

Understanding the Digital Interactive Design of Henan Museum through the Concept of “De Yi Wang Xiang”

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Abstract:

This study focuses on the digital interactive design of Henan Museum, exploring the significance and practical applications of integrating the concept of “De Yi Wang Xiang.” Digital interactive design has revolutionized museum development, while the principle of “De Yi Wang Xiang” offers a fresh perspective. Although digital interactive design is well-established in international museums and rapidly advancing domestically, research on its application remains limited. Henan Museum employs diverse exhibition formats utilizing technologies such as VR and AR, along with online exhibitions, to enhance visitor experiences and promote cultural dissemination; however, there is room for improvement in deepening cultural interpretation. Innovative interactive experiences, such as the “Let’s Archaeology Together” initiative, have significantly enhanced engagement and learning outcomes. Visitor satisfaction surveys confirm the remarkable effectiveness of digital interactions in attracting younger audiences and strengthening brand building. The principle of “De Yi Wang Xiang” is manifested in artifact displays through 3D models and virtual relics, while interactive experiences employ participatory elements and multisensory engagement to create immersive environments. Therefore, efforts should focus on refining cultural content analysis, optimizing user experience design, fostering technology-culture integration, enhancing interdisciplinary collaboration and evaluation mechanisms, thereby advancing sustainable development of museum digital interaction design and setting exemplary models for cultural preservation and innovation.

Keywords:

Henan Museum, Digital Interactive Design, De Yi Wang Xiang, Cultural Heritage Preservation

1. Introduction

In today’s digital age, the rapid advancement of information technology has profoundly impacted various fields, and the museum sector is no exception. Digital interactive design has become a key driving force in the development of contemporary museums, offering unprecedented opportunities for transformation. For instance, the British Museum employs VR technology to recreate historical scenes, allowing visitors to experience the charm of ancient civilizations firsthand; the Louvre

Museum utilizes AR technology to provide rich information about artifacts, enhancing visitor interaction with these relics. These practices demonstrate that the widespread application of digital technologies such as virtual reality (VR), augmented reality (AR), and artificial intelligence (AI) in museums transcends temporal and spatial limitations, enabling visitors to go beyond the constraints of physical exhibitions and delve deeper into the historical narratives and cultural significance behind artifacts. This significantly enhances visitor engagement and experience, transforming museum visits from passive observation into active exploration and learning.

The concept of “yi di wang xiang” (meaning “to grasp the essence while forgetting the form”), originating from ancient Chinese philosophy and aesthetics, emphasizes transcending external forms in artistic creation and appreciation to reach intrinsic spirit and artistic conception. Its profound impact on the arts provides a unique theoretical perspective and innovative inspiration for contemporary museum digital interactive design. Incorporating this concept into digital interactive design helps designers overcome technical and formal constraints, focusing more on visitors’ emotional experiences and spiritual needs. Through creative and profound designs, it guides visitors to comprehend the deep cultural meanings embedded in artifacts during interactions, achieving an organic integration of cultural preservation and emotional resonance.

As a vital showcase of Central Plains culture, the Henan Museum boasts abundant cultural relics and profound historical heritage. A thorough study of its digital interactive design not only provides theoretical support and practical guidance for its own innovative development, enabling it to better highlight the charm and characteristics of Central Plains culture amidst the digital revolution, but also offers valuable insights for the digital transformation of other museums across China, thereby promoting the overall advancement and development of China's museum sector. As Yang Yang points out in “New Explorations into Museum Cultural Communication Pathways in the Context of Converged Media: A Case Study of the Henan Museum,” Museums should prioritize the development of integrated media platforms and explore innovative communication approaches, with the Henan Museum's practices serving as a significant model in this regard.

2. The Connotation and Origins of the Concept “De Yi Wang Xiang”

2.1. The philosophical original meaning of “deyi wangxiang” (to become so pleased with one's own achievements that one forgets the fundamental reality).

The philosophical concept of “understanding the essence while forgetting the image” was proposed by Wang Bi during the Three Kingdoms period. In his interpretation, the three elements— “word,” “image,” and “meaning” —form a hierarchical yet interconnected relationship. He stated: “The image serves as the vehicle for expressing meaning; words are the means to elucidate images. Nothing fully conveys meaning like an image, nor does anything fully capture an image like words.” Thus, “image” acts as the carrier of “meaning,” while “words” serve as the tool for explaining it. Through “words,” one can comprehend the “image”; through the “image,” one can grasp the “meaning.” However, Wang Bi further emphasized the principle of “understanding the essence while forgetting the image, and understanding the image while forgetting the words,” asserting that once the “meaning” is comprehended, one can transcend the constraints of both “image” and “words.” This does not negate the value of “image” and “words,” but rather highlights the central

role and ultimate pursuit of “meaning.” Within the context of the *I Ching*, “words” refer to hexagram descriptions and line texts—textual interpretations of hexagram symbols; “images” denote the abstract symbolic representations of phenomena; and “meaning” represents the profound ideas or principles embedded within the hexagrams. For instance, when interpreting the Qian hexagram, its symbol signifies strength and initiative, while phrases like “yuan heng li zhen” provide detailed explanations. By understanding these descriptions, readers gain deeper insight into the hexagram's essence, thereby grasping its spirit of resilience, proactive action, and self-improvement. Once this spiritual essence is fully understood, the hexagram and its text become secondary; they are internalized as a transcendent guide for thought.

From a philosophical perspective, the concept of “understanding the essence while forgetting the appearance” holds profound significance and extensive influence. It reveals a progressive process in human cognition: evolving from perception of external manifestations and symbolic representations (language and imagery) to comprehension of intrinsic nature and fundamental principles (essence). This concept challenges excessive reliance on concrete phenomena and linguistic concepts, prompting reflection on how to transcend superficial appearances and reach the core of things. Within the metaphysical trends of the Wei-Jin period, “understanding the essence while forgetting the appearance” emerged as a pivotal intellectual methodology, exerting profound impacts on philosophical inquiry, literary and artistic creation, as well as spiritual pursuits. It fostered intellectual liberation and innovation, laying a solid foundation for the development of subsequent philosophy and aesthetics.

2.2. The aesthetic concept of “De Yi Wang Xiang”

Extending from the philosophical domain to the realm of aesthetics, it has exerted a profound influence on artistic creation and aesthetic experience.

In artistic creation, this concept advocates that creators move beyond the mere realistic depiction of objective realities, focusing instead on refining and elevating the intrinsic spiritual and emotional essence of subjects, and employing unique artistic language to create works rich in appeal and artistic conception. China's traditional freehand painting serves as a typical example: artists use concise yet expressive brushwork to capture the spirit of subjects, skillfully employing techniques such as negative space and the interplay of reality and void to evoke profound artistic ambiance. Works like those by Bada Shanren often convey inner loneliness, indignation, and deep reflections on life through exaggerated, distorted forms and ethereal compositions. Viewers are encouraged to transcend the surface of the artwork and appreciate the profound emotional world and spiritual aspirations behind it.

In terms of aesthetic experience, the concept of “appreciating essence over form” guides viewers to transcend the constraints of a work's external structure and delve into its intrinsic spiritual content and aesthetic value. It stimulates the viewer's subjective initiative and imagination, fostering a dialogue between mind and emotion with the artwork. When appreciating classical poetry, readers should not merely focus on surface-level words but rather engage with the imagery and rhythmic patterns to grasp the artistic conception and emotions conveyed by the poet. For instance, in Wang Wei's line “The lone smoke rises straight through the vast desert; the setting sun is round over the long river,” readers must draw upon associations with images such as the desert, solitary smoke, long river, and setting sun to appreciate the

grandeur, magnificence, and solitude inherent in this frontier landscape, thereby achieving an aesthetic experience that transcends mere textual interpretation.

The concept of “capturing essence beyond form” finds unique expression across various art forms. In literature, poetry strives for “finite words conveying infinite meaning”; Li Shangyin’s *Jin Se* employs numerous imagery to create a hazy, evocative atmosphere that allows readers to experience complex emotions and reflections. In novel writing, masterpieces like *Dream of the Red Chamber* reflect social realities through character development and plot construction, enabling readers to grasp profound life philosophies transcending the narrative itself. In painting, while meticulous brushwork focuses on detailed depiction of subjects, it also conveys spiritual essence through delicate strokes, exquisite colors, and rigorous composition—as seen in Emperor Huizong of Song’s flower-and-bird paintings, which embody both reverence for natural beauty and celebration of life. In music, Beethoven’s *Fate Symphony* uses intense notes and dynamic melodic variations to allow listeners not only to appreciate its musical impact but also to perceive his spirit of resistance and pursuit of a better life, achieving a sublimation from musical form to spiritual depth.

In museum digital interaction design, the concept of “De Yi Wang Xiang” holds significant importance. It offers fresh perspectives for design, guiding creators to focus not only on superficial appearances when presenting cultural artifacts and designing interactive experiences, but also on conveying the profound cultural significance and spiritual values embedded within them. This enables visitors to transcend formal aspects, forge a deep emotional connection with historical culture, and achieve both effective cultural preservation and innovative engagement experiences.

3. The Current State of Digital Interactive Design at the Henan Museum

3.1. Diversification of presentation formats

The Henan Museum actively explores digital interactive exhibition formats, employing various cutting-edge technologies to deliver immersive experiences for visitors. The application of technologies such as VR, AR, and holography stands out prominently in its exhibitions. For instance, the exhibition “Treasures of Ancient Central Plains Music: Ancient Harmony from the Henan Museum” utilizes VR technology to recreate scenes of ancient musical performances. Visitors wearing the devices feel as if they have traveled through time, immersing themselves in ancient imperial courts or sacrificial ceremonies, witnessing musicians playing traditional instruments firsthand and experiencing the charm and solemn atmosphere of ancient music—a seamless integration of history and modernity. Visitors can not only appreciate exquisite melodies but also gain deep insights into the cultural context of music through vivid visual presentations, thereby enriching their sensory experience and cultural understanding.

“The Gold and Jade Artistry – Special Craft Treasures from Nine Huanghe Regions Exhibition” employs AR navigation technology: visitors simply scan exhibits to access detailed information, production techniques, and historical narratives on their mobile screens. Scanning gold and jade ornaments reveals their wearing effects and cultural symbolism, allowing visitors to appreciate both the visual aesthetics and the

underlying cultural significance and historical context. Holographic imaging technology is also utilized in certain sections; when displaying ancient bronze artifacts, visitors can observe their intricate details from all angles in a three-dimensional format, with patterns and inscriptions clearly visible as if the artifacts were floating before them, transcending traditional display limitations and delivering a novel visual experience and viewing pleasure.

Significant progress has been made in online exhibitions and the development of digital exhibition spaces. Multiple digital exhibition halls have been launched on official websites and mobile applications, featuring a variety of thematic displays, including the online presentation of permanent exhibitions such as “The Great China: Choosing Zhongzhou as the Capital.” Visitors can access these platforms anytime, anywhere, viewing cultural relics images in high definition and examining details using the zoom function; some artifacts even support 360-degree panoramic views for comprehensive inspection. These digital exhibition halls provide extensive textual descriptions, audio guides, and video materials that delve into the historical context, cultural significance, and craftsmanship behind the artifacts, addressing information gaps associated with offline visits.

The diversification of exhibition formats holds significant importance for enhancing audience engagement and cultural dissemination. Visitors evolve from passive observers to active participants, delving into the mysteries of cultural artifacts through technological interactions, thereby strengthening participation and interactivity, catering to diverse needs, and elevating visit satisfaction and anticipation. In terms of cultural outreach, these approaches transcend geographical and temporal constraints by utilizing multimedia tools to visually present abstract cultural concepts, enabling broader public understanding of Central Plains culture, fostering conservation awareness, and promoting widespread cultural exchange.

3.2. Innovative Measures for Interactive Experience

The Henan Museum enhances visitor engagement and learning outcomes through innovative interactive experiences. The “Let’s Archaeology Together” mini-program stands out as a key feature, simulating an actual archaeological site. Upon entering the simulated underground chamber via Alipay, users feel as if they are immersed in a real environment. The interface displays simulated excavation pits and soil layers containing artifacts; users can use tools like Luoyang shovels to conduct excavations following standard archaeological procedures. The texture, color, and sound effects of the soil are meticulously designed to enhance realism. When artifacts are unearthed, a scroll appears on the screen displaying detailed information, allowing users to acquire knowledge while enjoying the experience. The mini-program is user-friendly and suitable for all ages; its real-time feedback on excavation actions boosts a sense of accomplishment, while the element of uncertainty sparks curiosity. Many users become fully engaged, significantly improving their understanding of historical and cultural knowledge.

In addition to “Let’s Archaeology Together,” the museum offers various interactive experiences. Some exhibition halls feature touch-screen interactive zones; for instance, when showcasing ancient ceramic-making techniques, the screens display animations covering the entire process from material selection to firing, allowing visitors to swipe the screen to control playback progress, explore details independently, actively engage in knowledge discovery, and enhance learning motivation and effectiveness.

Role-playing interactive experiences are particularly distinctive in certain exhibitions. At the “Ancient Clothing Culture Exhibition,” visitors can don replicas of ancient garments and take photos in simulated settings, gaining an intuitive understanding of ancient cultural charm, delving into the characteristics and cultural significance of clothing across different dynasties, and strengthening their cultural comprehension and identification. These interactive elements complement each other, creating a rich and immersive visitor experience that transforms passive observation into active exploration and learning.

3.3. The Outcomes and Impact of Digital Interaction

To evaluate the effectiveness of the Henan Museum’s digital interactive design, a visitor satisfaction survey was conducted among visitors from diverse backgrounds. The results indicated overall high satisfaction levels. Regarding the diversity of exhibition formats, visitors highly praised the application of technologies such as VR and AR, with most noting that these enhance the visual appeal and cultural depth of artifacts while increasing engagement and interactivity. For instance, VR technology recreates ancient musical performances, providing visitors with an immersive and unforgettable experience. Online exhibitions and digital galleries have also received widespread acclaim; many visitors appreciate their convenience, allowing access anytime, anywhere, while high-definition visuals, panoramic displays, and comprehensive resources facilitate deeper understanding of the artifacts.

In terms of innovative interactive experiences, the “Let’s Archaeology Together” mini-program has been widely popular, with most participants expressing satisfaction. By recreating authentic archaeological settings, it enables visitors to acquire knowledge through gameplay, enhances engagement, and encourages active exploration of cultural heritage values. The touchscreen interaction zones and role-playing activities have also received positive feedback: the former promotes self-directed exploration and improves learning outcomes, while the latter allows users to experience cultural charm and deepen cultural understanding and appreciation.

Digital interactive design plays a significant role in enhancing museum cultural communication and brand development. It attracts a substantial number of young visitors, who constitute a considerable proportion of the audience and demonstrate strong interest and high engagement with such designs. After visiting, tourists frequently share their experiences on social media, thereby expanding the museum’s influence and visibility. The museum’s brand image has also been elevated; visitors gain a deeper understanding of its cultural significance and educational functions, recognizing it as an important platform for cultural preservation and education, and are willing to recommend it to others. This demonstrates that digital interactive design effectively promotes museum cultural dissemination and brand building while enhancing its socio-cultural value.

4. The Manifestation of “De Yi Wang Xiang” in the Digital Interactive Design of the Henan Museum

4.1. The concept of “De Yi Wang Xiang” in the presentation of cultural relics

3D Models and Animation: Transcending Physical Representations. In the digital interactive design of Henan Museum, the concept of “De Yi Wang Xiang” is manifested in multiple aspects. Taking the short documentary series *Treasures of*

Central China as an example: when showcasing cultural relics such as jade artifacts, high-definition photographs are captured using cameras. Through computer graphics processing and AI algorithms, fully automated 3D models of the artifacts are generated, which are then animated. Even a thumb-sized jade artifact can rotate freely 360 degrees in videos, with clear patterns and preserved luster—yet these lifelike representations were not filmed from actual objects. This presentation approach breaks through traditional limitations in artifact display, enabling viewers to examine details comprehensively without blind spots, transcending mere superficial representation. Visitors are no longer constrained by exhibition case space or viewing angles; they can appreciate the artifacts' exquisite craftsmanship from any perspective, deeply appreciating their historical-cultural significance and artistic charm, thereby better understanding the “essence” behind them—a leap from perceiving external appearances to comprehending intrinsic spiritual and cultural values.

Virtual Cultural Heritage and Detail Presentation: Conveying Meaning Through Visual Representations. Through virtual technology, the Henan Museum presents audiences with detailed insights into cultural artifacts, enabling them to fully appreciate the historical and cultural significance embedded within these relics. Take the jade tiger-shaped kneeling figure as an example: via mobile connectivity, visitors can rotate the virtual artifact 360 degrees using their fingers to examine every detail—akin to handling a physical artifact in their palm, even noticing labels on its base. This design vividly highlights subtle features often overlooked in traditional display cases, such as carving textures and unique forms. By showcasing these details, visitors gain deeper understanding of the artifacts' historical and cultural value. From the distinctive “tiger-head human-body” design on the front to the ingenious owl-shaped motif on the back, and the harmonious integration of these elements reflecting the aesthetic principles, religious beliefs, and cultural characteristics of the Shang-Zhou period—all become increasingly clear through interactive engagement with virtual replicas. This approach leverages tangible visual representations (the “form”) to guide viewers toward comprehending the underlying cultural essence (“meaning”), embodying the philosophy of “understanding the meaning beyond form.” Thus, when appreciating these artifacts, visitors not only observe their external appearances but also perceive the profound depth and unique charm of ancient culture, fostering a profound dialogue and resonance with its historical heritage.

4.2. “De Yi Wang Xiang” in interactive experiences

Interactive Sessions and Emotional Resonance: Like the business of elephants. The interactive exhibition programs at Henan Museum focus on guiding visitors to experience the emotional and cultural significance behind artifacts through hands-on activities, fostering emotional resonance and achieving a deeper understanding of historical contexts. For instance, their digital archaeology blind box “Let’s Archaeologize Together” digitally recreates an excavation site, where users operate various archaeological tools to unearth artifacts, personally experiencing both the challenges and joys of archaeological work. This design approach transforms visitors from mere players into active participants in the historical exploration process. When visitors physically “unearth” artifacts, they develop a unique emotional connection, feeling as if they are the discoverers themselves, which motivates them to learn about the stories and cultural values behind these relics. Each “miniaturized” artifact found in the blind box—such as bronze tiger talismans or golden tablets from Empress Wu Zetian—carries profound historical and cultural meaning, serving as cultural

ambassadors that convey ancient knowledge to modern audiences. Through interaction, visitors appreciate the richness of Central Plains culture, fostering emotional engagement and deepened comprehension of its cultural essence. This emotional resonance exemplifies the concept of “understanding the essence while forgetting the form”: visitors experience the profound cultural significance and emotional value embedded in artifacts through concrete interactive experiences.

Multisensory Interaction and Atmosphere Creation: Overcoming Visual Distractions to Focus on the Essence. In terms of multisensory interaction and artistic atmosphere creation, the performance by Henan Museum’s Huaxia Ancient Orchestra stands as a model example. Through the integration of various sensory elements, the orchestra creates a unique artistic ambiance that allows audiences to grasp the cultural essence behind the music, achieving a state of transcending physical perception to comprehend its deeper meaning. Visually, performers wear costumes meticulously designed with harmonious color schemes that align with historical contexts, instantly transporting viewers back in time. Stage sets are also thoughtfully crafted to complement musical themes—for instance, during performances of ancient sacrificial music, props or scenes related to rituals are arranged to enhance visual impact and cultural immersion. Audibly, all instruments are replicas based on authentic artifacts such as Jiahu bone flutes, bianzhong chimes, xun pipes, and se lutes; their distinctive tones serve as vital carriers of ancient musical culture. When the resonant melodies of bianzhong, the solemn simplicity of xun, and the delicate grace of se intertwine, audiences feel transported through time into ancient musical settings. The repertoire is diverse, encompassing both traditional pieces and modern adaptations—such as Jiahu bone flutes performing “Rolling Red Dust” and bianzhong playing the world-famous “Ode to Joy”—creating a unique auditory experience that bridges past and present. Tactilely, while instruments cannot be physically touched, audience members can indirectly perceive musical rhythm and power through seat vibrations and air currents, further enhancing the sense of presence. Furthermore, the performance incorporates various olfactory elements: in specific musical scenes, aromas associated with ancient culture are released—for instance, when performing music and dance from the prosperous Tang Dynasty, subtle floral scents are emitted, allowing the audience to experience the cultural prosperity and elegance of that era through their sense of smell. By integrating these multi-sensory interactive elements, the Huaxia Ancient Orchestra creates an immersive atmosphere that enables audiences to forget external distractions while fully immersing themselves in the musical ambiance, thereby gaining insight into the cultural essence of ancient music—including its aesthetic sensibilities, philosophical ideas, and social characteristics—and achieving a transcendence from perceiving the musical performance form (the “image”) to comprehending its cultural significance and spiritual depth (the “meaning”).

5. A Digital Interactive Design Strategy for the Henan Museum Based on the Principle of “De Yi Wang Xiang”

5.1. Deepening the exploration of cultural connotations

A thorough study of the stories and cultural significance behind cultural relics is fundamental to achieving the principle of “understanding the essence while forgetting the form.” The Henan Museum possesses a rich and diverse collection of cultural artifacts, each carrying information about specific historical periods, regional cultures, and social contexts. For instance, the Jiahu bone flute is not only a significant

discovery in the history of ancient Chinese music but also reflects the lifestyle, aesthetic concepts, and level of musical development among the people in the Jiahu region during the Neolithic Age. By comprehensively analyzing archaeological materials, historical documents, and folkloric research, scholars can delve into details such as the manufacturing techniques, functions, and social status of the Jiahu bone flute, thereby gaining a full understanding of its cultural implications. Another example is the bronze Lotus and Crane Square Pot, whose unique design features a striking contrast between the lotus and crane motifs on its lid and the solemn, rustic appearance of its body. This design embodies the ideological transformations and cultural integration of the period, serving as a tangible manifestation of the transition between old and new cultures during the Spring and Autumn Period. Examining the relationship between its decorative patterns, shape, and contemporary political, economic, and cultural factors helps uncover its profound cultural significance.

Guided by the principle of “appreciating essence over appearance,” the presentation of cultural artifacts should avoid merely showcasing their external forms. Instead, thoughtful design should guide visitors to comprehend the spiritual significance and cultural value embedded within these relics. A contextual display approach can be employed, creating virtual scenarios or narrative threads tied to the artifacts' historical backgrounds, enabling visitors to immerse themselves in the historical context and experience the cultural atmosphere they represent. For instance, when displaying ancient ceramics, one could recreate traditional ceramic workshops, illustrating the entire production process—from material sourcing and shaping to decoration and firing—allowing visitors to appreciate both the craftsmanship and wisdom involved while recognizing the artisanal spirit and aesthetic ideals embodied in these pieces. Additionally, integrating modern technologies like augmented reality (AR) allows real-time delivery of historical narratives and cultural interpretations during viewing sessions, enriching the visitor experience and deepening understanding of the artifacts' cultural heritage, thereby elevating the experience from mere observation to genuine appreciation.

5.2. Design Innovations for Optimizing User Experience

In interface design, the principles of simplicity, aesthetics, and high usability should be adhered to to enhance user experience. For instance, employ a clean layout by avoiding excessive information clutter to create a fresh and comfortable visual appearance; utilize color schemes that reflect the distinctive characteristics and cultural style of the Henan Museum, such as elegant and rustic tones, to foster a strong cultural ambiance; adopt clear and easily recognizable fonts to ensure textual information is accurately conveyed to users. Additionally, optimize the layout of interface elements by placing important information and action buttons in prominent positions for quick access. Furthermore, pay attention to icon design—making them intuitive and accurately representing corresponding functions or artifact categories so users can understand their purpose at a glance during operation.

The operational workflow should be simplified and optimized to ensure greater convenience and smoothness. Unnecessary steps and complex procedures should be eliminated; for instance, in interactive applications, one-click operations or intuitive gesture controls can be implemented to facilitate user engagement. Clear instructional guidance should be provided, such as displaying prompt messages or step-by-step instructions on the interface at appropriate times, helping users understand subsequent actions and preventing frustration caused by confusion. Additionally, visual feedback

mechanisms can be incorporated: after performing an operation, the interface should promptly display corresponding changes or notifications, enabling users to clearly assess whether the action succeeded and its outcome, thereby enhancing their confidence and sense of involvement.

Proactively leveraging cutting-edge technologies to enhance the naturalness and fluidity of interactive design is crucial. For instance, artificial intelligence enables intelligent recommendation systems that analyze users' browsing history and preferences to suggest tailored cultural exhibitions, interactive experiences, or educational content, delivering personalized visitor experiences. Voice recognition and synthesis technologies facilitate voice-guided tours and interactive operations—users can access artifact information or perform actions like viewing details or switching display perspectives through voice commands, offering a more intuitive and user-friendly approach ideal for scenarios where manual interaction is impractical. The integration of natural interaction technologies such as gesture recognition and eye tracking allows users to interact with exhibits through natural movements: zooming or rotating artifacts via gestures, or automatically focusing on specific details based on gaze direction. This immersive experience creates a face-to-face interaction with cultural artifacts, significantly enhancing both naturalness and engagement.

5.3. Promoting the integrated development of technology and culture

The integration of technology and culture presents significant challenges in the digital interactive design of Henan Museum. On one hand, rapid technological advancements require the museum to continuously adapt by investing substantial resources in R&D and equipment upgrades—a substantial test for its financial capacity, human resources, and technical expertise. For instance, the application of virtual reality (VR) and augmented reality (AR) technologies demands high-performance hardware and entails considerable software development and maintenance costs; without sustained funding, their effectiveness may be significantly compromised. On the other hand, extracting and accurately presenting cultural significance proves challenging. Henan Museum's rich collection of cultural artifacts embodies profound historical and cultural heritage. Presenting these abstract and complex cultural concepts to visitors through digital means in an intuitive, accessible, and engaging manner requires close collaboration between specialized cultural research teams and technical development teams, who must deeply understand the cultural context behind the artifacts and employ appropriate technical approaches. However, in practice, a disconnect often exists between cultural content and technological implementation: technological solutions fail to effectively convey cultural essence, or cultural nuances are distorted or oversimplified during digital presentation.

To promote the sustainable development of digital interaction design based on the concept of “De Yi Wang Xiang,” measures can be implemented in the following areas. First, strengthen interdisciplinary team collaboration by fostering exchanges and cooperation among cultural experts, designers, and technical professionals. Regular academic seminars and workshops should be organized to enhance mutual understanding across different disciplines and jointly explore how to better integrate technology and culture in digital interaction design. For instance, cultural experts can provide technical staff with in-depth explanations of artifacts' historical context and cultural significance; designers can propose creative solutions grounded in cultural principles; while technical personnel are responsible for translating these ideas into

feasible technological implementations, ensuring seamless integration of both dimensions through teamwork. Second, establish a comprehensive evaluation system for digital interaction design that assesses works across multiple dimensions—including cultural communication effectiveness, user experience, technical feasibility, and innovation. The evaluation should prioritize not only technical sophistication but also the accuracy and depth of cultural content delivery, as well as users' ability to truly grasp the spiritual values embedded in artifacts through interactive designs. Design strategies and technical approaches should be promptly refined based on evaluation results to continuously improve digital interaction design. Third, enhance collaborations with universities and research institutions to leverage external expertise in elevating both the technical proficiency and cultural research depth of museum-based digital interaction design. Universities and research institutions possess abundant talent resources and cutting-edge research achievements. Collaborating with them enables joint research projects, internship program development, and other initiatives, introducing new technological concepts and cultural research methodologies to museums, fostering innovative integration of technology and culture in digital interaction design, and achieving sustainable development.

6. Conclusion and Prospects

This study conducts an in-depth exploration of the application of “De Yi Wang Xiang” in the digital interactive design of the Henan Museum. Through analyzing the current state of its digital interactive design, it identifies achievements and shortcomings regarding diversified display formats, innovative interactive experiences, as well as the effectiveness and impact of digital interaction. In terms of display formats, while technologies such as VR and AR have delivered novel experiences, there remains room for improvement in deeply exploring and presenting cultural content; although interactive features enhance audience engagement, further simplification and optimization of operational workflows are required.

The concept of “focusing on essence while forgetting the form” is prominently reflected in both cultural relic exhibitions and interactive experiences. In exhibitions, technologies such as 3D models and virtual artifacts transcend the limitations of physical representations, conveying meaning through visual imagery to help visitors better appreciate the cultural significance behind the relics; in interactive experiences, carefully designed interactive elements evoke emotional resonance among audiences, while multi-sensory engagement creates a unique atmosphere that achieves the state of “focusing on essence while forgetting the form.”

The digital interactive design strategy developed by the Henan Museum based on the concept of “De Yi Wang Xiang” encompasses three key aspects: deepening cultural connotation exploration, innovating user experience design, and fostering integration between technology and culture. By conducting in-depth research into the stories behind cultural artifacts and employing contextual display methods, the presentation of cultural significance can be enhanced; adhering to principles of simplicity and aesthetics in interface design, streamlining operational processes, and leveraging new technologies can optimize user experience; strengthening interdisciplinary collaboration, establishing evaluation systems, and engaging external partners can facilitate the convergence of technology and culture.

Conflicts of Interest

The author declares that there is no conflict of interest regarding the publication of this article.

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