

The Newer the Better?: Critiques on Interactivity in Museums

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EXTENDED ABSTRACT

Museums' "digital turn" has become increasingly default rather than strategic: interactive screens, AR overlays, projection mapping, and headset-based XR are often treated as self-evident upgrades to exhibition quality. Yet the lived visiting experience suggests a more uneven reality, one where "more digital" does not automatically mean "more meaningful," and where the very tools meant to enrich interpretation can, when poorly integrated, dilute attention, disrupt presence, and flatten the encounter with artefacts. This paper pushes back against the "newer is better" logic in museum interactivity by analysing three exhibition moments: a non-digital interactive, the rotatable architectural model at the Hong Kong Heritage Discovery Centre (HKHDC); MGM Macau's exhibition where virtual surrogates sit beside the artefacts they supposedly support; and a Macanese food-and-living culture exhibit in the Hong Kong Museum of History, where physical furniture becomes projection surfaces to anchor digital storytelling. Through close reading of tactile and spatial affordances, and in dialogue with scholarship on museum interactivity and embodiment, this study makes three linked arguments: (1) physical, non-digital interactives still have distinctive and defensible value; (2) uncritical "virtualisation" can actively damage the museum visit (not because high-tech is bad, but because it can be misused); and (3) only through coherent experience design, where physical and digital elements are choreographed toward a single visitor journey, can digital interventions reliably succeed.

This study's theoretical framework is grounded in the interconnected concepts of psychological presence, tangibility, and embodied cognition, which together define a visitor's sense of being "at present" with historical content. Presence refers to the subjective feeling of "being there" that can lead to a "numinous museum experience," where visitors feel transported back in time (Latham, 2015). Tangibility, the direct physical encounter with artefacts or replicas, enhances visitor engagement and discovery (Damala et al., 2016). These concepts are linked through embodied cognition, a mode of understanding where physical manipulation and spatial

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orientation become integral to knowledge formation (Chen et al., 2025). As scholars like Noë (2004) and Kirsh (2013) emphasise, interactive bodily movement can scaffold deeper cognitive processing, enabling a more profound understanding of history. The "digital turn" in museology offers significant benefits for sensory engagement yet also presents limitations regarding materiality and embodied experience. Studies confirm that VR can enhance cognitive outcomes (Ariya et al., 2025; Chang & Suh, 2025), but these technologies are not without drawbacks. Technical issues like "cyber-sickness" can break immersion (Chang & Suh, 2025), and a reliance on screen-based interfaces can neglect the material qualities of heritage (Ciolfi, 2021) and the uniquely embodied dimensions of a museum visit (Pękowska, 2022). This trade-off makes the question of how interactivity is designed, rather than whether it is digital or not, an urgent and empirical one.

The HKHDC case clarifies why physical interactives remain uniquely capable of producing a felt sense of "being with" the past. The rotatable architectural models, such as the Tin Hau Temple in Causeway Bay, invite visitors to rotate a physical miniature by hand, producing a 360-degree encounter that is simultaneously visual, haptic, and spatial. The interaction is not mediated by menus, devices, or screens; it is immediate, bodily, and constrained by the material object itself. This matters because the experience is not merely representational ("I see a model of the past") but enactment-based ("I handle and reveal the object through my own movement"). The unadorned act of rotating the model becomes a form of knowledge formation: it aligns with embodied cognition in that physical action actively shapes perception, attention, and understanding (Chen et al., 2025). In this sense, the model does more than "display" architectural heritage; it positions the visitor's body as part of the interpretive apparatus. Beyond embodied cognition, the HKHDC model fosters a sense of experiential authenticity that collapses temporal distance. Jin et al. (2020) suggest that authenticity can be experienced, not as a property of historical accuracy alone, but as a felt quality of encounter. Here a productive paradox emerges: a fully virtual reconstruction designed to "transport" a visitor to the past may also underscore the past's inaccessibility (its distance, its irretrievability), whereas a tangible replica anchored in the present can make the past feel immediately graspable. The model allows visitors to "touch" the past in both literal and metaphorical terms. The "at present" sensation does not come solely from what the model depicts, but from the authenticity of the interaction itself, what Latham (2015) describes as a "unity of the moment," where attention, body, object, and meaning cohere. Materiality becomes a stabilizing anchor: the visitor can quite literally hold a historical form in view, reorient it, and relate to it through the tempo of their own hands.

At the same time, the current enthusiasm for virtual experiences can backfire when virtual layers compete with, rather than support, the artefact encounter. Tourism-and-museum research has begun to describe these "dark side" outcomes more directly: technology overuse can generate emotional dissonance, cognitive overload, and even technology loathing when devices dominate the experience-creation process (Fan et al., 2024). The MGM Macau case captures a recurring pattern: a virtual surrogate of an artefact is presented in close spatial adjacency to the "real thing," often enlarged, animated, and aesthetically intensified (for instance, by highlighting patterns and surface detail). In practice, this can tip the exhibition away from interpretation and toward spectacle. The virtual layer may become visually dominant, large enough to occlude the visitor's sightline to the physical object, thereby inverting the intended hierarchy of attention, hence the artefact becomes "background," the digital becomes "main event". This is not a critique of XR per se. It is a critique of experience misallocation: when digital augmentation is deployed without explicit rules for visual primacy, occlusion, and attentional economy, it risks degrading presence rather than increasing it. The same logic applies to headset-based AR "demonstration"

deployments (such as Rokid AR glasses in Sichuan Museum / Sanxingdui contexts): when a headset inserts a virtual object directly in front of an already-present artefact, visitors are placed in an avoidable competition between layers, often at the cost of artefact immediacy. The problem is not technological ambition; it is the failure to design for the encounter's basic perceptual logic: what visitors can see, what they are nudged to prioritise, and what is allowed to remain quietly powerful.

The success condition for museum digitalisation, then, is not "more digital," but coherent experience design: a careful choreography of physical and digital elements such that they mutually reinforce a single interpretive arc. This is the missing middle term between "physical good" and "digital bad." Coherence is treated here as an experience-level property: the degree to which interactive components (screens, projections, objects, spatial layout, narrative cues) align in what they ask visitors to do, attend to, and feel, moment by moment, without fragmenting the visit into competing micro-experiences. Visitor-experience modelling helps formalise this point. The MEUX model (Museum Exhibition User Experience) argues for evaluating exhibitions holistically through both pragmatic qualities (usability, clarity) and hedonic qualities (meaningfulness, affect), and critically through the relationship between design decisions and visitor outcomes (King et al., 2023). The Hong Kong Museum of History case is proposed as a third demonstration precisely because it exemplifies a more coherent "blend": physical furniture (a table; a chair) is repurposed as projection surfaces so that digital content is not a detachable add-on but spatially anchored in visitors' posture and bodily relation to the exhibit. By casting food/cookbook imagery onto the table and projecting a "representative" figure onto the chair to guide visitors through Macanese food-and-living culture, the exhibit assigns clear roles: physical surfaces stabilise attention and position, while digital layers supply narrative continuity and animation. This supports what Hansen et al. (2023) describe as "experience blend", the felt integration of technology into a visitor's movement, attention, and interpretation, rather than a separate gadget-experience running alongside the exhibition.

In conclusion, this paper makes three claims about the museum's digital turn. First, physical interactivity remains indispensable because tangibility and bodily manipulation can generate a distinctive sense of presence that is difficult to reproduce through screen/headset-centered mediation. Second, virtualisation is not inherently beneficial: when introduced uncritically, it can fracture attention, diminish material encounter, and push the visit toward spectacle rather than interpretation. Third, the meaningful route forward is coherent experience design, a disciplined choreography of physical and digital elements that protects what matters in a museum visit, the artefact primacy, interpretive clarity, and embodied engagement, rather than treating technology as a self-justifying upgrade. Taken together, this research propose a simple claim: museums do not need less digital innovation; they need clearer rules for when tangibility should lead, when augmentation should recede, and how both can be integrated without competing for the visitor's eye and body.

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