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Multi-Sensory Museum Experiences: Balancing Objects' Preservation and Visitors' Learning

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**Multi-Sensory Museum Experiences:
Balancing Objects' Preservation
And Visitors' Learning**

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Submitted in partial fulfillment of the requirements for the degree

Master of Arts in Museum Professions

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A handwritten signature in black ink, appearing to read 'Petra ten-Doesschate Chu'. The signature is stylized and cursive.

Approved by: _____
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Abstract

In the late twentieth century, museums moved from a near exclusive focus on researching, collecting and preserving objects to an increased interest in visitors' experiences and learning. Consequently, today's museums are re-focused on facilitating engaging connections between visitors and collections. Nonetheless, many current-day museum visitors are dissatisfied with their primarily visual experiences. In order to enhance visitors' intellectual, emotional and physical connections with objects, this paper argues museums should introduce new ways of visitor interaction with objects through narrative and multi-sensory experiences. By combining discursive and immersive exhibition models, museums can create narratives that emotionally and intellectually involve visitors.

While museums should aim to make visitors' museum experiences more immersive by incorporating senses in addition to sight, such as touch, hearing, smell and taste, museums must also protect the integrity of their collections. Through a tiered or stratified approach to collections, museums may remain responsible for their collections yet allow visitors to increase their physical, emotional and intellectual access to more diverse types of objects. This paper demonstrates how museums may implement discursive and immersive narratives as well as tiered or stratified, multi-sensory collection experiences in permanent installations, temporary exhibitions and educational programming.

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Introduction

Beginning in the eighteenth century, museums formed restrictions against visitors' physical contact with collections objects likely due to "class distinctions," as reasoned by Constance Classen in *The Museum of the Senses*.¹ At that time, museums became increasingly visited by the middle class rather than solely by the elite, so museums' anti-touch environment developed as a "matter of protecting museums pieces from harm" and "ensuring that they be treated with respect."² The limitation on handling museum objects not only reflected their monetary worth but also the fact that they were held at a "higher level" of aesthetic, cultural, and educational value than common and ordinary objects. In keeping museum objects safe and "respected," the museum became a place where people of all classes came to primarily experience collections through sight.

In the nineteenth century, there was an increased emphasis on objects' educational value, resulting in the introduction of labels as communication between visitors and museum objects. However, even as museums transitioned from a central focus on their collections to educating the public, sight remained, and continues to remain, essential to museum visitors' experiences. The visual appreciation of museum objects was further stressed in the twentieth century with the development of the "white cube" display aesthetic. It emphasized exhibiting objects in galleries with "low ceilings, controlled lighting, and neutral walls" in order to "concentrate the beholder's gaze" on artworks.³ Most of today's museum visitors are not excited or stimulated by simply

¹ Constance Classen, *The Museum of the Senses: Experiencing Art and Collections*, (New York: Bloomsbury Academic, 2017), 117.

² Classen, *The Museum of the Senses*, 118.

³ Andrew McClellan, "Collecting, Classification, and Display," in *The Art Museum from Boullée to Bilbao* (Los Angeles: University of California Press, 2008), 129-130.

looking at objects and reading labels in white washed galleries. They may be dissatisfied with the “white cube” due to the overstimulation of the visual sense in today’s culture.

In this thesis, I develop two strands in which I argue that museums should direct their attention (1) to objects’ narratives and (2) to new ways in which visitors can engage with them. In order to do so, museums should combine discursive and immersive methods of presenting objects. Discursive displays typically contain verbal descriptions and interpretations of objects that provide overarching themes and patterns. As a result, visitors may intellectually and critically assess displays’ contents. In contrast to discursive exhibition models’ means of constructing information, immersive installations “create knowledge in the realm of experience and affective information,” according to Dr. Emilie Sitzia.⁴ Immersive installations engage visitors’ senses and emotions through interactive experiences, which permits visitors to form personal relationships with objects. Overall, a dual approach to exhibition content and design improves museums’ visitors intellectual and emotional involvement with objects.

I will begin with a discussion of the standard way in which museums currently display and interpret their collections and I document visitors’ dissatisfaction with their museum experiences. Addressing this dissatisfaction, I argue for a new emphasis on the enabling of a multi-sensory approach to objects which, in addition to sight, may also include touch and hearing, perhaps even smelling and taste. Such an approach would require a stratified method to collections care, in which a distinction is made between objects that need optimal care and those that are stable or replicable in some way. Objects suitable for handling, I suggest, should be used in temporary exhibitions, permanent collection installations and educational programs. In order

⁴ Emilie Sitzia, “Narrative Theories and Learning in Contemporary Art Museums: A Theoretical Exploration,” *Stedelijk Studies*, no. 4 (Spring 2016): 2, accessed June 13, 2018, https://www.stedelijkstudies.com/beheer/wp-content/uploads/2016/06/Stedelijk-Studies_Narrative-Theories_Sitzia.pdf.

to initiate tiered permanent collections, museums may begin by implementing education collections as means of exploring sensory-inclusive environments. Especially for collection objects originally made to be handled and operated, such as musical instruments, museums should aim to make multi-sensory experiences available, whether through authentic objects or with the assistance of copies, supplementary materials or audio-visual technologies.

It is up to the museums to facilitate connections between visitors and objects. While protecting the integrity of their collections, future museum should enhance visitors' physical, emotional and intellectual engagement with objects by introducing new ways of viewing, such as through narrative and sensual experiences.

Chapter One:

Museums' Use of Collections and Visitors' Learning Experiences

Present-day museums dedicate themselves to the public and the care of collections, yet much professional literature suggests that the latter is more important than the former. Perhaps relatedly, despite museums' professed attention to serving the public, museum visitors often remain dissatisfied with their experiences due to exhibitions' inability to truly engage the public. In order to improve museum visitors' experiences, museum professionals must first recognize the equal importance of collections care and museums' duty to meeting public interests and needs.

From Treasure House to Social Enterprise

Museums have already made great strides in the movement from a near exclusive focus on objects to an ever-growing interest in visitors. Unlike today's common adoption of the visitor-centered museum model, museums previously saw their collections and the preservation of those collections as their *raison d'être*. According to Stephen Weil in *Making Museums Matter*, museums prior to World War II functioned as "treasure houses," in which collections were viewed as an end rather than as a means to achieve an end.⁵ After the War, this situation gradually changed. Rather than collections simply serving as the purpose of museums' existence, they became a way to meet museums' educational and social goals. Most museums achieved this goal of educating visitors through verbal means, such as text labels, catalogs or (virtual) docent tours. Words, essentially, became the vehicle through which museums connected visitors to objects.

⁵ Stephen Weil, *Making Museums Matter* (Washington D.C.: Smithsonian Institute Press, 2007), 80.

Museums' shift in focus from collections to visitor learning experience corresponds with the emerging concept of the museum as a "social enterprise." In the early 1990s, J. Gregory Dees, a professor at the Harvard Business School, developed the idea that non-profit organizations can be entrepreneurial entities. In Dees' 2001 revised version of "The Meaning of 'Social Entrepreneurship,'" he recognized Peter Drucker's definition of entrepreneurs, whether for-profit or non-profit, as "always search[ing] for change, respond[ing] to it, and exploit[ing] it as an opportunity."⁶ According to Dees, non-profit organizations like for-profits, "exploit opportunities" for change, but they aim for social outcomes rather than monetary gains. Museums as "social enterprises" measure their success by the degree to which they produce social impact. Dees goes on to clarify that to do so, they adopt "a mission to create and sustain social value."⁷ Surely, most present-day museums are guided by a mission statement that stresses the importance of social impact. In Odile Paulus's 2010 study, she found, on the basis of her study one-hundred-forty museum mission statements, that the terms "public," "exhibition," and "education" appear more than one hundred times in the mission statements, while the words "acquisition," "preservation" and "research" occur half as often.⁸ From a simple counting of words' frequency in missions, it seems apparent that today's museums' attention is on social outreach and education rather than collections. However, the role of museums as protectors and preservers of cultural heritage remains relevant. In a 2013 interview conducted by CNN with Ford W. Bell, the president of the American Alliance of Museums at the time, the overarching question was: "Are Museums Still Relevant?" Among the many questions, Bell was asked how

⁶ J. Gregory Dees, "The Meaning of 'Social Enterprise,'" *Duke University*, last modified May 30, 2001, accessed September 29, 2017, <https://entrepreneurship.duke.edu/news-item/the-meaning-of-social-entrepreneurship/>.

⁷ Dees, "The Meaning of 'Social Enterprise.'"

⁸ Odile Paulus, "Museums as Serigraphs or Unique Masterpieces: Do American Art Museums Display Differentiation in Their Mission Statements," *International Journal of Arts Management* 13, no. 1 (Fall 2010): 16, *JSTOR*, accessed July 13, 2017, <http://www.jstor.org/stable/41057870>.

museums go beyond acting as “collectors of stuff?”⁹ In response, he asserted that “museums are much more than mere collectors.”¹⁰ Rather than serving as warehouses, or “treasure houses,” for objects, Bell argued that museums are unique, because the public can access real, priceless objects as well as expert content. Bell implied that museums’ collections are means to serving the public rather than an end in themselves, which is an essential premise of museums as social enterprises. While museums’ missions guide their overall social goals, museum displays’ text more specifically conveys objects’ purposes to museums’ visitors. It is often through text labels, or audio-guide text, that objects on view are explained and connected to visitors.

Communication through Labels and Presentation

Of the several verbal tools, such as catalogs, labels, guided tours, audio guides, etc., one of the most basic ways museums aim to connect the public with their objects is through wall text, like “tombstone” and “interpretive” labels. Tombstone labels primarily include objects’ identifying details, such as titles, artists’ names, dates and mediums. For more information, interpretive labels often contain historical contexts and narratives that aim to reveal “thematic threads, biographies, and connections among objects.”¹¹ Exhibitions tend to have a hierarchy of interpretive labels in order to express narrative. For example, an exhibition may most broadly introduce its main concept in an introductory statement. Then, the exhibition may provide section texts that “address larger themes and unify groups of objects” to “divide the installation space into more digestible areas for viewing and understanding.”¹² Most directly discussing objects on display, the exhibition will likely incorporate object labels that inform visitors how and why objects are relevant to the exhibition’s narrative.

⁹ CNN Staff, “Are Museums Still Relevant?” *CNN*, 2013, last modified July 12, 2017, accessed August 14, 2017, <http://www.cnn.com/travel/article/are-museums-still-relevant/index.html>.

¹⁰ CNN Staff, “Are Museums Still Relevant?”

¹¹The J. Paul Getty Museum, *Complete Guide to Adult Audience Interpretive Materials: Gallery Texts and Graphics*, 14, accessed July 20, 2018, https://www.getty.edu/education/museum_educators/downloads/aaim_completeguide.pdf.

¹² The J. Paul Getty Museum, *Complete Guide to Adult Audience Interpretive Materials*, 13.

Narrative, as Sitzia argues, may be generally understood as museums' "mediation tool" for communicating content to visitors.¹³ Although, narrative may be more specifically identified as "storytelling." According to Rachel Esner and Fieke Konijn, storytelling is "a prominent feature of exhibitions."¹⁴ Museums' temporary exhibitions are commonly organized through narrative to teach concepts, spark interest in certain topics, change people's attitudes or perspectives on an issue or improve people's behavior or learning skills. In a different use of narrative, permanent collection displays traditionally present objects in a chronological, hierarchical and categorical fashion that demonstrates the progression of ideas, human experience, etc. However, Esner and Konijn reveal that storytelling "has become the guiding principle for many a collection display" as a result of museums' aim to create more engaging experiences with their collections.¹⁵

Narrative in museums' labels and other verbal tools are essential to museum education, because Sitzia explains that "human beings think in narratives and through narratives by using and understanding specific patterns, structures, motifs, etc."¹⁶ Narrative helps museum visitors to interpret and relate to objects as well as to better understand exhibitions' concepts. Through written and audial descriptions and interpretations, exhibitions take a discursive approach. In discursive exhibitions, "the visitor experiences discursive experiences as an external narrative on which he/she can have a critical view or outlook for existing patterns."¹⁷ Discursive displays allow visitors to analyze, interpret and reflect upon objects and information outside of their own self-narratives. Additionally, text labels only move information in one direction: from museum to visitor. Consequently, visitors tend to be left

¹³ Sitzia, "Narrative Theories and Learning in Contemporary Art Museums," 4.

¹⁴ Rachel Esner and Fieke Konijn, "Curating the Collection," *Stedelijk Studies*, no. 5 (Fall 2017): 1-2, accessed June 7, 2018, <https://www.stedelijkstudies.com/journal/curating-the-collection/>.

¹⁵ Esner and Konijn, "Curating the Collection," 1-2.

¹⁶ Sitzia, "Narrative Theories and Learning in Contemporary Art Museums," 4-5.

¹⁷ Sitzia, "Narrative Theories and Learning in Contemporary Art Museums," 7.

without the possibility of linking their personal narratives to objects' narratives. Even though interpretive labels and verbal tools are essential for museum exhibitions to communicate with visitors, museums should recognize that such methods are only one way to minimize intellectual and emotional distances between visitors and objects.

Even though most museums today make visitor learning experiences the focal point of their entrepreneurial model, mission statements and text labels, it is apparent that collections care is still an essential museum stewardship role because of the measures taken to protect objects from museum visitors. Museum objects are typically behind barriers or enclosed in glass cases. In the essay, "The Gloom of the Museum," John Cotton Dana describes museums' objects as "enshrined" and containing a "peculiar sanctity."¹⁸ The reverence that museum objects demand is amplified by their installation behind glass and ropes, which communicates to viewers the objects are to be seen and not touched. The sacred status of "enshrined" museum objects continues today. Although museum visitors may feel to an extent that collections objects are inaccessible and sacred, museums as "social enterprises" use objects as educational resources to achieve their social goals. In the same thought, Alex Barker in "Exhibiting Archaeology" explores that "Museums are at once sacred groves and public attractions (Jeffers 2003), consecrated as temples to the Muses on the one hand and committed to service as a public forum on the other."¹⁹ Barker points out the dichotomy between museums as institutions dedicated to collections' preservation and serving the public. By the way in which they are displayed, objects' humanity is often removed from them as they are elevated to a sacred level. In the process, it is

¹⁸ John Cotton Dana, "The Gloom of the Museum," in *Reinventing the Museum: The Evolving Conversation of the Paradigm Shift*, 2nd ed., ed. Gail Anderson (United Kingdom: AltaMira Press, 2012), 20.

¹⁹ Alex W. Barker, "Exhibiting Archaeology: Archaeology and Museums," *Annual Review of Anthropology* 39 (2010): 303, *JSTOR*, accessed July 13, 2017, <http://www.jstor.org/stable/25735113>.

forgotten that objects are created by people and an emotional distance is formed between museum visitors and objects.

Constructivism

In contrast to the visual learning environment that museums established since the eighteenth century, the learning theory “constructivism” gained momentum in museum education in the 1990s. According to George E. Hein in “Constructivist Learning Theory,” constructivism is the idea that one learns by creating meaning from one’s previous knowledge.²⁰ One of the main principles of constructivism is that “learning is an active process in which the learner uses sensory input and constructs meaning out of it.”²¹ Through participation and involvement in situations or activities, or immersive environments, one learns by taking in information and building on past knowledge. Learning through sensory input, as result, allows audiences to “engage in the mind as well as the hand.”²² In immersive installations, “the experience will be integrated in the visitor’s own history.”²³ Museum visitors will, ultimately, form personal and emotional relationships with objects through physical contact with them. Visitors’ hands-on engagement with collections may also allow them to go beyond personal associations and toward an external, intellectual analysis of overarching ideas. Constance Classen clarifies in the previously mentioned book, *The Museum of the Senses*, that there is a “stereotypical association of touch with the body and the material world and sight with the mind and the world of ideas. There is no reason, however, why ideas cannot be conveyed by touch, as

²⁰ George E. Hein, “Constructivist Learning Theory,” (presented at CECA (International Committee of Museum Educators) Conference, Jerusalem, Israel, October 15-22, 1991.)

²¹ Hein, “Constructivist Learning Theory.”

²² Hein, “Constructivist Learning Theory.”

²³ Sitzia, “Narrative Theories and Learning in Contemporary Art Museums,” 7.

well as by sight.”²⁴ Information, knowledge and ideas can be communicated through sight as well as touch.

Following up on Classen’s claim that information may be understood through sight as well as touch, Sitzia argues that “a hybrid exhibition environment with some immersive parts and discursive parts seem to be an ideal museum learning environment.”²⁵ Museums should employ discursive and immersive approaches within their displays, so visitors receive a defined yet engaging narrative through visual (and audial) text as well as through multi-sensory elements. As a result, museum visitors subjectively and objectively interpret and learn about objects and themes; and, the distance between visitor and objects is lessened, as objects may no longer appear to be unrelatable, sanctified things.

Focus on Collections vs. Focus on the Public

While collections may be a vehicle through which museums serve the public, museum professionals working in direct contact with museum collections, such as registrars and collections managers, are often convinced that collections and research are museums’ “core business,” as quoted of Ethan Lasser in his article, “An Unlikely Match: On the Curator’s Role in the Social Work of the Museum” for *Museum Management and Curatorship*.²⁶ In view of collections and research as museums’ “core business,” it reflects they are understood as an end and museums’ main purpose rather than resources to achieve museums’ social goals. Similarly, collections care guidebooks also enforce the notion that collection objects are crucial to museums’ purposes. For instance, in the beginning of Brent Powell’s 2016 handbook, *Collection*

²⁴ Classen, *The Museum of the Senses*, 128.

²⁵ Sitzia, “Narrative Theories and Learning in Contemporary Art Museums,” 11.

²⁶ Ethan W. Lasser, “An Unlikely Match: On the Curator’s Role in the Social Work of the Museum,” *Museum Management and Curatorship* 27, no. 3 (August 2012): 206, accessed August 29, 2017, <https://tinyurl.com/yemn5s9c>.

Care, he quotes a label from the 2008 exhibition “Afghanistan: Hidden Treasures from the National Museum, Kabul” at the Asian Art Museum in San Francisco. The label declares: “collections are fundamental to all that a museum does in regard to its programming and why it exists as an institution.”²⁷ Powell uses this exhibition label to highlight the foundational importance of museum collections to museums’ overall functioning. Similarly, Barker affirms, “Collections lie at the heart of the museum.”²⁸ Like Powell, Barker stresses that collections are the point of departure for all the museum’s actions, much like the heart pumps blood through the body to sustain life. In order to ensure museums continue to be responsible stewards over their collections, collections personnel often require a physical barrier or a significant distance between objects and the public. As previously noted, the physical distance kept between museum visitors and objects likely maintains a learning “gap” as well.

Collections care texts are, of course, correct in saying that collections are key to museums’ operations; however, texts focused on the importance of visitor experience and museum survival also justifiably claim that visitor experience is crucial to museum operations. Co-authors Franklin Vagnone and Deborah Ryan in their 2016 book, *Anarchist’s Guide to Historic House Museums*, argue that, “visitor experience is more important than any other aspect of House Museum stewardship.”²⁹ For Vagnone and Ryan, visitor experience is even more essential than the care of collections in historic house museums. In their text, the authors specifically discuss historic house museums, which are distinct from “traditional” museums in that they are generally old houses converted into museums. They also tend to have a reputation

²⁷ Brent A. Powell, *Collection Care: An Illustrated Handbook for the Care and Handling of Cultural Objects* (London: Rowan and Littlefield, 2016), 3.

²⁸ Barker, “Exhibiting Archaeology: Archaeology and Museums,” 299.

²⁹ Franklin D. Vagnone and Deborah E. Ryan, *Anarchist’s Guide to Historic House Museums* (Walnut Creek, California: Left Coast Press, Inc., 2016), 137.

for valuing the preservation of collections and providing relevant historical information to visitors over valuing the stimulating and engaging nature of visitors' experience.³⁰ "Traditional" museums might also consider providing an optimum visitor experience as a primary part of museum stewardship. The role of museums as "stewards" customarily signifies museums' responsibility to properly care for their collections according to current best practices; yet, Vagnone and Ryan advocate museums' delivery of effective visitor experience is also a part of museums' duty to care for their collections. Suggesting that collections care standards can limit museums' ability to serve the public, the authors also argue that "it is important not to let past methodologies and best practices limit new endeavors."³¹ However, museums are ethically responsible for preserving their collections for future generations. Objects "enshrined" behind glass and ropes prevent visitors from fully engaging with objects, so the objects are protected for the long-term.

In order to find balance between visitor learning experience and the preservation of collections, there needs to be a re-evaluation of visitors' sensory access to collections objects. As the following section of this paper, "Current Visitor Dissatisfaction with Museums' use of Collections," clarifies, improvements should to be made to visitor learning experience in museums; although, for improvement, compromises likely need to be made in the current best practices of object preservation. Collections may be the "heart of the museum," but public access to and use of those collections are what give them purpose.³²

³⁰ Vagnone and Ryan, *Anarchist's Guide to Historic House Museums*, 19.

³¹ Vagnone and Ryan, *Anarchist's Guide to Historic House Museums*, 137.

³² Barker, "Exhibiting Archaeology: Archaeology and Museums," 299.

Visitors' Dissatisfaction with Museums' Current use of Collections

Despite museums' transition to the "social enterprise" model and their increased focus on maximizing visitor experience, there is still a degree of visitor dissatisfaction with museum experiences. This dissatisfaction largely stems from visitors' feeling of disconnect—of emotional and physical distance— between themselves and the objects on view. In his 2013 article, "Stupid Curators," Maurice Davies makes visitors' frustration with art museums' presentation of objects and content viscerally clear in his title. His main problem with art museums' exhibition practices is their tendency to let art "speak for itself," or present art without a means for visitors to connect with it based on their own experiences and knowledge. At times, art may seem so distant that viewers do not know how to begin interpreting it. In those situations, labels serve as interpreters of the artworks' "different language." It is neither possible nor advisable to include interpretive labels for every object, mainly due to available staff time and visitors' time spent in museums, but Davies' criticism reveals a rift between the discursive model of museum exhibitions and visitors' engagement and learning in them. Even though text labels begin to close the distance between viewers and objects, they may no longer be entirely effective for contemporary visitors. In Hampton Stevens' article, "Museums Want to Entertain You," he accurately describes museum visitor behavior as an "old school, cattle-like shuffle past painting after painting."³³ People's slow movement past objects without taking time for reflection indicates they are not stimulated by their museum experiences.

According to Stevens, the experience of looking at museum objects and reading traditional text labels does not compare to the contemporary experience of moving images and

³³ Hampton Stevens, "Museums Want to Entertain You (and That's Not a Bad Thing)," *Atlantic Daily*, April 19, 2012, accessed July 12, 2017, <https://www.theatlantic.com/entertainment/archive/2012/04/museums-want-to-entertain-you-and-thats-not-a-bad-thing/256042/>.

sounds, such as those projecting from smartphones, iPads and IMAX movie theaters. However, rather than an issue of technology, it more so appears to be an issue of visitors' engagement with their surrounding environment. As a solution, museums use technological channels in addition to text labels in gallery spaces to provide visitors with additional narrative. However, rather than a conversational situation between visitors and objects, it appears most of these devices create the same one-way flow of information from museums to visitors and may even distract visitors from engaging with objects. It is not possible to list here all of the continually advancing technologies that museums use in gallery spaces, although it is essential to note museums often employ technology to augment text labels. An exception from the usual one-way museum lecture is the smartphone application "ASK Brooklyn Museum." This app allows visitors, as the Brooklyn Museum clarifies, to "ask questions, get info, and share insights—via live, one-on-one texting—with one of our knowledgeable and friendly experts."³⁴ The "ASK Brooklyn Museum" app serves as a platform for visitors to ask qualified museum staff questions about what they see in the museum, permitting visitors to develop a deeper understanding of the objects on view. Through conversation and supplementary information, people may feel they form closer relationships with objects and the distance between them is less apparent. Yet, through this method, visitors still access objects visually through narrative.

In addition to the written and spoken word, the distance between people and objects can also be closed, more controversially, through direct contact with objects. Not only is object handling another method through which museum visitors can potentially lessen an emotional, intellectual and physical gap between them and objects, but it is also essential to acknowledge

³⁴ "Ask Brooklyn Museum," *Brooklyn Museum*, accessed October 16, 2017, https://www.brooklynmuseum.org/ask?gclid=Cj0KCQjwsZHPBRCIARIsAC-VMPDRxrhaL4maM3pLf4Ot5UleZq31DQ7rUVwldXwiDWnaYzyG4UJGOLsaAkM8EALw_wcB.

that visitors desire to handle museum objects. In the sarcastic article by *The Onion*, “Struggling Museum Now Allowing Patrons to Touch Paintings,” it imagines The Metropolitan Museum of Art permitting visitors to handle the art, including “prod and scratch at the classic paintings.”³⁵ It claims The Met’s former director, Thomas P. Campbell, discloses: “most people remain completely indifferent to our museum” . . . “so we decided to try something a little different and give visitors a chance to experience our timeless works of art up close and personal.”³⁶ By handling The Met’s objects, visitors would become personally engaged rather than remain unaffected and “shuffle past painting after painting,” like cattle, as portrayed by Stevens.³⁷ Even though this article pokes-fun at the public handling museum objects, The Met’s allowance of visitors to touch its objects creates an immediate reaction of shock in readers; because, thousands of daily Met visitors handling priceless cultural heritage would overtime degrade, destroy and prevent further study from the objects. The purpose of readers’ shock and the article’s humor is to comment on museums’ heightened focus on finding new ways to entice people through museums’ doors. However, the author’s depiction of the extreme situation of the public handling museum objects also observes that museums would fulfill visitors’ desire to form closer relationships with museums’ collections. As John Falk explains, visitors tend to visit museums that, they perceive, will “adequately satisfy their leisure, identity-related needs.”³⁸ A museum’s public offerings signify to visitors from various backgrounds whether or not that museum suits the way they can and would like to spend their time. But, in order to fulfill visitors’ needs, like those of personal and intellectual engagement and physical access to collections, museums must consider the needs of their

³⁵ “Struggling Museum Now Allowing Patrons to Touch Paintings,” *The Onion* 45, no. 41 (October 5, 2009), accessed October 16, 2017, <http://www.theonion.com/article/struggling-museum-now-allowing-patrons-to-touch-pa-2821>.

³⁶ “Struggling Museum Now Allowing Patrons to Touch Paintings,” *The Onion*.

³⁷ Stevens, “Museums Want to Entertain You (and That’s Not a Bad Thing).”

³⁸ John Falk, “Attracting and Building Audiences,” in *Identity and the Museum Visitor Experience* (Walnut Creek, CA: Left Coast Press, 2009), 190.

collections. Since museums are ethically responsible for their collections, they cannot entirely disregard “past methodologies and best practices,” and let the public handle all, particularly rare and unstable, objects.³⁹

Conclusion

Museums transitioned from “treasure houses” to “social enterprises” and, as a result, adopted social goals which promote visitors’ learning experiences. However, for museum professionals, such as registrars and collections managers, collections remain primary to museums’ functioning. Due to restrictions against handling museum collections, visitors typically experience museum objects through vision rather than multiple senses. Physical barriers cause, museums’ objects to become, as Dana explains, “enshrined.”⁴⁰ While collections form the basis of museums, Vagnone and Ryan argue that visitor learning experience is equally essential to museum stewardship. As visitors’ “cattle-like shuffle” past objects reveal, visitors are not involved in their museum experiences.⁴¹ The primary discursive museum display model and its communication through text labels may no longer suffice for visitors’ access to objects and information. They desire to form closer physical, emotional and intellectual relationships with objects. The learning theory constructivism brings to light that a mind and hands-on learning environment provides greater context and a more informative experience than one merely through the mind. As the following chapter considers, museums may be able to further close the physical, emotional and intellectual gap between visitors and objects through a tiered approach to collections and by incorporating multi-sensory experiences in museums’ displays and, ultimately, combining discursive and immersive exhibition models.

³⁹ Vagnone and Ryan, *Anarchist’s Guide to Historic House Museums*, 137.

⁴⁰ Dana, “The Gloom of the Museum,” 20.

⁴¹ Stevens, “Museums Want to Entertain You (and That’s Not a Bad Thing).”

Chapter Two:

Current Collections Standards vs. a Tiered Approach to Collections

In the twentieth century, professional organizations, such as the American Alliance of Museums (AAM) and International Council of Museums (ICOM), have formalized object handling restrictions through policy and procedure. However, there is an imbalance between museums' practical ability to uphold rigid collections best practices and the changing needs of their visitors. A tiered or stratified approach to collections may allow museums to protect the integrity of their collections and provide the immersive and personally engaging experiences that many visitors desire in museums.

Current Collections Standards

As clearly articulated by Dixie Neilson in the *Museum Registration Methods, 5th Edition* (henceforth, *MRM5*), current collections care standards call for museums' objects to be appreciated for their cultural rather than monetary value, because each object "is a priceless part of the collection."⁴² In other words, all museum objects are culturally invaluable. In order to preserve museums' cultural heritage, collections care guidebooks, like the *MRM5*, reason museums should employ preventative care, also known as preventative conservation. According to Genevieve Fisher, preventative care is defined as "the mitigation of deterioration and damage to cultural property through the formulation and implementation of policies and procedures."⁴³ Simply speaking, museums employ policies and procedures to protect objects from deterioration and damage. One of the major ways museums implement preventative care is through policies dictating the minimal handling of objects. As Neilson points out, museum objects should only be

⁴² Dixie Neilson, "Object Handling," in *Museum Registration Methods*, 5th ed. Rebecca A. Buck and Jean Allman Gilmore (Washington D.C.: American Association of Museums, 2010), 209.

⁴³ Genevieve Fisher, "Preventative Care," in *Museum Registration Methods*, 5th ed. Rebecca A. Buck and Jean Allman Gilmore (Washington D.C.: American Association of Museums, 2010), 287.

handled by qualified and trained individual and they should be handled “as little as possible and only when absolutely necessary.”⁴⁴ Minimal handling of collections is needed, because Neilson identifies “human interaction is by far the most common” danger to museum collections.⁴⁵ Since museums are trusted with stewardship over objects, preventative care measures inhibit unnecessary interactions with objects, so they can be preserved for future study and generations. While the view of humans as a danger toward objects allows museums to remain ethically responsible for their objects and ultimately protects the objects from deterioration, it also creates a taboo of handling them. Not every object should be handled for reasons explained in the subsequent paragraphs, but the restriction, or “best practice,” creates physical, intellectual and emotional barriers between museum visitors and objects.

Questioning Current Collections Standards

In response to collections care best practices, are all museum objects equal? Barker questions the equality of collections and determines the “relative value or utility of an object depend[s] on the specific purposes or needs on which it is called to address.”⁴⁶ In his observation, Barker suggests that rather than thinking in terms of equality or a hierarchy of objects, objects are valued based on circumstances’ needs. For instance, Katy Barrett in “Preservation vs Presentation” points out a large group of pottery shards “may be [of] little visual interest” to the public, but may “provide crucial research opportunities that then inform the context for more widely interesting items.”⁴⁷ Objects’ scholarly use and public interests vary and change; however, museums should take an objective stance on objects, so those objects and

⁴⁴ Neilson, “Object Handling,” 209.

⁴⁵ Neilson, “Object Handling,” 209.

⁴⁶ Barker, “Exhibiting Archaeology: Archaeology and Museums,” 299.

⁴⁷ Katy Barrett, “Preservation vs. Presentation: is Digital Display a Solution for Museums?” *Apollo: The International Art Magazine*, August 1, 2014, accessed September 6, 2017, <https://www.apollo-magazine.com/conservation-vs-access-digital-displays-solution-museums/>.

their contexts are preserved for a more complete interpretation of the past. Objects may be considered equal in terms of cultural value, but is it an ideal goal for all museum objects to be treated equally in terms of care, such as through conservation treatment and storage materials? James Vaughan recognizes historic house museums cannot afford to treat every object “as though it were a Rembrandt.”⁴⁸ Vaughan discusses historic house museums, but, in reality, most museums do not have the resources, like time, staff and money, to give all collection objects best standards care. As a result, a tiered approach to collections may be considered a pragmatic way of balancing museums’ limited resources, respecting objects’ cultural value and providing visitors with the most effective learning experiences.

A Tiered or Stratified Approach to Collections

In weighing the importance of museums’ ethical responsibility to their objects and visitors’ learning experiences, a tiered approach to handling museum collections may be a solution that allows museums to remain accountable stewards, financially sustain themselves and satisfy visitors’ needs. Vaughan proposes the adoption of more “relaxed” or “graduated” standards to collections care.⁴⁹ The standards could, perhaps, classify collections as “for use,” “limited use,” and “no use.”⁵⁰ Similarly, Peter Brown, the Head of Learning and Interpretation at The Manchester Museum in the United Kingdom, offers a stratified outlook on collections, as reported by Helen Atkinson. Atkinson relays that Brown argues for a “hands-on approach” to collections at The Manchester Museum, for which he justifies a classification of handling objects.⁵¹ He contends all objects are “potentially handleable,” however, each object should be

⁴⁸ James Vaughan, “Rethinking the Rembrandt Rule,” *American Alliance of Museums*, March/April 2008.

⁴⁹ Vaughan, “Rethinking the Rembrandt Rule.”

⁵⁰ Vaughan, “Rethinking the Rembrandt Rule.”

⁵¹ Helen Atkinson, “Uncover Those Mummies! Pete Brown’s Hands-on Approach to the Display of Human and Animal Remains,” November 27, 2009.

assessed by “weighing the risks.”⁵² He considers risks to be conservation needs, such as an object’s stability, and whether or not an object is fulfilling its purpose. He questions how an object can serve the public if it is behind glass or in storage? According to Brown, objects do not serve the public when they are in storage and when they are behind glass, or any other physical barrier. Handling objects, Brown believes, will help the general public to have “a greater awareness of the world around them, extended beyond their usual experience in space and time.”⁵³ In other words, visitors can better comprehend the past and present through handling museum collections. The argument for visitors’ interaction with objects coincides with constructivist learning theory, which establishes learning occurs through engagement of the mind and body. While touch can give the public a greater understanding of some objects, it may not for others. For instance, touch may provide perspective into makers’ and users’ lives for functional objects, like clothing, musical instruments, furniture, etc. But, touching a painting’s surface may not help audiences gain insight into its meaning and significance. A stratified collections approach does not mean that all objects are to be handled. Only for some objects, handling may be a way in which the distance between viewers and objects can be minimized. As will be discussed, there may be other ways museums may create multi-sensory experiences for visitors to help them better comprehend museums’ objects, such as replicas, reproductions and supplementary materials. Ultimately, the goal of a tiered collections approach is to improve visitors’ physical, emotional and intellectual access to, at least, a greater selection of museum objects.

There are issues with a stratified collections approach. It immediately raises certain questions, such as who will define the stratification categories and who will put objects into

⁵² Atkinson, “Uncover Those Mummies!”

⁵³ Atkinson, “Uncover Those Mummies!”

them? Organizations, such as the AAM and ICOM, may provide a regularization of practices and collections professionals, such as registrars, collections managers and conservators, may aim to standardize collections categories, but it would be difficult to include objects uniformly into categories within museums across all fields. Every object is different and has specific requirements and circumstances. Therefore, the categorization of objects would need to be on a case-by-case basis. Ultimately, it would be up to professionals in the field to decide which objects fall into which categories. Additionally, due to the necessarily subjective application of a tiered approach, there is potential for an object to go beyond repair due to misjudgment of the object's stability, excessive handling, or an accident. With these risks in mind, can museums have a stratified approach to their collections and still be responsible stewards? While a compromise of collections care best practices presents risks, the trajectory of selective handling may be museums' future as visitors' express their desire for closer physical, emotional and intellectual connections with objects. As a result, museums will need to adapt in some regard to accommodate visitor needs and stay relevant to their communities.

Conclusion

Even though it may seem radical to stratify collections objects based in quality of needed care, it should be kept in mind there is already a tiered approach to objects in many museums, especially those that have education collections, as will be further discussed in the next chapter. As the AAM's guidelines of "Collections Stewardship" recognize, museums may possess "diverse types of collections categorized by different levels of purpose and use—permanent, educational, archival, research and study, to name a few," and these collections may require "different management and care needs."⁵⁴ Differing collections exist for distinct purposes and

⁵⁴ American Alliance of Museums, "Collections Stewardship," accessed March 14, 2018, <http://www.aam-us.org/resources/ethics-standards-and-best-practices/collections-stewardship>.

entail specific care needs. With the implementation of a tiered collection approach throughout museums, objects may be physically accessed by visitors based on their stability/instability and rarity. Again, museums must weigh their ethical responsibility to collections objects and the importance of visitor learning experience to determine what is appropriate “for use,” “limited use” and “no use.” For example, as will be discussed with regard to museums’ musical instrument collections, an instrument may be played regularly by a professional for a public audience; it may be played once and the sound recorded for visitors to hear; or it may never be played because the condition does not allow it.

Chapter Three:

Integrating Multi-Sensory Experiences into Museums

Multi-sensory museum experiences are usually geared toward children or those with limited vision or learning impairments. In contrast to the specific intended audiences of multi-sensory museum environments, Classen recognizes “the nonvisual senses are no longer regarded as simply second-rate ways of apprehending art for those who can’t see, but rather as modalities through which anyone can receive meaningful and stimulating impressions.”⁵⁵ Multi-sensory museum experiences should be inclusive, not “second-rate” exclusive. This chapter aims to explore the possible learning opportunities and emotional connections between visitors and museum collections in multi-sensory environments, like in education collections and musical instrument collections, through the use of a tiered approach as well as copies or supplementary materials. Together, classified access to collections and replication technologies permit more diverse objects available to more diverse audiences.

Education Collections

Museums do not typically use their permanent collections as touchable education tools for the public, so some implement education collections. According to Anna Goss, an education collection comprises “authentic objects and specimens which have been set aside for hands-on use in educational programming.”⁵⁶ In addition to the specific purpose of handling, objects may be separated from permanent collections and put into education collections, because, as Rebecca Gavin explains, they are not “of great historic value to the museum, or are in the collection

⁵⁵ Classen, *The Museum of the Senses*, 129.

⁵⁶ Anna J. Goss, “Managing Education Collections: The Care/Use Balance in Natural History Museums” (master’s thesis, University of Washington, 2015), 9, accessed January 13, 2018, https://digital.lib.washington.edu/researchworks/bitstream/handle/1773/33430/Goss_washington_02500_14770.pdf?sequence=.

numerous times.”⁵⁷ Goss’s and Gavin’s definitions of education collections commonly consider them as separate from museums’ permanent collections. Permanent and education collections’ division, as the AAM describes, results from “different levels of purpose and use.”⁵⁸ Since education collections are generally meant to be handled and contain low-value objects (i.e., not rare and often mass-produced) as well as reproductions, education collections are perceived to have less prestige than the rare and unique objects often found in permanent collections. However, education collections should not be understood as separate holdings for museums’ insignificant and maybe even undesired objects. The goal of a tiered approach to museums’ collections is for education collections to be part and parcel of permanent collections and to become means through which the public can come into physical, intellectual, and emotional contact with museum objects.

In line with the consideration of museums’ education collections as “second-tier” to permanent collections, Shane Macfarlan reveals in his research at The Lubbock Lake Landmark in Texas that museums often do not provide education collections with conservation care, particularly preventative conservation.⁵⁹ Macfarlan argues that objects placed in education collections should not exclude them from receiving preventative conservation, because “it is the duty of the museum staff to ensure the longevity of the collections, including the education collection.”⁶⁰ Even though it is not possible for a museum to pay for all necessary conservation expenses for all objects, a tiered approach to collections prevents the neglect of collections while

⁵⁷ Rebecca Gavin, “A Study of Interactives in Virginia Museums,” *Journal Of Museum Education* 36, no. 2 (June 1, 2011): 160, *EBSCOhost*, accessed January 13, 2018, www.search.ebscohost.com/login.aspx?direct=true&AuthType=cookie.ip.sso&db=eric&AN=EJ936223&site=eds-live&authtype=sso&custid=s8475574.

⁵⁸ American Alliance of Museums, “Collections Stewardship.”

⁵⁹ Shane J. Macfarlan, “A Consideration of Museum Education Collections: Theory and Application,” *Curator* 44, no. 2 (April 2001), *EBSCOhost*, accessed January 13, 2018.

⁶⁰ Macfarlan, “A Consideration of Museum Education Collections: Theory and Application.”

encouraging the prioritization of objects when it comes to costly care. In order to protect handleable objects, Tara Trewinnard-Boyle and Emily Tabassi explain the Nottingham Loans Collection (NLC), an almost entirely handleable independent collection, provides basic handling advice and guidelines to schools and community groups that borrow objects.⁶¹ The authors claim the guidelines have “undoubtedly prevented breakages” and the collection experienced “no losses or breakages. . . during the first year of the project.”⁶² The guidelines serve, arguably, as an effective form of preventative conservation. While the main goal of the NLC is to provide audiences with learning experiences through authentic objects, the NLC also has an ethical responsibility to care for its objects, as do all museums. Macfarlan argues museums should demonstrate institutional commitment to their collections.⁶³ Indeed, the NLC establishes a commitment to its objects through handling guidelines as well as a collections policy.

Handling objects can provide visitors with information they cannot receive solely through sight. As Fiona Candlin explains:

Touch involves the inter-relation of rhythm, movement, contact, proprioception (postural or bodily awareness), articulation and pressure and with it we can grasp shape, space, size, texture, temperature, vibration and response (Heller, 2000).⁶⁴

The sensations and physical characteristics accompanying objects that Candlin describes cannot be understood simply through sight and reading museum labels. For example, when visiting the Museum of Early Trades and Crafts in Madison, NJ, I lifted a nineteenth-century clothes iron and discovered its surprising weight. Not only did handling the object provide me with

⁶¹ Tara Trewinnard-Boyle and Emily Tabassi, “Learning Through Touch,” in *The Power of Touch: Handling Objects in Museums and Heritage Contexts*, ed. Elizabeth Pye (Walnut Creek, CA: Left Coast Press, Inc., 2007), 196.

⁶² Trewinnard-Boyle and Tabassi, “Learning Through Touch,” 196.

⁶³ Macfarlan, “A Consideration of Museum Education Collections: Theory and Application.”

⁶⁴ Fiona Candlin, *Don't Touch! Hands off! Art, Blindness and the Conservation of Expertise* (London: Birkbeck ePrints, 2004), 4, accessed January 13, 2018, <http://www.eprints.bbk.ac.uk/775>.

information I could not comprehend by simply viewing it, but the experience allowed me to infer the experience of nineteenth-century domestic work. Similarly, Trewinnard-Boyle and Tabassi describe how a Victorian flat iron in the NLC “made the “past more vivid” for its audience by permitting them to imagine “what it would be like to use it” and even “prompt[ed] deeper understanding of” its past environment.⁶⁵ While handling the iron provides an excellent example of the advantage of manipulating an object, Macfarlan warns that “hands-on activities do not always equate to an actual learning experience.”⁶⁶ He argues that all visitors must “mak[e] connections between exhibits and education collection objects” on their own and to help them do this, physical contact with objects should be reinforced with verbal descriptions or interpretations.⁶⁷ In support, Charles Spence in “Making Sense of Touch” explains “researchers investigating the multisensory perception of surface texture have shown that both vision and touch appear to contribute to people’s perception of the felt texture (or roughness) of surface. . .”⁶⁸ Spence’s evidence is along the lines of constructivism, in which one can gain more information about something through multi-sensory experiences, such as through sight and touch. As a result, museum environments that provide visuals, haptics and audio create engaging connections between objects, history and personal experiences. While visitors may become overwhelmed with stimuli and more sensory elements may not be better in every situation, a select combination of multi-sensory elements allows visitors to make subjective and objective connections with objects.

⁶⁵ Trewinnard-Boyle and Tabassi, “Learning Through Touch,” 192.

⁶⁶ Macfarlan, “A Consideration of Museum Education Collections: Theory and Application.”

⁶⁷ Macfarlan, “A Consideration of Museum Education Collections: Theory and Application.”

⁶⁸ Charles Spence, “Making Sense of Touch: A Multisensory Approach to the Perception of Objects,” in *The Power of Touch: Handling Objects in Museums and Heritage Contexts*, ed. Elizabeth Pye (Walnut Creek, CA: Left Coast Press, Inc., 2007), 47.

If museums approach education collections with institutional commitment and combine hands-on activities with reaffirming verbal explanations, museums will maximize the public's educational benefit from the collections and perhaps alter the perception of education collections as "less valuable" than permanent collections. Even though handleable collections would ideally be included in permanent collections rather than be isolated to education collections, education collections provide museums with the ability to begin implementing multi-sensory experiences.

Reproductions and Replicas

When visiting the British Museum on a guided highlights tour during the summer of 2017, the tour guide encouraged my group to touch the Rosetta Stone. After the excitement and adrenaline of touching the Stone, I learned it was in fact a replica. A feeling of disappointment overcame me and, in my head, I questioned with slight fear, where is the real Rosetta Stone? The stone was, in fact, on view behind glass in a different location in the museum. I feel my personal situation in the British Museum reflects visitors' common feelings when they discover objects are replicated rather than authentic. Museums are typically dedicated to protecting, caring and interpreting genuine objects of cultural heritage. However, as extensively noted, visitors' handling of authentic collections is not always permissible. As a result, alternatives, such as a replicated Rosetta Stone, offer solutions for visitors to create physical connections with objects. Some of the most current ways replicas are created is through 3-D printing and, particularly for documents, high quality scans and photocopies.

In 2015, Ezgi Ucar, a former MediaLab Intern at The Met, experimented with different ways visitors can interact with art through supplementary materials. He found that replicating objects may not be the best solution for multi-sensory experiences, because, as he clarifies, "even if I 3-D printed the object, any small flaw or change of size would make the replica less

authentic.”⁶⁹ Additionally, Samantha Sportun admits, “there are scanners available that will capture accurate color and texture and will give the digital scan excellent resolution,” but the quality of 3-D printing “can still be variable.”⁷⁰ In solution, Ucar concentrates on objects’ individual mediums rather than focusing on the authenticity and exact replication of objects for visitors to gain a better understanding “of what it would be like to touch the work of art.”⁷¹ For instance, Ucar aimed to make the Power Figure (*Nkisi N’Kondi: Mangaaka*) accessible through touch and smell, so he created a “Material Book” containing materials, such as feathers and wood. As a result of handling the materials, one may gain perspective on the process of production, what it felt like to hold and use the object, and so on, without compromising the original object.

Whether a museum uses 3-D printed reproductions, replicas, substitutes for original materials or authentic objects, museums’ goal should be to make a greater diversity of objects accessible to more people. Candlin observes museums’ selection of touchable objects allows them to control visitors’ interaction with objects, which she argues is a demonstration of collections professionals, particularly conservators, “conservation of territory as it is to the preservation of objects.”⁷² It is conservators’ duty to protect cultural heritage from deterioration, so objects available for visitors to handle, according to Sportun, tend to be “robust enough to be routinely touched or handled” rather than delicate, fragile objects.⁷³ Such “robust” objects are primarily composed of hardy materials like stone, bronze and marble. As a result, handleable

⁶⁹ Ezgi Ucar, “Multisensory Met: Touch, Smell, and Hear Art,” *The Metropolitan Museum of Art*, September 8, 2015, accessed March 14, 2018, <http://www.metmuseum.org/blogs/digital-underground/2015/multisensory-met>.

⁷⁰ Samantha Sportun, “The Future Landscape of 3D in Museums,” in *The Multisensory Museum: Cross-Disciplinary Perspectives on Sound, Smell, Memory, and Space*, eds. Nina Levent and Alvaro Pascual-Leone (Plymouth, UK: Rowman and Littlefield, 2014), 337.

⁷¹ Ucar, “Multisensory Met: Touch, Smell, and Hear Art.”

⁷² Candlin, *Don’t Touch! Hands off! Art, Blindness and the Conservation of Expertise*, 4.

⁷³ Sportun, “The Future Landscape of 3D in Museums,” 331.

object selections are limited to museum visitors, especially those who are visually impaired and cannot access objects through other means. However, Sportun explains replicas offer a solution to a limited selection of handleable objects and collections professionals territorial claim on objects, because “the fragile, potentially dangerous, or particularly rare objects” may now be included in touchable collections and, more specifically, “on handling tables, in outreach sessions, or attached to permanent handling displays.”⁷⁴ Even though replication compromises museums’ authentic object experience for visitors, an engagement of the senses through reproductions and replicas allows museums to provide all visitors with a more immersive and informational environment than can be done through a solely visual environment.

The inclusion of reproductions and replicas in museum collections for educational purposes is not a new one. In the nineteenth century, notable museums like the British Museum and Louvre exhibited plaster casts, “reproducing both works of classical art, seen as ideal models, and the mediaeval and modern sculpture associated with each nation’s own past.”⁷⁵ As Schreiter quotes of the 1853 *Prospectus of the Crystal Palace Company*, one of the goals of plaster cast collections was to “educat[e] the eye of the people for the appreciation of art and beauty.”⁷⁶ Even though plaster casts may have served as visual resources and today’s reproductions and replicas may be used as immersive educational tools, the emphasis on authenticity in museums is relatively recent. Museums should take advantage of the technological opportunities available to them in order to make collections as inclusive, accessible and engaging for visitors.

⁷⁴ Sportun, “The Future Landscape of 3D in Museums,” 338.

⁷⁵ Charlotte Schreiter, “Competition, Exchange, Comparison: Nineteenth-Century Cast Museums in Transnational Perspective,” in *The Museum Is Open: Towards a Transnational History of Museums 1750-1940*, eds. Andrea Meyer and Bénédicte Savoy (Berlin: De Gruyter, 2014), 32, *EBSCOhost*, accessed July 1, 2018.

⁷⁶ Schreiter “Competition, Exchange, Comparison,” 37.

Musical Instrument Collections

Through the Murtoth D. Guinness Collection of mechanical musical instruments and automata at the Morris Museum in Morristown, New Jersey, this section discusses the ethics of caring for and playing versus not playing musical instruments in museum collections; since musical instrument collections consist of objects that are made to be handled and heard. Even though the focus of this conversation is on musical instruments, it may also be broadly applied to other mechanical objects in museum collections such as cars, clocks and watches, because of their ability to be kept in working condition. With the assistance of stratified physical access to collections, copies and audio-visual technology, musical instruments provide museum visitors with opportunities to receive educational multi-sensory experiences.

In the same vein as my argument for museums' collections as wholes, Andrew Lamb argues musical instruments may be physically accessed in different levels. The levels should be determined by an instrument's rarity, risk of damage and physical state.⁷⁷ As a result, museum professionals, such as conservators, should carefully assess the use of instruments on a case-by-case basis.

One of the most prominent arguments for playing musical instruments is that they cannot be fully understood or appreciated without being played. Steven Miller, the Executive Director of the Morris Museum at the time of the Museum's acquisition of the Guinness Collection, reasons musical instruments "were meant to be played and enjoyed, not just looked at."⁷⁸ Sight and sound can combine to create meaningful contextual histories about music, musical instruments and the audiences that engage with them.

⁷⁷ Andrew Lamb, "To Play or Not to Play: Making A Collection of Musical Instruments Accessible," in *The Power of Touch: Handling Objects in Museums and Heritage Contexts*, ed. Elizabeth Pye (Walnut Creek, CA: Left Coast Press, Inc., 2007), 202.

⁷⁸ Steven Miller, interview by Anna Baccaglini, telephone conversation, January 22, 2018.

Lamb recognizes, however, that playing an instrument and achieving its original sound is “an inherently destructive process” due to alterations of parts, vibration and abrasion to the object.⁷⁹ An authentic instrument may need to be permanently modified for it to be in playing condition, which is against conservation ethics. The Code of Ethics of the American Institute for Conservation of Historic and Artistic Works directs that “the conservation professional must strive to select methods and materials that, to the best of current knowledge, do not adversely affect cultural property or its future examination, scientific investigation, treatment, or function.”⁸⁰ In other words, changes to cultural heritage should be reversible. Not only may an instrument need to be altered, but it may no longer be able to play its original sound with alterations. Similarly, Hilde Hein points out that contemporary listeners cannot “ascribe the same meaning” to the music an instrument plays as its original listeners would have.⁸¹ Contemporary audiences can place music into historical context; however, Odell and Karp argue that instruments may be restored to working condition if “historic, technical, or aesthetic quality can only be determined by actually operating the artifact, and only if this information cannot be gained in some other manner.”⁸²

In order for museums to balance the accessibility to and the preservation of their musical collections, Lamb contends “it is surely acceptable to allow limited playing of certain chosen

⁷⁹ Andrew Lamb, “To Play or Not to Play: The Ethics of Musical Instrument Conservation,” *V&A Conservation Journal*, no. 15 (April 1995), accessed September 13, 2017, <http://www.vam.ac.uk/content/journals/conservation-journal/issue-15/to-play-or-not-to-play-the-ethics-of-musical-instrument-conservation/>.

⁸⁰ American Institute for Conservation of Historic & Artistic Works, “Code of Ethics and Guidelines for Practice,” revised August 1994, accessed July 1, 2018, [http://www.conservation-us.org/our-organizations/association-\(aic\)/governance/code-of-ethics-and-guidelines-for-practice/code-of-ethics-and-guidelines-for-practice-\(html\)#.WzkukxJKglU](http://www.conservation-us.org/our-organizations/association-(aic)/governance/code-of-ethics-and-guidelines-for-practice/code-of-ethics-and-guidelines-for-practice-(html)#.WzkukxJKglU).

⁸¹ Hilde Hein, *The Museum in Transition: A Philosophical Perspective* (Washington D.C.: Smithsonian Institution Press, 2000), 83-84.

⁸² J.S. Odell and C. Karp, “Ethics and the Use of Instruments,” in *The Care of Historical Musical Instruments*, ed. Robert L. Barclay (Ontario: Canadian Conservation Institute and the Museums & Galleries Commission, 2005), 4, accessed July 1, 2018, http://network.icom.museum/fileadmin/user_upload/minisites/cimcim/pdf/The_Care_of_Historic_Musical_Instruments_small.pdf.

instruments without seriously compromising the overall obligation for museums to preserve.”⁸³

For example, the Morris Museum offers visitors a “Daily Live Demonstration” every Tuesday through Sunday at 2:00 P.M. A docent plays a select number of instruments and automata among the 150 available in the gallery. When I went to a live demonstration, the docent explained that objects played in the permanent exhibition are rotated every few years and objects’ parts are replaced as needed. He specifically noted one of the largest instruments in the gallery, the *Popper’s Rex*, has parts replaced often. When interviewing Miller, he explained that parts may be replaced, but all of the replaced artifacts should be kept as a form of documentation and that all conservation should be reversible, or “does no harm,” according to conservation ethics. For Miller, objects’ ability to create sound was more valuable over instruments’ authentic inner parts. When viewing the *Popper’s Rex* interior mechanisms move to create sound, the authenticity, or lack of authenticity, of its parts did not affect my learning experience. My learning experience derived from my observation of how the parts moved to project such loud music.

In addition to the Museum’s live demonstration, visitors can listen, touch, and watch a selection of instruments and automata through interactive elements located in the gallery space. For instance, there are videos of instruments and automata playing and moving, which visitors listen to through “audio wands.” Media is an essential tool that allows museums to play yet preserve musical instruments. Miller justifies the audiovisual technology allows the Morris Museum to “balance the long-term preservation of Guinness Collection artifacts with the visitor’s desire to see and hear mechanical musical instruments and automata in action.”⁸⁴

⁸³ Lamb, “To Play or Not to Play: The Ethics of Musical Instrument Conservation,” *V&A Conservation Journal*.

⁸⁴ Steven Miller, “Foreword,” in *Musical machines and Living Dolls: The Murtogh D. Guinness Collection of Mechanical Musical Instruments and Automata*, ed. Kathryn Grover (Morristown, N.J.: Morris Museum, 2011), 9.

The gallery also contains haptic elements. Specifically, in the “Music Revolution” section of the gallery, visitors can crank the handle of a fake, yet seemingly real, organette, called the Gem Roller Organ to hear it play the song, “Arkansas Traveler.” This particular educational element relates to the previously discussed topics of education collections as well as replicas and reproductions. The haptic element is supplemented by text in order to make the experience a learning one for visitors. The object’s label provides directions and basic identifying information, such as the name of the organette and song. Additionally, the section’s introductory text puts the organette in context of the mid-1700s to early 1900s, when there was a demand for music to be repeatable and portable. While not the same as the original object, the simulation of playing an authentic organette and listening to the sound and type of song from the once popular instrument permits visitors to connect personally with the instrument and gain an appreciation for the human experience surrounding the object. Lamb recognizes the use of copies to help preserve yet make objects accessible and it is even “possible that a good copy may be closer to the ‘original’ sound than the historical instrument itself!”⁸⁵

Particularly for musical instrument collections, or collections with mechanical objects, museums may use levels of access to collections as well as employ audio-visual media, replicas or reproductions in order to preserve collection objects and provide visitors with the opportunity to listen, observe and understand them. Rather than aim to precisely reproduce the past through collection objects, museums should interpret and contextualize their collections through immersive and discursive environments in order to produce the most educationally beneficial museum environments.

⁸⁵ Lamb, “To Play or Not to Play: The Ethics of Musical Instrument Conservation,” *V&A Conservation Journal*.

Conclusion

From my multi-sensory experiences in museums, I address two important aspects of handling objects. In the case of the Victorian iron, I learned more about it by touching it. By feeling its weight, I gained an appreciation for the hard labor of professional and domestic ironesses. Similarly, when physically cranking the organette to hear one song, I came to understand people's limited accessibility to music from the mid-1700s to early 1900s. In comparison, when touching the Rosetta Stone, I learned very little. However, by touching it, I received an emotional, personal experience that sight could not give me. Immersive museum experiences, ideally, give visitors both an overarching informative and an emotional, personal experience, so visitors meaningfully interpret exhibitions' content.

Chapter 4:

Case Studies

Since the establishment of museum spaces as “white cubes” in the twentieth century, museums are typically sanctioned as quiet places with neutral smells, so visitors focus on museums’ objects. However, in about the past two decades, museums have begun to reintroduce sensory elements within galleries, primarily in temporary exhibitions and more rarely in permanent collections, as well as in touch tours. The case studies of sensory-integrated museum spaces in this chapter are locations I personally experienced, chosen so that I could speak accurately and directly about them. First, I address the multi-sensual temporary exhibition in the Cooper Hewitt, Smithsonian Design Museum’s Process Lab. Then, I discuss the Rijksmuseum van Oudheden’s (National Museum of Antiquities) permanent installation, *Archeology of the Netherlands*. Finally, I explore educational programming through touch tours, like The Met Cloisters’ Sights and Scents program. The cases studies include haptic experiences, as mainly discussed throughout this paper, however, they also incorporate visual, audial and olfactory experiences with authentic collection objects, audio-visual technologies and supplementary materials.

Temporary Exhibitions

In comparison to permanent collection galleries, temporary exhibitions tend to be more experimental and more readily permit museums to explore objects and curatorial themes through new approaches, aesthetics and technologies, like interactive elements. The impermanence of temporary exhibitions likely encourages innovation due to an ability to change with trends in the museum field. Likely in correlation with museums’ desire to provide the most effective engaging

and learning experiences through displays, the Cooper Hewitt incorporates haptic and audial elements in its continually changing Process Lab.

Cooper Hewitt, Smithsonian Design Museum

As a museum dedicated to design, the Cooper Hewitt appropriately incorporates a space called the Process Lab, which is dedicated to visitors experience as “designers” and “bring[ing] the design process to life” through engagement in “digital and physical activities.”⁸⁶ At the time of my visit in January 2018, the Cooper Hewitt’s Process Lab was “Hear, See, Play: Designing with Sound.” One of the main elements in the Lab was an interactive device that allowed visitors to act as sound designers for “Trash Bot,” a street cleaning machine. Visitors created a video of a day in the life of Trash Bot using melodies, ambiences and effects to signify the machine’s experiences as it powered up, approached a cyclist, swallowed a piece of trash and went to sleep. At the end of composing the sounds, visitors could watch their completed videos.

The interactive element was supplemented by a text label that put sound in the setting of visitors’ daily lives by explaining, “through sound, our digital devices and products tell us when we have completed a task, received a message, or achieved a goal.”⁸⁷ As Stephen Arnott and Claude Alain express, “sound colors our world, adding a dimension to our perceptual experience that none of the other four senses ever truly capture.”⁸⁸ Essentially, sound informs and enhances experiences and interactions. The label went onto explain the anatomy of sound, which informed visitors why they used melodies, ambiences and effects in Trash Bot. As a result, it provided visitors with key information to understand the interactive element.

⁸⁶ “Hear, See, Play: Designing with Sound,” *Cooper Hewitt*, October 13, 2017 - July 29, 2018, accessed March 14, 2018, <https://collection.cooperhewitt.org/exhibitions/1141959691/>.

⁸⁷ “Hear, See, Play: Designing with Sound,” *Cooper Hewitt*.

⁸⁸ Stephen Arnott and Claude Alain, “A Brain Guide to Sound Galleries,” in *The Multisensory Museum: Cross-Disciplinary Perspectives on Sound, Smell, Memory, and Space*, eds. Nina Levent and Alvaro Pascual-Leone (Plymouth, UK: Rowman and Littlefield, 2014), 85.

In order to express the significance of sound in terms of design, it was necessary to create a multi-sensory experience that included sound. While this may seem obvious, sound is often omitted from museum environments. Not only did Trash Bot include sound, but it also incorporated touch by permitting visitors to select melodies, ambiences and effects. Due to these selections, the interactive activity created, what Nina Simon describes as “meaningful constraints,” which “promote and focus participation.”⁸⁹ From personal experience, the act of selecting the three elements at each stage of Trash Bot’s day increased my comprehension of and ability to remember the composition of sound and underscored the role of sound designers in everyday technology. The combination of sound and sight in “Hear, See, Play: Designing with Sound” created an informative and personal museum experience.

The Trash Bot interactive did not include haptic elements directly involved with the Cooper Hewitt’s collection, but the Lab’s explanation of the composition of sound assisted in the perception of sound expressed visually, such as in the Cooper Hewitt’s collection of jazz music album covers by Josef Albers from 1959 to 1961 for Command Records. As explained by the Cooper Hewitt, Albers “translated musical rhythms into circles and squares that slide bounce and overlap.”⁹⁰ Multi-sensory elements to create an understanding of sound were much more illuminating for this particular experience than haptic ones directly involved with the collection, which would likely incorporate handling the album covers. The Lab formed “hearing relationships,” between sound, or music styles, and design, as termed by Salomé Voegelin.⁹¹ Through specific interactive and sound elements as well as explanatory narrative, the Process

⁸⁹ Nina Simon, “Principles of Participation,” in *Reinventing the Museum: The Evolving Conversation of the Paradigm Shift*, 2nd ed., ed. Gail Anderson (United Kingdom: AltaMira Press, 2012), 343.

⁹⁰ “Hear, See, Play: Designing with Sound,” *Cooper Hewitt*.

⁹¹ Salomé Voegelin, “Soundwalking in the Museum: A Sonic Journey through the Visual Display,” in *The Multisensory Museum: Cross-Disciplinary Perspectives on Sound, Smell, Memory, and Space*, eds. Nina Levent and Alvaro Pascual-Leone (Plymouth, UK: Rowman and Littlefield, 2014), 128.

Lab constructed a learning experience for visitors to create connections between sound, sound designers, daily life and the Cooper Hewitt's collection.

Permanent Installations

Permanent installations tend to be less experimental with multi-sensory elements due to displays' unchanging nature. However, some museums are exploring the idea of "semi-permanent" displays, which permit museums to display more of their collections in experimental fashions similar to temporary exhibitions. As a result, museums may create multi-sensory collection displays that encourage new and repeating visitors. The Rijksmuseum van Oudheden's (Leiden, Netherlands) permanent collection display, *Archeology of the Netherlands*, may not be semi-permanent, but its recent re-installation incorporates engaging tactile elements not typically embraced in traditional permanent displays. The installation may serve as a successful example of including multi-sensory components in permanent collection installations.

Rijksmuseum van Oudheden

In 2011, the Rijksmuseum van Oudheden opened *Archeology of the Netherlands*. It displays 300,000 years of Dutch history, beginning with early prehistory and ending with the modern era, as evidenced by the archeological record.⁹² Some of the most memorable collection objects in the display are hand-axes from around 4,000 BCE, because visitors can touch the tools.

Of all the interactive experiences I had in museums, the hand-axes are some of the only authentic collection objects I handled, besides the Victorian flat iron. As a result, my time with the hand-axes combined an emotional, personal connection with history and a learning experience. I discovered how naturally hand-axes fit into my hand, a revelation I did not make

⁹² Rijksmuseum van Oudheden, "Archeology of the Netherlands," accessed July 10, 2018, <http://www.rmo.nl/english/collection/permanent/archaeology-the-netherlands>.

without touching them. In order to support the tactile experience, the installation's text labels explain the tools were used for "cutting branches, felling small trees, quartering and skinning animals, working skins, and so on."⁹³ Additionally, flint was mined in the Netherlands for many centuries after 4,000 BCE.⁹⁴ Visitors can gain a better understanding of life in the Netherlands around 4,000 BCE by associating their haptic experience with contextual information. As a result, the collection objects no longer feel sacred or abstract, they are objects created by people. The personal, emotional and intellectual distances between visitors and objects on display are lessened through physical interaction.

It may be argued that copies of the hand-axes should replace the authentic ones in the permanent installation, so the Museum properly provides preventative care. However, in terms of visitors' experiences, the copies probably would not offer visitors comparable personal connections to human beings that lived about 6,000 years ago. By handling authentic hand-axes, I felt closer to understanding their human experience. Additionally, in a stratification system of access to collection objects, the hand-axes are ideal for visitors' handling, as the tools are made of flint, a relatively firm material. They can withstand restricted manipulation from the general public. The Museum does not allow visitors to fully control the hand-axes, as the objects cannot be picked up, likely for visitors' safety and to prevent damage to the objects. The Museum manages the display's haptic component in order to protect the hand-axes, give visitors effective and safe access to authentic collection objects and offer visitors more perspective about the prehistoric Netherlands.

⁹³ Rijksmuseum van Oudheden, "Hand-axe" (text label) accessed May 23, 2018.

⁹⁴ Rijksmuseum van Oudheden, "Digging for Flint" (text label), accessed May 23, 2018.

Educational Programming - Touch Tours

In addition to temporary and permanent exhibition galleries, museums incorporate interactive elements or multi-sensory environments in educational programming, like touch tours. Touch tours are, essentially, collection handling sessions that are typically for specific audiences, such as those with visual impairments, with dementia, or with behavioral or mental disabilities. In terms of the object selection often available for handling, as mentioned in chapter three, the collections in touch tours are usually limited due to rarity and fragility of materials. In consequence, museum visitors, especially those who are visually impaired, cannot access diverse objects. However, as The Met Cloisters' Sight and Scents program reveals, museums may use relevant supplementary materials, like those used by Ucar at The Met, to enable multi-sensory activities for memorable learning experiences.

The Met Cloisters

The Met Cloisters' Sights and Scents program incorporates a sense that is not examined in this paper nor commonly used in object-based museums, which is olfaction. At the beginning of the program, the educator, volunteers, eight participants with dementia and their care partners sat inside the cloistered section of the Museum, in view of the garden. The educator and volunteers gave the participants and their care partners clippings of plant material, such as daffodil buds, hyacinth and evergreens, to handle and smell. Although the plants are not collection objects, per say, the multi-sensual session encouraged participants to talk about their gardening experiences and their uses of particular plants, like rosemary. With regard to olfaction, Richard J. Stevenson in "The Forgotten Sense" explains that odors evoke memories that tend to be "vivid and may make a person feel as if they have been transported back to the actual time

and place where the memory took place.”⁹⁵ Particularly for people with dementia, sensory experiences may be used for reminiscence, which enables them, according to Claire Jacques, to “relive the experiences that are personal to [them] in a way that is vivid and engaging.”⁹⁶ Museums may use senses, like smell, to evoke personal experiences, so visitors create connections between their lives, collections and broader ideas. Importantly, the senses in the program were associated with verbal interpretations in order to create an effective learning experiences for the participants. In order to connect the handling session and participants’ gardening experiences to the Middle Ages, the educator provided historical context of how monks used seeds, plants and soil. For instance, rosemary was used to eat as well as mask unpleasant scents. Essentially, the plant material was used as a reminiscence resource and to discuss Medieval horticulture.

The discussion of plants was also related to objects in The Met Cloisters’ collection. In front of medieval tapestries, like the Unicorn Tapestries, the educator conversed with the participants about the meaning and importance of flora in the background of the tapestries. For example, the educator interpreted that flora may occupy tapestries’ backgrounds because wealthy people hung tapestries on their walls for insulation during cold winter months. Bright, floral weavings gave them hope for warmer months to come. After experiencing the pleasant smells and colors of the plants in the cloister, the discussion about the tapestries became meaningful. The participants established a personal connection with the plants by handling them and remembering their gardening experiences. Additionally, the program was held in March, when

⁹⁵ Richard J. Stevenson, “The Forgotten Sense,” in *The Multisensory Museum*, ed. Nina Levent and Alvaro Pascual-Leone (United Kingdom: Rowman & Littlefield, 2014), 156.

⁹⁶ Claire Jacques, “Easing the Transition: Using Museum Objects with Elderly People,” in *The Power of Touch: Handling Objects in Museums and Heritage Contexts*, ed. Elizabeth Pye (Walnut Creek, CA: Left Coast Press, Inc., 2007), 157.

warmth was slowly returning to the New York City area. As a result, the program's participants could understand why plants were so practically and visually important to people in medieval times.

The program was designed for visitors with dementia and their care partners, but it would also likely be valuable for general museum visitors due to odors' strong ability to evoke memory. However, the group number for the program was small. As Jacques found when museum professionals brought tactile museum objects to elderly care homes in Lincolnshire, England, "groups of up to ten participants are appropriate because this allows objects to be circulated rapidly enough to stimulate discussion. This group size also encourages people to join in the experience and ensures that everyone gets a chance to speak or to be involved."⁹⁷ A limited group size allows all participants to experience the objects and participate in discussion. As a result, the select number of participants would also likely apply for the general museum visitors in order to facilitate the most effective learning experiences. However, small groups do not indicate a program, like Sights and Scents, cannot be offered to the general public, such as through timed tours.

Conclusion

As seen through the displays and programs by the Cooper Hewitt, Rijksmuseum van Oudheden and The Met Cloisters, some museums currently implement multi-sensory experiences. The different ways museums may employ audial, visual, tactile and olfactory elements are not limited to the examples provided in these case studies. However, overall, the Cooper Hewitt and The Met Cloisters exemplify how audio-visual technology and supplementary materials assist the preservation of authentic collection objects and provide

⁹⁷ Jacques, "Easing the Transition: Using Museum Objects with Elderly People," 153-154.

visitors with meaningful context, which ultimately allows visitors to create personal narratives that contribute to an overall understanding of history. Additionally, the Rijksmuseum van Oudheden demonstrates how a museum may successfully include authentic collections in its exhibitions by determining how visitors may interact with the objects. Museums yet to incorporate a combination of immersive and discursive exhibition models may look to the case studies provided in this paper to create more innovative, engaging and effective learning environments that protect yet make collection objects personally, intellectually and physically accessible to visitors. Museums in need of integrating multi-sensory elements into their spaces should also adapt their exhibitions, installations and programs to suit their needs in terms of collections, audiences, budget and more.

Conclusion

In order to create the most stimulating and educational museum experiences for visitors, museums should combine the commonly employed discursive exhibition model with the less utilized and more controversial immersive mode of presenting collections. As seen within many of the examples provided in this paper, interactive elements should be accompanied by verbal narratives so visitors may successfully relate their personal, emotional knowledge to broader, external ideas. However, museums must balance the care of their collections and visitors' physical access to them by adopting a tiered approach to collections as well as through the use of reproductions, replicas, supplementary materials and audio-visual technologies. A tiered approach to collections allows visitors to gain physical, emotional and intellectual access to more authentic objects, while copies and supplementary materials of collections allow museums to protect unstable collections and provide visitors with the ability to have visual, aural, tactile, smelling and, potentially, taste experiences in museums. Indeed, museums' trajectory toward more sensory-inclusive visitor experiences has already begun, but the trajectory should not end as it stands; most museum visitors still access museums' collections primarily visually and verbally, as objects are usually behind barriers and interpreted through text labels. Museums should continue to lessen the physical, emotional and intellectual gap between visitors and objects, because visitors' engagements with collections are an essential part of museums' increasingly visitor-centered model. They should do this not only because it is the right thing to do but also because it is a matter of their survival. In reality, museums are only one way in which the public may spend its leisure time, so museums must remain relevant and fulfill visitors' needs in order to sustain themselves.

Bibliography

- American Alliance of Museums. "Collections Stewardship." Accessed March 14, 2018.
<http://www.aam-us.org/resources/ethics-standards-and-best-practices/collections-stewardship>.
- American Institute for Conservation of Historic & Artistic Works. "Code of Ethics and Guidelines for Practice." Revised August 1994. Accessed July 1, 2018.
[http://www.conservation-us.org/our-organizations/association-\(aic\)/governance/code-of-ethics-and-guidelines-for-practice/code-of-ethics-and-guidelines-for-practice-\(html\)#.WzkukxJKglU](http://www.conservation-us.org/our-organizations/association-(aic)/governance/code-of-ethics-and-guidelines-for-practice/code-of-ethics-and-guidelines-for-practice-(html)#.WzkukxJKglU).
- Arnott, Stephen, and Claude Alain. "A Brain Guide to Sound Galleries." In *The Multisensory Museum: Cross-Disciplinary Perspectives on Sound, Smell, Memory, and Space*, edited by Nina Levent and Alvaro Pascual-Leone, 85-107. Plymouth, UK: Rowman and Littlefield, 2014.
- Atkinson, Helen. "Uncover Those Mummies! Pete Brown's Hands-on Approach to the Display of Human and Animal Remains." November 27, 2009.
- Ballantyne, Roy, and David Uzzell. "Looking Back and Looking Forward: The Rise of the Visitor-centered Museum." *Curator* 54, no. 1 (2011): 85-92. *EBSCOhost*. Accessed August 14, 2017.
- Barker, Alex W. "Exhibiting Archaeology: Archaeology and Museums." *Annual Review of Anthropology* 39 (2010): 293-308. *JSTOR*. Accessed July 13, 2017.
<http://www.jstor.org/stable/25735113>.
- Barrett, Katy. "Preservation vs Presentation: is Digital Display a Solution for Museums?" *Apollo: The International Art Magazine*, August 1, 2014. Accessed September 6, 2017.
<https://www.apollo-magazine.com/conservation-vs-access-digital-displays-solution-museums/>.
- Bennes, Crystal. "Open the Stores: Conservation, Collections and the Museum of the Future." *Apollo: The International Art Magazine* (June 13, 2014). Accessed September 6, 2017.
<https://www.apollo-magazine.com/conservation-accessible-stores-museum-future/>.
- Bertacchini, Enrico, and Federico Morando. "The Future of Museums in the Digital Age: New Models for Access to and Use of Digital Collections." *International Journal of Arts Management* 15, no. 2 (Winter 2013): 60-72. *JSTOR*. Accessed July 13, 2017.
<http://www.jstor.org/stable/24587113>.
- Candlin, Fiona. *Art, Museums and Touch*. Manchester and New York: Manchester University Press, 2010.

- . *Don't Touch! Hands off! Art, Blindness and the Conservation of Expertise*. London: Birkbeck ePrints, 2004. Accessed January 13, 2018. <http://www.eprints.bbk.ac.uk/775>.
- Classen, Constance. "Museum Manners: The Sensory Life of the Early Museums." *Journal of Society History* 40, no. 4 (summer 2007): 895-914. Accessed January 13, 2018. <http://www.david-howes.com/WebClassenMuseumMannersJSH.pdf>.
- . *The Museum of the Senses: Experiencing Art and Collections*. New York: Bloomsbury Academic, 2017.
- CNN Staff. "Are Museums Still Relevant?" *CNN*, 2013. Last modified July 12, 2017. Accessed August 14, 2017. <http://www.cnn.com/travel/article/are-museums-still-relevant/index.html>.
- Dana, John Cotton. "The Gloom of the Museum." In *Reinventing the Museum: The Evolving Conversation of the Paradigm Shift*, 2nd ed., edited by Gail Anderson, 17-33. United Kingdom: AltaMira Press, 2012.
- Davies, Maurice. "Stupid Curators." *Museums Association*, August 28, 2013. Accessed July 12, 2017. <http://www.museumsassociation.org/comment/maurice-davies-blog/28082013-stupid-curators-why-we-should-listen-to-the-public>.
- Dees, J. Gregory. "The Meaning of 'Social Enterprise.'" *Duke University*. Last modified May 30, 2001. Accessed September 29, 2017. <https://entrepreneurship.duke.edu/news-item/the-meaning-of-social-entrepreneurship/>.
- Durston, James. "Opinion: Why I hate museums," *CNN*, Last modified August, 22, 2013. Accessed July 12, 2017. <http://edition.cnn.com/travel/article/opinion-why-i-hate-museums/index.html>.
- Esner, Rachel, and Fieke Konijn. "Curating the Collection." *Stedelijk Studies*, no. 5 (Fall 2017): 1-13. Accessed June 7, 2018. <https://www.stedelijkstudies.com/journal/curating-the-collection/>.
- Falk, John H. "Attracting and Building Audiences." *Identity and the Museum Visitor Experience*, 185-213. Walnut Creek, CA: Left Coast Press, 2009.
- Falk, John H., and Lynn D. Dierking. *The Museum Experience Revisited*. Walnut Creek: Routledge, 2012. *EBSCOhost*. Accessed September 6, 2017.
- Fisher, Genevieve. "Preventative Care." In *Museum Registration Methods*, 5th ed., edited by Rebecca A. Buck and Jean Allman Gilmore, 287-299. Washington D.C.: American Association of Museums, 2010.

- Gavin, Rebecca. "A Study of Interactives in Virginia Museums." *Journal of Museum Education* 36, no. 2 (June 1, 2011): 155-164. *EBSCOhost*. Accessed January 13, 2018. www.search.ebscohost.com/login.aspx?direct=true&AuthType=cookie.ip.sso&db=eric&AN=EJ936223&site=eds-live&authtype=sso&custid=s8475574.
- Goss, Anna J. "Managing Education Collections: The Care/Use Balance in Natural History Museums." Master's thesis, University of Washington, 2015. Accessed January 13, 2018. https://digital.lib.washington.edu/researchworks/bitstream/handle/1773/33430/Goss_was_hington_02500_14770.pdf?sequence=.
- Hein, George E. "Constructivist Learning Theory." CECA (International Committee of Museum Educators) Conference, Jerusalem, Israel, October 15-22, 1991.
- Hein, Hilde. *The Museum in Transition: A Philosophical Perspective*. Washington D.C.: Smithsonian Institution Press, 2000.
- Hudson, Kenneth. "The Museum Refuses to Stand Still." *Museum International* L, no. 1 (January 1998): 43-50. Accessed September 15, 2017. <http://unesdoc.unesco.org/images/0011/001105/110513e.pdf>.
- Jacques, Claire. "Easing the Transition: Using Museum Objects with Elderly People." In *The Power of Touch: Handling Objects in Museums and Heritage Contexts*, edited by Elizabeth Pye, 153-161. Walnut Creek, CA: Left Coast Press, Inc., 2007.
- The J. Paul Getty Museum. *Complete Guide to Adult Audience Interpretive Materials: Gallery Texts and Graphics*. Accessed July 20, 2018. https://www.getty.edu/education/museum_educators/downloads/aaim_completeguide.pdf
- Lamb, Andrew. "To Play or Not to Play: Making A Collection of Musical Instruments Accessible." In *The Power of Touch: Handling Objects in Museums and Heritage Contexts*, edited by Elizabeth Pye, 201-214. Walnut Creek, CA: Left Coast Press, Inc., 2007.
- , "To Play or Not to Play: The Ethics of Musical Instrument Conservation." *V&A Conservation Journal*, no. 15 (April 1995). Accessed September 13, 2017. <http://www.vam.ac.uk/content/journals/conservation-journal/issue-15/to-play-or-not-to-play-the-ethics-of-musical-instrument-conservation/>.
- Lasser, Ethan W. "An Unlikely Match: On the Curator's Role in the Social Work of the Museum." *Museum Management and Curatorship* 27, no. 3 (August 2012): 205-222. Accessed August 29, 2017. <https://tinyurl.com/ycmn5s9c>.
- Lester, Peter. "Is the Virtual Exhibition the Natural Successor to the Physical?" *Journal of the Society of Archivist* 27, no. 1. (April 2006): 85-101.

- Macfarlan, Shane J. "A Consideration of Museum Education Collections: Theory and Application." *Curator* 44, no. 2 (April 2001): 166-178. *EBSCOhost*. Accessed January 13, 2018.
- Malaro, Marie C., and Ildiko Pogany De Angelis. *A Legal Primer on Managing Museum Collections*, 3rd ed. Washington D.C.: Smithsonian Books, 2012.
- Miller, Steven. "Foreword." In *Musical Machines and Living Dolls: The Murtogh D. Guinness Collection of Mechanical Musical Instruments and Automata*, edited by Kathryn Grover, 6-9. Morristown, N.J.: Morris Museum, 2011.
- Neilson, Dixie. "Object Handling." In *Museum Registration Methods*, 5th ed., edited by Rebecca A. Buck and Jean Allman Gilmore, 209-218. Washington D.C.: American Association of Museums, 2010.
- Odell, J.S. and C. Karp. "Ethics and the Use of Instruments." In *The Care of Historical Musical Instruments*, edited by Robert L. Barclay, 1-7. Ontario: Canadian Conservation Institute and the Museums & Galleries Commission, 2005. Accessed July 1, 2018. http://network.icom.museum/fileadmin/user_upload/minisites/cimcim/pdf/The_Care_of_Historic_Musical_Instruments_small.pdf.
- Paulus, Odile. "Museums as Serigraphs or Unique Masterpieces: Do American Art Museums Display Differentiation in Their Mission Statements?" *International Journal of Arts Management* 13, no. 1 (Fall 2010): 12-28. *JSTOR*. Accessed July 13, 2017. <http://www.jstor.org/stable/41057870>.
- Pine II, Joseph and James H. Gilmore. "The Experience Economy." In *Reinventing the Museum: The Evolving Conversation of the Paradigm Shift*, 2nd ed., edited by Gail Anderson, 163-169. United Kingdom: AltaMira Press, 2012.
- Powell, Brent A. *Collection Care: An Illustrated Handbook for the Care and Handling of Cultural Objects*. London: Rowan and Littlefield, 2016.
- Rhoads, Libby. "Museums, Meaning Making, and Memories: The Need for Museum Programs for People with Dementia and Their Caregivers." *Curator* 52, no. 3 (July 2009): 229-240. Accessed March 19, 2018. <https://onlinelibrary-wiley-com.ezproxy.shu.edu/doi/pdf/10.1111/j.2151-6952.2009.tb00348.x>.
- Roberts, Jennifer L. "The Power of Patience: Teaching Students the Value of Deceleration and Immersive Attention." *Harvard Magazine* (November-December 2013). Accessed September 19, 2017. <http://harvardmagazine.com/2013/11/the-power-of-patience>.
- Schreiter, Charlotte. "Competition, Exchange, Comparison: Nineteenth-Century Cast Museums in Transnational Perspective." In *The Museum Is Open: Towards a Transnational History of Museums 1750-1940*, edited by Andrea Meyer and Bénédicte Savoy, 31-50. Berlin: De Gruyter, 2014. *EBSCOhost*. Accessed July 1, 2018.

- Simon, Nina. "Principles of Participation." In *Reinventing the Museum: The Evolving Conversation of the Paradigm Shift*, 2nd ed., edited by Gail Anderson, 330-350. United Kingdom: AltaMira Press, 2012.
- Sitzia, Emilie. "Narrative Theories and Learning in Contemporary Art Museums: A Theoretical Exploration." *Stedelijk Studies*, no. 4 (Spring 2016): 1-15. Accessed June 13, 2018. https://www.stedelijkstudies.com/beheer/wp-content/uploads/2016/06/Stedelijk-Studies_Narrative-Theories_Sitzia.pdf.
- Spence, Charles. "Making Sense of Touch: A Multisensory Approach to the Perception of Objects." In *The Power of Touch: Handling Objects in Museums and Heritage Contexts*, edited by Elizabeth Pye, 45-61. Walnut Creek, CA: Left Coast Press, Inc., 2007.
- Sportun, Samantha. "The Future Landscape of 3D in Museums." In *The Multisensory Museum: Cross-Disciplinary Perspectives on Sound, Smell, Memory, and Space*, edited by Nina Levent and Alvaro Pascual-Leone, 331-340. Plymouth, UK: Rowman and Littlefield, 2014.
- Stevens, Hampton. "Museums Want to Entertain You (and That's Not a Bad Thing)." *Atlantic Daily*, April 19, 2012. Accessed July 12, 2017. <https://www.theatlantic.com/entertainment/archive/2012/04/museums-want-to-entertain-you-and-thats-not-a-bad-thing/256042/>.
- "Struggling Museum Now Allowing Patrons to Touch Paintings." *The Onion* 45, no. 41 (October 5, 2009). Accessed October 16, 2017. <http://www.theonion.com/article/struggling-museum-now-allowing-patrons-to-touch-pa-2821>.
- Torres, Jennifer, Katherine J. Gallagher, Sanchita Balachandran and Lisa Anderson. "Rehousing a 'Working Collection': Perspectives from the John Hopkins University Archaeological Museum." *Journal of the American Institute for Conservation* 56, no. 2 (2017): 96-112.
- Trewinnard-Boyle, Tara, and Emily Tabassi. "Learning Through Touch." In *The Power of Touch: Handling Objects in Museums and Heritage Contexts*, edited by Elizabeth Pye, 191-200. Walnut Creek, CA: Left Coast Press, Inc., 2007.
- Ucar, Ezgi. "Multisensory Met: Touch, Smell, and Hear Art." *The Metropolitan Museum of Art*. September 8, 2015. Accessed March 14, 2018. <http://www.metmuseum.org/blogs/digital-underground/2015/multisensory-met>.
- Vagnone, Franklin D. and Deborah E. Ryan. *Anarchist's Guide to Historic House Museums*. Walnut Creek, California: Left Coast Press, Inc., 2016.
- Vaughan, James. "Rethinking the Rembrandt Rule." *American Alliance of Museums*. March/April 2008.

Voegelin, Salomé. "Soundwalking in the Museum: A Sonic Journey through the Visual Display." In *The Multisensory Museum: Cross-Disciplinary Perspectives on Sound, Smell, Memory, and Space*, edited by Nina Levent and Alvaro Pascual-Leone, 119-130. Plymouth, UK: Rowman and Littlefield, 2014.

Weil, Stephen. *Making Museums Matter*. Washington D.C.: Smithsonian Institute Press, 2007.