

Analysis of the Dynamic Decoding and Recoding Mechanisms of Cultural Genes in Transmedia Art Practices

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Abstract:

This study takes the contemporary translation of traditional mythological symbols as its entry point to construct a theoretical framework termed the “Three-Stage Translation Model,” systematically analyzing the dynamic decoding and recoding mechanisms of cultural genes in transmedia art practices. Through semiotic analysis and case studies of digital art, it reveals the patterns of aura reconstruction of mythological symbols across painting, sculpture, and digital media, demonstrating how technological media transformations drive the spatiotemporal restructuring of cultural narratives and paradigm shifts in cognition.

Keywords:

Cultural Genes, Symbolic Translation, Cognitive Reconstruction, Transmedia Art, Mythological Symbols

1. Introduction

Traditional mythological symbols, as carriers of spiritual genes, constitute a sacred coding system through the interplay of formulaic modeling and metaphorical representation. The advent of digital technology has accelerated the symbolic translation process, facilitating the recombination and reinterpretation of cultural genes. For instance, Xu Bing’s deconstruction of Dunhuang murals and the algorithmically generated patterns from the Forbidden City demonstrate the reconstruction of meaning production mediated by evolving technologies. This paper integrates semiotic theory to reveal how media reshapes cognitive frameworks—ranging from the aura preservation in Zhang Daqian’s paintings, through the ecological warnings embedded in Cai Guoqiang’s installations, to the ontological metamorphosis of symbols manifested in TeamLab’s immersive liquid narratives. By examining temporal-spatial compression and cognitive grafting within digital art practices, this study highlights the historical tensions and trauma that mythological symbols encode, thereby offering a dual pathway for theoretical and applied innovation in cultural heritage preservation.

2. Cultural Genes and Theoretical Frameworks — Translational Foundations of Traditional Mythological Symbols

Traditional mythological symbols originate from the collective spiritual imaginations of early civilizations, embodying a complex generative logic that intersects primitive religion, totemic worship, and natural cognition. For example, the figure of Zhulong (Candle Dragon) in *The Classic of Mountains and Seas* (Shan Hai Jing), characterized by its human face and serpent body, visually encodes multifaceted notions of time and space. Similarly, the taotie motif prevalent in Shang and Zhou dynasty bronzes asserts divine authority through symmetrical patterns and exaggerated features. Han dynasty silk paintings further express a tripartite cosmology via layered spatial configurations. Collectively, these manifestations epitomize a dual-structured semiotic system composed of “formulaic modeling” and “metaphorical function.”

Parallel phenomena can be observed in Western traditions, such as the serpent hair of Medusa depicted in Greek vase paintings—a visual paradigm symbolizing fear that resonates with Carl Jung’s theory of collective unconscious archetypes. Such examples underscore mythological symbols as sacrosanct material carriers imbued with encoded cultural meanings.

Driven by the proliferation of digital technology, the dialogic relationship between cultural heritage and contemporary art has intensified, evolving into a sophisticated interaction with the fundamental structures of cultural genes. Xu Bing’s *Background Story* juxtaposes fragments of Dunhuang murals with contemporary found objects, deconstructing the sacredness of symbols through heterogeneous materiality while reactivating the critical contemporary resonance of motifs such as “self-sacrifice to feed the tiger.” Likewise, the Palace Museum’s “Pattern Awakening Project” harnesses generative adversarial networks (GANs) to algorithmically mutate traditional patterns, creating innovative visual forms that blend taotie motifs with fractal geometries. This exemplifies Marshall McLuhan’s assertion that “the medium is the message,” whereby technological media not only alter transmission modes but fundamentally reshape cultural meaning-making logics. Henri Lefebvre’s theory of “deterritorialization and reterritorialization” offers a spatial production framework to interpret these transformations.

Grounded in Charles Sanders Peirce’s triadic semiotic model and Ferdinand de Saussure’s signifier-signified dyad, this study proposes a “Three-Tier Translation Model” to systematically articulate the contemporary transformation of traditional cultural symbols. This model comprises three interrelated dimensions: (1) the cultural semantic layer, tracing the diachronic evolution of symbolic meanings; (2) the symbolic translation layer, analyzing artists’ strategies of semantic reconstruction through defamiliarization; and (3) the visual expression layer, examining how cross-media technologies reshape symbolic forms.

This bidirectional mechanism of dynamic decoding and recoding transcends static classical semiotics paradigms, establishing a robust methodological foundation for the contemporary translation and revitalization of cultural genes.

3. Hierarchical Analysis of Visual Translation Mechanisms

The material properties of media and their inherent logics of dissemination fundamentally shape and constrain the pathways through which mythological symbols

are translated. Walter Benjamin's theory of mechanical reproduction reveals a dialectical process of dissolution and reconstruction of the "aura," which manifests divergently across various media practices. For example, Zhang Daqian's reproductions of Dunhuang murals utilize mineral pigment layering and textured shading techniques to evoke dynamic rhythms within the otherwise static folds of flying celestial robes, thereby preserving the ritualistic significance embedded in religious symbols. In *Blind Portrait*, Sui Jianguo abstracts the protruding eyes of the Sanxingdui bronze figure into tactile spheres, privileging haptic perception to deconstruct visual centrism and translating the symbolic order of divine authority into an existential gaze. TeamLab's *Harmony in Chaos* algorithmically generates fluid dynamics to deconstruct the myth of the Yamata-no-Orochi; the real-time computation of light particle trajectories embodies the posthuman theory of symbolic system liquefaction.

Collectively, these three media practices establish a triadic dialectic framework of "media materiality – symbolic semantics – cognitive modality," illustrating that technological innovation does not erode but rather reconstructs the ontological presence of symbolic aura.

Contemporary mythological narratives undergo spatiotemporal reconstructions that transcend linear historiography, engaging in critical praxis within Mircea Eliade's conceptualization of "mythic time" versus "historical time." Qiu Zhijie's *Map of the World* (Figure 1) overlays the mytho-geography of *The Classic of Mountains and Seas* with the topological logic of Silicon Valley circuit boards, staging a cyberpunk-style synchronic dialogue between the Yellow Emperor's battle with Chiyou and contemporary debates surrounding AI ethics. In *RMB City*, Cao Fei virtually reconstructs the myth of "Nüwa mending the heavens," where players are engaged in endless labor constrained by the law of entropy, thereby deconstructing the illusion of technological utopia.

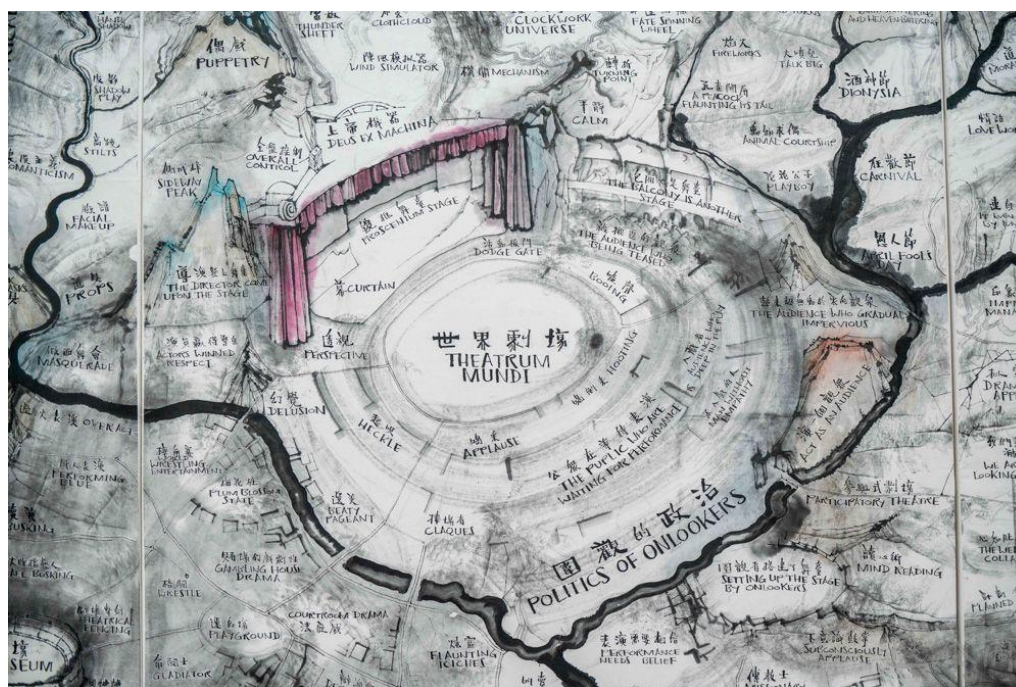


Figure 1. Qiu Zhijie, Mappa mundi, 2019.

These practices function as visual interfaces of temporal politics—spatiotemporal compression dissolves linear chronology, character alienation dismantles subject-

centered mythology, and contextual displacement exposes the paradoxes of mythic restoration—transforming sacred narratives into critical diagnostic tools for technocultural civilization.

4. The Cognitive Reconstruction of Visual Metaphor within the Epistemic Framework of Foucault's "Episteme"

The cognitive mechanisms underpinning visual metaphor are increasingly reconfigured through transhistorical and transcultural experimentation, situated within Michel Foucault's theoretical framework of the episteme. Yin Xiuzhen's *Portable City* grafts the mythological Fusang tree from the *Songs of Chu* onto e-waste materials; the tree rings are transformed into flowing ASCII code, while its roots are embedded in discarded circuit boards, constructing an eco-critical metaphor of the "natural genome versus technological virus." In *Background Story*, Xu Bing juxtaposes ink-washed Xuan paper shadow compositions with surveillance footage, staging a temporal dialogue between Tang dynasty Chan Buddhist gong'an and the contemporary crisis of digital privacy. Anish Kapoor's *Descent into Limbo* reconstructs the mythic River Styx through an industrial vortex; its distorted mirror reflection confronts viewers with the anxiety of identity within consumerist subjectivity.

These case studies reflect the epistemic convulsions experienced by global digital civilization, where technological signifiers become repositories of overlapping epistemological formations. This convergence produces a landscape of non-linear cognitive reconfiguration—an unstable terrain where distinct types of knowledge intersect, merge, and collapse. Within this context, visual metaphors operate as dynamic diagnostic interfaces, offering critical insights into the cultural traumas and symbolic instabilities of our techno-mediated present. (Figure 2)



Figure 2. Anish Kapoor, Descent into Limbo, 1992.

5. Practical Dimensions and Cross-Cultural Communication Strategies

The revolutionary intervention of digital technology has reconfigured the translation paradigm of traditional symbols, forming a three-dimensional innovation system encompassing algorithmic generation, interactive narrative, and virtual presence. The Han Mirror augmented reality project at the Central Academy of Fine Arts activates the Four Symbols pattern system found on Han Dynasty bronze mirrors through

advanced image recognition technology. Users trigger dynamic holographic interfaces via gesture control, spatially translating mythological narratives from Huainanzi. As Manovich's theory of "database aesthetics" reveals, mythological symbols are deconstructed into freely retrievable and recombinable data modules, shifting the mechanism of meaning production from traditional linear narratives to nonlinear topological networks. Audiences participate in real-time database construction through interactive behaviors, inducing a cognitive paradigm shift wherein symbolic sacredness no longer arises from historically fixed semantics but emerges dynamically through human-machine collaboration.

Meanwhile, the translation of mythological symbols in public art reveals dual practical dimensions. Olafur Eliasson's *Riverbed* constructs an artificial watercourse using 800 tons of volcanic gravel within a museum space. Viewers physically alter the flow trajectory of water and the refraction angles of mineral crystals, translating the flood memory embedded in Nordic Edda creation myths into an embodied, multisensory participatory experiment. Grounded in Merleau-Ponty's phenomenology of the body, this translation strategy deconstructs the Enlightenment rational order of museum spaces through water ripples triggered by plantar pressure and the spectral matrix formed by dome spotlights, reconstructing a tripartite memory-writing system of "body-matter-space." The *Porcelain Dragon* installation at Jingdezhen Taoxichuan Art Museum reconstructs dragon patterns from Ming and Qing imperial kilns using 30,000 fragments of blue-and-white porcelain inscribed with craftsmen's personal marks. Applying de Certeau's "tactics of the weak," this work replaces imperial symbols with microhistorical archives of the ceramic industry. The porcelain shard matrix preserves the visual continuity of "dragons soaring across the seas" while simultaneously marking individual craftsmen's embodied experiences with cracks, activating local cultural identity amid the tension between sublime aesthetics and ruin poetics. This transformation converts mythological symbols into material media of collective memory. Together, these two translation pathways demonstrate that activating cultural memory in public art requires breaking the constraints of visual centrism in participatory narratives and achieving democratic translation of symbolic semantics through localized practices.

6. Conclusions

This study constructs the "Three-Stage Translation Model," revealing the contemporary transformation mechanisms of traditional mythological symbols: The cultural connotation layer underscores the diachronic tension between the stability of signifiers and the fluidity of signifieds; the symbolic translation layer achieves semantic reconstruction through material alienation (e.g., Cai Guoqiang's ecological warnings generated by explosion) and algorithmic generation; and the visual representation layer propels the ontological transformation of symbols toward a "process-event" paradigm enabled by transmedia technologies. Parametric control through digital technology dissolves linear constraints of time and space, while blockchain and brain-computer interface technologies reshape the production of digital aura. In public art practices, participatory narratives and ruin poetics strategies activate cultural memory, and de Certeau's tactics of the weak facilitate democratic symbol translation. Future research should deepen investigations into artificial intelligence ethics and cognitive archaeology paradigms to uncover universal laws governing cross-civilizational translation. The findings offer a theoretical model

balancing critical inquiry and constructive innovation, providing both academic significance and practical guidance for cultural heritage development in the digital era.

Conflicts of Interest

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

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