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Multimedia Design Research From the Perspective of Embodied Interactive Narratives

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ABSTRACT

The convergence of narrative design and multimedia design has become a central tendency in contemporary digital art. As virtual media forms proliferate, audiences increasingly demand narrative experiences that are immersive, participatory, and experientially rich, while the dominance of a single screen-based mode of "virtual narration" continues to decline. Drawing on the concept of embodied interaction, this study analyzes three representative interactive works and develops a triadic framework—Space, Time, and Action—for organizing interactive narratives in multimedia design. This model provides a practice-oriented framework for multimedia creation and offers a pathway toward more situated and engaging narrative experiences.

Keywords: Embodied interaction, Narrative studies, Multimedia art, Interaction design

INTRODUCTION

Over the past decade, digital art has undergone a significant creative transformation—from image- and interface-centered "visual design" toward an experience-centered paradigm grounded in context, participation, and interaction. Within this shift, the convergence of narrative design and multimedia design has become increasingly prominent, signaling a deeper transition: from technology-driven production to experience-oriented creation, from static presentation to dynamic audience engagement. This change is not only reflected in the evolution of artistic forms such as interactive installations, immersive exhibitions, and digital performances, but also in the transformation of the designer's conceptual logic—from the transmission of content to the construction of participatory environments. Particularly within exhibitions, urban interfaces, and online platforms, narrative mechanisms have emerged as key structuring devices for activating audience emotions, behaviors, and cognitive involvement.

At the same time, new content generation technologies—exemplified by AIGC (Artificial Intelligence Generated Content)—are restructuring both creative workflows and audience experience frameworks. On one hand, such technologies have vastly increased the speed and scale of content production, enabling the explosive proliferation of visual, sonic, and textual media within virtual environments. On the other hand, audiences now expect greater levels of immersion, interactivity, and embodied presence in the narratives they

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engage with. In this context of content saturation and experiential fatigue, multimedia works that rely on linear narrative paths increasingly reveal their limitations: they struggle to deliver meaning effectively and fail to sustain audience participation. As a result, contemporary design practice must explore alternative narrative pathways—ones that emphasize embodiment, materiality, and co-construction.

It is against this multifaceted backdrop that this paper introduces the concept of tangible narrative, a framework intended to reveal how contemporary digital art embeds storytelling functions within the relations among body, space, and object. By going beyond the traditional visual–textual paradigm, tangible narrative enables new forms of interactive design in which meaning is constructed through situated action and spatial engagement. Drawing upon both theoretical excavation and case-based analysis, this study proposes a triadic narrative model—comprising time, space, and behavior—as a theoretical tool for understanding and designing future multimedia works. In doing so, it seeks to address structural transformations in digital creation under the influence of algorithmic technologies and provide a concrete methodological framework for future design practices.

THE EMERGENCE OF TANGIBLE NARRATIVE

Over the past decade, digital art has undergone a profound creative shift, moving from image- and interface-centered "visual design" toward an experience-centered paradigm grounded in context, participation, and interaction. Within this transformation, the convergence of narrative design and multimedia design has become increasingly visible, signaling a deeper turn: from technology-driven production to experience-oriented creation, and from static presentation to dynamic audience engagement. This shift is evident not only in the evolution of artistic forms such as interactive installations, immersive exhibitions, and digital performances, but also in the changing conceptual logic of design itself—from the delivery of content to the construction of participatory environments. In exhibitions, urban interfaces, and online platforms in particular, narrative mechanisms have become crucial structuring devices for activating audience emotion, behavior, and cognitive involvement.

At the same time, emerging content-generation technologies, especially AIGC (Artificial Intelligence Generated Content), are reshaping both creative workflows and the frameworks through which audiences experience media. On the one hand, these technologies have dramatically accelerated and expanded content production, enabling the rapid proliferation of visual, sonic, and textual media across virtual environments. On the other hand, audiences increasingly expect narratives to offer deeper immersion, stronger interactivity, and a greater sense of embodied presence. Under conditions of content saturation and experiential fatigue, however, multimedia works that rely on linear narrative structures are showing clear limitations: they often struggle to communicate meaning effectively and fail to sustain

audience participation over time. Contemporary design practice, therefore, must explore alternative narrative strategies that foreground embodiment, materiality, and co-creation.

Against this backdrop, this paper introduces the concept of tangible narrative as a framework for understanding how contemporary digital art embeds storytelling functions within the relationships among body, space, and object. By moving beyond the traditional visual-textual paradigm, tangible narrative opens up new possibilities for interactive design, in which meaning emerges through situated action and spatial engagement. Through a combination of theoretical inquiry and case analysis, this study proposes a triadic narrative model consisting of time, space, and behavior as a conceptual tool for interpreting and designing future multimedia works. In doing so, it seeks both to respond to the structural transformation of digital creation under algorithmic conditions and to offer a concrete methodological framework for future design practice.

THREE MODES OF TANGIBLE NARRATIVE IN PRACTICE

Within the evolving cultural landscape in which digital art increasingly intersects with multimedia installation design, tangible interaction has moved beyond its original role as a technical triggering mechanism and developed into a composite system that intertwines audience behavior, spatial context, and narrative structure. It mediates not only users' perception of physical environments but also the production of information, the transmission of meaning, and the activation of emotional resonance. The three case studies examined in this paper—City Memory: Beijing, A Curious World, and Luxor in Reflection—differ in production context, technological framework, and modes of interaction, yet all demonstrate the mediating role of tangible interaction in digital storytelling. More importantly, each case points to a distinct narrative typology: spatial memory reconstruction, behavior-driven generation, and historical-cultural dialogue.

The first case, City Memory: Beijing, exemplifies a narrative approach centered on the reconstruction of spatial memory. Presented in the central atrium of the Zhaolong Hotel, the work superimposes three historical moments—"Old Beijing Memory," "Era of Transition," and "New Community"—within a single physical setting through the use of 3D scanning and digital human modeling. Rather than encountering the story through a linear script, visitors engage with it by entering, moving through, and lingering within overlapping spatial zones, thereby reconstructing memory through embodied experience. By embedding these narrative layers into the existing architectural structure, the work transforms historical space into a semantic carrier: physical architecture becomes an active narrative agent, while the audience assumes the role of co-creator of meaning through spatial engagement. This narrative logic foregrounds temporal layering and spatial juxtaposition, sustained by the emotional resonance between space and personal memory.

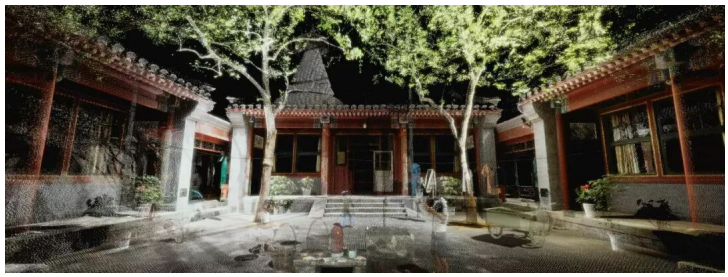

Figure 1: Visual presentation of the work city memory: Beijing.

In contrast, A Curious World adopts a behavior-driven narrative model. Developed around the social building game Rui·Xun, this work offers an open-ended storytelling framework where participants generate their own future cities through the act of "selecting–combining–placing" modular components. These actions are not merely procedural but serve as the primary narrative units, establishing a strong correlation between behavior and storytelling. Here, the artist is no longer a singular author but a facilitator of creative agency, transforming users into both creators and experiencers. Through embedded social features such as "alliances" and "collaborations," the narrative expands from individual creation to networked collective authorship, forming a multi-vocal storytelling ecology. By disrupting the fixed triangle of "author–work–audience," and embracing nonlinear browsing, shuffled sequencing, and user-driven decision-making, the project constructs a polysemantic narrative universe.

Figure 2: Visual presentation of the work a curious world.

Figure 3: Visual presentation of the social building game Rui·Xun.

The third case, Luxor in Reflection, presents a historical-cultural dialogic form of tangible narrative. Using the 3,000-year-old Luxor Temple in Egypt as a projection surface, the piece overlays dynamic visual elements—such as galloping horses and rotating pillars—onto the temple's stone architecture via 3D mapping. Unlike the previous two cases that emphasize constructive manipulation, this work focuses on activation. The light-based interaction does not physically alter the site but instead animates its symbolic and historical presence, creating a multi-sensory dialogue between ancient space and contemporary imagery. The resulting narrative structure embodies a temporal and cultural overlay, reframing the sacredness of the site while integrating new symbolic orders through contemporary media. It achieves a non-invasive spatial translation, combining ritual continuity with technological reinterpretation.

Figure 4: Visual presentation of the work luxor in reflection.

Figure 5: Visual presentation of the work luxor in reflection.

Taken together, the three case studies demonstrate three key functions of tangible interaction within narrative multimedia design:

- Spatial Capacity – in City Memory: Beijing, where historical space becomes a platform for temporal collage;
- Behavioral Generation – in A Curious World, where "to build is to narrate";
- Cultural Dialogicity – in Luxor in Reflection, where asymmetric interplay between past and present becomes a narrative engine.

In conclusion, these three narrative paths illustrate the restructuring of relationships among site, technology, and audience in contemporary digital art. Though divergent in method, structure, and engagement, they share an emphasis on embodied participation, contextualized spatiality, and

technologically mediated storytelling. Tangible narrative thus emerges not only as a design technique but as a cultural methodology for reorganizing expression, temporality, and interaction across physical and digital domains. In the era of AIGC, it offers a promising strategy to resist content homogenization, decentralize authorship, and reactivate meaning production through immersive, co-created narrative systems.

CONSTRUCTING THE TRIADIC NARRATIVE MODEL: TIME – SPACE – BEHAVIOR

Drawing on the analysis of the three tangible narrative works—City Memory: Beijing, A Curious World, and Luxor in Reflection—this chapter develops a triadic narrative model organized around three core dimensions: time, space, and behavior. The model not only clarifies the underlying mechanisms through which tangible installations generate information and activate perception, but also marks a critical shift in digital storytelling—from the logic of passive viewing to that of active co-construction.

In the temporal dimension, all three works employ non-linear narrative structures. City Memory: Beijing unfolds through the sequence of "Memory – Transition – Community," allowing viewers to move across three temporal layers within a single space and thereby experience urban transformation as a historical collage. A Curious World disrupts temporal continuity even more radically, enabling users to move across different user-generated spaces, choose their own narrative routes, and construct individualized temporal experiences. Luxor in Reflection, by contrast, overlays ancient architecture with contemporary imagery to produce a hybrid timespace in which ancestral totems and modern experience coexist. Rather than following conventional plot progression, these non-linear temporal frameworks present narrative as rhythm—something to be perceived, reconfigured, and navigated.

On the spatial level, all three projects use juxtaposition and immersion to organize relationships between physical and virtual layers. City Memory: Beijing embeds multiple urban temporalities within the same architectural setting, transforming physical space into a vessel of overlapping cultural memory. A Curious World creates a symbiotic relation among virtual, networked, and real spaces, allowing creators to build in digital environments, audiences to engage through physical installations, and participants to connect across platforms. Luxor in Reflection, through 3D mapping technology, animates the surfaces of Luxor Temple with projected imagery, turning columns and walls into narrative interfaces. In each case, storytelling moves beyond any single medium or visual surface and becomes embedded in space itself, thereby intensifying the audience's embodied sense of presence.

In the behavioral dimension, audience engagement shifts from passive reception to the generation and activation of narrative. In City Memory: Beijing, memory is reconstructed through wandering, sensing, and spatial immersion. In A Curious World, the acts of building, exploring, and socializing do not merely accompany the narrative but constitute it. Although Luxor in Reflection does not involve direct user interaction in a strict sense, the audience's sensory encounter with the temple environment, together with

their cultural resonance with the projected imagery, functions as a form of embodied response. In this sense, behavior is no longer a secondary operation; it becomes a trigger for meaning and emotion, forming a dynamic loop between action and narrative semantics.

Taken together, the Time–Space–Behavior triadic model reveals the operational logic of tangible narrative systems: temporal collage, immersive spatial juxtaposition, and behavioral-semantic mapping. These three dimensions collectively form an embodied narrative system that moves beyond image-centered and linear modes of storytelling. In an era increasingly shaped by AIGC technologies and immersive cultural environments, this model offers not only a theoretical foundation for multimedia design but also a practical framework for future experiments in collaborative narrative, cultural expression, and spatial organization.

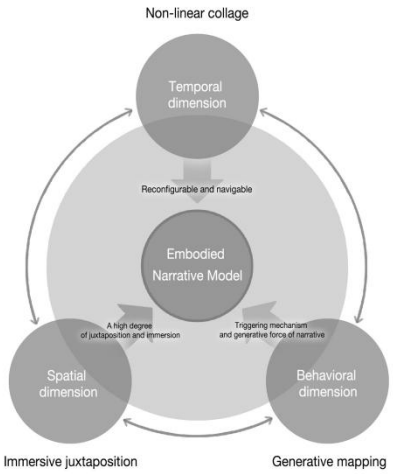

Figure 6: Schematic diagram of the embodied narrative model.

CONCLUSION

This study has focused on the concept of tangible narrative in order to examine how digital art and multimedia design might respond to the challenges of content oversaturation and experiential fatigue in the context of emerging AIGC (Artificial Intelligence Generated Content) technologies and the rise of immersive culture. Beginning with a review of the historical development of human-computer interaction (HCI) and interface technologies, the paper traces the evolution of tangible interaction and ultimately` proposes the Time–Space–Behavior triadic model as a conceptual framework for understanding contemporary narrative design.

Through close analysis of three representative case studies—City Memory: Beijing, A Curious World, and Luxor in Reflection—the study identifies three distinct narrative modalities: spatial memory reconstruction, behavior-driven generation, and historical-cultural dialogue. Taken together, these cases demonstrate how embodied behavior, physical environments, and layers of

virtual information converge to form complex narrative systems. The findings suggest that tangible narrative not only departs from the linear structures and medium-specific constraints of traditional storytelling, but also redefines the role of the audience, shifting it from passive viewer to active co-creator.

At the disciplinary level, this research expands the dialogue between interaction design and narrative theory by foregrounding embodiment, spatial situatedness, and participatory mechanisms as central dimensions of narrative construction in digital media art. The proposed model thus offers a practical analytical framework for artists, designers, and researchers seeking to create more situated, responsive, and interactive storytelling experiences.

In a broader cultural sense, tangible narrative points toward a mode of expression grounded in empathy, connection, and collaboration. It therefore holds the potential to push future narrative forms toward greater democratization, plurality, and experiential richness. More than a technical method, it can be understood as an emergent cultural practice that weaves together technology, embodiment, and social relations, reshaping how stories are produced, experienced, and shared in the age of intelligent media.

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