is no longer a simple tool, but a core element of reconstructing narrative. It helps users further confirm their identity as participants in cultural inheritance, and injects sustainable endogenous momentum into ICH inheritance through public life experience and emotional wisdom.

4. The Triggering Mechanism of Emotional Empathy: Flow Antecedents from the Perspective of Narrative Communication

From the perspective of narrative communication, the formation of emotional empathy and cultural identity is a progressive process driven by flow experience. This process is jointly shaped by three interrelated dimensions: mediated narrative presence, immersive narrative tasks and multi-dimensional interactive narrative.

4.1 Mediated Narrative Presence: Interactive Tools for Narrative Space Construction

The core of mediated narrative presence is that interactive tools, based on interactive narrative theory, transform specific cultural elements of ICH creative products into perceivable and intervenable concrete narrative scenarios through multi-modal presentation, cross-media collaboration and user agency, thereby triggering user emotional resonance and gradually deepening into emotional identity and cultural identity⁴. From the perspective of interactive narrative theory, tools rely on the diversity, vividness and interactivity of media, endow users with narrative participation rights through spatial presence and behavioral presence, link real things with specific cultural symbols, aggregate multi-sensory experience information such as vision, hearing and touch, and build 2D and 3D explorable virtual spaces, making it easier for users to obtain flow experience.

VR devices are widely used in exhibition halls, ICH experience museums and other cultural spaces. They construct embodied cognitive situations through immersive visual and interactive design, enabling users to realize the on-site perception of traditional crafts in virtual environments. The VR equipment of Suzhou Pingtan Digital Immersion Theater, based on historical materials of Suzhou teahouses in the late Qing and early Republican periods, constructs scenes including grey brick and tile buildings, virtual tea guests sitting around, and virtual Pingtan artists holding sanxian. It even restores details such as steam from tea and texture of wooden tables and chairs, so as to create a sense of reality and enhance user acceptance. At the same time, the equipment is equipped with motion capture technology, allowing users to order classic Pingtan repertoires such as Pearl Pagoda and Jade Dragonfly through gestures, inquire about the historical stories behind the repertoires through voice interaction, or even participate in simple Pingtan accompaniment¹. Compared with static text and image displays in physical spaces, interactive mechanisms such as motion feedback and perspective switching of VR tools stimulate users' willingness to explore, and promote them to complete the meaning decoding of cultural symbols during operation, thus providing cognitive basis and psychological preparation for the generation of emotional empathy⁶.

Websites and APPs, as lightweight interactive tools, can efficiently integrate multi-modal material libraries with great flexibility in time and space. Physical tools and digital tools complement each other to build a grander, more complete and richer narrative experience for

audiences. When users use digital physical creative products out of their own initiative, the tangible physical feeling, fascinating interactive mechanism and profound cultural connotation all give users abundant positive feedback.

The Seventh Archives: The Damask Silk Mystery, China's first archival puzzle game co-developed by Suzhou China Silk Archives and Museum Puzzle Master, integrates archival knowledge into immersive books, H5 mini-games and offline real-scene puzzle solving, promoting Suzhou China Silk Archives in the form of archival gamification⁶. The physical part includes replica samples of damask patterns, maps of Shanghai Concession in the Republic of China, wooden seals and other "physically perceivable" props that carry basic narrative clues. The digital part extends the narrative dimension and provides instant learning feedback through supporting H5 pages. The creative product guides users to internalize multi-sensory information into cognition unconsciously in the process of enjoying pleasant sensory experiences, and form cultural subconsciousness.

4.2 Immersive Narrative Tasks: Activating Concentration Through Challenging Assignments

When task difficulty is slightly higher than the user's current skill threshold but does not exceed their ability boundary, the individual will enter a state of high concentration, which drives cognitive resources to aggregate towards the current activity. Under the framework of Interactive Digital Narrative (IDN) theory, the "agency" and "narrative transportation" mechanisms proposed by Janet Murray further strengthen this process: users gain narrative dominance through task interaction, and the activation of concentration promotes their transformation from passive recipients to narrative co-creators. Through narrative transportation, cognitive focus is transformed into in-depth understanding of cultural content, and finally triggers emotional empathy. This transformation is not only reflected at the level of individual exploration, but also extends to the collective collaborative construction of ICH cultural knowledge⁴.

Accordingly, narrative tasks are not mere entertainment links, but an IDN "challenge-skill matching system" centered on the decoding of cultural codes. The charm of digital narrative lies in constructing an explorable narrative possible world for users, while narrative tasks play an intermediary role between users and this world.

The Palace Mystery: Ruyi Linglang Codex, an interactive game-reading work launched by the Palace Museum, takes "searching for hidden treasures of the Forbidden City" as its core narrative arc. Combined with the multi-sequence narrative characteristics of IDN, it realizes dynamic adaptation of skills and challenges through "narrative gradient" design. Basic tasks are dominated by explicit narrative guidance. Simple levels such as deciphering secret letters and matching compass directions provide instant feedback and reduce cognitive load. Users can complete them without profound historical knowledge, avoiding the negative state of anxiety caused by insufficient skills. Challenging levels embedded with deep ICH cultural codes, such as deducing routes from the architectural layout of the Forbidden City and verifying conjectures with Qing Dynasty archives, constitute high-level tasks. Users need to actively associate implicit cultural content such as the architectural regulations of the Forbidden City and court life of the Qing Dynasty, and explore relevant craft logic. At this time, task challenges form a dynamic match with users' historical knowledge reserve and logical reasoning ability, promoting the flow state to a higher level. In the process of completing tasks, the "craft steps – historical context – symbolic implication" of ICH culture are decomposed into perceivable and operable narrative units, which continuously stimulate users' concentration and complete the transformation from fragmented cultural information reception to immersive cultural scenario understanding⁶.

4.3 Multi-dimensional Interactive Narrative: Cognitive Restructuring and Identity Construction

From the perspective of cognitive restructuring mechanism, the multi-dimensionality of interactive digital narrative is first reflected in the interaction and synergy between public cognitive level, the operational difficulty of interactive tools and the challenge level of narrative

tasks. Users' personality traits and personal experience shape their cognitive level. Users' perceived innovativeness and sense of control over interactive tools affect their recognition and acceptance of digital creative products. Users' perception of challenging narrative tasks with clear goals and timely feedback brings high participation and enhances product loyalty. At the same time, when users feel participation and control over tasks in interaction, they will enter a state of high concentration, which strengthens the depth of information processing and avoids superficial cognition¹². Therefore, to help users build a systematic cognitive framework, it is necessary to guide users to actively integrate fragmented cultural elements and form scenario-based memory in the interaction with interactive tools and challenging tasks.

Taking the Dunhuang Poem Scarf platform developed by the Dunhuang Academy as an example, when users select patterns and combine designs, the platform actively associates the aesthetic characteristics and historical connotations of Dunhuang patterns for users through cultural connotation annotations and historical context prompts. At this time, users enter a state of concentration due to the sense of control brought by independent control of design direction, and will actively look up the cultural implications of different patterns. They learn originally fragmented cultural cognitive points imperceptibly, and integrate them into a systematic cognition of "Dunhuang art = religious belief + aesthetic expression + historical context" in the situation created by narrative tasks.

Further analysis shows that the deep value of multi-dimensional interactive narrative lies in the interaction between users' mind and cultural artistic conception, and promotes the transformation from cognitive restructuring to identity formation through emotional projection and meaning construction. Users can influence the narrative direction through independent choices, and this sense of agency will promote them to project their own emotions onto cultural symbols and form emotional bonds¹³. The immersion and pleasure brought by multi-media integration will strengthen this emotional bond, elevating temporary emotional resonance into stable emotional identity.

The AR virtual try-on and VR craft interaction system of Miao silver ornaments practices this view. When users try on silver ornaments through AR, they can independently choose styles and patterns, and the system simultaneously displays the corresponding Miao legend stories to create a narrative atmosphere. In the VR-simulated forging process, users experience the traditional craft steps of "hammering silver material first, then engraving totems", making them fully focus on craft details. The pleasure and sense of achievement in the production process are bound with the craftsmanship spirit of Miao silver ornament culture, and then users' appreciation of traditional crafts is projected onto the ethnic belief symbols carried by Miao silver ornaments, forming emotional identity¹⁴.

From the perspective of the complete path of identity construction, multi-dimensional interactive narrative ultimately realizes the landing of cultural identity through the progressive progression of "cognitive integration – emotional projection – cultural understanding". At the cognitive level, multi-media interaction helps users integrate fragmented ICH cultural information and form systematic cognition. At the emotional level, the pleasure of immersive experience and the user agency mechanism of interactive narrative promote emotional projection and strengthen emotional identity. At the cultural level, users deepen their understanding of the spiritual core of ICH culture through participating in narrative co-creation, and upgrade emotional identity to cultural identity¹⁵. The multi-dimensionality of interactive narrative narrows the distance between culture and users, making cultural identity no longer an abstract value advocacy, but an internal cognition and emotional choice formed by users in active participation.

5. Discussion and Practical Implications

5.1 Theoretical Contributions

This study expands the application scope of digital narrative theory in the field of intangible cultural heritage, and reveals the internal mechanism of digital narrative promoting cultural identity through immersion and empathy. Different from previous studies that mostly focus on single technology application or case description, this study constructs a complete analytical framework from immersive field construction to empathy triggering and then to identity formation, and integrates Peircean semiotics, symbolic interactionism and flow theory, which provides a multi-disciplinary theoretical perspective for related research.

In addition, this study responds to the academic debate on the balance between cultural authenticity and digital innovation. It points out that digital narrative is not a simple technical superposition, but a symbolic translation and cultural reconstruction based on respect for the cultural connotation of ICH. The empowerment of users as cultural co-creators is the key to realizing the contemporary activation of ICH while maintaining its cultural essence.

5.2 Practical Implications

For the practice of ICH digital creative products, this study puts forward the following implications:

1. Attach importance to the accuracy of symbolic translation. In the digitization process, the cultural connotation of ICH symbols should be accurately decoded first, and then multi-modal digital coding should be carried out, so as to avoid cultural distortion caused by excessive entertainment or technical display.
2. Build immersive narrative fields with spatiotemporal reconstruction. Make full use of VR, AR and other technologies to break the limitations of time and space, and create multi-sensory and interactive narrative scenarios, so as to enhance users' sense of presence and participation.
3. Design gradient narrative tasks. Set task difficulty matching users' skill levels, realize the dynamic balance between challenge and ability, and guide users to complete cultural cognition and emotional experience in the flow state.
4. Empower users as cultural co-creators. Give full play to users' subjectivity, encourage them to participate in narrative creation and cultural interpretation, and inject endogenous power into the inheritance of ICH.

6. Conclusion

This paper takes ICH creative products as the research object, explores the communication and identity pathways driven by digital narrative, and draws the following conclusions. First, digital narrative constructs immersive narrative fields for ICH through three interrelated paths: symbolic translation, spatiotemporal reconstruction and subject empowerment, which break the linear and one-way limitations of traditional communication. Second, the formation of emotional empathy is a progressive process driven by flow experience, which is jointly promoted by mediated narrative presence, immersive narrative tasks and multi-dimensional interactive narrative. Third, digital narrative promotes the transformation of audiences from passive recipients to cultural co-creators, and finally realizes cultural identity through the layered mechanism of cognitive integration, emotional projection and cultural understanding.

This study still has some limitations. The research is mainly based on theoretical analysis and typical case studies, and lacks large-sample empirical verification. Future research can further conduct quantitative research on the influence mechanism of digital narrative on cultural identity through questionnaires and experiments, and explore the differentiated effects of different interactive forms on different groups.

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