

A Comparative Study of the Natural and Cultural Heritage in the Palace Museum and the North Carolina Museum of Natural Sciences

Zhiyang Tang^a, Weina Li^{b,*}

School of English Studies, Beijing International Studies University, Beijing, China

^a13568205018@163.com, ^bfrancisli@163.com

**Corresponding author*

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Abstract: Museums play a critical role in preserving heritage and fostering cultural understanding. This study examines the differences in exhibition themes, educational functions, and public engagement strategies between the Palace Museum in China and the North Carolina Museum of Natural Sciences in the United States. Grounded in experiential learning and intercultural communication theories, it explores how these institutions reflect the unique societal priorities of their respective nations. Findings highlight China's focus on cultural continuity and national identity, contrasted with the U.S.'s emphasis on scientific literacy and global responsibility. Recommendations for cross-cultural collaborations are proposed to enhance heritage preservation and education globally.

1. Introduction

Museums play a pivotal role in preserving history and fostering cultural awareness. As centers of cultural exchange and education, they connect the past to the present and inspire future generations through diverse engagement strategies. In an era of globalization, where cultural identities are constantly negotiated and redefined, museums face a dual challenge: safeguarding cultural heritage and embracing modernity to stay relevant. These challenges highlight the need to explore how different societies utilize museums to reflect their unique cultural priorities and societal needs.

Cultural and societal contexts have led to diverse approaches in the functions of museums worldwide. In China, museums such as the Palace Museum focus on preserving and showcasing historical artifacts and intangible cultural heritage, aiming to foster a strong sense of cultural identity and national pride. By contrast, American museums like the North Carolina Museum of Natural Sciences prioritize the dissemination of natural heritage and science education, emphasizing scientific literacy and environmental awareness. These divergent priorities not only reflect the distinct cultural values of each society but also shape the ways in which museums engage with their audiences and contribute to global education.

This paper adopts a comparative case study approach to investigate the exhibition themes, educational functions, and public engagement strategies of the Palace Museum and the North

Carolina Museum of Natural Sciences. By analyzing these two institutions, this study identifies key differences in their approaches to cultural preservation and audience interaction, offering insights into how museums can address both local and global needs. Furthermore, it explores opportunities for cross-cultural collaboration, emphasizing the potential for museums to serve as platforms for fostering mutual understanding and cultural diversity in an increasingly interconnected world.

2. Theoretical Framework

This study is informed by two key theoretical perspectives: Experiential Learning Theory and Intercultural Communication Theory, both of which will help explore the differences in cultural heritage protection and communication between Chinese and American museums, as well as how these differences shape students' understanding of cultural heritage.

Experiential Learning Theory[1] posits that effective learning stems from active engagement with and reflection on experiences. For museums, this implies that visitors learn not merely by observing but by interacting with exhibits and interpreting their meanings. For example, hands-on workshops in the Palace Museum allow participants to explore traditional Chinese crafts, deepening their understanding of cultural heritage through practice.

Intercultural Communication Theory[2], as Gudykunst (2004) explains, explores how cultural differences influence communication and understanding. Museums, as cross-cultural spaces, serve as platforms to bridge these differences. The Palace Museum's focus on collective memory and the North Carolina Museum's emphasis on individual exploration exemplify how cultural contexts shape communication strategies in heritage preservation.

Together, these two theories offer valuable insights into how different museum practices affect cultural learning. They will allow the study to better understand how students from different cultural backgrounds engage with and interpret cultural heritage in diverse museum settings, and how these practices contribute to broader cultural dissemination.

3. Background and Problem Statement

3.1 Cultural Background of Chinese Museums

Chinese museums play a crucial role in safeguarding and promoting traditional cultural heritage, serving as custodians of the nation's rich historical legacy. Exhibitions in Chinese museums, such as the Palace Museum, are often centered on historical artifacts, ceramics, paintings, and intangible cultural traditions, including Peking opera and traditional crafts like embroidery. These exhibits reflect not only the depth of Chinese history but also the nation's emphasis on cultural continuity and identity.

In recent years, technological innovation has transformed the way Chinese museums interact with audiences. The Palace Museum, for instance, has implemented digital technologies, such as virtual tours and 3D modeling of artifacts (Figure 1), to reach a broader audience and adapt to the demands of a digital era. Initiatives like the "Digital Palace Museum (Figure 2)" not only enhance accessibility but also bridge the gap between traditional culture and modern lifestyles, ensuring that cultural heritage remains relevant to younger generations. These developments underline the dual mission of Chinese museums: preserving cultural memory while embracing innovation to maintain their relevance in a rapidly changing global context.



Figure 1 Virtual tours and 3D modeling of artifacts (Source: <https://digicol.dpm.org.cn/>)

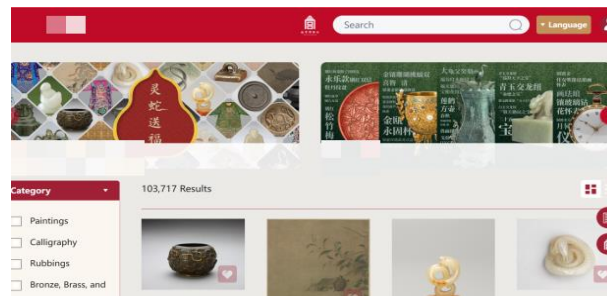


Figure 2 Digital Palace Museum (Source: <https://digicol.dpm.org.cn/>)

3.2 Cultural Background of American Museums

In the United States, museums have traditionally emphasized natural heritage and science education, reflecting societal priorities that focus on technological progress and environmental conservation. The North Carolina Museum of Natural Sciences exemplifies this approach, with its dynamic exhibits that range from biodiversity and prehistoric fossils to immersive habitats and space exploration. These exhibits aim to inspire curiosity and foster scientific literacy among diverse audiences, especially young learners.

A notable feature of American museums is their participatory and hands-on approach. Programs like “Community Science Days (Figure 3)” and open-access paleontology labs (Figure 4) actively involve visitors in scientific exploration, turning passive observers into active participants. This model not only makes scientific concepts more accessible but also cultivates a deeper appreciation for the interconnectedness of humans and the natural world. By emphasizing engagement and experiential learning, American museums contribute to a culture of innovation and global responsibility.



Figures 3 Community Science Days (Source: North Carolina Museum of Natural Sciences)



Figures 4: Open-access labs (Source: North Carolina Museum of Natural Sciences)

3.3 Problem Statement

While museums worldwide share the fundamental mission of preserving and disseminating cultural heritage, their strategies and priorities often diverge, shaped by cultural and societal contexts. Chinese museums, represented by the Palace Museum, prioritize the inheritance of historical culture and the cultivation of national identity. In contrast, American museums, like the North Carolina Museum of Natural Sciences, focus on science education and environmental awareness, emphasizing practical engagement and global perspectives. These differing approaches influence how audiences perceive and interact with cultural heritage, leading to varied educational and cultural outcomes.

To better understand these differences, this paper addresses the following questions:

What are the primary differences in exhibition themes, educational functions and public engagement between Chinese and American museums?

How do these differences reflect the distinct cultural and societal priorities of China and the United States?

In what ways can cross-cultural collaboration between museums advance global cultural preservation and education?

4. Case Studies

4.1 Study method

This study employs a comparative analysis focusing on three key dimensions: exhibition themes, educational functions, and public engagement. These dimensions capture the core roles of museums in contemporary society, offering a structured framework for examining their similarities and differences.

4.2 The Palace Museum

The Palace Museum stands as a testament to China's historical and cultural heritage, attracting millions of visitors annually from around the world. Housed in the iconic Forbidden City, the museum showcases a vast collection of historical artifacts, from ancient ceramics and paintings to imperial treasures, embodying the depth and richness of Chinese civilization.

According to public records, the Palace Museum welcomed over 19.3 million visitors in 2019, making it the most visited museum in the world. As of 2023, the museum's annual visitor count has exceeded 16 million (Table 1). In recent years, the Palace Museum has embraced digital innovation to expand its reach and modernize its educational offerings. The "Digital Palace Museum" platform, for instance, allows users to explore virtual exhibits with high-resolution images and interactive features. By 2023, this platform had amassed over 200 million online visits, demonstrating the

transformative power of digital tools in cultural dissemination. Such initiatives not only preserve traditional culture but also make it accessible to global audiences, particularly younger generations [3].

Table 1 Top 10 Chinese Museum in 2023 (Source: <https://www.mct.gov.cn>)

| Rank | Museum Name | Visitors(2023) |
|------|-------------------------------------|----------------|
| 1 | National Museum of China | 6,765,000 |
| 2 | China Science and Technology Museum | 5,315,000 |
| 3 | Nanjing Museum | 5,007,000 |
| 4 | Suzhou Museum | 4,852,000 |
| 5 | Guangdong Museum | 4,000,000 |
| 6 | Huhan Musesum | 3,880,000 |
| 7 | Shananxi History Museumn | 3,730,000 |
| 8 | Palace Museum (Forbidden City) | 3,680,000 |
| 9 | Zhejiang Museum | 3,550,000 |
| 10 | Shanghai Museum | 3,500,000 |

The museum’s educational programs are equally diverse. Activities like the “Palace Culture Workshops” engage teenagers in traditional crafts such as pottery and embroidery, fostering hands-on appreciation of intangible cultural heritage. Seasonal events, such as the “Night Tours of the Palace Museum,” offer immersive experiences that blend history, art, and storytelling. During the COVID-19 pandemic, the museum innovated further by launching the “Volunteers Talk about National Treasures” video series, presenting engaging narratives about its collections. These efforts underscore the Palace Museum’s dual mission of preserving heritage and inspiring cultural pride.

4.3 The North Carolina Museum of Natural Sciences

The North Carolina Museum of Natural Sciences excels in promoting natural heritage and science education through its dynamic and interactive exhibits. Located in the heart of Raleigh, the museum draws approximately 700,000 visitors annually with attractions like the Butterfly Pavilion, Dinosaur Trail, and immersive Earth Science exhibitions. These displays emphasize biodiversity, environmental conservation, and technological innovation, reflecting America’s focus on scientific progress and global responsibility.

One of the museum’s defining features is its participatory approach to education. Programs like “Community Science Days” invite visitors to actively engage in scientific experiments, fostering curiosity and critical thinking. Open-access labs allow guests to observe or even participate in fossil preparation, bridging the gap between scientific research and public education. These hands-on opportunities transform traditional learning experiences into collaborative explorations, inspiring a lifelong passion for science and the natural world.

The museum also prioritizes accessibility and outreach. Seasonal events, such as wildlife observation nights, connect visitors with nature, while partnerships with schools and community organizations ensure that its educational resources reach diverse audiences. This inclusive and forward-thinking model positions the North Carolina Museum as a leader in science education and public engagement.

4.4 Comparative Analysis

4.4.1 Exhibition themes

The exhibition themes of the Palace Museum and the North Carolina Museum of Natural

Sciences are shaped by their distinct cultural priorities and societal contexts.

The Palace Museum primarily focuses on historical artifacts and intangible cultural heritage, reflecting the richness and continuity of Chinese civilization. Iconic exhibits, such as ancient ceramics, calligraphy, and paintings, highlight the depth of Chinese history and its artistic achievements. Moreover, the museum integrates elements of intangible culture, including Peking opera and traditional crafts, into its thematic exhibitions, reinforcing its role as a guardian of cultural identity. These themes emphasize a connection to the past, aligning with China's broader focus on preserving its historical legacy and fostering national pride.

Conversely, the North Carolina Museum of Natural Sciences showcases themes centered around natural heritage, biodiversity, and scientific exploration. Exhibits such as the Butterfly Pavilion, Dinosaur Trail, and immersive space explorations aim to inspire curiosity about the natural world. The museum also addresses contemporary issues, such as environmental conservation and climate change, reflecting America's focus on innovation and addressing global challenges. By linking science to everyday life, the museum encourages visitors to engage with and appreciate the dynamic relationship between humans and nature.

This thematic contrast underscores a fundamental cultural divergence: the Palace Museum represents a static inheritance of history and tradition, while the North Carolina Museum embodies dynamic exploration and forward-thinking innovation. These differences highlight the broader societal priorities of cultural preservation in China and scientific advancement in the United States.

4.4.2 Educational Functions

The educational approaches of the Palace Museum and the North Carolina Museum of Natural Sciences are distinct, reflecting their respective cultural values and societal needs. This perspective aligns with Kolb's Experiential Learning Theory (Kolb, 1984), which emphasizes the role of experience and reflection in shaping understanding [4].

The Palace Museum emphasizes the promotion of cultural identity through educational activities centered on intangible cultural heritage. Programs such as "Palace Culture Workshops" allow participants, especially young people, to engage in traditional crafts like embroidery and pottery. These activities not only teach skills but also deepen participants' appreciation for China's cultural traditions. During festivals, the museum organizes themed events, such as the "Night Tours of the Palace Museum," offering immersive cultural experiences that blend education with entertainment. These efforts are complemented by digital educational initiatives, such as the "Volunteers Talk about National Treasures" video series, which delivers engaging content about Chinese history and art to a global audience. Together, these programs foster a sense of cultural pride and continuity.

The North Carolina Museum, on the other hand, prioritizes scientific literacy and practical learning. Its educational initiatives, such as "Community Science Days" and hands-on activities in open paleontology labs, encourage visitors to actively participate in scientific processes. These programs are designed to demystify science and make it accessible to a broader audience, particularly children and families. By integrating practical experiments and real-world applications, the museum not only enhances knowledge but also cultivates skills and critical thinking. This approach reflects the American emphasis on experiential learning and innovation.

In essence, the Palace Museum's educational model focuses on cultural cognition and emotional connection, while the North Carolina Museum prioritizes experiential education and practical application. These differing strategies reveal how each institution addresses its audience's specific needs and societal expectations.

4.4.3 Public Engagement

The approaches to public engagement in the Palace Museum and the North Carolina Museum of Natural Sciences reflect their institutional priorities and cultural contexts. Intercultural Communication Theory (Gudykunst, 2004) highlights how engagement strategies can facilitate or hinder cross-cultural understanding.

The Palace Museum emphasizes collective cultural experiences. Through events such as traditional workshops and festival-themed activities, the museum engages visitors in a shared appreciation of Chinese heritage. For instance, its Chinese New Year celebrations combine lantern displays, cultural performances, and interactive exhibits, creating an atmosphere of communal celebration. These events often incorporate storytelling and demonstrations of traditional practices, such as tea ceremonies or calligraphy, fostering an immersive experience. By engaging visitors in collective activities, the museum strengthens cultural identity and reinforces a sense of belonging.

In contrast, the North Carolina Museum of Natural Sciences adopts a participatory and individualized approach to engagement. Programs like “Community Science Days” and its open-access labs invite visitors to contribute to scientific research, such as preparing fossils or monitoring environmental changes. These initiatives transform visitors into active participants rather than passive observers, aligning with the American emphasis on individualism and self-directed learning. Seasonal events, such as wildlife observation nights, further encourage visitors to connect with nature and apply scientific principles in their daily lives.

These distinct engagement strategies (Table 2) highlight broader cultural differences: the Palace Museum prioritizes collective memory and tradition, while the North Carolina Museum fosters personal exploration and practical involvement. Both approaches effectively serve their respective communities, but their differences underscore the unique societal values of China and the United States.

Table 2 Comparative analysis of The Palace Museum and North Carolina Museum of Natural Sciences from different dimensions

| Dimension | The Palace Museum | North Carolina Museum of Natural Sciences |
|-----------------------|--|---|
| Exhibition Themes | Historical artifacts and intangible cultural heritage Examples: Ancient ceramics, calligraphy, traditional crafts like Peking opera. | Natural heritage and scientific innovation. Example: Dinosaur fossils, biodiversity displays, immersive space exhibits. |
| Educational Functions | Promoting cultural identity and heritage appreciation. Programs: Palace Culture Workshops, Volunteers Talk about National Treasures. | Encourage Scientific literacy and environmental awareness. Programs: Community science Days, open paleontology labs. |
| Public Engagement | Traditional festival activities and interactive cultural workshops. Examples: Night Tours of the Palace Museum, seasonal celebrations. | Hands-on science activities and community-based events. Examples: Wildlife observation nights, fossil preparation sessions. |

The comparative analysis reveals distinct priorities and methodologies in the approaches of these two museums. The Palace Museum emphasizes the preservation and promotion of historical and cultural heritage. Its static exhibitions of cultural relics, complemented by heritage workshops and festival-themed events, are designed to foster an emotional connection to traditional culture and strengthen cultural identity.

Conversely, the North Carolina Museum of Natural Sciences focuses on interactivity and

practical engagement. Through scientific experiments and community collaboration projects, the museum seeks to enhance scientific literacy and promote environmental awareness. These participatory initiatives allow visitors to actively engage with the exhibits, fostering curiosity and hands-on learning.

These differences underscore the contrasting educational philosophies of the two nations. The Palace Museum embodies a focus on “cultural cognition,” emphasizing the understanding and appreciation of historical culture. In contrast, the North Carolina Museum highlights “scientific practice,” aiming to cultivate practical skills and a global perspective through experiential learning.

5. Discussion and Analysis

5.1 Reflection of Cultural Values

The distinct cultural values embedded in Chinese and American museums reflect their unique historical trajectories and societal needs. For instance, the Palace Museum’s record-breaking 19.3 million visitors in 2019 emphasize its role as a cultural symbol attracting global attention. Through its displays of historical relics and intangible traditions, it fosters a sense of shared national identity and historical continuity. This approach aligns with China’s broader cultural narrative of honoring the past to inspire the present, positioning museums as guardians of collective memory and tradition.

In contrast, the North Carolina Museum of Natural Sciences prioritizes practicality and forward-looking innovation. Its focus on the interdependence of humans and the natural environment reflects the American ethos of adaptability and progress. By addressing contemporary challenges such as environmental conservation and scientific literacy, the museum fosters global responsibility and problem-solving skills. This difference highlights a cultural dichotomy: the Palace Museum embodies “static inheritance,” while the North Carolina Museum champions “dynamic innovation.”

5.2 Differences in Educational Functions

Education lies at the heart of both museums, yet their approaches reveal contrasting priorities. This perspective aligns with The Educational Role of the Museum[5].

The Palace Museum emphasizes cultural transmission and emotional engagement through activities like the “Palace Culture Workshops.” These workshops allow participants to engage in traditional crafts such as calligraphy and embroidery, cultivating a deep appreciation for intangible heritage. Seasonal events like the “Night Tours of the Palace Museum” provide immersive cultural experiences that blend history, art, and storytelling. This model focuses on fostering pride in cultural identity and continuity, especially for younger generations navigating a globalized world.

The North Carolina Museum of Natural Sciences adopts a hands-on, experimental approach. Through initiatives such as “Community Science Days” and open-access paleontology labs, visitors actively participate in scientific processes, demystifying complex concepts and linking them to real-world applications[6]. This experiential model not only imparts knowledge but also cultivates critical thinking and problem-solving skills, reflecting America’s emphasis on innovation and practical education.

The differences underscore how each institution aligns its educational functions with societal expectations: the Palace Museum focuses on cultural cognition, while the North Carolina Museum prioritizes experiential learning.

5.3 Approaches to Public Engagement

The public engagement strategies of these museums reflect their institutional priorities and cultural contexts.

The Palace Museum emphasizes collective cultural experiences. Its traditional workshops and seasonal activities engage visitors in shared celebrations of heritage, such as Chinese New Year events featuring lantern displays and live performances. These initiatives highlight the importance of community and collective memory, aligning with China's cultural emphasis on collectivism and continuity[7].

The North Carolina Museum of Natural Sciences, on the other hand, promotes individualized exploration and active participation. Programs like fossil preparation labs and wildlife observation nights invite visitors to become contributors, transforming the museum experience from passive observation to active engagement. This individualized approach reflects the American cultural value of self-direction and personal achievement[8].

While both approaches effectively engage their audiences, they reflect broader societal values: the Palace Museum fosters communal appreciation, whereas the North Carolina Museum encourages individual exploration.

5.4 Advantages and Disadvantages of the Models

Both models have unique strengths but also face limitations.

The Palace Museum's focus on cultural heritage strengthens national identity and emotional resonance. However, its relatively static exhibitions may lack the interactivity needed to captivate a global audience accustomed to more dynamic experiences; The North Carolina Museum's emphasis on participation and technological innovation ensures accessibility and engagement, but its focus on science may overlook the cultural and historical depth that enriches a broader understanding of heritage.

To overcome these limitations, cross-cultural collaboration could bridge these gaps. For instance, Interactive Enhancements for the Palace Museum: Incorporating participatory activities inspired by the North Carolina Museum, such as digital simulations of historical events, could attract a more diverse audience. Cultural Integration for the North Carolina Museum: Adding elements of storytelling or cultural context, akin to the Palace Museum's approach, could deepen visitors' appreciation for the historical and cultural significance of natural phenomena.

Such collaborative strategies would not only improve the individual offerings of each museum but also contribute to the global preservation and dissemination of both cultural and natural heritage.

6. Conclusion

This comparative study of the Palace Museum and the North Carolina Museum of Natural Sciences highlights their distinct approaches to exhibition themes, educational functions, and public engagement. These differences, rooted in the unique historical, cultural, and societal contexts of China and the United States, reflect broader cultural philosophies. While the Palace Museum focuses on preserving historical and intangible cultural heritage to reinforce national identity, the North Carolina Museum emphasizes scientific literacy and environmental awareness through participatory methods.

Despite these differences, both museums face shared challenges in the global era, such as engaging younger audiences, integrating technology, and balancing local narratives with global relevance. These challenges also present opportunities for collaboration, where their unique

strengths could complement each other.

For example, joint exhibitions combining Chinese cultural heritage with American scientific expertise could offer a richer, multidimensional learning experience. Digital platforms sharing virtual tours and interactive content could increase accessibility and global outreach. Cross-cultural research and professional training initiatives could inspire innovative approaches to heritage preservation and public engagement.

By embracing such collaborative strategies, these museums could transcend cultural boundaries, fostering greater mutual understanding and contributing to a more interconnected global community. Ultimately, the Palace Museum and the North Carolina Museum exemplify the diverse yet complementary roles museums play in preserving and disseminating heritage, offering valuable lessons for global cultural and educational practices.

References

- [1] Kolb, D.A. *Experiential Learning: Experience as the Source of Learning and Development*. Prentice Hall, 1984.
- [2] Gudykunst, W.B. *Bridging Differences: Effective Intergroup Communication*. SAGE Publications, 2004.
- [3] Li Ning. *Research on the Dissemination of Chinese Cultural Heritage in the Digital Age*. *Cultural Heritage*.5 (2021): 33-37.
- [4] Chen Dandan. *Research on Museum Educational Activity Design from the Perspective of Experiential Learning Theory*. *Journal of Museum Studies*.4 (2018): 22-28.
- [5] Hooper-Greenhill, E. *The Educational Role of the Museum*. Routledge, 1999.
- [6] Falk, J. H., and Dierking, L. D. *The Museum Experience Revisited*. Routledge, 2013.
- [7] Han Liang. *Discussion on Museum Public Education Strategies in Cross-Cultural Contexts*. *Cultural Studies*. 23 (2022): 15-17.
- [8] AAM. *Trends Watch 2022: Emerging Issues in Museums*. American Alliance of Museums, 2022.