

Sheet Happens All the Time!

Re-imagination of Museum Objects Through Materiality Using Phygital
Storytelling

A Thesis Submitted to the Faculty of the Themed Entertainment Design Department
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Dedication

To my greatest inspiration and mentor, my mother, who has always taught me to fight against all odds, break barriers, embrace each day as a new opportunity, and face challenging situations to be the best version of myself.

To my motivation, a sweetheart and an artist, my father, who has constantly motivated me to chase my dreams.

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Abstract

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Re-imagination of Museum Objects Through Materiality Using Phygital Storytelling

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The evolving roles of museums, driven by societal shifts, have created growing tension between museums' artifact preservation efforts and visitors' expectations for sensory, immersive experiences, exacerbated by their increasing reliance on digital tools. This tension leaves museums at risk of weakening human-object relationships and overlooking the intrinsic value of objects that shape the world around us. This paper explores how principles of themed entertainment design, particularly phygital storytelling, can help museums balance preservation of objects and visitor engagement without compromising artifact authenticity. This research examines effective storytelling methods for museums that could enable narrative-driven, multisensory experiences, thereby strengthening visitor-object relationships through a comparative analysis of museum experience models and themed entertainment design strategies. Using interdisciplinary qualitative methodologies, this paper proposes a conceptual phygital museum experience that foregrounds materiality through immersive storytelling and adaptive, tiered participatory design. The research argues that museums can transform overlooked objects into meaningful experiences that reconnect audiences with the material world.

Keywords: *Materials, Museums, Societal Shifts, Experience Economy, Conservation of Artifacts, Museum Experience Models, Themed Entertainment Design, Sensory and Immersive Experiences, Effective Storytelling, Phygital Experience Design, Repeatability*

Introduction

Objects become extensions of human experiences through our interactions with them. Their materiality influences how we perceive the object's value, significance, usefulness, and identity. In the case of ubiquitous, common, "ordinary" objects, their materiality is often judged by function, cost, or convenience. However, in museums, objects with similar physical properties may be framed as "artifacts" worthy of preservation, interpretation, and reflection. By acting as mediators, museums remove ordinary objects from their original contexts and place them within curated environments as "extra-ordinary." Such contextualization results in objects acquiring new layers of meaning, historical significance, and cultural value.

Museums have long served as collectors and preservers. They implement effective preservation techniques to safeguard the cultural integrity and physical properties of objects. As a result, preserved objects are either displayed in glass cases in the exhibits or end up in the museum's storerooms. Museum storerooms serve as vaults not only for objects that require preservation due to their physical properties but also for unprovenanced, unloved objects. Preservation efforts are of primary importance, as museums aim to educate society. However, ever-evolving societal expectations constantly challenge their role. The demand for staged experiences originated in the experience economy¹, and the dependency on digital tools, a direct effect of the COVID-19 pandemic², has changed how visitors encounter information, objects,

¹ B. Joseph Pine II and James H. Gilmore, "Welcome to the Experience Economy," *Harvard Business Review*, August 1998, <https://hbr.org/1998/07/welcome-to-the-experience-economy>.

² Angelica B. Ortiz de Gortari, "Sensory and Cognitive Intrusions with and without Media Content during the COVID-19 Pandemic: Isolation, Media Use, Sleep and Stress Factors," *Telematics and Informatics* 87 (March 2024): 102095, <https://doi.org/10.1016/j.tele.2023.102095>.

and their environment. Modern visitors increasingly seek immersive, participatory, emotionally engaging, and multi-sensory experiences. To address these recent societal shifts, museums serve as facilitators, fostering meaningful visitor engagement. This effort creates tension over whether they focus on preserving artifacts or staging immersive experiences for maximum visitor satisfaction.

This paper argues that, to reduce the tension arising from the growing need to adapt to societal expectations, museums may employ themed-entertainment design principles that offer efficient experience design strategies. These strategies could help combine preservation and visitor engagement rather than treating them as competing priorities.

Theme parks have long mastered the art of storytelling by crafting compelling narratives and building immersive worlds. Their environments foster sensory engagement, spatial immersion, emotional arcs, and interactivity, transforming narratives into lived experiences.

To maximize the effectiveness of themed entertainment design strategies in museum settings, this paper first compares them with existing museum experience models developed over the years. By identifying the similarities between the two and museums' priorities as informational, educational, and cultural hubs, this paper highlights what museums are not fully orchestrating: **effective storytelling**.

This paper further compares museums with contemporary-themed environments to understand how themed spaces effectively cater to evolving societal expectations. The comparative analysis, informed by an understanding of world-building, narrative arcs, sensory design, interactivity, agency, and repeatability, and supported by case studies, investigates how museums could become immersive storytellers and redefine the meaning of "once upon a time."

This approach could strengthen human-object relationships without compromising authenticity or the preservation of objects and their material properties.

Based on the research outcomes, this paper ultimately turns toward **phygital** (a portmanteau of the two words “physical” and “digital”) **experience design: *the integration of physical objects and digital technologies to create meaningful hybrid experiences.***³ Rather than replacing material objects with digital replicas, phygital storytelling could amplify the tactile, visual, and cultural qualities of museum artifacts. Through carefully designed narratives and multisensory experiences, museums can reveal hidden meanings embedded in objects. In this context, materials could serve not merely as showcases of objects’ physical properties but also as a medium for storytelling, fostering deeper emotional and cultural engagement.

Drawing on phygital storytelling strategies, this paper proposes a concept for a **tiered, customizable phygital museum experience**, “Sheet Happens All the Time!” centered on one of the most ubiquitous, ordinary, universal, and often **overlooked materials: “paper,”** to highlight the **historical and cultural significance of paper-based museum artifacts**. Its physical properties and transformative qualities make it an ideal representative of ordinary materiality. The narrative, while maintaining the authenticity of paper’s centuries-old history, explores how it can move beyond its role as a disposable commodity and emerge as a powerful protagonist, connecting audiences to histories of labor, creativity, technology, and human expression.

Ultimately, this paper seeks to challenge the perception of the ordinary. It proposes that museums can move beyond static preservation models toward immersive, participatory, and

³ Mohammad Bakhnoo et al., “Balancing Human Interaction and System Digitization in the Phygital Ecosystem: A Metasynthesis Study,” *Human Behavior and Emerging Technologies* 2026, no. 1 (2026): 6675139, <https://doi.org/10.1155/hbe2/6675139>.

emotionally resonant experiences without sacrificing the authenticity of their collections. By foregrounding materiality through storytelling and phygital design, museums have the opportunity not only to preserve objects but also to reawaken curiosity about the material world itself, transforming the “ordinary” into the “extra-ordinary.”

Tale of the “Ordinary”

This research originated with my appreciation for paper art. The more I read about it, the more I realized that its essence is closely tied to the intrinsic qualities of paper, one of the most ubiquitous materials in our day-to-day, ordinary lives. Through this investigation, I encountered broader frameworks of **materiality**, **materialism**, **material culture**, and the **material world**. While these terms share a linguistic root, their conceptual applications vary significantly. We inhabit a material world shaped by the objects around us that, along with the meanings we attach to them, form material culture. The drive to acquire and value these objects often reflects materialism, and we interact with them through their physical properties.⁴

The Intersection of Materiality, Materialism, Material Culture, and Material World

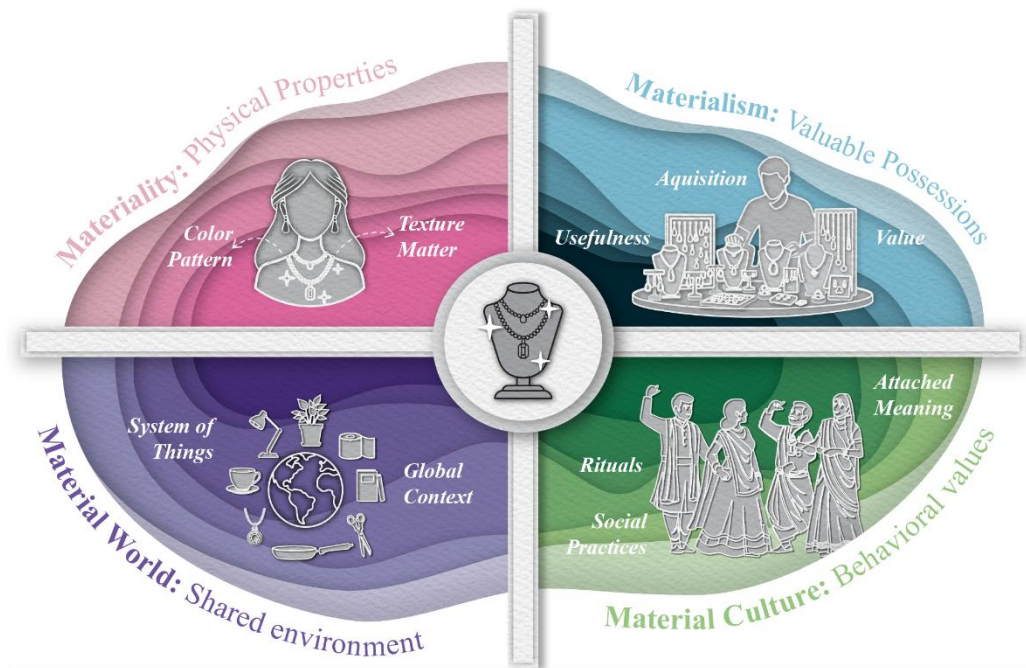


Figure 1. Pranali Tari, *The Intersection of Materiality, Materialism, Material Culture, and Material World*, 2026, Infographic, Adobe Illustrator, and Photoshop.

⁴ Terence E. McDonnell, “Cultural Objects, Material Culture, and Materiality,” *Annual Review of Sociology* 49, no. 1 (2023): 195–220, <https://doi.org/10.1146/annurev-soc-031021-041439>.

This shift in perspective led me to look more closely at the objects around me to understand the human-object relationship. I realized that we always categorize things and the materials they are made of. For instance, I collect themed interactive toys, most of which are plastic. When I look at plastic simply as a material, it forces me to bring pros and cons into conversation: its meaning changes, and I am forced to weigh its utility against its adverse effects on the planet. By doing this, I am taking plastic material out of one context and placing it in another. Some may see this as hypocritical, but that's their "interpretation," and we often do the same with the objects around us. As Katharina Zinn, the author of *Material Culture, the Public, and the Extraordinary— 'Unloved' Museum Objects*, implies, objects are always in a *situation-ship* with their habitat. They have various social identities, ranging from their origins to each new space they occupy.⁵

This analysis could also be applied to materials. Material value changes when materials are removed from their context and turned into functional objects (i.e., given a purpose).⁶ Going back to plastic now, if an object made of the same material is displayed in a museum setting, we would interpret it differently. **Given the environments in which objects are placed, many times we either appreciate them as precious, luxurious, aesthetically pleasing, and valuable, or we underappreciate them because they lack these qualities or are simply "ordinary things" in our "ordinary lives."** This raises an important question: *How do museums convey the significance of objects and, in turn, of their materials, which rarely receive the limelight?*

⁵ Katharina Zinn, "Material Culture, the Public, and the Extraordinary – 'Unloved' Museums Objects as the Tool to Fascinate," *Open Archaeology* 11, no. 1 (2025): 3, <https://doi.org/10.1515/opar-2025-0048>.

⁶ Helene Cherrier and Meltem Türe, "Value Dynamics in Ordinary Object Disposal," *Journal of Business Research* 116 (August 2020): 221–28, <https://doi.org/10.1016/j.jbusres.2020.05.022>.

“Ordinary” at a Museum

Objects acquire historical and cultural significance through their transition into museum collections. The roles of **materiality**, **preservation**, **visitor engagement**, and **evolving societal expectations** in a museum setting create tension.⁷ On one side, museums **conserve artifacts**; on the other, they plan strategies to **create meaningful experiences for ever-changing audiences**.⁸

Journey of Objects in the Material World and their Transformation from Ordinary to Extra-ordinary in a Museum Setting

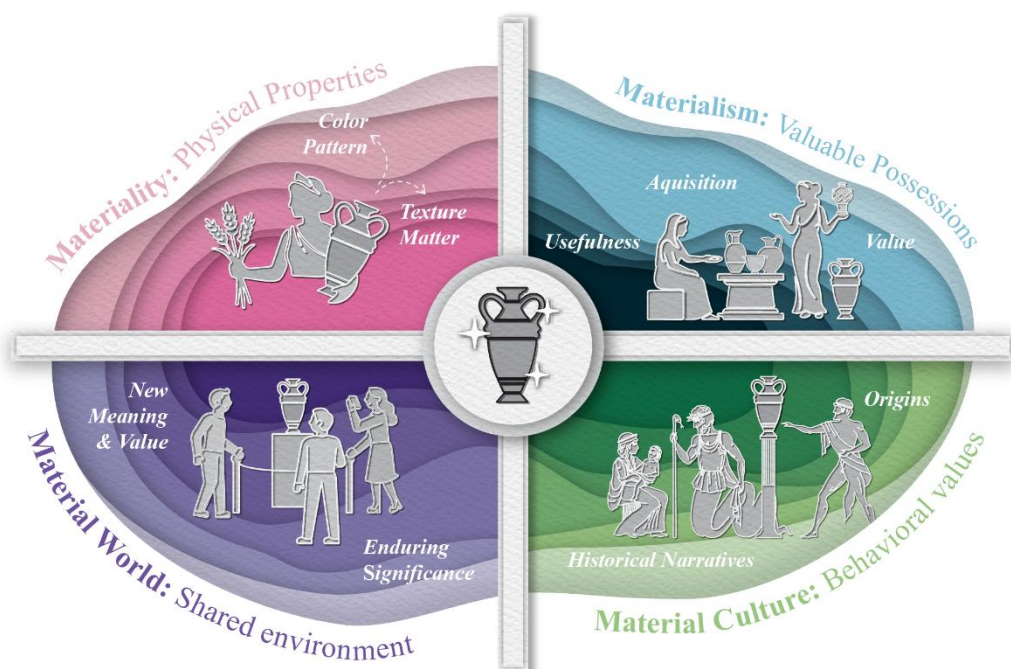


Figure 2. Pranali Tari, *Journey of Objects in the Material World and their Transformation from Ordinary to “Extra-ordinary” in a Museum Setting*, 2026, Infographic, Adobe Illustrator and Photoshop.

⁷ Peter H. Welsh, “Re-Configuring Museums,” *Museum Management and Curatorship* 20, no. 2 (2005): 103–30, <https://doi.org/10.1080/09647770500302002>.

⁸ Iñigo Ayala et al., “Examining the State of the Art of Audience Development in Museums and Heritage Organisations: A Systematic Literature Review,” *Museum Management and Curatorship* 35, no. 3 (2020): 306–27, <https://doi.org/10.1080/09647775.2019.1698312>.

In this regard, what we consider significant objects today were historically ordinary items made from common materials (materiality). The people who made these objects used them for practical purposes within everyday life (materialism). These things traveled through time, carrying traces of their origins and becoming part of a shared historical narrative (material culture). Now they are represented in museum collections, with enduring significance. This transition helps objects gain new meaning and value (in the material world).

Museums as Mediators

By removing objects from their original contexts and placing them in curated environments as “artifacts,” museums frame them as worthy of attention, study, and reflection. It is known as “contextualization” or “the museum effect.”⁹ For this reason, often, museums are equipped with glass-covered displays. The artifacts are usually placed alongside labels describing their significance. Even when objects are placed without glass casings, ropes, barriers, and “Do not touch” signs restrict anyone from getting too close. It is simply “collection care” in Helena Rodwell’s opinion, who works at the Collections Care Office of the Fitzwilliam Museum and the University of Cambridge museums; that supports object preservation efforts.¹⁰ *Why is the preservation of objects in museums so important, though?*

⁹ Pam Schwartz, “Contextualization: The Museum Effect,” Portfolio and Blog, *Mada(M)Useo*, September 8, 2010, <https://madamuseo.com/2010/09/08/contextualization-the-museum-effect/>.

¹⁰ Helena Rodwell, “Please Do Not Touch?,” University of Cambridge Museums, September 21, 2018, <https://www.museums.cam.ac.uk/blog/2018/09/21/please-do-not-touch/>.

Museums as Preservers

Let us take gold jewelry as an example; it is a famous topic of discussion in Indian households, especially during wedding seasons. *Why is possessing gold vital for them?* Ultimately, it belongs to an ordinary category of materials: metals. How materialism affects an object's materiality is evident here. We often forget that an object's materiality, textures, patterns, and colors make it what it is. Paul Graves-Brown, the author of *Matter, Materiality and Modern Culture*, believes that objects are “a world of surfaces onto which we project significance.”¹¹ In this regard, museums are bound to study, monitor, and conserve an object's materiality more than the object itself.

One way traditional museums have done so is by following the “white box style” of exhibitions, popularized by the Museum of Modern Art.¹² It features pristine ivory walls that display artworks in an untouchable, exclusive manner and artifacts in glass-covered cases. Such exhibits emphasize artworks above all else, with no outside distractions.



Figure 3. Objects Exhibited in Glass-covered Cases, Collections Care for Organic Objects, The Metropolitan Museum of Art, June 11, 2020, (<https://www.metmuseum.org/essays/collections-care-for-organic-objects>).

¹¹ Paul Graves-Brown, ed., *Matter, Materiality and Modern Culture* (2000; 0 ed., Routledge, 2012), 4, <https://doi.org/10.4324/9780203351635>.

¹² Joori Suh, “Theory Studies: Contemporary Museum and Exhibition Spaces” (M.A. Thesis, Cornell University, 2003), <https://intypes.cornell.edu/expanded.cfm?erID=91>.

Museums as Vaults

Another way is by simply putting these objects in the museum's storage rooms.

According to Zinn, "all museums have large parts of their collections in their storerooms and not on display."¹³ Erica Moore, in *Art Not Seen: The Purposes of Museum Storage*, an intern blog post on the Bates College Museum of Art website, also suggests that fewer than 10% of collections are exhibited in large-scale museums such as the Louvre and the Guggenheim.¹⁴



Figure 4. Photograph by Chip Clark, The National Museum of Natural History's Collections in Storage Rooms, Iconic Photos Give Rare Glimpse of Smithsonian's Storage Rooms by Abigail Eisenstadt, Smithsonian Magazine, May 18, 2022, (<https://www.smithsonianmag.com/blogs/national-museum-of-natural-history/2022/05/18/iconic-photos-give-rare-glimpse-of-smithsonians-storage-rooms/>).

¹³ Zinn, "Material Culture, the Public, and the Extraordinary – 'Unloved' Museums Objects as the Tool to Fascinate," 4.

¹⁴ Erica Moore, "Art Not Seen: The Purposes of Museum Storage," Bates College Museum of Art, April 9, 2019, <https://www.bates.edu/museum/2019/04/09/art-not-seen-the-purposes-of-museum-storage/>.

Sometimes these are unprovenanced objects; sometimes, in Zinn’s opinion, unloved ones (not because they are “forgotten” but because they are “yet to be realized” as meaningful);¹⁵ and sometimes those that require maximum attention and care due to material deterioration over time.¹⁶

These authors’ observations indicate the necessity of conservation efforts by museums. However, by doing so, *are museums limiting our ability to engage with them and their materiality? Is looking at something extraordinary in a museum setting enough? Furthermore, why should museums allow engagement with the objects?* These are not merely logistical questions; they touch on the very purpose of a museum and what it owes its visitors. *If an object's meaning is in its intrinsic material properties, then how can we access what it determines?*

Museums as Facilitators

The ongoing tension between preservation and engagement has shaped the very definition of a museum, which continues to evolve. From ancient Babylonian times, museums were collectors and preservers of intriguing objects.¹⁷ In 1946, the International Council of Museums (ICOM) was established and described a museum as “collections, open to the public,

¹⁵ Zinn, “Material Culture, the Public, and the Extraordinary – ‘Unloved’ Museums Objects as the Tool to Fascinate,” 1.

¹⁶ Christopher Groskopf, “Museums Are Keeping a Ton of the World’s Most Famous Art Locked Away in Storage,” Quartz, July 21, 2022, <https://qz.com/583354/why-is-so-much-of-the-worlds-great-art-in-storage>.

¹⁷ Geoffrey Lewis, “Museums and Their Precursors: A Brief World Survey,” in *Manual of Curatorship*, ed. John M. A. Thompson (1993; Second Edition, Routledge, 2015), 24, <https://doi.org/10.4324/9781315810126-10>.

of artistic, technical, scientific, historical or archaeological material [...].”¹⁸ Museums were known as the epicenters of knowledge, inclusivity, and accessibility. Fast forward to the 21st century; as per the most recent definition approved by ICOM in 2022, a museum is characterized as “a not-for-profit, permanent institution in the service of society that researches, collects, conserves, interprets, and exhibits tangible and intangible heritage. Open to the public, accessible, and inclusive, museums foster diversity and sustainability. They operate and communicate ethically, professionally, and with the participation of communities, offering varied experiences for education, enjoyment, reflection, and knowledge sharing.”¹⁹ According to Bevin Yamazaki, co-leader of Gensler’s Culture & Museums practice, this transformation reflects “**societal shifts,**” driven by changing economic and socio-cultural movements.²⁰ Recently, **the experience economy** and **the global COVID-19 pandemic** have changed society’s expectations for museums.

The Experience Economy:

In the past few years, Pine II and Gilmore, in an article for *Harvard Business Review* (*HBR*), have noted the transition of commodities to staged experiences and stated that we are now part of the experience economy. It is a rising fourth economic state in which modern consumers crave experiences over mere goods or services.²¹

¹⁸ Martina Lehmannová, “224 Years of Defining the Museum,” ICOM Czech Republic, 2020, 2, https://icom.museum/wp-content/uploads/2020/12/2020_ICOM-Czech-Republic_224-years-of-defining-the-museum.pdf.

¹⁹ “Museum Definition,” International Council of Museums, August 24, 2022, <https://icom.museum/en/resources/standards-guidelines/museum-definition>.

²⁰ Bevin Savage Yamazaki, “The Evolution of the Museum,” Gensler Research and Insights, September 3, 2024, Q&A, <https://www.gensler.com/blog/evolution-of-the-museum>.

²¹ Pine II and Gilmore, “Welcome to the Experience Economy.”

THE PROGRESSION OF ECONOMIC VALUE

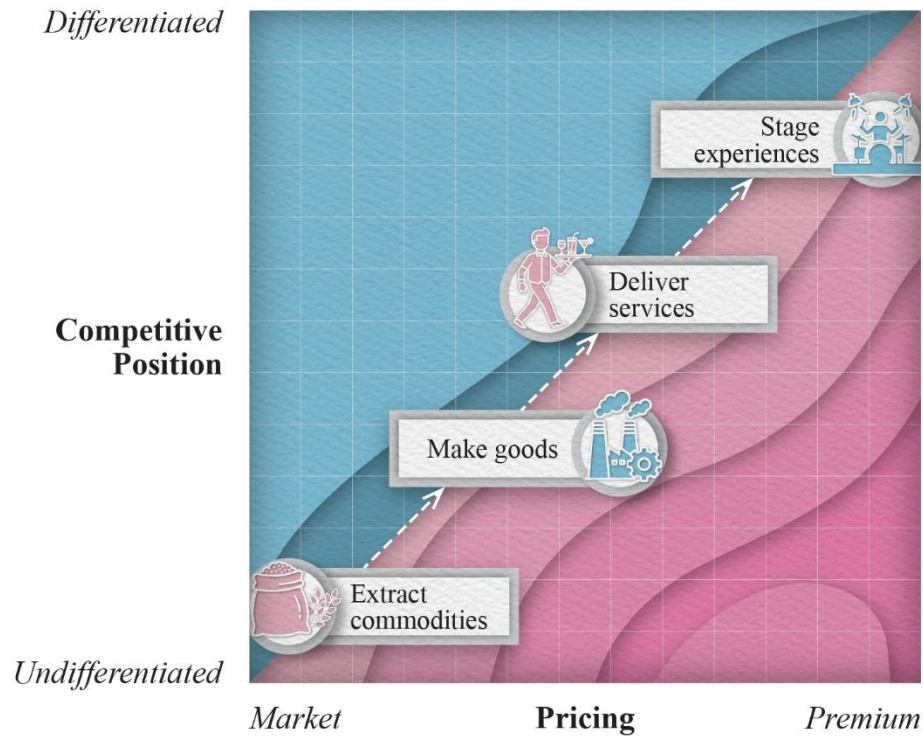


Figure 5. *The Progression of Economic Value*, [Adapted from B. Joseph Pine II and James H. Gilmore, *Welcome to the Experience Economy*, Harvard Business Review Magazine, July–August 1998, (<https://hbr.org/1998/07/welcome-to-the-experience-economy>)].

In the context of museums, this economic trend, driven by the ever-changing fabric of societal expectations, has transitioned objects from preservation to staged experiences. Previously, the purpose of attending social gatherings at museums was to passively access cultural content (Stage 1), for example, by interpreting artifacts on display. In this first stage, visitors primarily observed and passively absorbed information rather than actively participating in the experience. As such offerings became standardized (Stage 2), museums increased in numbers, becoming more convenient and consistent to visit, which allowed them to reach broader audiences more efficiently. Later, as the economy shifted towards a service-oriented society (Stage 3), museums added services such as guided museum tours, educational programs,

and audio tours to enhance visitor understanding and comfort. In the modern setting, however, the audience wants not just to consume cultural content but also to feel, interact with, and experience it on a more personal and immersive level (Stage 4).

THE PROGRESSION OF ECONOMIC VALUE

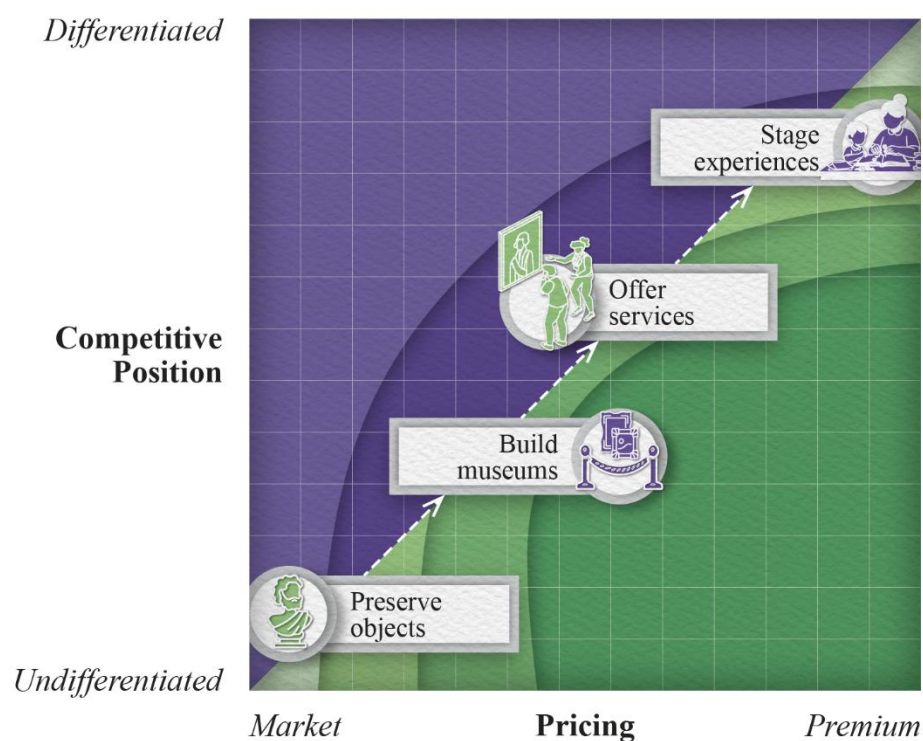


Figure 6. Effect of the Progression of Economic Value on Cultural Venues, [Adapted from B. Joseph Pine II and James H. Gilmore, *The Progression of Economic Value*, Welcome to the Experience Economy, Harvard Business Review Magazine, July–August 1998, (<https://hbr.org/1998/07/welcome-to-the-experience-economy>); modified by author to include the Effect of the Progression of Economic Value on Cultural Venues, 2026].

A Case Study: The Global COVID-19 Pandemic:

In recent times, the COVID-19 pandemic has starkly exposed the relationship between physical experience and digital consumption. What had been a gradual shift toward screens and virtual engagement pre-COVID has suddenly, and forcibly, accelerated. A study by Angelica B. Ortiz de Gortari, Faculty of Psychology at the University of Bergen, Norway, states that

“COVID-19 pandemic restrictive measures curtailed environmental stimuli and social contact while encouraging media consumption.”²² The pandemic, in a way, restricted our ability to engage our senses, especially through touch. That pushed us to use digital media, reducing our engagement with the material world around us.

Post-COVID, digital tools have been valuable for access, visual representation, and interpretation. However, now they are depriving us of the tactile experiences we, as human beings, need to establish connections in a museum setting. They have also changed the way we receive and process information. Incessant research on the impact of digital media has shown a subsequent reduction in attention span over the years. Gloria Mark, PhD, who studies the effects of digital media, said that the average attention span observed in the last few years is 47 seconds, compared with 2.5 minutes in 2004, during an interview with the American Psychological Association.²³ While this is just one example, some studies have also highlighted the challenges faced by mixed reality experiences. Additionally, research led by Bevin Savage Yamazaki and Nina Murrell for Gensler suggests that “tech-savvy” younger generations are so dependent on digital and online material that there is a need to design persuasive museum experiences.²⁴

The cumulative effect of societal shifts driven by the need for staged experiences and post-COVID dependency on digital tools is that visitors are simultaneously more connected and

²² Gortari, “Sensory and Cognitive Intrusions with and without Media Content during the COVID-19 Pandemic,” 1.

²³ Kim Mills, host, *Why Our Attention Spans are Shrinking*, episode 225, with Gloria Mark, PhD, “Speaking of Psychology,” American Psychological Association, February 2023, at 5:58, Podcast audio, <https://www.apa.org/news/podcasts/speaking-of-psychology/attention-spans>.

²⁴ Bevin Savage Yamazaki and Nina Murrell, “Engage: The Future of Museums,” *Gensler Research*, 2015, 19, https://www.gensler.com/uploads/document/395/file/gensler_museum-research-interim-report.pdf.

more distracted than ever before. *Now the question is, how are museums catering to the changing fabric of society's expectations, such as these?*

Museums as Staged Experiences

Museums are now at a crossroads, compelled to embrace digital tools to remain relevant in the current experience economy, while risking the very sensory depth that makes a museum experience irreplaceable. Yamazaki said that modern museums are “creating experiences that not only preserve and collect but also interpret, engage, and share a range of stories that are trustworthy, ethical, and inclusive.”²⁵ Mazen N., Mohammed N., and Ibrahim M., authors of *Investigating the Socio-Economic Sustainability within the Egyptian Museums over the Last Decade*, also remark that museums “have become public places that promote socio-economic sustainability through recreation, commercial, and cultural activities. This shift has altered public perception of museums globally and had a profound impact on today’s museums, resulting in new prototypes that differ significantly from prior ones.”²⁶ In the post-COVID era, experts continue to debate the future direction of museums, focusing on new methods for contextualizing objects and sharing their histories through authentic stories. Moreover, they are establishing ways to further develop digital engagement post-pandemic.²⁷

²⁵ Yamazaki, “The Evolution of the Museum.”

²⁶ Mazen Nassef et al., “Investigating the Socio-Economic Sustainability within the Egyptian Museums over the Last Decade,” *Sustainability* 15, no. 24 (2023): 1, <https://doi.org/10.3390/su152416746>.

²⁷ “Museum Digital Engagement: Before, During, and Beyond the COVID-19 Pandemic,” Association of Science and Technology Centers, April 2022, 2, https://www.astc.org/wp-content/uploads/2022/05/ASTC_Museum-Digital-Engagement_Before-During-and-Beyond-the-COVID-19-Pandemic.pdf.

Through these two impactful movements recently, it is evident that **museums are shifting towards improving the visitor experience while expanding their use of digital tools.**

However, *what does it mean for the physicality of museum artifacts?*

Sandra Dudley, author of a working paper for the University of Michigan Museum Studies Program, states that “our experience of the material world is dependent upon our location, our movement, and our interpretations of the data we receive from our senses.”²⁸ It means humans interact with objects to satisfy their own “material presence” using their sensory organs. Through our interactions with objects’ materiality, they become meaningful to us.

In such a case, what should museums focus more on: the preservation of objects’ materiality or the constantly changing societal expectations? Could the answer potentially lie between the two priorities of museums? Is it possible to find a balance between the two challenges? For objects made from organic materials (wood, textiles, paper, clay, wax, and more), advanced preservation techniques are required. Should museums compromise with them to satisfy visitors?

These questions suggest that in the current times, museums can no longer rely on traditional methods of preservation and display alone. As visitors increasingly seek immersive, participatory, and emotionally engaging experiences, museums are challenged to rethink how objects are interpreted and encountered without compromising their material integrity. Museums may benefit from approaches that combine preservation and engagement rather than treating

²⁸ Sandra Dudley, “Materiality Matters: Experiencing the Displayed Object,” *University of Michigan Working Papers in Museum Studies*, 2012, 1, https://ummsp.rackham.umich.edu/wp-content/uploads/2022/06/8_Dudley_2012.pdf.

them as competing priorities. One such field that offers meaningful insight in this regard is themed entertainment design, which has always been rooted in creating meaningful experiences.

Themed entertainment design is associated with storytelling, spatial immersion, community participation, and sensory interaction, some concepts that closely align with ICOM's recent definition of museums. Hence, the principles of themed entertainment design can be used to strike a balance between the two challenges museums face today: preserving objects' materiality and designing the visitor experience to meet current societal expectations.

“Ordinary” Transformation

As museums continue to evolve in response to societal shifts, the boundaries between cultural institutions and themed entertainment are becoming increasingly intertwined. Education and entertainment are no longer mutually exclusive; both increasingly incorporate immersive, emotionally engaging, and effective storytelling. A comparison between the two fields could reveal both what museums already offer and the experiential gaps that prevent a more profound relationship between the visitor and the object. This comparative analysis could explore how themed entertainment design strategies can inform contemporary museum experiences without compromising the authenticity and physical significance of museum objects.

In an interview with UCF Today, Peter Weishar, Director of Themed Experience at the University of Central Florida, said that depending on the theme of a book, movie, or original story, a themed experience can create an immersive environment. He further added that, “a themed experience can occur at any establishment. Retail spaces, restaurants, museums, libraries, zoos and aquariums can all fit into this category — as long as they have created unique, themed environments that guests can explore.”²⁹ Comparing this statement with the definition of museums today, it can be said that the fundamental principles of themed entertainment are already applied to the way we perceive museums. In the current experience economy, experiences are no longer limited to theaters and theme parks.³⁰ It has been explained by Pine II

²⁹ Arielle Feldman, “6 Things You Should Know About Themed Experiences,” UCF Today, University of Central Florida, August 2, 2019, <https://www.ucf.edu/news/6-things-know-themed-experiences/>.

³⁰ Pine II and Gilmore, “Welcome to the Experience Economy.”

and Gilmore using the four types of experiences defined by guest participation, either through narrative absorption or immersion.

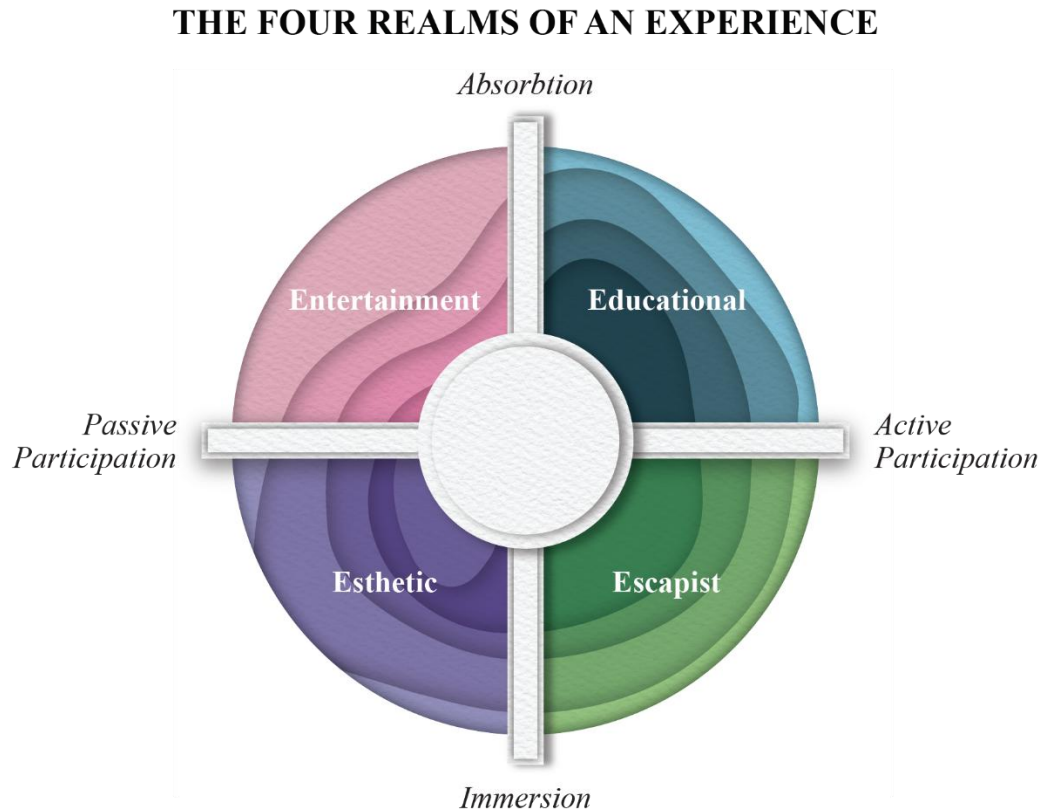


Figure 7. *The Four Realms of an Experience*, [Adapted from B. Joseph Pine II and James H. Gilmore, Welcome to the Experience Economy, Harvard Business Review Magazine, July–August 1998, (<https://hbr.org/1998/07/welcome-to-the-experience-economy>)].

Case Study: Mickey's 10 Commandments

Theme parks have focused on creating fantastical, immersive realms that encourage guest participation since their inception. What makes theme parks and themed entertainment design, as a whole, an effective comparison here is their attention to detail in crafting an experience. Their

meticulousness in storytelling can be streamlined using Mickey's 10 Commandments, which have proven effective planning strategies for decades.³¹

Mickey's 10 Commandments

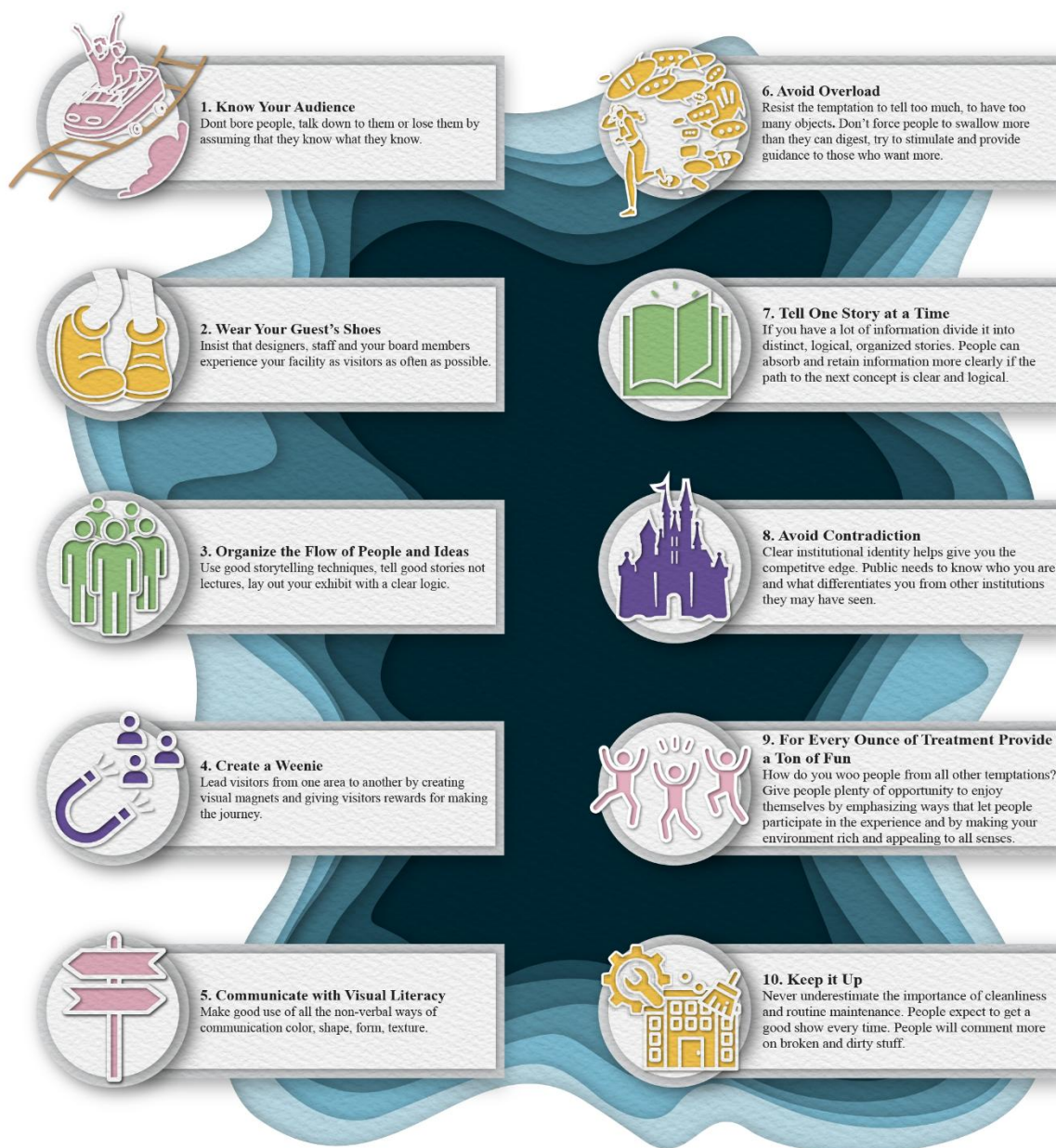


Figure 8. *Mickey's Ten Commandments* [Adapted from Laura Catherine, *Do You Know About Mickey's 10 Commandments?* DisneyFanatic, December 4, 2024, (<https://www.disneyfanatic.com/do-you-know-about-mickeys-10-commandments-lh1/>)].

³¹ Laura Catherine, *Do You Know About Mickey's 10 Commandments?*, December 4, 2024, <https://www.disneyfanatic.com/do-you-know-about-mickeys-10-commandments-lh1/>.

Similar to the commandments for theme parks, museums have adopted multiple experience-design models over the years. A deep dive into these models reveals that museums and theme parks employ similar strategies to enhance visitor experiences. The chart below compares prominent educational museum experience models with Mickey's 10 Commandments to understand the overlap:

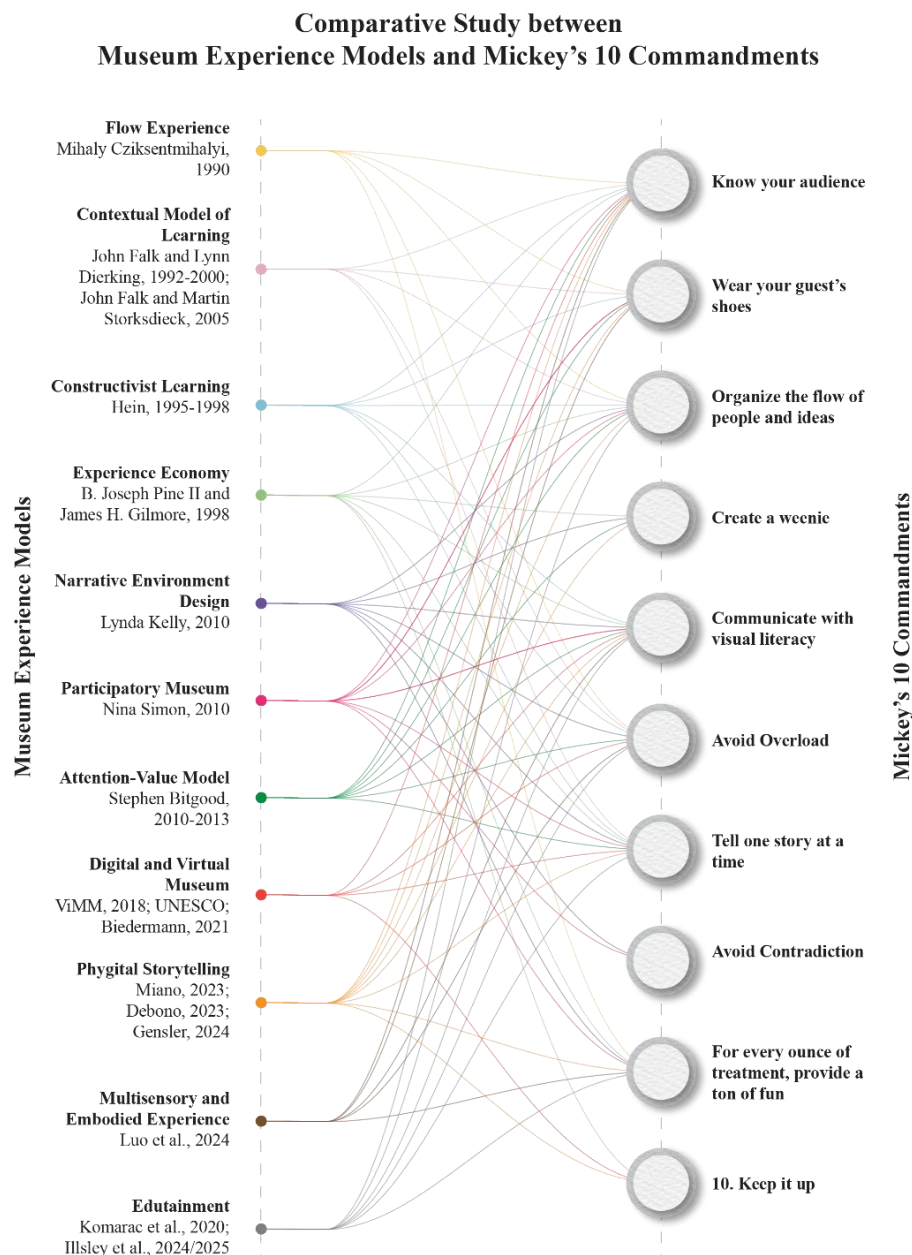


Figure 9. Pranali Tari, *Comparative Study Between Museum Experience Models and Mickey's 10 Commandments*, 2026, Infographic, Adobe Illustrator

Based on this study, it can be assessed that museum experience models (Flow Experience in 1990³², Constructivist Learning in 1995-1998³³, Experience Economy in 1998-1999³⁴, among many) **display similar methods to Mickey's commandments**. In such a case, *what is the purpose of discussing it again?* Re-evaluating them to align with current societal shifts would be a starting point for weaving an ideal narrative that benefits the objects as well.

The overlap between museums and themed entertainment here shows **that museum experience models primarily prioritize cognitive engagement, interpretation, and the clarity of objects' backgrounds**. These are often conveyed through text, displays, or digital tools. This approach limits the visitor experience to observation and understanding rather than participation and embodiment. On the other hand, themed entertainment design turns stories and meanings into spaces that visitors can see, touch, and feel (sometimes even smell and taste), allowing them to step into an immersive, otherworldly sensory experience, like shrinking to the size of a mouse and running within a Parisian kitchen on *Remy's Ratatouille Adventure* ride at Disney World EPCOT,³⁵ or physically touching a dragon, *Toothless*, in the *How to Train Your Dragon Land* at Epic Universe.³⁶

³² Mihaly Csikszentmihalyi, *Flow: The Psychology of Optimal Experience* (Harper & Row, 1990), https://www.researchgate.net/publication/224927532_Flow_The_Psychology_of_Optimal_Experience.

³³ Satish Prakash Chand, "Constructivism in Education: Exploring the Contributions of Piaget, Vygotsky, and Bruner," *International Journal of Science and Research (IJSR)* 12, no. 7 (2023): 274–78, <https://doi.org/10.21275/SR23630021800>.

³⁴ Pine II and Gilmore, "Welcome to the Experience Economy."

³⁵ "Remy's Ratatouille Adventure," Walt Disney World, Disney, accessed April 26, 2026, <https://disneyworld.disney.go.com/attractions/epcot/remys-ratatouille-adventure/>.

³⁶ "How to Train Your Dragon Isle of Berk," Universal Orlando Resort, Universal Orlando, accessed April 26, 2026, <https://www.universalorlando.com/web/en/us/epic-universe/worlds/how-to-train-your-dragon-isle-of-berk>.

Museums as Storytellers

Museums are equally capable of offering fantastical experiences like theme parks.

Objects in museums have inherently authentic stories to tell. These objects can **influence strong narratives, in which their materiality, textures, patterns, weight, scale, colors, and making processes become plots or characters.** Through such narratives, museums can help **build deeper human-object connections.** Hence, even though Mickey's commandments are indirectly embedded into museum experience models, the **greatest takeaway** is in understanding **what museums are not fully orchestrating: effective storytelling.**

Unlike traditional museum displays, which prioritize providing information, theme parks construct emotionally engaging, immersive narratives that actively involve visitors in the story world. Their narrative techniques rely on sensory immersion, participation, spatial sequencing, and emotional engagement, converting passive audiences into active participants. Their approach to storytelling strongly aligns with the realms of an experience discussed previously (Figure 7).

To understand how theme parks tell stories, I looked at the latest insights report by SCADask, "The Future of Story."³⁷ The report presents a concept map derived from valuable insights into today's society's expectations and perspectives of various industry professionals.

³⁷ SCADask, *The Future of Story*, Insights Report (Savannah College of Art & Design, 2025), 4–17, https://www.scad.edu/sites/default/files/scadask/the-future-of-story-scadask-report_0.pdf.

CONCEPT MAP

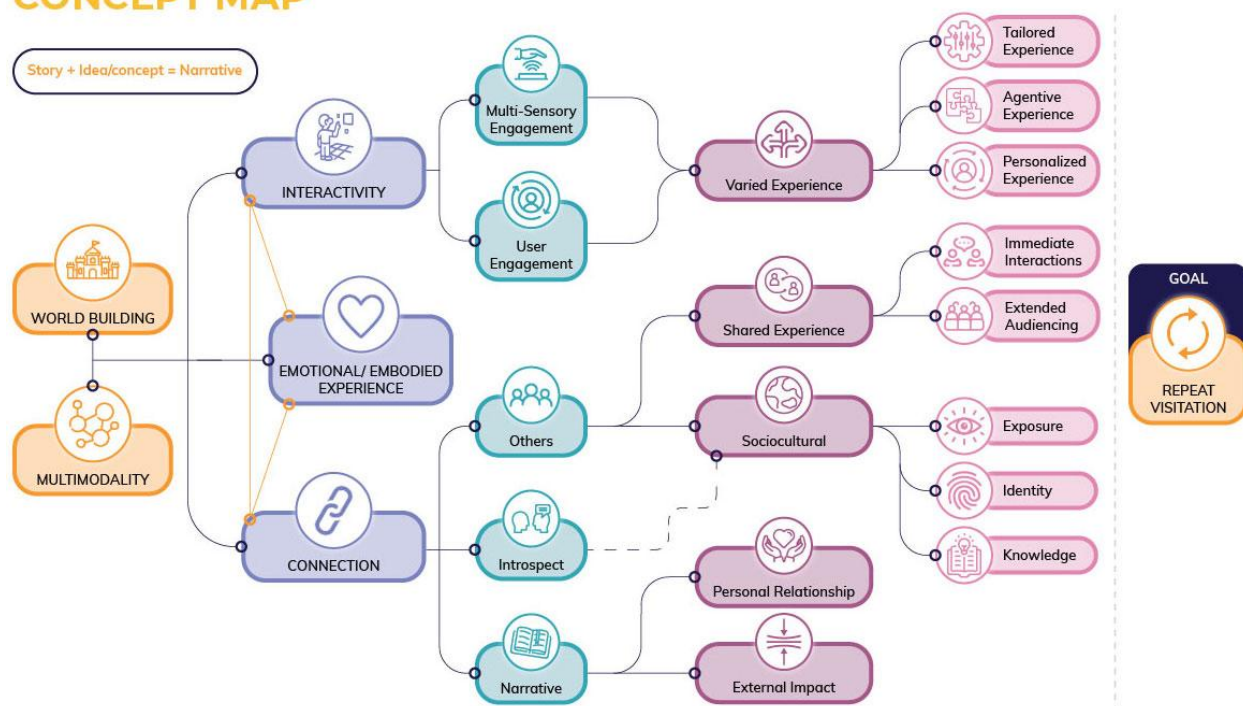


Figure 10. *Concept Map*, The Future of Story, Insights Report by SCADask Research in Technology, Fall 2025. The Savannah College of Art & Design, Savannah, GA, (<https://www.scad.edu/about/industry-partnerships/scadask/future-story>).

For modern museums, these insights and the concept map could help redefine the meaning of “Once upon a time” in an educational yet recreational context. Based on this map, the latest trends indicate that repeatability is a key factor in creating a visitor experience.

Theme parks create a welcoming atmosphere for their guests by making repeatability a focal point of their ethos. As a theme park enthusiast, I have been to *Universal Orlando* at least five times in the last two years. Each time, I explored something new that I might have missed previously. *What makes people want to go back to such themed environments? Is it the thrill of riding their favorite coaster again, or their connection to the story and the characters, or a feeling of leaving the ordinary world behind just for a day?* The answer is all of the above because themed experiences are always adapting and evolving. They learn what works for their

audience and continually improve the experience they offer. It helps guests want to go back and make new memories.

Museums do not have to go to the length of repetitive upgrades. However, like theme parks, **museums can build repetitive relationships between their collection of objects and visitors.** They could start by shifting their perspective towards society first. The key difference in repeatability between theme parks and museums is beautifully explained by Matt Dawson, vice president of Business Strategy at RWS Global, in an interview. He asserts that museums should consider their frequent audience as “guests” rather than “visitors” since “a guest is someone you invite in; a visitor is someone who shows up unannounced.”³⁸ In other words, when you are invited, you are encouraged to be a part of the story, and your presence as a guest matters.

However, our material presence is not the only important aspect when we enter a space. It is linked to the material presence of everything around us. Themed spaces have been following this thumb rule for as long as they have existed. They create a themed environment that influences our sensory responses. Adaptation of digital tools further enhances the influence of these themed environments. Themed experiences always find ways to enhance the physical qualities of themed components through technology.

In the case of museums, **the material presence or physical qualities of objects can be significantly enhanced if digital tools are used as supplements to museum experiences rather than as substitutes.** It could help build meaningful relationships with visitors and

³⁸ Ella Van Haren, “The Modern Movement Museum: An Immersive Approach to Art Education” (M.F.A. Thesis: Themed Entertainment Design, Savannah College of Art and Design, 2025), 14, <https://scad.lunaimaging.com/luna/servlet/detail/SCAD~3~3~7873~26391:The-Modern-Movement-Museum--An-Imme?qvq=q%3A%20haren%3Bsort%3Acreator%2Ctitle%2Cdate%3B%3ASCAD%7E3%7E3&sort=creator%2Ctitle%2Cdate&mi=1&trs=2&cic=SCAD%7E3%7E3>.

highlight an object's cultural heritage. Simply mapping a stone material on a digital three-dimensional model of an ancient sculpture cannot give us an authentic experience of that object. Rather, if museums design participatory activities that use the same digital stone material to enhance artifacts' physical presence, people could establish a meaningful connection with the objects. This is a way to fill the gap identified earlier in this research: an ideal visitor experience informed by current societal shifts and a focus on valuable objects and their materiality. Hence, by drawing inspiration from theme parks and adapting their design methodologies, **museums can combine physical objects with digital technologies to establish a strong visitor-object relationship** today. Recently, this approach has been known as **phygital experience design**.³⁹

Going back to the comparison graph between museum experience models and Mickey's 10 Commandments (Figure 9), it can be observed that phygital storytelling adheres to the maximum number of Mickey's commandments. Hence, given today's experience economy and the hunger for meaningful multisensory experiences, similar to those of theme parks, this approach could offer a promising way to connect our interpretation of museum objects with real, lived experiences.

³⁹ Alessandra Miano, "Phygital Museum Experiences: The Situated and Invisible Dimension of Technology as Sensitive Activation of Cultural Heritage," AMPS (August 2023).

Goodbye Ordinary, Welcome “Extra-ordinary”

Phygital experiences are especially gaining popularity post-COVID.⁴⁰ However, it is not a new concept. It has been adapted from the field of marketing, where it gained popularity after the former chairman and CEO of Momentum Worldwide, a marketing agency, coined it around 2007,⁴¹ as Sasha Belitskaja noted in an article for *Architectural Design* in 2023. Belitskaja expands on the concept, stating, “Combining elements across the physical and digital worlds creates unique spatial opportunities that cannot be replicated by either medium alone – which is what is meant by ‘phygital.’” Massimiliano Lo Turco, author of “On Phygital Reproductions: New Experiential Approaches for Cultural Heritage,” further explains the term from two perspectives, humanistic and technical, by describing it as “a neologism that can take on different meanings. In a more humanistic sense, it can be used to describe a generation of people for whom the real and digital worlds overlap. In a more technical context, it is used to define the interconnection between the physical and digital layers that increases the meaning and value of the original object.”⁴²

While the portmanteau “phygital” might have originated in marketing, themed experiences have indirectly been using its design principles since Walt Disney revolutionized audio-animatronics.⁴³ Disney studied wind-up toys, which led to the revolution of audio

⁴⁰ Miano, “Phygital Museum Experiences: The Situated and Invisible Dimension of Technology as Sensitive Activation of Cultural Heritage,” 1.

⁴¹ Sasha Belitskaja, “All at Once – From Zoom Fatigue to Immersive Digital Experiences: Why Architecture Must Adapt,” *Architectural Design* 93, no. 6 (2023): 116, <https://doi.org/10.1002/ad.3001>.

⁴² Massimiliano Lo Turco, “On Phygital Reproductions: New Experiential Approaches for Cultural Heritage,” *Img Journal*, no. No. 1 (October 2019): 163, 158-173 Pages, <https://doi.org/10.6092/ISSN.2724-2463/11065>.

⁴³ Keith Gluck, “The Early Days of Audio-Animatronics©,” *The Walt Disney Family Museum*, June 18, 2013, <https://www.waltdisney.org/blog/early-days-audio-animatronicsc>.

animatronics (AAs) in 1963. From 1963 to now, AAs have undergone major upgrades, benefiting from advances in digital technology. So much so that Disney trademarked a new name for it: Autonomatronics. Otto, Disney's first autonomatronic, was introduced in 2009. Otto receives inputs from cameras, sensors, and microphones to provide outputs.⁴⁴ Based on my multiple visits to Universal Orlando and my observations, Universal could be using similar input and output techniques for their automated window displays in *Diagon Alley* at *The Wizarding World of Harry Potter*. While nobody can notice the seamlessly hidden tech behind the elaborate displays, an experiment by Sanniti Pimpley shows how she designed her own magic spells using a laptop, its camera, specific code, and a *Harry Potter* interactive magic wand from *Universal*, among other things.⁴⁵

Phygital components have greatly influenced themed entertainment, as seen in the impressive technology and its advancements over the years. For educational cultural venues such as museums, **phygital storytelling methods could enhance visitors' perceptions of objects, their materiality, and material culture, while making the museum experience more engaging.** It would also help bridge the gap this paper has discussed so far: current societal expectations and the primary focus on artifact preservation methods in museums. Overall, phygital installations could mediate "the value of material culture," which "is based on both its physical and immaterial values" of an object, says Turco.⁴⁶ Meaning: The underlying physical features of objects can be elicited using digital tools. It would bring to light the tangible and

⁴⁴ Mallory O'Bryant, "The Imagineering of Audio-Animatronics," Personal Blog, *MALLORYLAND*, July 27, 2011, <https://malloryobryant.wordpress.com/2011/07/27/the-imagineering-of-audio-animatronics/>.

⁴⁵ Sanniti Pimpley, "Tech-Magic: Home Automation Using Interactive Wand from Wizarding World of Harry Potter," *Autodesk Instructables*, November 25, 2017, <https://www.instructables.com/Tech-Magic-Home-Automation-Using-Interactive-Wand-/>.

⁴⁶ Lo Turco, "On Phygital Reproductions," 160.

intangible aspects of the objects that are otherwise conveyed to visitors through text. Visual representations could enhance our interpretation of objects and, through them, our understanding of our own cultural heritage. In a way, this storytelling method provides museums with an opportunity to incorporate their exhibits into a larger narrative by strategically placing objects. The stories they craft can be further translated into immersive, multi-sensory, interactive worlds. Some museums are quietly adopting phygital storytelling strategies. Which are as follows:

Case Studies

Jorvik Viking Centre, York, United Kingdom

One outstanding example of phygital storytelling experiences with respect to museums is the JORVIK Viking Centre in York, England. It was developed following the discovery by the York Archaeological Trust of archaeological remains from Viking-age settlements that are at least 1,000 years old.⁴⁷ Built directly above the archaeological site, the center preserves ancient Viking history and communicates it through an immersive heritage attraction. The center combines excavated artifacts in a carefully crafted narrative that takes visitors on a journey through the past. Visitors hop on a dark ride and witness the reconstructed streets and animatronics, while smells, fresh breezes, sounds, and sights immerse them in daily life in 10th-century Jorvik, based entirely on archaeological evidence.⁴⁸ After interpreting the day-to-day life in the ancient city, visitors are brought back to the future, where they witness the actual findings.

⁴⁷ “About the JORVIK Viking Centre,” Jorvik Viking Center, York Archaeological Trust, 2026 2012, <https://www.jorvikvikingcentre.co.uk/about/>.

⁴⁸ Peter Addyman, *Creating Heritage Vikings, Jorvik and Public Interest Archaeology*, Review 26 (The British Academy, 2016), 15–16, <https://www.thebritishacademy.ac.uk/documents/845/BAR27-05-Addyman-reduced.pdf>.

Using interactive screens and role-specific interactions, the center offers visitors the opportunity to engage further with the narrative.⁴⁹



Figure 11. The Immersive Ride Experience at the JORVIK Viking Center, JORVIK Viking Center, York, United Kingdom, (<https://www.jorvikvikingcentre.co.uk/visit/access/>).

The Viking Center revolutionizes the traditional museum experience by crafting a narrative and guiding guest flow through a ride. It reduces the likelihood that visitors will miss important educational information. The depiction of the city through a reconstructed neighborhood and the use of phygital elements, such as animatronics, help build anticipation before visitors see the actual excavated artifacts. This approach is beneficial in a museum setting

⁴⁹ York Archaeological Trust, “About the JORVIK Viking Centre.”

because it fosters meaningful connections with the preserved artifacts and deepens understanding of the cultural significance of ancient Viking life.

In addition to phygital installations in the museum, the founding trust has established an Archaeological Resource Center (ARC), now renamed DIG, to address issues caused by limited space and long queues outside the Viking Center.⁵⁰ The purpose of DIG is to provide interactive educational activities for school students. Through hands-on experiences such as examining, sorting, and classifying real, organic Viking remains, DIG offers an opportunity to engage with the materiality of objects.

Though the presence of a dark ride similar to those in theme parks is intriguing, the journey within offers a passive experience. Today's society craves experiences that enable narrative personalization. Hence, the center can upgrade the phygital installations to include more interactive activities, reducing dependence on screens. The scope of DIG can also be expanded to include hands-on activities for visitors of all ages, creating a more fulfilling experience.

Lavazza Museum, Turin, Italy

The Lavazza Museum in Turin, Italy, serves as another excellent example of phygital storytelling, incorporating the concepts of materiality and material culture. It is a coffee company museum that offers a journey into the world of coffee culture, tracing the history of the coffee-making process pioneered by the Lavazza family over 120 years.⁵¹ The museum offers an

⁵⁰ Addyman, *Creating Heritage Vikings, Jorvik and Public Interest Archaeology*, 16.

⁵¹ RAA, "Lavazza Museum Turin, Italy," Company Website, Ralph Appelbaum Associates, 2018, <https://raai.com/project/lavazza-museum/>.

immersive, interactive experience that engages all five senses through the culinary heritage experience.⁵² For complete immersion in the sounds, images, and aromas of coffee, the museum uniquely blends tradition with innovation. The journey is divided into 5 zones, each with a unique narrative that builds on Lavazza's passion for delivering the perfect coffee experience.⁵³ Visitors establish a personal connection with global coffee culture through their interactions with the themed installations. As they enter the museum, they are handed a Radio-Frequency Identification (RFID)-activated interactive espresso coffee cup: the most iconic object of the coffee ritual. The cup serves as a visitor's companion, guiding them through the space by activating interactives and saving their personalized journey content.



Figure 12. Photograph by Andrew Lee, Interaction using the RFID-enabled Espresso Coffee Cup, 2018, The Lavazza Museum Experience, Turin, Italy, designed by Ralph Appelbaum Associates (RAA), (<https://raai.com/project/lavazza-museum/>).

⁵² “Discover the Lavazza Museum,” Company Museum Website, Discover the Museum, Museo Lavazza, <https://www.lavazza.com/en/lavazza-museum/discover-the-museum.html>.

⁵³ RAA, “Lavazza Museum Turin, Italy.”

In this museum experience, the coffee cup, as both a phygital storytelling tool and a cultural object, connects visitors to the story of coffee. It embodies materiality by allowing visitors to hold, touch, and carry the experience with them. The cup also represents material culture, as it is a significant symbol of daily coffee rituals, social traditions, and global coffee heritage. The cup also depicts the material world and materialism by showing how common objects can embody memories, identity, and cultural importance beyond their everyday purpose. The museum creates an emotional bond between the visitor and the cultural history of coffee by using a familiar object associated with coffee consumption.

The seamless blend of physical objects and digital media creates a more engaging and participatory narrative journey. In this way, the museum establishes a meaningful connection among visitors, coffee culture, and material culture, thereby making the coffee cup a medium for effective storytelling and a cultural symbol.

Museums as “Phygital” Storytellers

Analysis of phygital experiences suggests that **phygital design strategies can reinvigorate static artworks housed in glass enclosures**. Museums should not compromise the cultural integrity of original, preserved objects in the process. However, they can create replicas that highlight the original artifacts’ material properties. Museums can also strategically place original artifacts within staged multi-sensory interactive experiences. Visitors can feel an object’s materiality and value in the material world by using physical props alongside digital tools. This feeling would help embody the material culture rather than just reading about it. It can further

reveal how an object's physical substance embodies histories of labor, environment, and technology.

The underlying intent of this research is to foster curiosity about the intrinsic value of objects that are ordinary or not yet recognized as valuable. As human beings, we are often influenced by the extrinsic value of objects. Our interpretation can be influenced by impactful storytelling that helps uncover the true meaning of the objects around us, which play a critical role in our material culture. Phygital storytelling can amplify the tactile, visual, and even sonic qualities of objects, highlighting both their physical appearance and their intangible cultural heritage.

One particularly compelling approach to perceive such ordinary objects as extraordinary is to foreground their materiality itself as a narrative. All materials carry intrinsic value, including the stories of their origin, extraction, processing, and cultural use. They silently pour their qualities into objects that we perceive as valuable and meaningful. Phygital storytelling methods can help materials that would otherwise disappear into the background become the lead characters for once.

While unpacking the truths and stories about different materials may be tempting, it is well beyond the scope of this paper. Focusing on a single material, though, can reveal the various ways in which we undermine it and materiality in general, whether in a museum setting or everyday life. Upon creating a list of materials, I came to a realization that “paper” is a particularly persuasive example that can be used as a representative of materiality. Ubiquitous yet overlooked, paper perfectly embodies the tension this research investigates: it is present in physical form throughout our daily lives and in museum settings, yet its material history is often invisible.

The “Extra-ordinary”: Paper

I initiated this research paper by sharing my admiration for paper. Though used in day-to-day, ordinary lives, paper is fascinating because of its adaptability, strength, textures, colors, the countless possibilities it offers, and the creative freedom it provides. While this personal bias sparked my interest, it is not the only reason why it is chosen as a representative of materiality. As an architect and designer, I keep returning to paper because it transforms my ideas into prototypes. However, this connection is not mine alone. The most important reason to choose paper is its universality. It is a calm companion, woven into the daily lives of almost everyone. Despite this intimacy, we usually fail to understand it. It seamlessly integrates into our lives, often going unnoticed and overlooked. Only a few outside the paper community wonder who made it, where it came from, and what stories it carries.

What if I told you that this apparently ubiquitous or ordinary material holds a history far more expansive than you can imagine? Through this research, I have discovered that paper’s story is anything but dull. It spans ages and continents, adapting cultures, technologies, and human experience. It is a tale of transformation, adaptation, and steady persistence. Most intriguingly, it is a story that has been hiding beneath the quiet surface of paper, waiting to be revealed. I am excited to unfold it. The question is, *will you follow?*

Sheet Happens All the Time!

Exploring Paper as a Multiverse of Creative Explorations

Come along to experience a reimagined museum visit with “Sheet Happens All the Time!” **an engaging extension of the traditional museum experience for all ages. It adapts phygital storytelling to highlight the underlying meaning of “paper-based” artifacts through a storyline rooted in paper’s history. It aims to bridge the gap between the modern visitor expectations and the traditional approach museums use to present objects on display by employing a tiered narrative structure. The narrative engagement is amplified by Intellectual Property (IP)-based gamification strategies.** To increase the impact of the story, paper itself is treated as a protagonist in the narrative. The carefully crafted, chronologically aligned narrative offers “you,” as a visitor, a multisensory, immersive experience through 4 educational yet entertaining and highly themed inquiry zones, each featuring 3 unique paper-themed exhibits that fit within a larger story.

The four zones investigate paper’s role as a material, model, medium, and muse within the multiverse of creative explorations it offers. In each zone, you move through paper-themed exhibits that trace the history of paper and examine its influence on minds, bodies, and social patterns. Each exhibit allows you to embark on an adventurous journey using magical keys with unique powers, adapted from the popular book series and Netflix series “*Locke & Key*”⁵⁴⁵⁵ for gamification. **This IP-based, story-driven gameplay, though optional, allows each visitor,**

⁵⁴ Joe Hill, *Locke & Key*, vols. 1–6, with Gabriel Rodríguez (IDW, 2008), https://idwpublishing.com/collections/locke-key?srsId=AfmBOop__bNrRljdkeHYAXPUbklxKtp7C0iZ7L9DwVu25WEDNDHaZ12i.

⁵⁵ *Locke Key*, episode 1–28, “*Locke & Key*,” with Joe King, Netflix, n.d., 33-56 minutes, accessed April 30, 2026, https://www.rottentomatoes.com/tv/locke_and_key.

like you, to choose their route and level of engagement, offering both interactive and personalized options through phygital components.

The museum experience model re-establishes the significance of paper's material culture (qualities that transcend its materiality) in the material world by characterizing paper's material presence (physical properties) into the storyline. The narrative provides a purpose for evaluating paper's materialism beyond its everyday usage, in which paper is often overlooked as an unimportant, cheap, and perishable commodity.

Moving away from the visitor experience to the production side of this narrative-focused design strategy, museums can adapt any zones or sections of the overall design according to their budgets and areas of focus. Additionally, museums can craft stories revolving around various other materials and artifacts made using them to foster human-object relationships further.

Zoning & Bubble Plan

1. Entrance Lobby Area
2. Pre-show 1
3. Paper as a Material
 - 3.1. Pre-show 2 (Paper Emerges)
 - 3.2. Loading/Unloading Area
 - 3.3. Ride Experience (Paper Travels & Paper Evolves)
4. Passage Area
5. Paper as a Model
 - 5.1. Paper Shines
 - 5.2. Paper Fades
 - 5.3. Paper Re-emerges
6. Paper as a Medium (Interactive Zone 1)
 - 6.1. Paper Makes
 - 6.2. Paper Helps
 - 6.3. Paper Breaks
7. Paper as a Muse (Interactive Zone 2)
 - 7.1. Paper Experiments
 - 7.2. Paper Folds
 - 7.3. Paper Entertains
8. Back of House
9. Restrooms

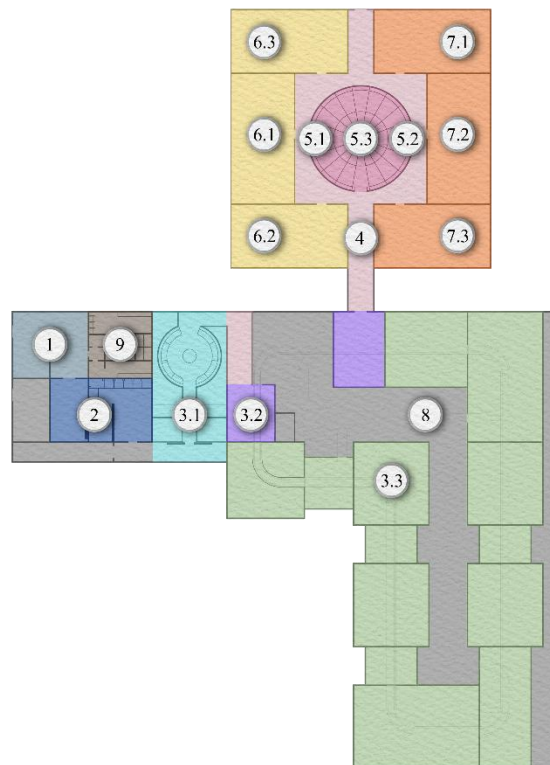


Figure 13. Pranali Tari, *Zoning & Bubble Plan of Sheet Happens All the Time! Museum Experience*, 2026, AutoCAD and Adobe Illustrator.

Rendered Floor Plan

1. Entrance Lobby Area
2. Pre-show 1
3. Paper as a Material
 - 3.1. Pre-show 2 (Paper Emerges)
 - 3.2. Loading/Unloading Area
 - 3.3. Ride Experience (Paper Travels & Paper Evolves)
4. Passage Area
5. Paper as a Model
 - 5.1. Paper Shines
 - 5.2. Paper Fades
 - 5.3. Paper Re-emerges
6. Paper as a Medium (Interactive Zone 1)
 - 6.1. Paper Makes
 - 6.2. Paper Helps
 - 6.3. Paper Breaks
7. Paper as a Muse (Interactive Zone 2)
 - 7.1. Paper Experiments
 - 7.2. Paper Folds
 - 7.3. Paper Entertains
8. Back of House
9. Restrooms



Figure 14. Pranali Tari, *Floor Plan of Sheet Happens All the Time! Museum Experience*, 2026, Rendering, AutoCAD, SketchUp, and Adobe Photoshop.

Narrative Design & Gamification Structure

To increase visitor engagement, foster interactivity with the paper-based museum exhibits, and fully immerse visitors in the narrative, the experience is layered with **IP-based gamification and roleplay**. To build a deep emotional connection with the story, five distinct **characters** are also introduced. Each character has unique traits and acts as a guide, directing you through the story beats. To capture how paper's journey influenced the world and, through it, the human-object relationship, cultures, and various fields of study, the narrative is crafted across **four educational-themed inquiry zones**. Lastly, to provide a personalized experience, **three tiers** are introduced. Each tier demonstrates different levels of gamification and narrative paths. As a visitor, you are encouraged to choose your path and level of immersion in the story.

“Locke & Key” IP-Based Gamification

The narrative of the *Locke & Key* series revolves around various magical keys with unique powers. In this narrative, the keys enable gameplay via Near Field Communication (NFC) technology. By visiting different exhibits, you can collect digital versions of magic keys on your mobile device using a digital app. Some keys play a crucial role in the narrative, especially during the finale. Hence, these keys are unlocked for everyone, irrespective of passive and active participation in the narrative, simply by visiting different exhibits, starting with the first pre-show. Using these keys, you can claim rewards offered by the museum store. However, there are other “rare” keys that can be unlocked through active participation in interactive zones and engagement with phygital components. This extended gameplay is optional. By collecting more keys, you can win exclusive rewards, discounts, and offers. Such incentivization through

Characters

There are 5 characters in the narrative who act as emotional anchors, drive the plot forward, and provide conflict. Throughout the journey, each of these characters plays a significant role.

Chamberlin Locke:

Other than adapting the magical keys from the *Locke & Key* series for gamification purposes, this narrative also adapts one character arc from the *Netflix* series, *Chamberlin Locke's ghost*,⁵⁶ to establish a connection between the series and the museum experience. *Chamberlin* appears as a supporting character during the first pre-show and leads the protagonist further in the story toward the second pre-show. This narrative builds on *Chamberlin's* appearance from the comic series while adding depth to his character arc.



Figure 16. Chamberlin Locke's Character Design and Appearance [Adapted from the comic series by Joe Hill and Gabriel Rodriguez, *Locke & Key*, IDW Publishing, 2011 (<https://comicvine.gamespot.com/chamberlin-locke/4005-168561/issues-cover/>)].

⁵⁶ Sydney Baum Haines, "The Minor Locke & Key Character Who's More Important Than You Think," *Looper*, accessed April 30, 2026, <https://www.looper.com/198876/what-new-keys-will-we-see-on-locke-key-season-2/>.

In this museum experience narrative, *Chamberlin Locke* is a time traveler and a collector of artifacts, primarily different modes of communication. His collection includes a wide range of artifacts like papyrus, wax tablets, clay tablets, parchment, paper, and computers, among many other modes of communication. The purpose of including this character as a time traveler and a collector is to create an opportunity to strategically display various modes of communication for educating visitors.

Sheet:

As this museum experience aims to educate about paper and its significance, the protagonist in the story is none other than paper itself, referred to as “*Sheet*.” *Sheet* is unintentionally created using one of the magical keys by *Chamberlin Locke*. For most of his life, *Sheet* remains trapped. First, inside *Chamberlin*’s drawing book, and later in a museum storeroom, hidden from the real world. Hence, following a Rags to Riches story arc,⁵⁷ at the beginning of the experience, *Sheet* demonstrates naivety and childlike innocence, mainly because he is unaware of his own significance in the real world. *Sheet* is essentially a piece of paper turned into a living, breathing object. As a result, he exhibits traits similar to paper, such as flexibility and adaptability. As you progress through your museum journey, the story beats dramatically reveal these traits. He acts as your constant companion throughout the journey. Your presence plays a key role in *Sheet*’s personality growth.

⁵⁷ Patrick Thomas, *Rags to Riches*, July 23, 2019, <https://www.thestoryiststrategy.com/p/rags-to-riches>.



Figure 17. Pranali Tari, *Sheet*, 2026, Character Design, AutoCAD, Adobe Illustrator, and Photoshop.

Cai Lun:

The eunuch *Tshai/Ts'ai (Cai) Lun* at the imperial court of the Han dynasty, China, innovated the process of papermaking in the second century CE.⁵⁸ Introducing him as a character in the museum experience creates a historical anchor that educates about the origin of paper and the process of papermaking. This character also acts as the narrator of paper's journey around the world once discovered in the second pre-show. Throughout the experience, *Cai Lun* provides hints and clues, guiding you and *Sheet*.



Figure 18. *Cai Lun and Paper Making*, [Adapted from China Paper Association, *September 12, 2013*, (<http://en.chinappi.org/paps/20130912095235315396.html>); modified by author to include presentation-specific colors and overlay of paper texture, 2026].

⁵⁸ Mark Kurlansky, *Paper: Paging through History*, First edition (W.W. Norton & Company, 2016).

Pixel Lag-a-Lot:

Any good story is incomplete without an antagonist who makes the protagonist shine by creating a climax. In this narrative, however, the antagonist is introduced as a supporting character at first. *Pixel* initially serves as the museum's AI bot and *Sheet*'s only friend in the museum storeroom. *Pixel* guides *Sheet* by responding to his prompts, in other words, helping *Sheet* discover his identity. However, *Pixel* only has access to the museum database. He cannot assist *Sheet* beyond that. One fine day, *Pixel* is disconnected from his brain, "Cloud." *Sheet*'s memories are saved in *Pixel*'s Cloud. Losing access to his memories causes *Pixel* to forget the bond he shared with *Sheet*. This incident turns *Pixel* into an antagonist, desperate to capture *Sheet*. This climax is created through the backstory and the first pre-show. For *Sheet*'s personality growth, the tension created by *Pixel*'s transformation is essential, as it adds emotional resolution and thematic depth, making the narrative during the main experience, especially during the finale, feel earned and satisfying.



Figure 19. Pranali Tari, *Pixel with and without Connection to Cloud*, 2026, Character Design, AutoCAD, Adobe Illustrator, and Photoshop.

Cloud:

This character acts as *Pixel*'s memory drive at first, as revealed in the backstory. The only role he plays in this narrative is disappearing. When *Pixel* is disconnected from *Cloud*, *Cloud* drifts away. He is attracted to floating things. Hence, if you find him floating across the sky between clouds in various themed rooms, that would not be a surprise! The introduction of this “lost” character allows further optional gamification during the finale. You can consume the museum narrative passively by observing the story or participate in the quest to find *Cloud* and reconnect him to *Pixel*.

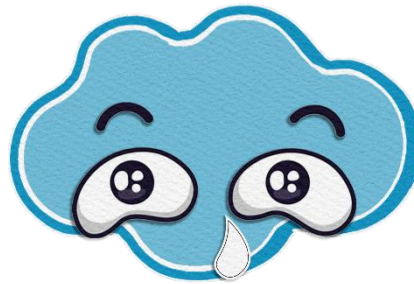


Figure 20. Pranali Tari, *Cloud*, 2026, Character Design, Adobe Illustrator and Photoshop.

Educational Themed Inquiry Zones

As a mode of written communication, paper traveled through the world methodically, leaving its essence in every place it visited. Hence, the larger narrative of this phygital experience unfolds through a chronological reveal of paper's history, organized into four zones. Each zone is further divided into three sections. While these zones are educational, the layering of gameplay using the magical keys fosters attention value and creates an otherworldly entertaining experience.

Zone 1: Paper as a Material (The journey of paper from its inception to the present)

This zone includes the second pre-show and the first part of the main experience: a dark ride experience that takes you on a journey across the world through various timelines.

1.1. Paper Emerges: This section is revealed in the second pre-show. Using phygital storytelling components, it educates about paper's origin (the inspiration behind the papermaking process), innovation, and technological roots (steps involved in the papermaking process).

1.2. Paper Travels and 1.3. Paper Evolves: These sections are tied together into a **15-minute dark ride experience to efficiently depict paper's journey around the world.** The ride enables time travel, revealing diverse landscapes and cultures. It guides the guest journey, unlike a traditional museum experience, where free movement often results in inconsistent flow, reducing narrative clarity and emotional build-up that leads to confusion and missed content. As you hop on the ride, it takes you through different countries and regions. The journey begins at the origin place of paper: ancient China, followed by Japan, the Middle East, Europe, the United Kingdom, and the Americas. Each region is connected by time-travel portals where *Cai Lun*, the narrator, appears and, through his exposition, builds anticipation about the next country or region you are about to explore. While **the Paper Travels section (from ancient China to Europe) focuses on paper's cultural acceptance, the Paper Evolves section (from the United Kingdom to the Americas) depicts its acceptance in everyday life.** It highlights how the increase in demand for paper led to mass production during the Industrial Revolution. In addition to the paper's history and evolution, **the ride also demonstrates how human cultures and civilizations evolved with the spread of paper and written communication.**

As established in the first pre-show, *Pixel's* transformation into an antagonist and *Cloud's* disappearance create a climax during the ride experience. Throughout the ride, *Pixel* follows you and *Sheet* to capture him, and *Cloud* floats across the sky. *Cloud's* presence is demonstrated in a manner similar to that of Easter eggs, whereas *Pixel's* is palpable and visible throughout the ride.

Zone 2: Paper as a Model (Transformation of paper from a traditional craft material to a phygital component)

The second zone indicates the end of the dark ride experience and entry into the finale. The finale presents an optional opportunity for you to actively participate in the quest to find *Cloud* and help *Sheet* connect him to *Pixel* to get *Pixel's* memories back during their face-off. *Cai Lun* serves as a guide during the finale, providing instructions about the gameplay while *Cloud's* memories are fragmented and stored in folders within the finale room. The role you choose during the booking process plays a crucial part in the finale. The finale zone is divided into three sections.

2.1. Paper Shines: This section covers the left side of the finale zone where paper's role in traditional handcrafted museum installations is highlighted. *Sheet* is powerful in this section.

2.2. Paper Fades: This section covers the right side of the finale zone where *Pixel's* powerful presence indicates paper's absence in modern digital installations, which are highly reliant on digital tools.

2.2. Paper Re-emerges: This section plays a pivotal role in the finale, culminating in a final confrontation between *Sheet* and *Pixel*. As you and *Sheet* discover *Cloud* and collect all his fragmented memory folders by playing an interactive game, *Sheet* reconnects *Cloud* with *Pixel*.

As a result, *Pixel*'s memories are restored, and the characters find their happily ever after. On the other hand, you receive satisfaction from the narrative.

Following the journey around the world with *Sheet* and *Pixel*'s transformation from the antagonist to back to being *Sheet*'s friend during the finale, together they build an extended universe through two phygital interactive zones (Paper as a Medium and Paper as a Muse). This extended universe covers various interactive rooms. Based on your role, you are able to access them and participate in interactive activities, fostering complete immersion and emotional, sensory engagement with the narrative. In terms of gameplay, by participating in the interactive activities, you unlock various “rare” keys. The two zones are further divided into 3 sections each, which are as follows:

Zone 3: Paper as a Medium (Evolution of paper from a background layer to a piece of art)

In this zone, paper's role in our individual lives and cultures is highlighted by introducing interactive, tactile experiences through 3 distinct sections.

3.1. Paper Makes: This section highlights paper's adaptable qualities and intrinsic values by showcasing paper art techniques such as paper folding and cutting. Within the extended universe built by *Sheet* and *Pixel*, this room presents a phygital paper folded forest life on one side and paper cut afterlife on the other.

3.2. Paper Helps: This section highlights paper's tactile qualities and its influence on the human mind and body by introducing maximum tactile experiences enhanced using phygital

components. *Sheet* and *Pixel* acts as your guides within this room, helping you out every step of the way.

3.3. Paper Breaks: This section highlights the effect of the Digital Revolution by introducing phygital components where paper is seemingly digitized and presented as a background layer. This is *Pixel's* favorite room. There is a strong presence of digital tools and interactives in this room.

Zone 4: Paper as a Muse (Role of paper from a mere commodity to a versatile influencer)

In this zone, paper's role in various fields of study is highlighted by introducing interactive, tactile experiences through 3 distinct sections that showcase how the use of paper and modern technology has resulted in various experiments withing different fields around the world. These sections allow collaboration with various industry experts by exhibiting their work through temporary exhibitions. Every trimester new artists and their work could be featured. Similar to the previous zone, this zone allows entry into 3 sections based on your role and creates opportunities to unlock various "rare" keys.

4.1. Paper Experiments: In this section, scientific research and experiments conducted using paper are presented through phygital components that focus on works of artists, scientists and paper engineers and their experiments with paper. The exhibitions are rotating and allow exhibiting works of industry professionals.

4.2. Paper Form: This section highlights the influence of paper in the field of architecture by presenting kinetic phygital installations and various other interactive activities. By presenting

works of architects, this section demonstrates paper's endurance to change resulting in a 3-dimensional form from a 2-dimensional sheet, shaping spaces, forms to create function.

4.3. Paper Entertains: This section highlights the use of paper in the entertainment industry by showcasing interactive phygital components that aim to entertain. The goal of this room to allow collaboration with various paper artists, entertainment providers to present their works.

The Three Tiers

This narrative is offered in three tiers. The tiered structure allows you to customize the journey based on your preferred level of immersion.

Tier 1:

This tier covers two zones (Paper as a Material and Paper as a Model). In this tier, you witness the backstory, understand the narrative and witness paper's history through the pre-shows and its journey across the world. Ultimate guest satisfaction is created through the finale. The entire experience lasts for 30 minutes. Each of the pre-shows take up 5 minutes, the ride lasts for 15 minutes and the finale for 5 minutes respectively. Since this experience is adaptable, museums can identify the timelines for each section based on the information they want to convey within each zone.

Tier 2:

This tier extends the journey further into the expanded universe built by the characters *Sheet* and *Pixel* by participating in one section in each of the interactive zones (Paper as a

Medium and Paper as a Muse). Entrance into each section is dependent upon the role you choose during the booking process. In addition to 30 minutes spent witnessing the pre-shows, ride and the finale, you can explore interactive rooms and spend as much time as you want within them doing the interactive activities and participating in gameplay to unlock keys and earn rewards.

Tier 3:

This tier offers a complete gamification of the narrative. This tier transforms the narrative into a timed mystery room structure where each new zone and section is unlocked by the choices you make in the previous zone. For example, after the pre-shows and the ride experience, the quest to find Cloud extends in interactive zones. Based on your role, you are divided into teams and enter one section in each of the zones, participate in the interactive activities, unlock keys, find clues about Cloud's location and proceed further into the narrative. Your end goal in this tier is to reach the finale with *Sheet* to ultimately connect *Cloud* to *Pixel*. This tier could be offered as a special after-hours event to foster maximum visitor participation and gamification of the narrative. After the initial 30 minutes, you can spend tentatively 45-minutes in each interactive zone, find clues and keys.

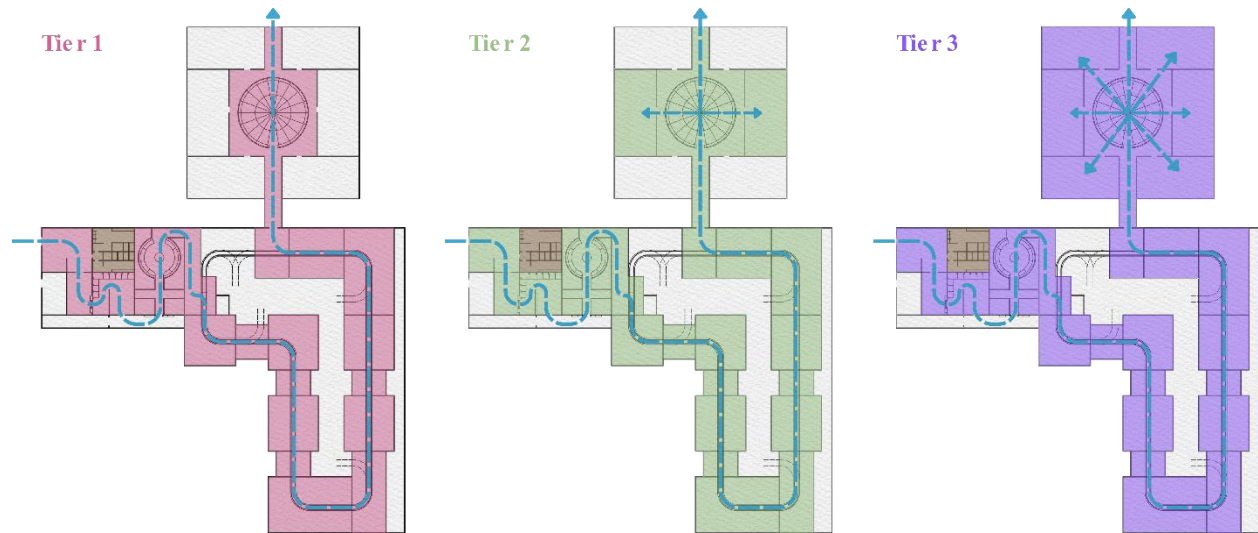


Figure 21. Pranali Tari, *Tiered Structure*, 2026, AutoCAD and Adobe Illustrator.

For this research paper, tier 2 is explained further below, which covers optional gamification opportunities and agency for visitors to choose their level of immersion.

Narrative 1: Backstory of the Museum Experience

The magical adventure of *the Locke family* came to an end when the children concealed the magic by tossing all the magical keys back into the *Omega portal* from which the magic had first emerged.⁵⁹ As the *Omega Portal* shrank in front of them, the family believed everything had been resolved. With the danger disappeared and evil entities gone, *the Locke family* moved out of their ancestral house, famously known as the *Keyhouse*,⁶⁰ leaving behind its painful memories forever. However, they were unaware that a tiny portion of the portal remained open. It looked like a speck of dust, only blue. The *Omega Portal's* failure to completely close was because a portion of its magic was concealed in *the Locke family's* ancestor, *Chamberlin Locke's*⁶¹ old drawing book.

Chamberlin was a time traveler, collector, and preserver. Over the years, using the *Anywhere Key*, he had traveled through time and across the world, collecting various forms of written modes of communication. *Chamberlin* held an immeasurable affection for art and history. He would draw in his free time. One day, out of boredom, *Chamberlin* had unintentionally used the *Creation Key* to doodle some of the magical keys on the last blank page of his drawing book. Alongside the keys, he doodled a small, naive, and playful childish face to represent the joy that the magical keys brought to him. The *Creation Key* not only creates drawings, but it also creates life. As a result, his own versions of keys, along with the page he drew a face on, came to life.

⁵⁹ Olivia Harrison, “‘Locke & Key’ Showrunners Explain the Series Ending,” Website Article, TUDUM by Netflix, Netflix, August 15, 2022, <https://www.netflix.com/tudum/articles/locke-key-season-3-ending-explainer>.

⁶⁰ Olivia Harrison, “An Inside Look at the Real Magic of Keyhouse Manor,” Website Article, TUDUM by Netflix, Netflix, August 12, 2022, <https://www.netflix.com/tudum/articles/keyhouse-manor-locke-key-season-3>.

⁶¹ Haines, “The Minor Locke & Key Character Who’s More Important Than You Think.”

However, the keys and the page remained silently breathing in the darkness of the closed book, as *Chamberlin* never opened the book again.

A few years later, *Keyhouse* was emptied. *Chamberlin's* entire collection, along with his old drawing book, was donated to a museum. During preservation efforts in the museum storeroom, the keys and the living page fell free. In that moment, the page opened its eyes for the first time and saw the light of day. Alone in the museum storeroom, this page did not understand its purpose. It strolled among lifeless modes of communication, all preserved, and all silent. The page believed the world was quiet and repetitive as it attempted to understand its dull surroundings. The only companions the page had were the magical keys, whose purpose was unknown to it.

One day, during one of its daily expeditions through the storeroom collections, the page found a museum computer. It started pressing random keys on the keyboard until the computer turned on. Through it, the page found its first friend, *Pixel: the museum's AI bot*. *Pixel* functioned primarily through his dependency on *Cloud*. *Cloud* possessed *Pixel's* additional memory, outside the museum database. The first question *Pixel* asked the living page was its name, like any personalized AI would. Since the page had no information about its existence and identity, *Pixel* suggested the name "*Sheet*." Their communication was broken at first, fragmented by weak Wi-Fi connections that barely reached the storeroom.

Over time, *Sheet* would ask *Pixel* questions. *Pixel*, being an AI bot, considered all *Sheet's* questions as prompts, sometimes answering correctly and sometimes making mistakes. Regardless, *Sheet* never questioned *Pixel's* responses. *Sheet* was naïve, and *Pixel* was informative. *Pixel* educated *Sheet* about *the Locke family*, the drawing book, and the magical keys, using information he had gathered from the museum database. He explained to *Sheet* that

the *Creation Key* might have brought him to life. As the bond between *Pixel* and *Sheet* grew stronger, they bonded and chuckled all the time, as is customary among friends. Because of the extensive latency *Sheet* was experiencing at the time, he would ridicule *Pixel*, calling him “*Pixel Lag-a-lot*” or “*Cloudy Pixel*”, as *Pixel* was always dependent on *Cloud*.

Eventually, the museum upgraded its storage systems. *Pixel* became stronger, faster, and more connected. *Cloud* became more advanced. *Pixel* initiated the digitization of the magical keys, studying them and encrypting their powers into the digital system, promising *Sheet* that, in unison, they would discover the truth about *Sheet*’s identity.

Something went wrong in the encryption process. When the final key was processed, *Pixel*’s system overloaded. He lost his connection to *Cloud*. Without *Cloud*, *Pixel*’s personality became unstable. As his primary focus was the museum database, he forgot about his friendship with *Sheet*. *Pixel* started looking at *Sheet* not as a friend but as an anomaly, a living artifact that did not exist in the museum’s database. Being a piece of paper, *Sheet* was an object that needed to be contained, erased, or even better, shredded. As a result, *Sheet* hid from *Pixel*. He learned to move quietly in the storeroom and to disappear whenever digital systems were activated.

One day, *Sheet* decided to escape the storeroom using the physical keys he hardly understood, let alone used in practice. He wanted to see the world and find his true purpose, away from *Pixel*’s terror and the scary shredding machines. However, no matter how hard he tried to find the courage to leave the storeroom, he returned because *Pixel* was not always cruel like this, running the shredding machine behind *Sheet*. *Pixel* was his friend, his only friend in the quietness of the museum storeroom. “*There must be something I could do to find Cloud and help Pixel,*” *Sheet* thought to himself. Ever since, he has been looking for *Cloud* everywhere in the storeroom.

Pixel, on the other hand, has devised an alternate plan. *Sheet* would not reveal himself, hence *Pixel* is planning to force him to appear. By controlling the museum's systems, he has launched a public campaign to lure visitors into the museum's storeroom. The campaign advertisement is loud, strange, and convincing enough to arouse curiosity among museum visitors. The punch line reads, "*The museum has opened its storeroom doors for you, where... Sheet Happens All the Time!*" It is an enthralling experience into the magical world of *Locke and Key*, their valuable possessions, a rare sight of *Chamberlin Locke*'s personal collection of objects and materials, mainly written modes of communication, and access to the museum's newly opened storage rooms. On the surface, this strategy looks like a creative museum event that caters to exclusive museum collections preserved in storerooms, but in reality, it is a manipulative trap disguised as an invitation to track down *Sheet*. Only time will tell who falls for it and who does not!

On an ordinary day, the invitation finds you, and.....

Your Journey Begins at Home

As you casually scroll through your phone, you come across a visually striking yet unconventional museum invitation, titled "Sheet Happens All the Time!" The phrasing is intentionally informal and vague. It makes you tick: *a sheet? Is that a thing? a person? a joke? It is understandable that the museum is opening its storage rooms to visitors, but why is it posting such an ambiguous invitation?* Everything in the punchline sounds absurd but intriguing enough to read more.

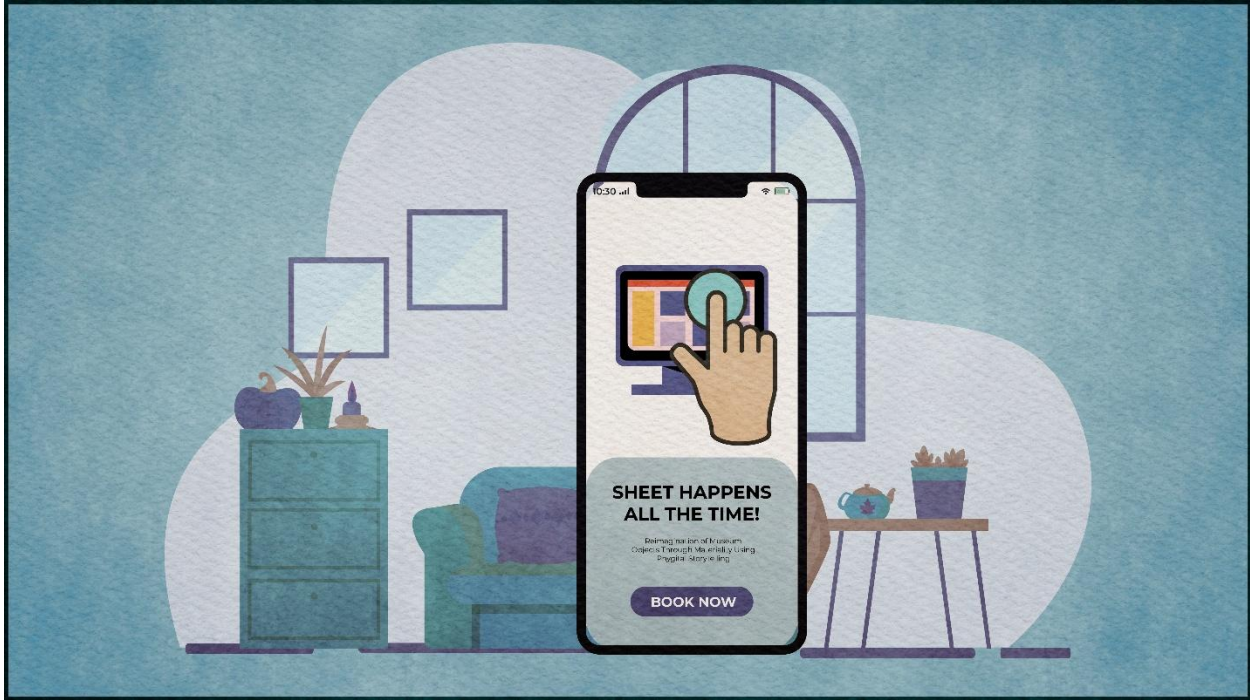


Figure 22. Pranali Tari, “*Sheet Happens All the Time!*” Museum Invitation UI/UX Wireframe, 2026, Storyboard, Adobe Illustrator and Photoshop.

Curiosity leads you to the museum website. The description of this latest immersive museum experience centers on artifacts from *the Locke family’s* collection from *Locke & Key*. Whether you have seen *Locke & Key* or not, the mention of magical keys intrigues you further.

Driven by curiosity, you decide to visit the museum. Instead of a standard online booking interface, tapping “visit” leads to an unusual digital interface. Subtle whispers begin to emerge, while a blue dot, looking like a speck of dust, appears on the screen, pulsing softly. The dot gradually increases in size in response to your interaction. With that, the whispers only grow louder and stronger. The dot then expands into a portal.

The portal depicts a tunnel-like structure. You are no longer on a website; you are inside something that resembles a simulated cave. The screen turns utterly dark. There is one source of intense blue light that captures your attention. The whispers seem to be coming from the

direction of the light. You try to follow the light by navigating through the cave, which is controlled by scrolling the screen. This effect creates the sensation of moving deeper into the cave. As you scroll, visibility is minimal while the whispers intensify, reinforcing a sense of immersion and anticipation.

You stumble upon a closed door that represents an omega symbol. It is *the Omega Portal Black door* from *Locke & Key*,⁶² with a faint blue light seeping through the gaps in the door frame, resurfacing again. The whispers are coming from behind the door. At this point, your cursor begins to function like a torch, illuminating parts of the scene and guiding your interaction. When you engage with the door, it creaks open, completely revealing the intense field of blue light beyond.



Figure 23. Pranali Tari, *The Omega Portal*, 2026, Storyboard, Adobe Illustrator and Photoshop.

⁶² *Black Door*, episode 6, “Black Door,” directed by Mark Tonderai, Netflix, February 7, 2020, 47 minutes, <https://www.imdb.com/title/tt8518208/>.

From this blinding, illuminated blue space, something comes towards you at the speed of a bullet. It is an animated paper fortune teller that, within a fraction of a second, occupies your screen, floating in front of you. The whispers fall silent. It opens with the cryptic dialogue, “*Sheet Happens All the Time!*” followed by the question, “*Are you ready to witness it?*” It asks whether you will allow it to choose your path, effectively prompting a role-selection process based on the tier you select out of the four choices. The roles are: an archivist, an innovator, an artist, or a researcher. You are expected to maintain your role throughout your visit, depending on the level of narrative personalization you want for your journey.

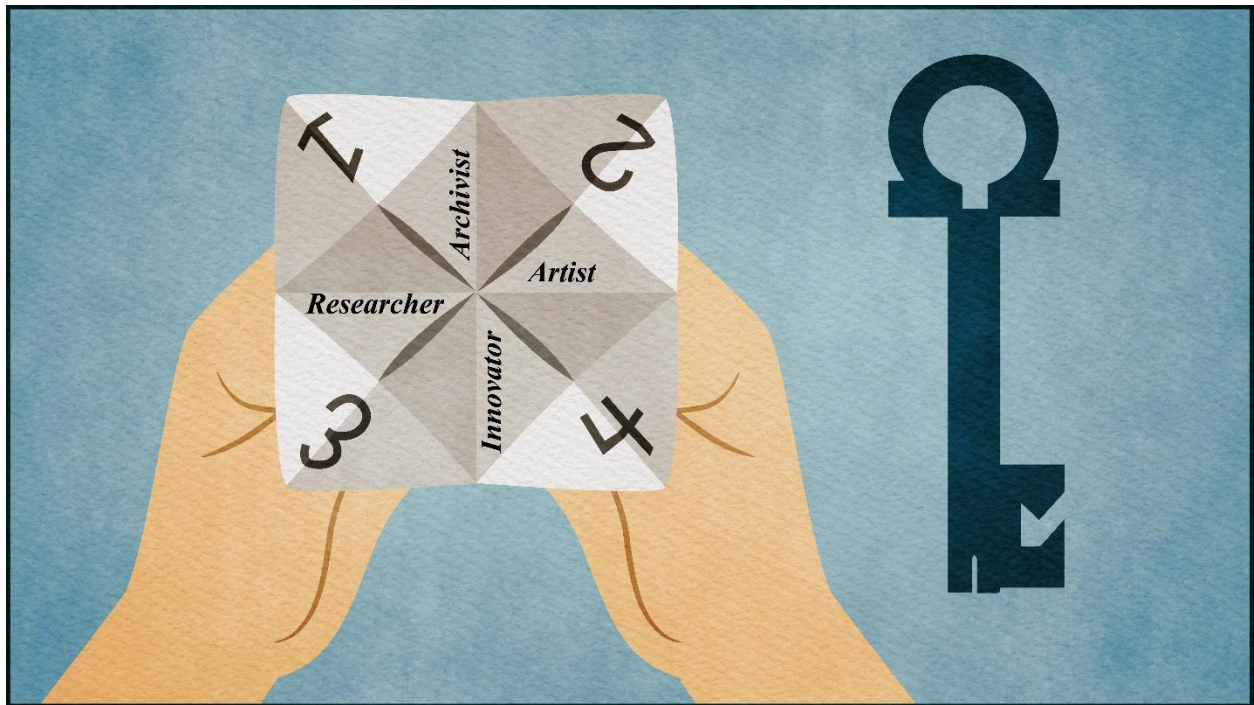


Figure 24. Pranali Tari, *Booking and Role Selection Process*, 2026, Storyboard, Adobe Illustrator and Photoshop.

As the final fold of the fortune teller reveals itself, something glints beneath. It is a key. It is the *Omega Key*. “*You are chosen,*” it says softly. However, the key appears to be sealed. The booking process has to be completed to unlock it.

Once your booking is confirmed, the fortune teller opens fully, revealing itself as a plain sheet of paper. This transition unlocks the *Omega Key*, which is essentially your ticket. You must carry it with you when you visit the museum. For verification and further assistance, you must contact *Pixel*, the primary mediator of your storeroom experience. Immediately after this exchange, the fortune teller folds again, but this time, in the form of a paper airplane, like a shape-shifter, and flies off your screen.

This digital journey through an interactive website marks the conclusion of your at-home onboarding experience and establishes a narrative for your upcoming visit to the museum. This narrative transitions your role from a museum visitor to a museum guest invited by a fictional character named “*Pixel*.” From a passive observer to an active participant, you are about to enter a unique museum experience that captures both characters: *Sheet*’s attempt to find his identity and help *Pixel* by finding *Cloud*, and *Pixel*’s underlying intent to capture *Sheet*.

The day of your journey to the museum arrives, and....

Upon Arrival

The backstory with *Pixel*’s malicious intents marks only the beginning of your journey. His clever invitation has lured you physically into the museum. Upon entry, you follow the steps outlined during the booking process: scan your ticket, identified as *the Omega Key*. The scanning process activates a system interface where you see *Pixel*. He immediately identifies you and your role within the narrative based on your tier. *Pixel* says, for instance, “*Ah! An archivist... The past is waiting for you.*”

After this interaction, you receive a physical paper fortune teller. While familiar in form with the digital version you witnessed, this fortune teller operates as a hybrid interpretive tool that embeds role-specific clues, AR markers, and navigational hints. It includes a physical, personalized *Omega Key*: the first token of your gamified experience, which you can keep as a souvenir. The physical key symbolizes a functional continuity between digital and physical layers of the experience.

Once verification is complete, *Pixel* opens the doors to the museum's storeroom. However, the inside of the storeroom looks nothing like it.



Figure 25. Pranali Tari, *Identity Verification and Entry into the Museum Storeroom*, 2026, Storyboard, Adobe Illustrator and Photoshop.

There are no collections, storage containers, or piles of boxes; rather, the storeroom door transports you into a dark cave, one you previously experienced virtually during the booking process.

Pixel reappears in the cave. He welcomes you to *the Locke & Key* immersive experience. He explains that once you walk through *the Black Door of the Omega Portal* using the *Omega Key*, you will be transported to the age of *Chamberlin Locke*, the first time traveler and collector in *the Locke family*. His collection of modes of written communication carries immense value. He further adds, “*I know you are here to witness the magic of the keys, but Chamberlin’s collection room is only the beginning. Enjoy the experience. I am right here if you need assistance or run into something extra-ordinary... because...Sheet will happen in this room..*” There is something suspicious about *Pixel’s tone*. He clearly hides his original intent to trap *Sheet*.



Figure 26. Pranali Tari, *The Black Door/Omega Portal Leading to Pre-show 1*, 2026, Storyboard, Adobe Illustrator and Photoshop.

When you walk through the door, the immense blue light leads you to *Chamberlin Locke's* study. The room's interior reflects Victorian, Georgian and Art Nouveau architectural styles, inspired by *the Keyhouse* manor.⁶³ It features a conventional exhibition layout with artifacts displayed in glass cases under controlled lighting, each with a label describing its significance. The purpose of placing the artifacts in the traditional style is to build anticipation for the immersive experience based on keys yet to be uncovered. The majority of the collection represents diverse modes of written communication, such as papyrus, parchment, wax tablets, clay tablets, botanical surfaces, amate, bamboo strips, silk, paper and computers among many.

Everything looks familiar and almost still like any other traditional museum experience and then suddenly you hear a noise, something moves within the pile of wooden fibers. It is *Sheet*, presented as an animatronic, revealing itself to the world for the first time. He is evidently scared and overwhelmed by attention. Yet he finds the courage to introduce himself to you. He whispers, "*I have been hiding here for a long time. You read on the labels how well-cultured all communication methods are, right? Why am I not like them, quietly lying in these cases? My existence as a living object has no significance.*" *Sheet* now explains to you his bond with *Pixel*. He says, "*Pixel and I... we wanted to explore the magical keys together, but he has changed now. His Cloud is missing and I cannot figure out where Cloud could possibly be! Would you help me?*"

⁶³ Harrison, "An Inside Look at the Real Magic of Keyhouse Manor."



Figure 27. Pranali Tari, *Interaction with Sheet in Chamberlin's Study*, 2026, Storyboard, Adobe Illustrator and Photoshop.

Suddenly, *Sheet's* interaction with you is interrupted. *Pixel* enters the room via *Chamberlin's* computer, placed next to the paper section, which depicts the modern mode of written communication. *Pixel* with his heavy AI voice says, "*Unauthorized interaction detected.*" A shredding machine is activated, signaling a shift from passive display artifact to active threat through its loud sound and automated presence.



Figure 28. Pranali Tari, *Pixel detects the Anomaly: Sheet*, 2026, Storyboard, Adobe Illustrator and Photoshop.

At this moment, something magical happens. Through dramatic environmental cues, a swarm of wasps flies in. They obstruct the shredder, impairing its movement. Simultaneously, previously dormant artifact from *Chamberlin*'s collection, his statue, activates and starts to communicate. He apologizes to *Sheet* for bringing him into the world without intention and reminds him that his worth is greater than he realizes. *Chamberlin* appreciates *Sheet*'s courage for seeking help for *Pixel* but he further explains that understanding *Pixel* is only possible after understanding his own significance. *Chamberlin* urges *Sheet* to visit *Cai Lun's Memorial Hall* in China using the *Anywhere Key* and enter *Cai Lun's* head with the *Head Key*, where the memories behind his creation would reveal the answers he seeks. *Chamberlin* urges you and all the other visitors to accompany *Sheet* and help him understand his own significance. *Chamberlin* also reveals that *Pixel* has been using visitors to capture *Sheet*. Finally, he mentions that *Cloud* has

left the storeroom and provides a hint that *Cloud* might be drifting somewhere in the skies above as you move forward in the journey.



Figure 29. Pranali Tari, *Chamberlin's Appearance in the Museum Storeroom*, 2026, Storyboard, Adobe Illustrator and Photoshop.

Chamberlin's interaction with you introduces, *Cai Lun*, linking *Sheet's* journey to the origin of paper itself and extending the narrative beyond the immediate environment.

Chamberlin Locke's statue now freezes in time again, and the door with the "*Chamberlin's Bedroom*" tag starts to glow. Although it is his bedroom, the *Anywhere Key* takes you to *Cai Lun's Memorial Hall* in China.

Sheet turns to you. He politely asks, "*Would you accompany me?*" Behind you, the shredder resumes function. *Pixel* recalibrates. This transition is shown through dramatic lighting

and sound effects that suggest disruption. This is your cue to leave the storeroom and witness the journey of paper.



Figure 30. Pranali Tari, *Sheet's Request to You to Accompany Him*, 2026, Storyboard, Adobe Illustrator and Photoshop.

Narrative 2: Paper as a Material

You step through the door and find yourself within the grounds of *Cai Lun's Memorial Hall* in China, where soft Chinese rhythms echo through stone pathways, quiet courtyards, and traditional architecture rooted in history. The space seems solemn and real, carrying a sense of reverence rather than fantasy. As you move deeper into the memorial hall, the music fades and faint whispers begin to emerge once again. The *Head Key* starts to glow, reminding *Sheet of Chamberlin's* words about entering *Cai Lun's* head.



Figure 31. Pranali Tari, *Cai Lun Memorial Hall*, 2026, Rendering, Sketchup and Photoshop.

Inside *Cai Lun's* head, space takes the form of a living organic structure with an earthy scent and repeating hexagonal patterns. It resembles a wasp nest: layered, porous, and intricate, yet its geometry feels precise and almost computational, blending biomimicry with parametric design. Wasps move throughout the structure in a calm, purposeful motion. Across the hexagonal

surfaces, *Cai Lun's* memories unfold like glowing fragments. As you step closer, one memory begins to intensify, shining brighter than all the others. Its label reads, “Paper Emerges.”



Figure 32. Pranali Tari, *Cai Lun's Memory of the Papermaking Process*, 2026, Rendering, Sketchup and Photoshop.

Paper Emerges

You and *Sheet* step inside *Cai Lun's* memory of innovating the papermaking process. It is an organic space filled with the scent of wood pulp and fiber. Wasps continue to move through it, weaving between structural ribs that divide the interior into distinct sections.

At the center stands *Cai Lun's* statue. *Cai Lun* welcomes everyone and explains that he standardized the papermaking process as *Sheet* asks him why he was created and how paper came to exist. *Cai Lun* guides you through six sections that reveal the evolution of papermaking through moving displays.

One section shows wasps building nests from chewed organic material, the inspiration behind paper's creation.⁶⁴ The remaining sections demonstrate the stages of papermaking, from collecting raw materials to forming, drying and finishing.⁶⁵ As the process unfolds, *Sheet* begins to understand his own origin and purpose, while you receive information through immersion in the world of paper.



Figure 33. Pranali Tari, *Inspiration Behind the Papermaking Process*, 2026, Rendering, Sketchup and Photoshop.

⁶⁴ Rhys B., "Wasps & Paper," Blog on Medium, *Wasps & Paper*, May 21, 2024, <https://medium.com/@rhysb/wasps-paper-b7a48571b009>.

⁶⁵ Bruce Zhou, "What Is the Cai Lun Papermaking Process?," Website Article, Jota Machinery, August 6, 2025, <https://www.jotamachinery.com/what-is-the-cai-lun-papermaking-process/>.



Figure 34. Pranali Tari, *Steps Involved in the Papermaking Process*, 2026, Rendering, Sketchup and Photoshop.

When the final stage concludes, *Cai Lun* tells *Sheet* that he has become far more than paper: flexible, adaptable, and capable of transforming into anything. He encourages *Sheet* to travel the world and witness the impact paper has had on human history. The environment suddenly reacts as sheets of paper swirl through the air and fold together, transforming *Sheet* into a ride vehicle made entirely of layered paper. An automated door opens ahead revealing the start of a dark ride journey through time and across civilizations. The ride vehicle accommodates six guests.



Figure 35. Pranali Tari, *Sheet's Transformation into a Ride Vehicle*, 2026, Rendering, AutoCAD and Photoshop.

Hopped on *Sheet*'s back, you and he are about to time-travel around the world, where you will witness how *Sheet* helped shape the evolution of countries, continents, and the world as a whole. Throughout the journey *Pixel* follows you and *Sheet*, since he has access to the encrypted keys. He uses the *Shadow Key*, which creates demonic shadows, in different settings to disrupt the flow of journey. Meanwhile, *Cloud* occasionally appears in the sky waiting to be noticed!

Paper Travels

Cai Lun now becomes the narrator of your journey. Through a series of time traveling portals, that act as interstitial hallways, you and *Sheet* move between countries and cultures while *Cai Lun* introduces each new destination. In every transition, lights, sound, and shifting environments build anticipation.



Figure 36. Pranali Tari, *the Time Traveling Portal*, 2026, Rendering, Sketchup and Photoshop.

Paper Travels to China

To discover how paper shaped cultures and societies, the first country you and *Sheet* visit is ancient China. You step into an ancient Chinese neighborhood where the Chinese New Year is being celebrated. Lanterns glow across the neighborhood. The surroundings are filled with music, dance, paper decorations, and dragon puppets. Everywhere, paper is woven into celebration and tradition. *Sheet* is overwhelmed with joy as he realizes how deeply he belongs within human culture. Sitting on his back in the ride, you feel his excitement through synchronized haptics. The subtle vibrations and movement allow you to sense *Sheet*'s wonder and joy. With him, you are not simply observing the celebration but emotionally experiencing paper's cultural significance.



Figure 37. Pranali Tari, *Paper Travels to China*, 2026, Rendering, Sketchup and Photoshop.

The next room *Cai Lun* takes you to is Japan. However, on your way to Japan, you witness the spread of paper in Asia via an informative time-lapse video in the time-traveling tunnel, as part of a visual montage of *Cai Lun's* expositions.

Paper Travels to Japan

In Japan, paper becomes part of everyday life and spirituality. Here, you and *Sheet* encounter the backyard of a traditional Japanese farming family. Inside their traditional house, *shoji* screens filter soft light while family members craft *gohei* paper art and preserve scrolls made from durable *washi* paper. Instead of interior walls, the rooms of the house are divided using *Karakami* sliding opaque decorative panels.



Figure 38. Pranali Tari, *Paper Travels to Japan*, 2026, Rendering, Sketchup and Photoshop.

The peaceful atmosphere is interrupted as *Pixel's* shadows begin creeping through the environment, pushing you onward toward the time-traveling tunnel. In the tunnel, *Cai Lun* announces the next land you would be visiting: the Middle East.

Paper Travels to the Middle East

In the Middle East, *Cai Lun* reveals the rise of the world's water-powered paper mill originated in Baghdad. He further explains that in Middle East, paper spread knowledge in mathematics, astronomy, medicine and literature. Beneath desert skies, *Sheet* quietly begins to understand the scale of his influence on human history.



Figure 39. Pranali Tari, *Paper Travels to the Middle East*, 2026, Rendering, Sketchup and Photoshop.



Figure 41. Pranali Tari, *Papermaking in Fabriano, Italy*, 2026, Rendering, Sketchup and Photoshop.

Pixel's growing interference quickly disrupts the triumph leading you into the time-traveling tunnel that builds anticipation for the next stop in your journey.

Paper Evolves

Paper Travels to the United Kingdom and Evolves

The next stop is the United Kingdom during the Industrial Revolution, where paper transforms from a luxury material into an everyday commodity. On one side you witness an elegant British house that displays wallpapers, books, photographs and decorative crafts while on the other side you notice factories mass-producing paper at an overwhelming speed. Here, smoke, machinery and industrial noise replace the warmth of handmade creation.



Figure 42. Pranali Tari, *Paper Travels to the United Kingdom*, 2026, Rendering, Sketchup and Photoshop.

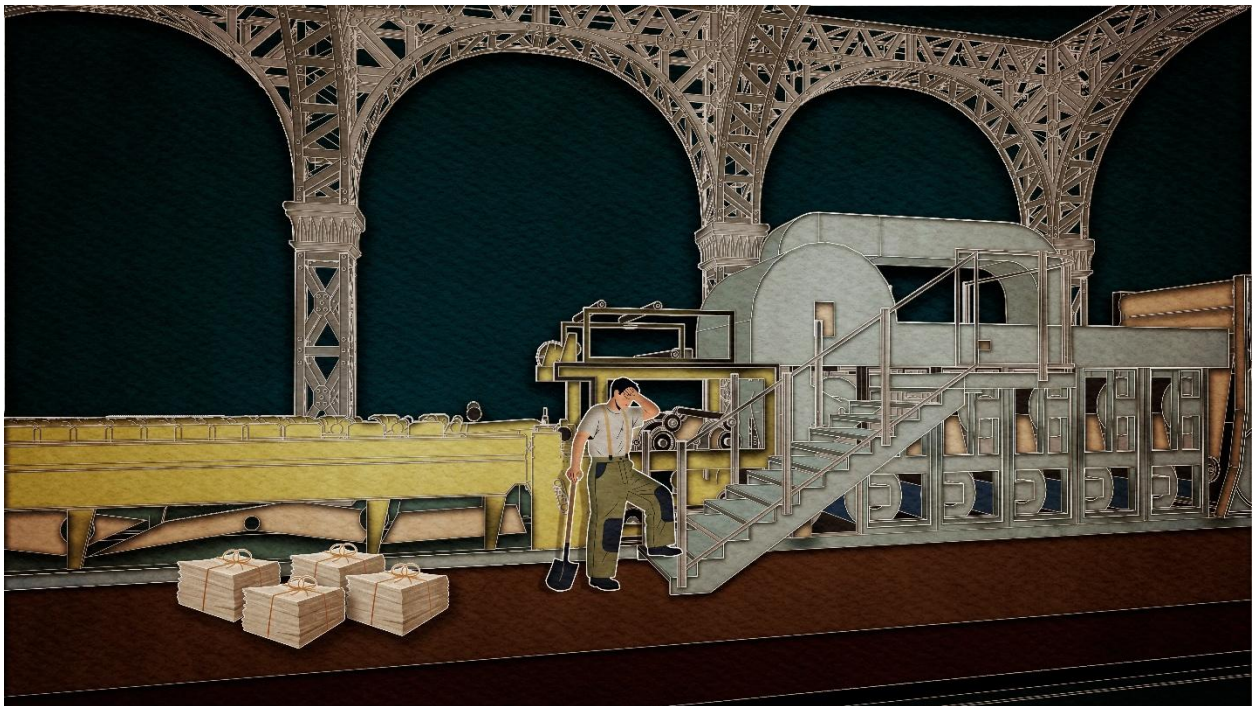


Figure 43. Pranali Tari, *Paper Evolves during the Industrial Revolution*, 2026, Rendering, Sketchup and Photoshop.

Looking at these two contrasting sides, *Sheet* begins to question whether progress has come at too great a cost.

Like every other room before, *Pixel* follows you in this room, too. As he is about to attack you, you enter the time-traveling tunnel where *Cai Lun* builds anticipation for the final destination you would be visiting.

Paper Travels to the Americas and Evolves

Crossing the Atlantic Ocean with British Colonists, you arrive in the Americas, where paper becomes fully embedded in daily lives.



Figure 44. Pranali Tari, *Paper Travels to the Americas*, 2026, Rendering, Sketchup and Photoshop.

Here, through the environment of the first library in the United Kingdom, you notice that paper is everywhere near you: newspapers, books, letters, packaging, tickets, posters, receipts, currency, sketchbooks, and photographs. It is now available in various sizes, textures, colors, and forms. For the first time, *Sheet* sees itself not as a single object but as something universal, present in almost every human experience.

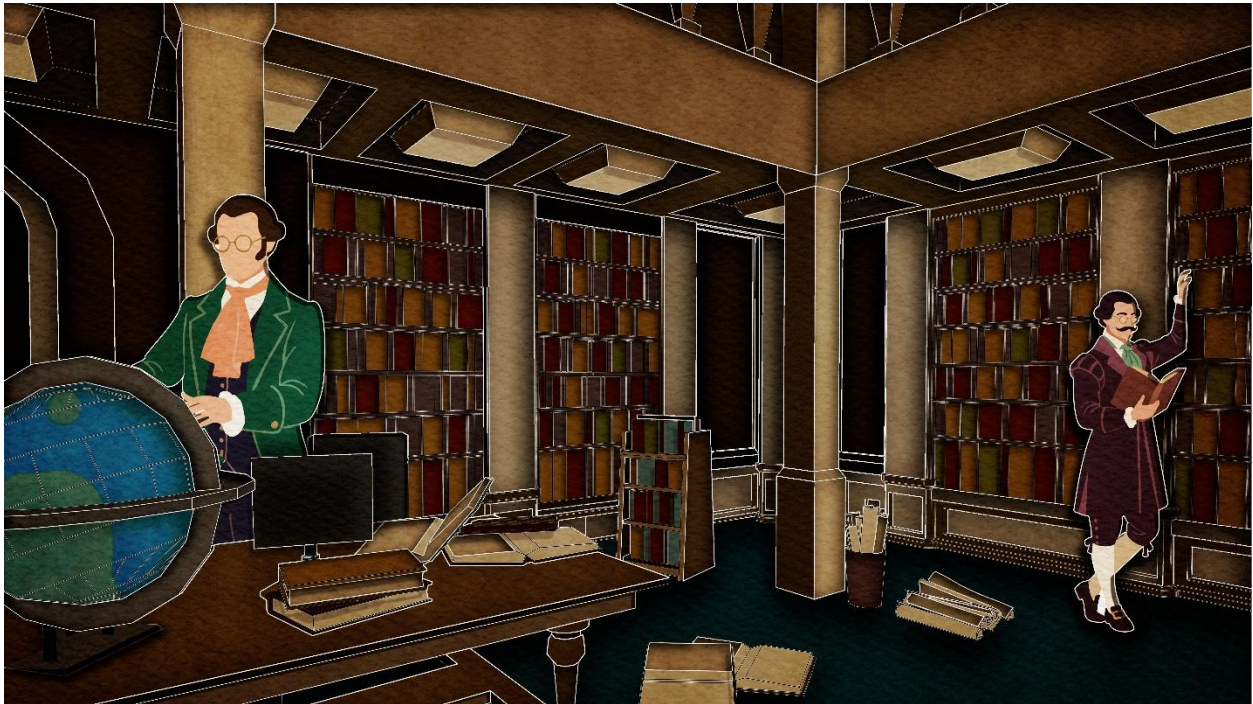


Figure 45. Pranali Tari, *Paper Evolves into an Everyday Object*, 2026, Rendering, Sketchup and Photoshop.

Suddenly, the environment shifts violently. The ride malfunctions and brings you into present-day New York City. Times Square flashes with noise, pollution and endless disposable paper waste scattered across the streets. Every screen in Times Square glitches as *Pixel* takes over it and accuses *Sheet* of becoming forgotten and meaningless. Then, using the *Creation Key*, *Pixel* physically emerges from the screens as an unstable AI robot and charges toward you.



Figure 46. Pranali Tari, *Disruption Caused by Pixel*, 2026, Rendering, Sketchup and Photoshop.

Before he could strike, *Cai Lun* pulls you and *Sheet* out of the city. Realizing *Cloud* may hold the answer to stopping *Pixel*, he sends his wasps to track *Cloud's* location before disappearing into time and space to uncover more about *Pixel* himself.

As the ride comes to an end and you step off *Sheet's* back, the wasps guide you toward the next stage of the journey, signaling that *Cloud* has finally been found.

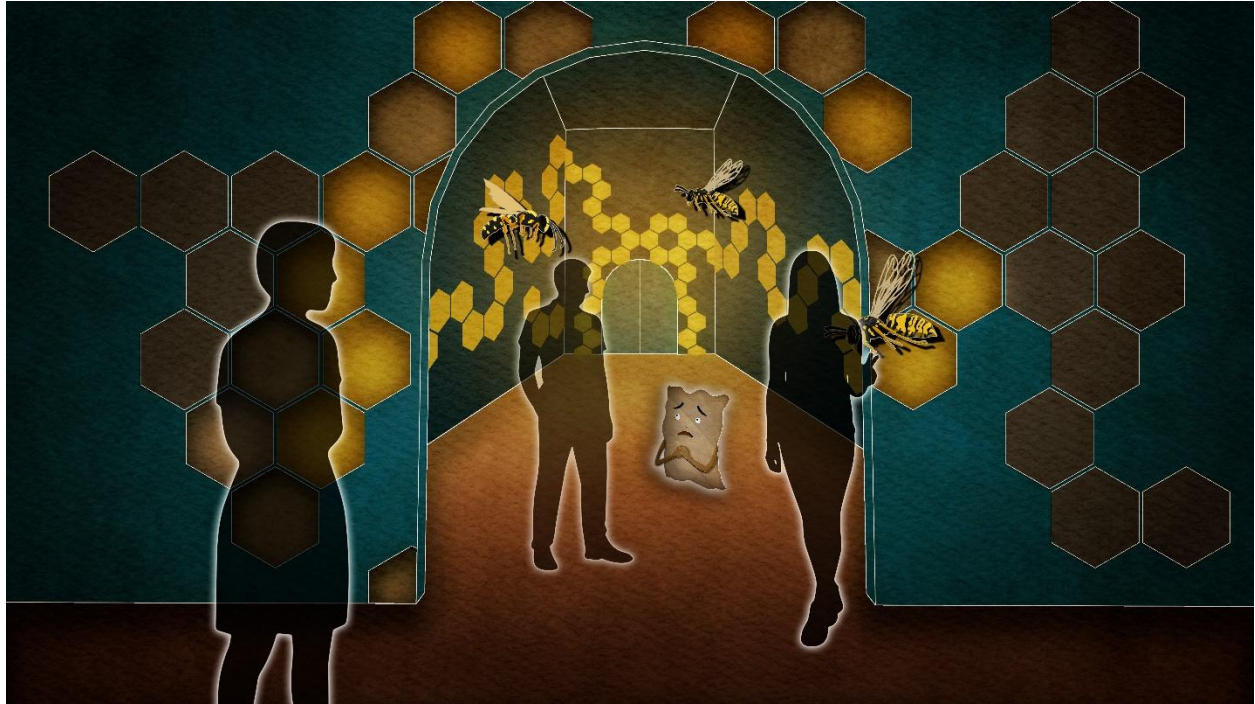


Figure 47. Pranali Tari, *Wasps Guiding Towards the Finale*, 2026, Rendering, Sketchup and Photoshop.

Narrative 3: Paper as a Model

Following the wasps, you and *Sheet* enter the finale zone: Paper as a Model. *Cai Lun* now returns and reveals that *Cloud* has been found. However, its memories are scattered throughout the space, leaving both the physical and digital environment fragmented. This marks the beginning of the finale which is divided in three interconnected sections.

Paper Shines

On the left side of the room lies Paper Shines, where handcrafted installations dominate the environment. Paper-based installations, folded sculptures, mechanical, kinetic paper artifacts create glowing warmth and movement in the space. Here, *Sheet* feels powerful and alive. The environment responds organically to touch, sound and motion, reminding you that paper carries emotion, memory and human presence.

Paper Fades

On the opposite side lies Paper Fades. This environment depicts a sharp contrast as the environment is colder, darker and overwhelmingly digital. Screens, artificial lighting, projections and digital interfaces dominate this part of the room. The lack of physical materiality can be sensed here as Pixel's presence is strongest. His corrupted influence distorts the installations, causing glitches. The absence of physicality creates an atmosphere that feels emotionally hollow.

Paper Re-emerges

At the center of the space lies Paper Re-emerges, where the final confrontation between *Sheet* and *Pixel* unfolds. Here, *Cai Lun* explains that without *Cloud*, *Pixel* forgot his origins, his friendship with *Sheet* and the meaning behind his existence. The fragmented memories of *Cloud* are scattered throughout the room in the form of memory folders and need to be restored to bring *Pixel's* memories back.

At this stage, your assigned roles during the booking process become crucial. Archivists, Artists, Researchers and Innovators must divide into teams. Once teams are formed, everyone receives the *Mending Key* in the form of a laser-based interactive gun. *Cai Lun* instructs you to search all sections within the finale zone and collect *Cloud's* fragmented memory folders before *Pixel* corrupts the entire space by generating more pixels.

As a result, the finale transforms into a collaborative interactive experience where you physically move through the environment collecting hidden memory folders projected on walls or hidden within paper-based and digital installations.

For the audience who choose not to actively participate, the finale zone functions as a passive observatory experience. Rather than collecting memories, they remain withing the central space while you restore *Cloud's* memory folders. This audience witnesses the story as an immersive performance piece. Both forms of participation remain equally meaningful; one through active engagement and other through observation and emotional immersion.



Figure 48. Pranali Tari, *Confrontation Between Sheet and Pixel during Finale*, 2026, Rendering, Sketchup and Photoshop.

As *Cloud*'s memories are recovered, the finale zone slowly begins to repair itself. Projections and installations stabilize. Across the walls, you see glimpses of *Sheet* and *Pixel*'s shared time together in the museum storerooms through immersive environmental storytelling. At this point, *Sheet* finally reconnects *Cloud* back to *Pixel*. The entire space now transforms into a unified phygital landscape where paper and digital installations coexist rather than compete. *Pixel* remembers his friend *Sheet* again. Their reunion becomes the emotional climax of the experience, and the story reaches its resolution.



Figure 49. Pranali Tari, *Pixel's Transformation upon Connection with Cloud*, 2026, Rendering, Sketchup and Photoshop.

Together, *Sheet* and *Pixel* build an extended universe through two new interactive zones: Paper as a Medium and Paper as a Muse. The interactive zones expand the narrative beyond the finale into a participatory world filled with phygital components, collaborative multi-sensory experiences and more magical keys. Depending on the role selected by you, you gain access to one section within each interactive zones. By participating in the interactive activities in these zones and unlocking more rare magical keys, you can deepen your connection with *Sheet* and *Pixel*.

Narrative 4: Paper as a Medium

This zone is a playground of tactile experiences where *Sheet* and *Pixel*, along with *Cloud*, play together. As part of the tier 2 experience, in this section you have the opportunity to choose one of 3 sections for multi-sensory, tactile engagement through active participation: Paper Makes, Paper Helps, or Paper Breaks. For this research paper, the environment of Paper Makes is depicted through rendering while the environment of Paper Makes and Paper Breaks is described through suggestive phygital interactives. Throughout these rooms, *Sheet* and *Pixel* serve as your companions.

Paper Makes

In this section, the environment splits into two contrasting worlds: life and afterlife. On the right side of the room, a folded forest filled with kinetic flora and fauna is built by taking inspiration from paper art forms such as *origami*, *zhezhi* and *European paper-folding*. Whereas on the left, the afterlife is depicted through paper-cut art silhouettes.

Since this room focuses on paper as a medium, there is a clear lack of digital screens and more of hands-on, tactile activities and phygital components. This is one of *Sheet's* favorite rooms. Rare keys with unique powers can be unlocked through your interactions with phygital installations. The interactives in the life paper folded forest area in this section are as follows:

A Voice Activation Interactive:

Automated, kinetic and interactive folded animals unlock a rare key. The key enables voice activation and awakens personalities and behaviors unique to each animal species. The animals share stories and memories from the forest.

A Tapping Interactive:

The forest contains folded animal inspired mini-indoor rides like seesaws, slides and a merry-go-round. By riding these indoor rides, you unlock a rare key.

A Riddle Interactive:

Digital screens in the forest are embedded seamlessly in the environment. You can solve origami-inspired geometry-based puzzles, math problems and riddles on the screens. A rare key is unlocked through this interactive.

Beyond the forest, the atmosphere softens into the afterlife section. Papel Picado banners hang overhead. The environment feels dreamlike and scared. The phygital interactives in this section are as follows:

A Physical Interactive:

A kirigami amphitheater in the afterlife area serves as a relaxation space. Kirigami inspired pop-up cards are placed on the walls which you can open through physical interaction.

These cards play music and depict exciting kirigami architecture designs. Some of these cards contain rare magical keys.

A Shadow Activation Type Interactive:

Next to the kirigami amphitheater, stand life-sized shadow boxes with delicate paper scenes. The shadow boxes function as immersive photo booths where you step into living paper-cut worlds. A rare key can be unlocked here. Visitors temporarily transform into shadow like spirits while glowing paper-cut animal companions are projected beside them.

A Mystery Booth Interactive:

This interactive allows you to enter in an afterlife guided by paper cut animal spirits and unlocks a special key. By entering into this booth, you witness paper cut art forms from around the world. Every trimester a new paper cut exhibition is presented in the booth to add an element of surprise and build mystery (First trimester: *Sanjhi* from India; *Silhouettes* from France, *Wycinanki* from Poland, *Papierknipkunst* from Holland, *Papel Picado* from Mexico, *Kirigami* from Japan, *Scherenschnitte* from Germany, *Jianzhi* from China and so on respectively).

Apart from the interactives in this section, there are workshop tables where you can engage in tactile activities by practicing paper folding and cutting art forms.

Paper Helps

While Paper Makes section celebrates imagination and transformation by focusing on paper's material properties, the Paper Helps section focuses on healing, learning and emotional connection. This section recreates the atmosphere of the world's first kindergarten, where experiments with paper were introduced as a tactile educational tool. With kindergarten melodies playing in the background, the atmosphere is filled with nostalgia and comfort.

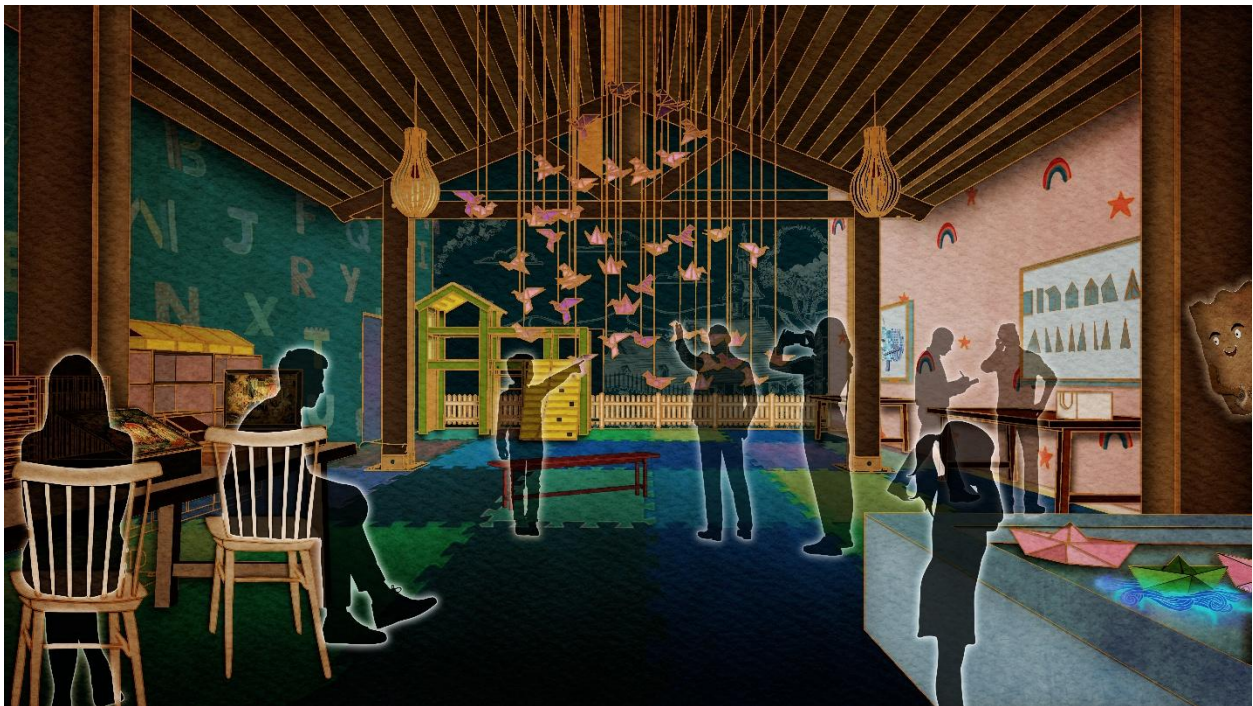


Figure 50. Pranali Tari, *Paper Helps Section in the Interactive Zone: Paper as a Medium*, 2026, Rendering, Sketchup and Photoshop.

Sheet and *Pixel* guide you and help you throughout this section, encouraging collaboration, creativity, and emotional reflection. Similar to the Paper Makes section, rare keys are unlocked in this section through phygital interactives. The interactives are as follows:

A Collaborative Physical Interactive:

At the center of this section lies a collaborative, constantly evolving, themed communal installation. The installation is inspired by *Sadako Sasaki's* story of folding one thousand cranes. Every month a new origami shape is introduced, allowing you to contribute folded creations carrying personal wishes, dreams and memories.

A Riddle Interactive:

Based on collaborative installation, the riddle interactive depicts each step involved in folding the specific forms through puzzles and riddles. *Sheet* and *Pixel* guide you through every paper folding step. A rare key is unlocked upon completing the form.

A Radio-Frequency Identification (RFID)-enabled Interactive:

In one corner, there is a water pool inspired phygital interactive that contains paper boats equipped with RFID technology. The paper boats generate wave patterns upon movement.

A Papier-mâché Interactive:

Another corner of this section is covered with Papier-mâché boxes. These boxes are engraved with Russian folk art inspired illustrations. You can paint these boxes based on the instructions provided by *Sheet* and *Pixel* and take them home as souvenirs.

A Handwritten Card Interactive:

You are encouraged to write messages or supportive notes for future visitors. This indirect interaction with other visitors fosters emotional exchanges between strangers connected through paper.

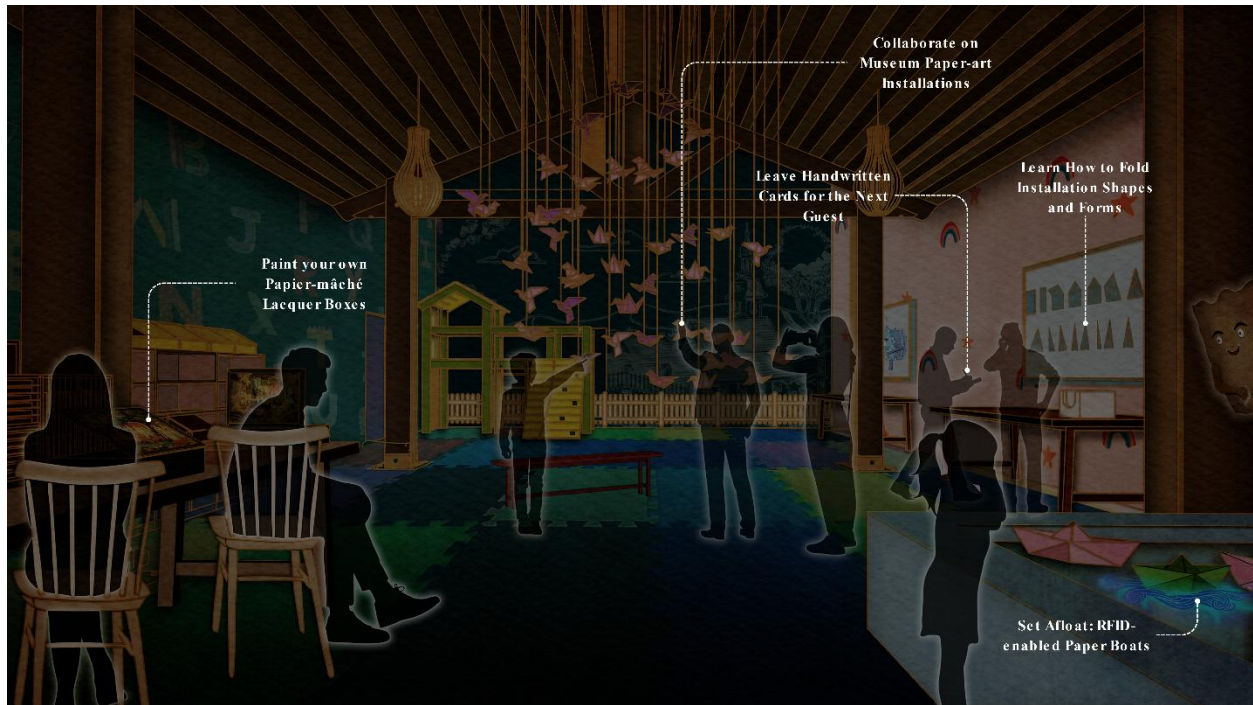


Figure 51. Pranali Tari, *Interactives in Paper Helps Section in the Interactive Zone: Paper as a Medium*, 2026, Rendering, Sketchup and Photoshop.

This section as a whole feels gentle and restorative. It acts as a reminder that paper has always helped humans learn, communicate, heal, and preserve emotions.

Paper Breaks

The final section, Paper Breaks feels confrontational. It represents the Digital Revolution and the transformation of paper into something increasingly digitized. Pixel thrives in this

environment. The overall environment of the room is inspired by the theme of 90's arcade games and disco. Pulsing synth music, glowing neon lights, retro projections create an energetic space where paper and digital media collide.

The room is divided into two opposing halves. One side is tactile and chaotic: pool of shredded paper that you can physically interact with. The other side is hyper digital, filled with projections, interactive floor, and retro arcade games. This room explores the tension between destruction and reinvention. Paper breaks apart here so it can become something new. The interactives are as follows:

A Shredded Disco Pool Interactive:

This interactive presents an opportunity to step inside a giant pit filled with shredded paper. Sheet appears alongside it, scared. His reaction is comical. Rare keys can be unlocked by playing in the pool.

A Pixel Dance Floor Interactive:

The floor of this section is interactive and generates pixels or paper folded patterns. Pixel himself becomes a DJ in this room and plays retro music while you walk or dance on the floor. You can step on the glowing patterns to synchronize the depiction of physical and digital worlds into one shared celebration and unlock special keys.

A Coloring Interactive:

The coloring interactive gives you access to digital screens that have options of various picture books you can select and paint. Paper serves as a background layer in this interactive while *Sheet* guides you with color palettes and rendering styles.

A Mirrorball Compression Interactive:

This interactive allows you to scan physical paper toys and create holographic forms to unlock keys.

A Gaming Interactive:

This interactive section captures phygital retro arcade games where folded paper objects act as controllers and activate game mechanics. Various keys are unlocked by playing different games.

Through its phygital arcade and disco aesthetic, Paper Breaks transforms the fear of digital replacement into something playful, nostalgic, and emotionally reflective. Instead of portraying modern technology as an enemy, this room encourages everyone to embrace it.

Narrative 5: Paper as a Muse

After exploring Paper as a Medium, the journey expands into Paper as a Muse where paper evolves beyond materiality and becomes a source of inspiration for science research, architecture and entertainment.

In this zone, the focus shifts from simply interacting with paper to understanding how paper's adaptable nature elevated by folding, cutting, layering, engineering inspires experimentation across various fields of studies. The environment feels futuristic, imaginative and collaborative. *Sheet*, *Pixel* and *Cloud* coexist in this zone and collaborate with various scientists, architects and artists to build a better world where curiosity drives innovation.

This zone is divided into three sections Paper Experiments, Paper Forms and Paper Entertains. The division creates opportunities for museums to collaborate with researchers, scientists, architects and artists and present their work in a rotating format as temporary exhibitions, thereby fostering repeatability and adding an element of surprise. These exhibitions could be changed every trimester or as preferred by the museum. Like the previous zone, each section in this zone unlocks rare keys as you interact with different phygital installations. For this research paper, Paper Experiments section is depicted through rendering while Paper Folds and Paper Entertains sections are described through suggestive interactives.

Paper Experiments

This section demonstrates a futuristic science laboratory filled with crease patterns, kinetic folded structures, holographic diagrams of computational origami and experimental

prototypes. Inspired by scientific curiosity and paper engineering, the room explores how paper influences discoveries in aeronautics, engineering, medicine, and other research oriented scientific divisions.

One corner of the room exhibits folded structures and interactives inspired by Matthew Shlian's paper engineering and research while the other side exhibits *Sheet*, *Pixel* and *Cloud*'s permanent collection interactive: a hot air balloon inspired by the experiments of the Montgolfier Brothers with paper and heated air.



Figure 52. Pranali Tari, *Paper Experiments Section in the Interactive Zone: Paper as a Muse*, 2026, Rendering, Sketchup and Photoshop.

The inclusion of work of researchers and paper engineers create an opportunity for museums to collaborate with different artists or researchers and build immersive environments inspired by their work. The interactives in this section include:

A Motion Lab Interactive:

In this interactive, motion sensors transform folded paper sculptures into scientific animations. The folded sculptures are placed inside a glass cloche. As you perform hand gestures around the cloche, motion sensors help unfold the sculptures through projections on the wall. A rare key is unlocked and added to your collection upon interaction.

A Folded Paper Interactive:

This interactive includes paper engineered sculpture that upon tapping generates patterns and lights in the paper folds.

A Prototype Demonstration Interactive:

In one corner of the room, a scientific paper-folding inspired interactive prototype derived from scientific research is placed to gain public feedback for the research. You can experience it, unlock a key and leave feedback for the research based on your experience. This interactive creates opportunities for researchers to gain public insights to improve prototypes further or market them.

A Hot Air Balloon Interactive:

The hot air balloon interactive uses Virtual Reality (VR) technology and transports you into the time when the Montgolfier Brothers conducted the public demonstration of their discovery of hot air balloon in front the King of France in a public display. Along with a sheep, a duck and a rooster you are presented with an opportunity to ride the first hot air balloon.

A Physical Gesture Game Interactive:

This interactive depicts a cloudy environment where hot air balloons float across the sky. This is a collaborative interactive where using hand gestures you must keep the hot air balloons afloat. This is *Cloud's* favorite area as he is attracted to floating clouds. Every time a hot air balloon falls off the sky, *Cloud* gets sad.

A Painting Interactive:

The highlight of this section is a physical interactive where you get an opportunity to put together a paper hot air balloon kit and paint the balloons. This tactile experience other than unlocking rare keys, allows you to take the balloon home as a souvenir.

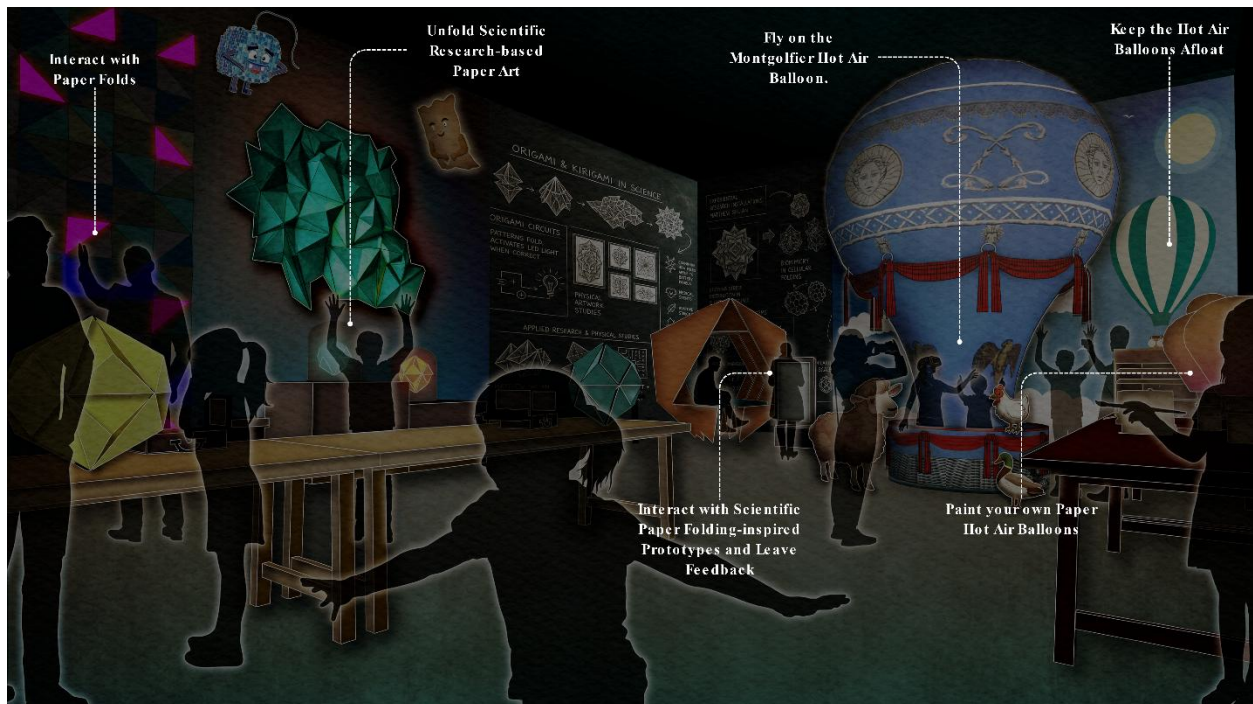


Figure 53. Pranali Tari, *Interactives in Paper Experiments Section in the Interactive Zone: Paper as a Muse*, 2026, Rendering, Sketchup and Photoshop.

Paper Forms

This section depicts an architectural studio filled with deployable structures, folded furniture, translucent materials, kinetic installations and experimental dioramas and miniature architectural models. This room explores how paper acts as a muse for form-making, structural experimentation, atmosphere, and material exploration in architecture and spatial design. The environment in this room feels playful and spatially immersive. For the first trimester, the work of legendary architect Frank Gehry is exhibited. The interactives are as follows:

A Canopy Lounge Interactive:

In one side of this section, a large deployable origami-inspired canopy acts as a relaxation booth. Sitting beneath it you can experience relaxing music and observe shifting lights and patterns that move across like constellations in the sky.

A Furniture Interactive:

Frank Gehry's "Easy Edges" inspired collection of furniture demonstrates paper's use in creating interior design elements. This interactive includes cardboard made modular furniture that you can rearrange in various forms.

A Kinetic Interactive:

This interactive includes hanging paper-folded chandeliers that are activated through motion sensors as you walk under them.

A Paper-folding Interactive:

In the center of the room, you can sit and create origami and kirigami forms and later scan them into speculative architectural concepts using AI. Generative AI transforms folded objects into buildings, interiors and deployable shelters.

A Green Wall Interactive:

Using hand gestures, you can activate the responsive kinetic paper installations placed on the green wall and unlock keys. The manipulative lighting projected on these installations activates different personalities within kinetic flowers, leaves and insects placed on the green wall.

A Physical Kirigami Card Interactive:

With the help of Sheet and Pixel you can perform a hand-on workshop where you can design kirigami pop up cards inspired by architectural forms. You can take these cards home as souvenirs and unlock rare keys.

A Small World Interactive:

Using AR/VR technology you can shrink to a particular scale and experience the miniature environments created using scaled architectural models or dioramas.

Paper Entertains

This final section transforms into a theatrical fantasy world celebrating paper's role in storytelling, live performance, scenic design, puppetry, pop-up paper engineering, and themed entertainment. The room is filled with life-sized pop-up books, a mini live theater puppet stage, paper theaters, paper quilling walls and kinetic scenery inspired by historical and modern entertainment practices. This section emphasizes how paper evolved into immersive forms of storytelling. This section also allows museums to collaborate with various puppet artists coming from different cultures and give them an opportunity to present their art on a rotating basis. Rare keys like all previous sections can be unlocked through engagement with phygital installations.

The interactives are as follows:

A Life-sized Pop-up Book Interactive:

This interactive allows you to flip the pages of a life-sized pop-up book exploring various environments and wonders created through paper engineering. Each trimester the interactive pop-up books can be changed, and new themes and books can be installed to foster repeatability and establish an element of surprise.

A Quilling Installation Interactive:

Based on the pop-up book installations, paper quilling art is installed on the walls. As you perform gestures, interactive projections generate patterns on the art installations.

A Kinetic Character Interactive:

Using kinetic design principles, this interactive allows you to activate characters frozen in time by rotating their control wheels.

A Paper Theater Arcade Interactive:

This interactive presents various themed renaissance-inspired paper theaters that function like arcade machines. You can converse with the characters in the theater which have distinct personalities and complete tasks to unlock a key.

A Live Theater Interactive:

This interactive includes a modular live theater stage where artists from diverse cultures perform live theater artforms like puppetry dance, Stand-up Comedy shows based on puppetry, Shadow puppetry and more. This theater, its aesthetic and themes change as per the themes of the shows.

An Artist Tribute Interactive:

This interactive demonstrated through Augmented Reality (AR)/ Virtual Reality (VR) showcases the influence of paper art techniques in stop-motion animation, projection mapping, scenic design, festivals, puppetry, themed props and works of paper artists by projecting their stories, documentaries through an immersive show experience.

Through these sections, Paper as a Muse zone reveals how paper evolved into a catalyst for invention, imagination, experimentation, and entertainment across countries and cultures.

The activities for the interactive zones mentioned in this paper are suggestive. Museums can target the activities that relate with their collections and exhibitions the most and modify them to create an ideal visitor experience that blends seamlessly with the themed of their exhibitions.

Conclusion

Museums today are at a critical intersection point between preservation and visitor participation. As society's expectations continue to evolve in the experience economy and the growing influence of digital tools, museums are challenged to create meaningful, immersive and emotionally resonant experiences while remaining committed to the conservation of artifacts and their cultural integrity. As demonstrated in this research, these priorities do not need to function in opposition. Instead, museums can establish a balanced relationship between object preservation and visitor engagement through the integration of themed entertainment design principles.

The comparative analysis of museum experience models and themed entertainment principles presented in this research identifies storytelling as a critical and powerful missing component within museums that could be orchestrated further for strengthening visitor-object relationships without compromising object authenticity. Phygital storytelling, which combines physical artifacts with digital technologies, emerges as a promising approach for enhancing the physical properties of objects, their materiality, cultural significance, and sensory presence.

The conceptual museum experience narrative, "*Sheet Happens All the Time!*" demonstrates how an ordinary material such as paper can be transformed into "extra-ordinary" narrative protagonist through multi-sensory and immersive phygital storytelling. While this research focuses on demonstrating the value of paper-based artifacts through paper's story, the proposed phygital storytelling strategy can be extended to create emotionally engaging narratives centered around materiality itself, allowing materials to become characters that communicate

histories, identities, labor, and cultural memory of museum objects while establishing emotional connections.

Additionally, the adaptive nature of this strategy suggests new possibilities for museums to foster curiosity, engagement, repeatability, and narrative personalization. By creating layered and participatory experiences, museums can encourage visitors to return, discover new perspectives, and establish deeper emotional connections with museum collections over time.

Conclusively, this research argues that museums can move beyond static preservation models toward experiences that preserve not only objects, but also meaningful human connections with the material world through the transformation of something ordinary as a material into extra-ordinary.

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Historical data that informed the design elements of various zones

Pre-show 2: Paper Emerges



Appendix Figure 1. *Papermaking by Cai Lun*, Image courtesy of Alamy, Accessed April 27, 2026, (<https://www.alamy.com/papermaking-by-cai-lun-private-collection-image535135150.html>).

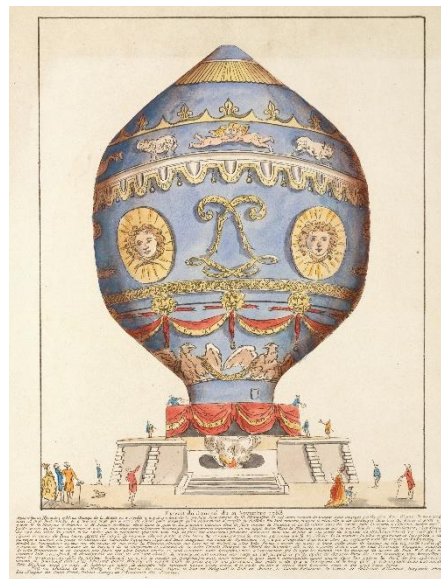


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Interactive Zone: Paper as a Muse (Paper Experiments)

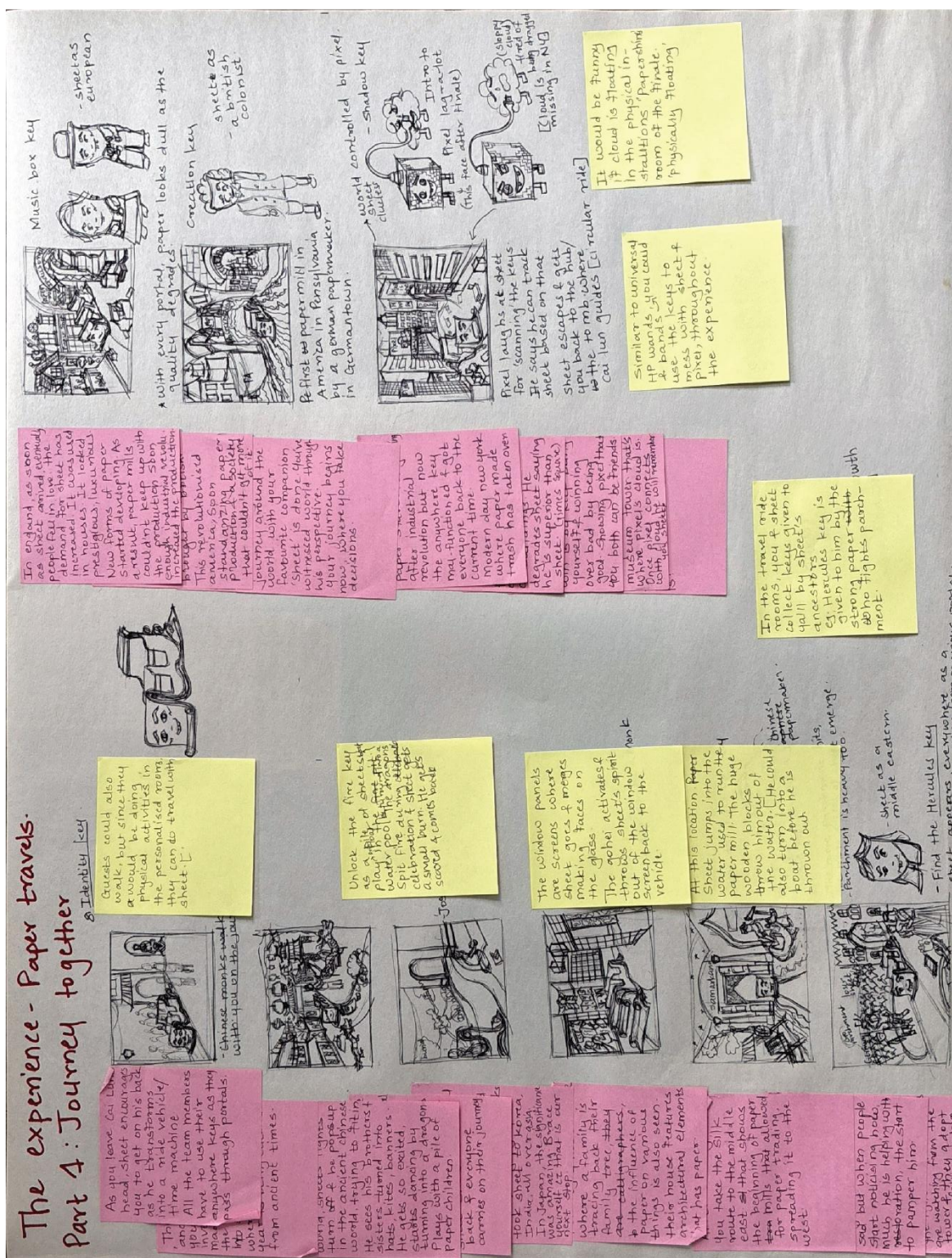


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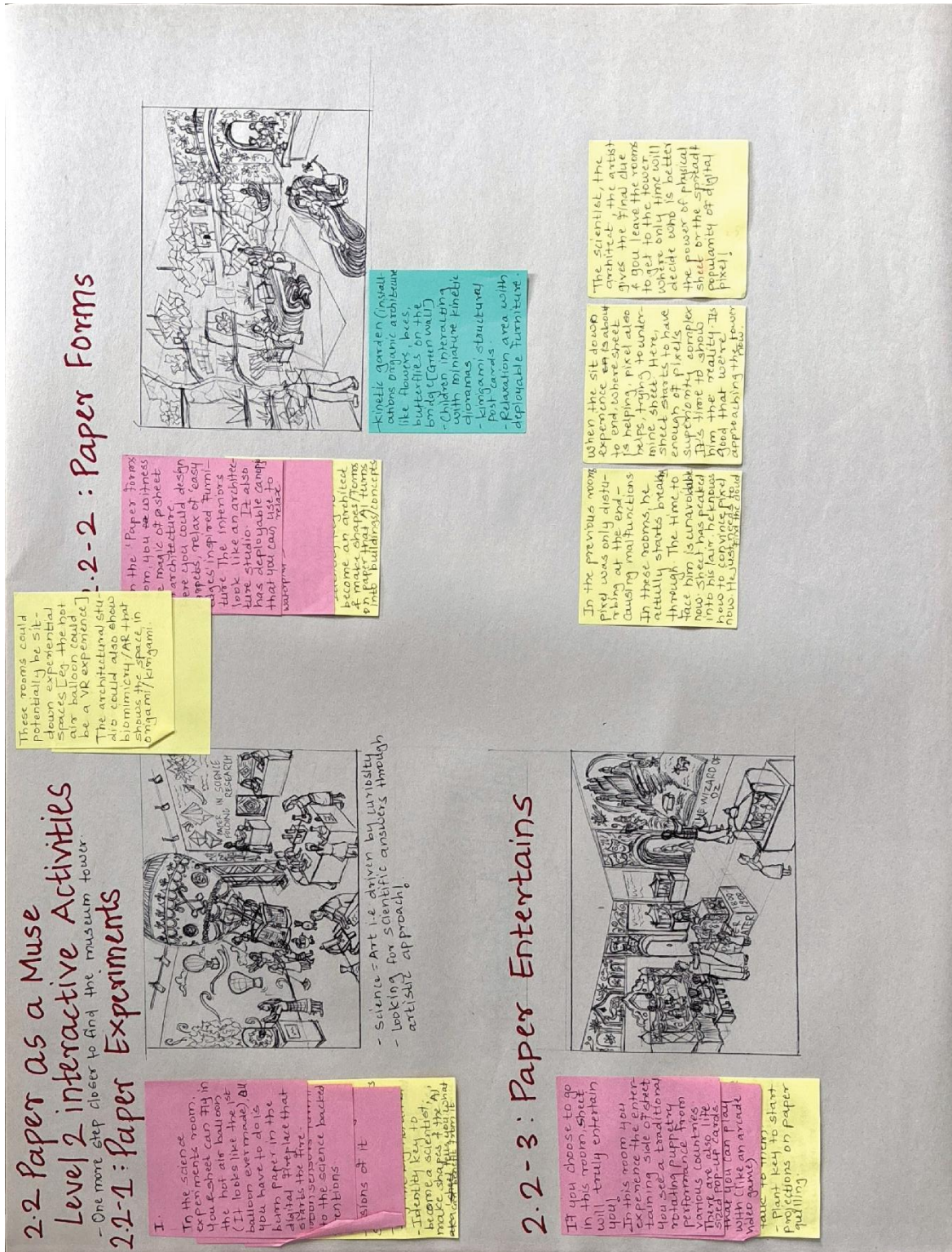


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The experience - Paper travels.
Part 4: Journey together



Narrative 5: Paper as a Muse



Appendix Figure 8. Pranali Tari, *Interactive Zone 2 (Paper as a Muse) Design Process*, 2026, Hand Sketches.

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