

# The Value and Creation Strategies of “Non-Digitizable” Sensory Experiences in Physical Exhibition Spaces

Yifan Wang

Beijing University of Financial Technology, Beijing, China

**Copyright:** © 2026 Author(s). This is an open-access article distributed under the terms of the Creative Commons Attribution License (CC BY 4.0), permitting distribution and reproduction in any medium, provided the original work is cited.

**Abstract:** While digital technologies bring immersive experiences to exhibition spaces, they also give rise to a crisis of “digital flattening”, the compression of rich sensory experiences into visually dominant data streams. Grounded in phenomenology and embodied cognition theory, this paper proposes the concept of “non-digitizable sensory” experiences and deconstructs it into four dimensions: material tactility, bodily scale, atmospheric field, and interactive traces. It systematically discusses their irreplaceable value at the cognitive, emotional, social, and cultural levels. Subsequently, four major strategies are constructed: the method of material tactile narration, the method of bodily movement choreography, the method of holistic atmospheric control, and the method of participatory trace design. Through case studies, the dialectical relationship of “physicality as the foundation, digital technology as the tool” is verified. This research aims to provide both a theoretical pathway and practical tools for exhibition design to return to human-centered experience.

**Keywords:** Digital flattening; Non-digitizable; Physical exhibition space; Multi-sensory experience

**Online publication:** May 12, 2026

## 1. Introduction

Currently, people are living in an “age of immersion” profoundly reshaped by digital technologies. Virtual reality, augmented reality, holographic projection, and large-scale digital screens are flooding museums, art galleries, and various cultural exhibition spaces with unprecedented resolution and interactivity, promising a “perfect” immersive experience that transcends physical limits. This trend has driven exhibition design from an “object-oriented” to an “experience-oriented” approach, widely regarded as an inevitable direction of progress.

However, behind this technological frenzy, a deep crisis of experience is emerging. When Monet’s Water Lilies is reduced to an image on a smartphone screen that can be zoomed and filtered, when a thousand-year-old temple is replicated proportionally within a VR headset for instantaneous traversal, when the narrative of

an exhibition is entirely carried by touchscreens and projection animations, do we, in gaining convenience and spectacle, lose some more essential dimension of experience that is intimately tied to our existence? This crisis can be summarized as “digital flattening”: the inevitable compression and simplification of the rich sensory properties, material characteristics, and spatiotemporal contexts of physical experiences into a visually dominant, standardizable, and reproducible data stream, as digital technologies attempt to simulate and replace physical experience.

Meanwhile, in the fields of philosophy, architecture, and cognitive science, a critical reflection on the “return of the body” and “embodied cognition” has long emerged. From phenomenology’s emphasis on “being-in-the-world” and the primacy of perception, to architectural phenomenology’s focus on “genius loci” (spirit of place) and the atmosphere of materials, and embodied cognition theory revealing that bodily activity is the foundation of thought, these lines of thought collectively point to the fact that human understanding of the world and the generation of meaning fundamentally depend on multi-sensory, coordinated, embodied experiences within concrete physical environments<sup>[1-3]</sup>. This provides a theoretical cornerstone for reflecting on “digital flattening” and suggests: those “non-digitizable” sensory experiences in physical exhibition spaces, such as the warmth of a material texture that can be felt by hand, the sense of scale that oppresses or shelters the body, and the natural light and shadow that flow with time, are not technological shortcomings, but rather constitute the core value that underpins our authentic memory, emotional connection, and cultural identity.

This study is thus situated at the intersection of two contexts: “the comprehensive penetration of digital technology” and “the revaluation of bodily sensory values.” It aims to cut through the fog of technological determinism and re-anchor the fundamental value and unique mission of physical exhibition spaces in the digital age.

## **2. Theoretical foundations and conceptual definitions**

### **2.1. Core theoretical perspectives**

Phenomenology and architectural phenomenology provide the philosophical tools for this study. Merleau-Ponty’s concept of the “lived body” (*corps vécu*) emphasizes that the body is the center of perceiving the world, and that perception is a bidirectional interaction between the body and the world<sup>[1]</sup>. Norberg-Schulz’s “genius loci” argues that a place is a holistic entity with a unique atmosphere, formed by the integration of specific materials, forms, activities, and meanings<sup>[2]</sup>. Pallasmaa, in “The Eyes of the Skin”, critiques the “ocularcentrism” of contemporary architecture and underscores the fundamental role of smell, hearing, and touch in constructing a sense of place<sup>[4]</sup>. The value of physical space lies precisely in its capacity to create a “place” that enables multi-sensory, embodied, and synthetic perception, an essence that any digital simulation ultimately extracts away, despite attempts to replicate it.

Embodied cognition theory provides a cognitive scientific basis for understanding “non-digitizable” experiences. This theory argues that cognition depends on real-time interaction between the body and the environment<sup>[3]</sup>. The disembodied, indirect cognition offered by digital interfaces bypasses this crucial link, resulting in a “flattening” of cognitive depth.

### **2.2. Definition of core concepts**

“Digital flattening” is the object of critique in this study. It refers specifically to the tendency of digital

technologies, in their pursuit of efficient communication, to unconsciously filter out and simplify physical experiences. It is characterized by: reduction of sensory dimensions, dissolution of materiality, abstraction of contextual scale, and predetermined interactivity.

“Non-digitizable” sensory experiences refer, in physical exhibition spaces, to perceptual states and cognitive feelings that depend on material physicality, bodily presence, and the unique specificity of time-space, and that cannot be fully captured, equivalently transmitted, or replaced by digital code. They constitute the ontological basis for physical spaces to resist “digital flattening.” Their structure can be decomposed into four interrelated dimensions: the tactile sense of material history, the perception of bodily scale and movement, the synchronic field of atmosphere, and the uncertainty and traces of interaction.

### **3. The value system of non-digitizable experiences: A critical appraisal**

#### **3.1. Cognitive value: The generation of embodied knowledge**

From the perspective of embodied cognition, knowledge is generated through the interaction between the body and the world <sup>[3]</sup>. When a visitor gauges the weight and edge angle of a stone tool with their own hand, they acquire not just the information that “this is a cutting tool,” but also a muscular imagination and embodied understanding of how it was used, the force required, and even the hardships of prehistoric life. Physical environments naturally provide multi-sensory, simultaneous stimulation, in an ancient temple, the layered visual brackets (dougong), the warm touch of wood, the clear sound of wind chimes, the scent of sandalwood, all interweave into a three-dimensional cognitive network. The curatorial narrative flow, constructed through sequence, rhythm, and light/dark contrasts, guides the body to form “motor memory.”

#### **3.2. Emotional value: Empathy triggered by authentic presence**

Benjamin’s “aura” refers to the “here and now” of a work of art, its unique existence in place and time <sup>[5]</sup>. Digital reproductions cannot carry this aura, which is grounded in material reality. The “atmosphere” shaped by light, sound, and temperature in a physical space is an emotional force that directly affects body and mind. Physical experiences are subject to contingent factors such as time, weather, and crowds; each instance is unique. These contingency yields emotional surprises and serves as a personal anchor for memory.

#### **3.3. Social value: Collective rituals constructed through bodily co-presence**

Visiting a physical exhibition is a mild form of social ritual. People share the same atmosphere and bodily rhythm in the same physical time-space. This collective co-presence silently reinforces a sense of community belonging and cultural identity. Physical spaces naturally facilitate interpersonal interactions, quiet discussions among family members, conversations between strangers sparked by the same exhibit. These spontaneous interactions are rich in body language and social cues, forming an important part of the exhibition’s educational function and social vitality.

#### **3.4. Cultural value: Memory continuity supported by material authenticity**

The core value of cultural heritage lies in its material authenticity as a witness to history. The material, craftsmanship, and traces of wear on an artifact are themselves the most authoritative “historical documents.” Visitors directly “read” these material proofs through their senses, establishing a direct trust in history. Cultural memory not only needs to be known but also to be “sensed”, the tactile experience of shaping

clay, the sensation of sound reflection in a traditional theater space, these bodily experiences transform abstract cultural knowledge into somatic memory. The unique “sense of place” is shaped by local materials, construction methods, and spatial configurations, and this embodied experience of place is the foundation of cultural identity<sup>[2]</sup>.

In summary, “non-digitizable” sensory experiences constitute an interconnected value system that supports the holistic existence of the “human being.” On the cognitive level, they transform information into wisdom rooted in the body; on the emotional level, they elevate viewing into empathetic resonance; on the social level, they link individual observations into collective rituals; and on the cultural level, they activate remnants of the past into a continuing memory.

## **4. Resisting flattening: Design strategy construction**

The philosophical premise of the strategy construction is a shift in design thinking from “visual communication” to “bodily awakening,” making space a subject for the body to explore, inhabit, and engage in dialogue with.

### **4.1. The method of material tactile narration: Prioritizing authenticity**

This strategy is manifested in the exposure of the material itself and in the design of touchpoints. Some structures are allowed to retain their original textures, such as weathered fair-faced concrete or the tactile quality of aged wooden beams. Lighting serves as an “amplifier” for reading materials, using precise light sources to dramatically highlight the texture and rust layers of materials, so that light and shadow themselves become the grammar for narrating material stories. This strategy guides the viewer from “looking at objects” to “reading materiality,” establishing a sense of historical trust based on physical authenticity.

### **4.2. The method of bodily movement choreography: Scale dialogue and rhythm control**

Designers should strive to construct a visiting flow with a “sequential ritual quality” that reinforces the exhibition’s theme and emotional arc. Moreover, techniques such as raising or lowering the floor, or setting specific viewing platforms, create “forced perspectives and bodily positioning,” allowing bodily posture to directly participate in the experiential understanding of abstract concepts such as “the sacred” or “the monumental.” Furthermore, providing multiple circulation options respects different visitors’ bodily rhythms, granting the pleasure of autonomous discovery. This strategy transforms space from a neutral container into an active force that guides the body and shapes memory, turning abstract cultural concepts into embodied bodily knowledge.

### **4.3. The method of holistic atmospheric control: Multi-sensory coordination and the introduction of temporality**

In implementation, natural light should be maximized and modulated; artificial light should be designed dramatically and thematically. In addition, an acoustic environment should be carefully constructed according to the spatial theme, making sound the backbone of spatial character. Further, “microclimate cues” can convey metaphorical information. For example, subtly increasing humidity and warmth when representing a tropical scene. Here, atmosphere is no longer the background of the exhibition; it is the content of the exhibition itself.

#### **4.4. The method of participatory trace design: Physical feedback and visible process**

This strategy encourages visitors to co-create an evolving collective work. Their actions directly change the space, and the traces become the content for subsequent viewers to observe. Examples include flexible installations that change shape as crowds gather, or special coatings that slowly change color over time, turning the space into a “living” instrument that reflects collective presence and the passage of time. This strategy transforms visitors from passive observers into active participants.

The four strategies must be integrated synergistically in practice, balancing the key tensions: awakening the senses without overloading them, encouraging interaction while protecting exhibits, and adhering to the principle of “physicality as the foundation, digital technology as the tool.” Digital technology should serve as an auxiliary tool to enhance, interpret, or supplement, not replace, the core physical experience.

### **5. Case studies**

#### **5.1. Punta della Dogana Museum, Venice**

The Punta della Dogana Museum in Venice, renovated by architect Tadao Ando, is an exemplary model for illustrating the philosophy of “resisting flattening.” Ando’s design does not overlay history with digital illusions. Instead, through extreme materiality and spatial operations, it initiates a direct dialogue between old and new, body and place, perfectly exemplifying the re-creation of “genius loci”.

Ando’s signature smooth, cool concrete walls are juxtaposed with the original building’s rough brick and timber beams, creating a powerful dialogue of materials and eras. Existing wall damage, graffiti, and maritime traces were deliberately preserved, not plastered over or concealed. Visitors directly perceive “historical layering” through tactile and visual contrasts. The “newness” of concrete and the “oldness” of brick together narrate the site’s transformation, evoking contemplation of temporal depth.

A large concrete spiral ramp serves as both vertical circulation and the narrative spine, guiding the body in a continuous upward spiral. Newly cut narrow slit windows, together with the existing large windows, frame Venice’s canals and cityscape as “living paintings.” As the body moves, it constantly establishes new visual relationships with the outside world. The ramp creates a unique, slow bodily ritual of ascent; the view changes accordingly, and cognition of the space accumulates through movement. The framed views force the body to pause at specific points, achieving “bodily positioning” and “perspective control.”

Natural skylight is introduced at the top, diffusing over the smooth concrete surfaces to create a soft, even, and time-varying illumination. The space maintains a high degree of silence, accommodating only ambient sounds such as footsteps and distant water.

In this case, this strategy manifests as a form of “passive participation”, the building itself does not feature interactive installations, but through its materials and space, it invites visitors to leave “inner traces.” The space serves as a vessel for contemplation, guiding visitors toward personal projections of meaning and emotional connection in quiet observation. This is a spiritual level of “participation” and “trace.”

#### **5.2. Lessons from an exploratory case: Shanghai Astronomy Museum**

The Shanghai Astronomy Museum represents another direction for contemporary top-tier museums: not resisting digital technology, but harnessing it to serve the ultimate experience of physical space. Its core design principle is to enable visitors to perceive the scale and mystery of the universe, with digitalization as

one of the key tools to achieve that goal.

In the planetarium, a world-leading dome projection system does not exist in isolation; it is combined with carefully designed reclining seats (a bodily strategy) and a temperature-controlled environment (an atmospheric strategy) to jointly create the awe-inspiring experience of “gazing up at the vast cosmos.” Here, digital technology is the means to create an unreplaceable physical atmosphere. Numerous interactive exhibits tightly integrate digital feedback with real physical manipulation, ensuring bodily engagement and material feedback. Architectural elements such as the inverted dome and the circular oculus are themselves physical installations that demonstrate astronomical phenomena through natural light and shadow; digital technology recedes into a role of explanation and supplementary information.

The Shanghai Astronomy Museum suggests that the most sophisticated “resistance” may not be refusal, but rather, under the command of the philosophy of physical experience, to recruit digital technology as a servant for creating a more profound “non-digitizable” experience.

## 6. Conclusion

The four design strategies proposed in this study realize a paradigm shift from “visual communication” to “bodily perception choreography,” providing concrete pathways for returning to human-centered experience. A dialectical relationship should be established between the physical and the digital: “the physical as the master, the digital as the servant.” The irreplaceability of physical experience is primary; digital technology is secondary and service-oriented. The future direction should be “digitalization with warmth.” The theoretical contribution of this study lies in constructing a “body-perception” analytical framework through an interdisciplinary perspective, translating philosophical discussions into four actionable dimensions: material, body, atmosphere, and interaction. Its practical contribution is to provide cultural institutions and designers with a “value wake-up call” and a “design toolkit” that clarifies their core competitiveness. The ultimate purpose of “resisting digital flattening” is to preserve the essential experiential dimensions and reflective space necessary for human wholeness in the digital age. It calls for a wisdom of balance: embracing the boundlessness of the digital while being deeply rooted in the finitude of the material; pursuing efficiency of communication while cherishing the depth and slowness of experience. The exhibition spaces of the future should become exemplars of this balanced wisdom, at once temples of knowledge and playgrounds of perception; stages for technology and homelands for the body. Only thus can cultural exhibition transcend fleeting sensory stimulation to become a lasting force that shapes sound minds, sustains cultural lineages, and nourishes social empathy.

## Disclosure statement

The author declares no conflict of interest.

## References

- [1] Merleau-Ponty M, 2003, *Phenomenology of Perception* (J. Jiang, Trans.), The Commercial Press (Original work published 1945), Beijing.
- [2] Norberg-Schulz C, 2010, *Genius Loci: Towards a Phenomenology of Architecture* (Z. Shi, Trans.), Huazhong University of Science & Technology Press, (Original work published 1979), Wuhan.

- [3] Ye H, 2010, Embodied Cognition: A New Orientation in Cognitive Psychology. *Advances in Psychological Science*, 18(5): 705–710.
- [4] Pallasmaa J, 2016, *The Eyes of the Skin: Architecture and the Senses* (X. Liu & C. Ren, Trans.), China Architecture & Building Press (Original work published 1996), Beijing.
- [5] Benjamin W, 2002, *The Work of Art in the Age of Mechanical Reproduction* (C. Wang, Trans.), China City Press (Original work published 1935), Beijing.

**Publisher's note**

Bio-Byword Scientific Publishing remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.