Walking the Tightrope: On the Balance of Digital Technology in Museum Exhibits and the UB Anderson Gallery Interactive

By

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Abstract

This paper explores the history of technology-supported exhibition design, the “open storage” exhibition, and how the concepts promoted by New Museology effected archaeological exhibitions. In particular, this paper seeks to understand the relationship between digital technology and the displayed artifacts in archaeology exhibits. It focuses on how the shift towards democratization of museum knowledge base has impacted the balance between authentic objects and technological additions. It hopes to identify what constitutes a “balanced” and comprehensive visitor experience.

I investigate this phenomenon in a case study at the University at Buffalo’s Anderson Gallery. I also propose a design for the Anderson Gallery interactive screen for their Annette Cravens Collection, taking into account the use of space, the importance of interactivity of the user experience, and the balance between the use of technology and the experience of authentic artifacts. The design also takes into consideration the Cravens Collection’s unique setting in a university museum.
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Introduction

Museums are the caretakers of culture. Their collections of artifacts and artworks represent societies from across the world and across time. Whether local or global, the collection is one of the museum’s most important resources. As curator Pontus Hultén (1924-2006) believed, the collection is the soul of the museum. Museums are in a unique position to present authentic objects and to safely preserve them. This authenticity makes museums and art galleries an exceptional place to learn and explore. University museums have a unique role in their duty as a teaching and research institution (Biehl and Harrison 2012). In the case of anthropology and archaeology collections, institutions have a particular responsibility to their objects’ different cultural origins. The incorporation of technology into exhibition design and curating increasingly affects the way institutions approach the presentation of knowledge and of objects.

Revolving around the collection is the narrative of different museums. Narratives are expressed through exhibitions that show certain objects from the collection to convey particular information or a story to visitors. Since the beginnings of the museum institution, exhibitions and the role of the curator have changed greatly. Once focused on an authoritative voice to provide information to passive visitors, exhibitions have come to focus on facilitating audience engagement (Weil 1999). In this way, visitors become participants in the exhibition. The goal is to engage with the audience to make longer lasting connections and foster a better educational experience. Vital to this goal is the use of new media and technology in museum exhibitions. The use of technology in museums has changed greatly since the beginnings of the institution. At first, technology existed in museums in the form of various tools for new
display techniques and object conservation. Mechanical technology was designed for hands-on components of exhibitions. Experimentation with interactive digital technology and new media in museum exhibitions began in the 1990s (Christensen 2011). Both digital technology and approaches to content on interactives have evolved since the first examples of new media in museum exhibitions. Today, new media is common in most museums (Henning 2006). An important question to ask is: how can digital technology assist museums in engaging their community?

Incorporating digital technology into the museum presents many problems as well as benefits. The major problem is the lack of authenticity that comes with the digital or virtual representations of objects (Hampp and Schwan 2014). If the museum is unique because it is able to present authentic objects, does the incorporation of technology (which often relies on digital representation of objects) undermine what makes the museum special? The answer is in a balance of technology that is used to enhance an exhibit space rather than replace the objects. Part of this balance lies in the use of space in an exhibition, so that the objects, and not the interactive technology, are still the focus of attention. Digital technology should be the scaffolding to a better understanding of the artifact, not a replacement.

Technology is being increasingly incorporated into all types of museums. This paper focuses on archaeological exhibits and museums. Many archaeological collections are found in science or natural history museums. However, archaeological objects are part of the collection of many art galleries and art museums as well. Archaeological artifacts have an interesting role in art museums as they are placed in a slightly different context than that of science or natural history institutions (Rosenbaum 2009). In art museums, the focus tends to be on form and
aesthetic quality of the cultural artifacts. Interesting comparisons can also be drawn between contemporary artworks and recognizable inspiration in ancient objects.

Particularly in smaller museums, technology has a major impact. Without the same funding available as large institutions such as the Metropolitan Museum of Art in New York City and the Smithsonian Institution museums in Washington D.C, medium to small museums have a more limited use of technology for making interactive exhibitions. Additionally, smaller museums have the disadvantage of limited exhibition space. Technology can be used to make the most of the limited space and give visitors access to more of the institution’s collection and intellectual property. University museums, which tend to be smaller in size, can make the most of the incorporation of technology to bring an active research community in more direct connection with the museum or gallery collection (Biehl and Harrison 2012). One example of a university museum working toward the incorporation of technology is the University at Buffalo’s Anderson Gallery.

The University at Buffalo (UB) was founded in 1846 in Buffalo, New York. UB is a public research university with three main campuses, over 100 academic buildings, and multiple small museums and galleries associated with the many different departments (University at Buffalo 2018). The Anderson Gallery, located near the University of Buffalo’s Main Street campus, is one of UB’s art galleries. Currently, the Anderson Gallery is working on integrating technology into one of their permanent exhibitions, The Human Aesthetic: The Cravens Collection. The Cravens Collection is an archaeological and ethnographic collection at the Anderson Gallery and is an example of an “open storage” exhibition- meant to make the most out of a small space by exhibiting as many objects as possible (Institute of Museum Ethics 2009). This type of exhibition often leads to a decrease in the amount of information
about the objects that is available to the visitor, but technology can be used to bridge this gap. This paper discusses a design for an interactive screen to be installed in the Cravens Collection gallery. While unique to this particular institution, the Anderson Gallery digital interactive project offers insight into issues that surround other small, mid-sized, and university museums. It is important with any such exhibition to find a balance between the technology and the authenticity of the objects. Another goal of the incorporation of digital technology into exhibitions is interactivity. Interactivity is achieved through the building of dialogue and collaboration around an exhibition and museum space (Witcomb 2006).

**Historical Background**

Humankind has a long history of desiring to collect, preserve and protect cultural and artistic heritage. From this desire came the institution now known as the museum. Some of the earliest evidence of a museum-like institution has been found in the 6th century BCE at the Babylonian city of Ur in Ancient Mesopotamia. In excavations at Ur, archaeologists have found evidence of written labels for various objects collected by kings Nebuchadrezzar and Nabondius (Lewis 1998). The word museum comes from the Greek word *mouseion*, meaning “seat of the Muses”, which usually referred to a philosophical institution (Lewis 1998). One of the first institutions that can be considered a museum in the more modern sense, was founded in the 3rd century BCE as the Library at Alexandria. The Library at Alexandria was more of a university, as it had a college of scholars and an extensive library, but it housed and cared for cultural objects from the known world as well (Lewis 1998).
The term museum was seen again in 15th century Europe in reference to the personal collection of Lorenzo de Medici of Florence, Italy and the Wunderkammer or “cabinets of curiosities”, which became popular in Germany and Northern Europe. In these chambers or cabinets, private collectors arranged their objects without any particular system other than to demonstrate their wealth, travels, and knowledge (Lewis 1998). Royal collections across Europe were of great importance to the formation of museums and kings and queens were one of the greatest patrons of pre-modern culture. Many royal families even today have retained their important collections. Eventually, the museum shifted as private collections were opened to the public and our modern understanding of a museum was established. The Ashmolean Museum of Oxford University in Oxford, England, which opened as the first modern, public museum in 1683. The British Museum in London followed in 1753 (Lewis 1998).

Museums became leading institutions in preserving cultural and art objects during the 19th and 20th centuries. One of the first museums in the United States was the Charleston Museum, in Charleston, South Carolina, which opened to the public in 1824 (Charleston Museum 2018). Beginning in the late 19th century, American collectors began gathering objects more fervently. Similar to the development of collections in Europe, the first collections of artifacts in the United States came from wealthy patrons and travelers. Among the earliest collectors were the Californian newspaper publisher William Randolph Hearst, Boston socialite Isabella Stewart Gardner, and banker J.P. Morgan (Schwarzer 2006). Of particular interest to these early collectors were artworks as well as ethnological and archaeological objects. The interest in artifacts from other cultures and from the natural world was due to the rapid industrialization and urbanization that was causing destruction of the natural landscape and of other cultures (Schwarzer 2006). The role of the collecting nations as
colonizers led to the idea of “dying” non-Western civilizations, notably Native American and African cultures. This notion led to the collection of thousands of cultural artifacts from non-Western societies.

This collecting fever led to a lack of proper documentation and conservation for thousands of artifacts. The use of digital technology in museums helps connect the holes in provenance information for objects. Looting and illicit trade of artifacts was, and continues to be, a major problem in museum collections. It was not until the post-WWI era that museums redirected their attention inward to better care for their existing and incoming collections (Schwarzer 2006). Proper documentation for newly acquired objects not only became practice but a requirement of the law, as the antiquities trade had grown into a major illegal activity. As a result, museums began to manage their collection more ethically, not only seeing objects but the people that the objects represented. In her article on the history of museums in America, Marjorie Schwarzer asks the question “[w]hy have a collection if it isn’t accessible and meaningful to the public for whom it is held in trust?” (Schwarzer 2006: 99). It was not enough for the museum to house collections any longer, they were responsible to making this collection meaningful for the general public, including those groups previously marginalized.

In the latter half of the 20th century, museums began to respond to this question by reaching out to their surrounding communities (Schwarzer 2006). In the 21st century, technology has allowed us new tools to make this reach even further.

In 2014, the Institute of Museum and Library Sciences estimated there are 35,144 active museums in the United States (Institute of Museum and Library Science 2014). This statistic includes zoos, aquariums, and wildlife conservation centers as well as museums and historical societies. Currently, museums are in a state of change. A shift in institutional
practice, an ideology called the “new museology”, is changing the way we think about the role of museums. The theories behind the “new museology” began to develop in the late 20th century (Mayrand 2015). While the primary concern of museums once was the care of its collection, the focus has now shifted to education and services to the community. Museums went “from being about something to for someone” (Weil 1999: 229) Successful museums are judged, in terms of public and private funding grants and by their boards of directors, by how well they are able to engage with the community and to stay relevant with the public through a variety of programs (Weil 1999). Additionally, museums are more self-aware of the power they have in contributing to accepted social values and to constructing social as well as intellectual narrative (Bautista 2014).

From their inception, museums have played an essential role in defining national and social narratives through the objects chosen to be put on display and the information given to the public about these objects. Museums are the defining institutions in creating a national identity (Kaplan 2006). As part of the practice of “new museology”, many institutions are working to re-evaluate that national narrative to be more representative of the actual demographic. The opening of the National Museum of the American Indian, Washington, DC in 2004 and the National Museum of African American History and Culture, Washington, DC in 2016 marked major turning points for the presentation of the American national narrative through museums (Kaplan 2006). Re-writing national narrative includes giving attention to minorities and groups that have traditionally been sidelined in the narrative of the museum, such as African Americans and Native Americans. For example, the Field Museum of Chicago, Illinois developed an “Anthropology Curation Portal” using their Philippines and Fiji Islands collections to engage with members of those communities. Their website portal allows
users to add information about the objects’ origins, materials, meaning, or function (Field Museum 2018). This knowledge is then added to object files and fosters a dialogue between the community members and academic experts inside the Field Museum. In this way, members of the Philippines and Fiji Islands communities participate in the co-curation of their cultural heritage at the museum. This fosters a sense of ownership and connection with the collections and the museum itself. The University of British Columbia’s (UBC) Museum of Anthropology in Vancouver is another example of a museum working to engage minorities in the narrative of the museum and the collection. One of their projects is the “Reciprocal Research Network”, a portal with digitized files of Northwest Coast Native Peoples’ artifacts. Artifacts are those from the UBC Museum of Anthropology’s collection as well as other Canadian and American museums (University of British Columbia 2018). This network is similar to that of The Field Museum’s “Anthropology Curation Portal” in that it allows users to share knowledge about their cultural heritage as well as connect with other users through discussion. The “Reciprocal Research Network” also works to build a community and dialogue around that artifacts that is larger than the collection of just one institution (University of British Columbia 2018). There is more work to be done, however improved digital technology and its incorporation into exhibition design and curation methods help museums engage a broader audience into the museum narrative and with the cultural objects.

**University Museums**

Out of the approximately 35,000 active museums in the United States, about 2,000 of these are university museums and galleries (Institute of Museum and Library Science 2014). Some of the first museums in the United States were connected to a university. The Peabody
Museum of Archaeology & Ethnology, for example, was founded in 1866 at Harvard University in Cambridge, Massachusetts (Harvard University 2018). University museums hold an interesting place in the creation of national and social narratives. In her article, “University Museums as Laboratories for Experiential Learning and Engaged Practice”, Christina Kreps of the University of Denver discusses the place of university museums as set apart from other museums as they are “uniquely positioned to allow risk taking, museological experimentation and ‘messiness’” (Kreps 2015: 109). University museums and galleries are directly tied to higher education institutions. This means that university museums have the added responsibility of being a research site and are tied in a more intricate way using their collections for educational programing. University collections are also able to be used for object-based learning experiences and are in a better place for interdisciplinary collaboration from the different departments at the university (Kreps 2015).

Kreps’ discusses the use of the University of Denver’s (DU) Museum of Anthropology, Denver, Colorado collections for engaging teaching experiences. The DU Museum of Anthropology, a research and teaching museum, uses their collections as tools for experiential and socially engaged learning programs (Kreps 2015). One of the aims of the program, which revolves around hands-on student object research and exhibition design, is to understand how museum objects were experienced in their original contexts. One 2012 exhibition, Connecting the Pieces, paired students with Amache community members. Amache was a Japanese-American internment camp in Granada, Colorado during World War II. In this way, the DU Museum of Anthropology fostered intercultural dialogue about a dark time in American history through their use of archaeological artifacts in a museum exhibition (Kreps 2015). University museums focusing on archaeology are not the alone in their use of collections to
develop unique learning curriculum. For example, The Tang Museum of Skidmore College, Saratoga Springs, New York is also a dedicated teaching museum. Their collection consists of contemporary art pieces. The Tang Museum uses their galleries and collection for teaching spaces in an effort to “advance knowledge across disciplines” (Tang Museum 2018). The Tang Museum creates successful and unique learning experiences and demonstrates how contemporary art is a powerful tool for engagement and social commentary. However, archaeological collections are well-suited to object-based learning experiences. This stems from the deep cultural meanings for the living members of the community that are associated with the archaeological artifacts. Archaeological objects represent cultural heritage that ties communities to the museum through dialogue and creates different meaningful connections.

Research of the collection is an integral part of every museum institution, however university museums have the advantage of being intrinsically connected to a larger research community. The university research campus is composed of a community of various specialties, disciplines and theoretical approaches that are an invaluable resource to the museum (Kim 2007). The diverse university community allows for interdisciplinary cooperation within museum exhibitions and use of collections.

**Exhibition Evolution**

In order to comprehend the significant change that digital technology has had on museum exhibitions, it is important to understand how exhibitions have changed over time. As museums changed, so too have their exhibitions and use of available technology. One of the earliest examples of museum use of technology geared toward audience engagement was in 1789 at the Boydell Shakespeare Gallery in London (Christensen 2011). The Boydell
Shakespeare Gallery utilized the printing press to create graphic reproductions of the displayed original artworks. These graphic reproductions were sold to the public, changing the relationship between the artwork and its audience as the art became more accessible. Visitors were able to bring a version of artwork home due to the mass-producing technology (Christensen 2011). A sense of ownership over the artwork was created through the availability of the reproductions and deepened visitors’ connection to the gallery.

By the time American museums were being established in the 19th century, exhibition standards had already gone through many changes in European museums. Medieval Europe and Renaissance royal and other private collections were arranged to demonstrate wealth and prosperity (Lewis 1998). Drawings and references depict the “cabinets of curiosity” with objects in dense arrangements, and typically in no particular order (FIG 1). Object labels with basic information, such as the object and where it came from, have been a standard in museum exhibitions since the early history of the institution.
Archaeological collections are found in almost all of the major varieties of museums—art, science, natural history, and history. Anthropology and archaeology exhibitions are generally intended to inform visitors about past and present cultures from around the world. These exhibits are more historically based, as the purpose is to share the object’s story with the audience—how it was made, what does its style and design mean, who made it, and what was going on in the time period that it was created in. Originally, anthropology exhibits offered a Westernized version of history and our ideals about the people represented by objects from all around the world (Schwarzer 2006). Some early anthropology/ethnology exhibits even
included people from different cultures that would put on live demonstrations or shows for museum visitors (Kirshenblatt-Gimblett 2012). Everything that was not from a Western nation was considered exotic and intriguing to visitors, many of whom had never traveled very far out of the United States or Europe before. This created a sense of the “other” between Western and non-Western cultures that persists today (Schwarzer 2006).

The first archaeological and anthropological collections and exhibitions focused on research and training new practitioners in the fields. In the early 20th century, the fields of archaeology and anthropology shifted to emphasize the importance on fieldwork and “armchair archaeology” was recognized to be an inefficient and unethical way to study other cultures (Kirshenblatt-Gimblett 2012). This led to changes in the museum presentation of archaeological and anthropological collections and an eventual resurgence in museum-based material culture studies in the 1990s (Kreps 2015).

In the past, anthropological exhibitions often included objects arranged thematically or chronologically in glass cases with text labels. The theory of evolution impacted anthropological collections as well as scientific and natural history ones. Prominent collectors such as Pitt Rivers, an English army officer, ethnologist, and archaeologist, attempted to apply the evolutionary theory to human technology and artifacts (Chapman 1988). Typology then became the most popular way to classify objects—those of like type and from the same culture together. As exhibitions evolved, the text included in the labels changed as well. The concept of the text label was re-evaluated to get the visitor to interact with the information. Interpretive labels often include questions asked to the viewer, to guide the visitor to thinking beyond the information provided in the label. Interpretive labels also try to make connections
between different objects by pointing out a similarity or asking viewers to compare artifacts cross-culturally (Romanowski 2015).

Archaeological collections are often found in art museums and galleries. In art museums, the most popular exhibition style in the 18th and 19th centuries, when museums and galleries first started to open to the public, was the “salon style” (Blazwick 2007) (FIG 2). This form of art exhibition arranged many paintings on the same wall. In the salon style, artworks are arranged at, below, and above eye-level with the visitors. Archaeological artifacts in the collection were not arranged according to the salon style but rather were placed in thematic cases. Such cases could be found in their own galleries or as a compliment to the artworks on the walls. In the 20th century, the most popular form of exhibition design in art museums became the “white cube” (Blazwick 2007) (FIG 3). This development had a long-lasting effect on art museums and remains the standard exhibition design in contemporary times. This type of exhibition arranges paintings generally in a single line around the gallery walls, hanging artworks at an average eye-level of 60 inches (Shelley 1987). Gallery walls are painted a singular color, generally white, though more frequently different colors are being used, to keep the attention focused on the various works of art. Archaeological artifacts in art museums cannot always be hung on the walls of the gallery but rather they are placed on plain mounts inside glass cases. Standards for distance between objects and height of cases exist as well as standards for hanging artwork (Shelley 1987). These cases follow the guidelines of the “white cube”- where the emphasis is placed on the aesthetic quality of the works.
Figure 2. Example of a salon style gallery at the Metropolitan Museum of Art. (Image courtesy of the Metropolitan Museum)

Figure 3. Example of the “white cube” style gallery at the Museum of Modern Art in New York City. (Image courtesy of the Museum of Modern Art).
History museums arose from the *Heimatmuseum*, popular in Germany during the 19th century (Weil 1999). A *Heimatmuseum*, meaning “homeland museum”, housed community collections and became widespread due to an increased desire to preserve local history through examples of everyday life and ordinary objects (Weil 1999). Similarly, history museums typically began as a historical society, whose members were interested in collecting artifacts with local significance. Many artifacts in history museums are archaeological ones. The exhibitions of history museums have followed a similar pattern to that of science and natural history museum, arranging artifacts geographically, thematically or chronologically to tell a particular story (Schwarzer 2006). While the dialogue and text in these exhibition have evolved, the general idea has not changed greatly over time.

Science and natural history museum exhibition have undergone some changes as well. Originally, science and natural history museums tended to keep their collections arranged by typology, wanting to provide visitors with information about the collections. At first, the major emphasis was on demonstrating evolutionary principles (Schwarzer 2006). However, science and natural history museums increasingly use technology as part of their exhibitions. Science museums were among the first to begin to incorporate new media technology into their exhibitions. Technology was a more natural step for science museum than other institutions, as technology is a part of the scientific field. In order to stay relevant with the most recent developments, science museums had to incorporate technology into their exhibitions. Hands-on exhibitions in science museums were a precursor to the incorporation of improved digital technology in the latter half of the 20th century (Friedman 2007). The Exploratorium, opened 1969 in San Francisco, became a model for hands-on and interactive exhibits and learning experiences (Friedman 2007). This museum utilized color, light, vision, and mechanical
technology in their exhibitions to create a participatory experience for visitors. The Exploratorium exhibits became a model for science museums and a basis for the later use of computer technology in all types of museum institutions.

In the latter half of the 20th century, important developments arose in the design of museum exhibitions. The major development in exhibition design came with the general technological improvement and invention of digital and media technologies. Beginning around the 1990s, museums began to utilize technology in a way that was unavailable before. One of the most popular forms of technology used in museums is the audio guide (Christensen 2011). The audio guide has many positive features that assist in improved communication with visitors including additional information and interpretation not included on text labels, ability to listen in multiple languages, and engaging with visitors who may be visually impaired. Audio guides provide visitors a personal tour of the museum. They also have the advantage of preserving audience connection with the museum artifacts and artworks as the visitor observes the object while listening to the information on the audio device (Christensen 2011).

As computer technology improved and evolved, it was adapted into the museum environment to add experiences beyond that of the audio device. Computer-based technology began in the form of interactive screens that either provided more information about the objects or included a game to promote visitor participation (Christensen 2011). As computer technology advances, so too does the use of digital technology in museum exhibitions. Virtual and augmented environments, 3D scans and modeling, and mobile applications are only a few examples of the diverse use of computer-based technology in archaeological and other types of museum exhibitions (Metallo and Rossi 2011).
Another of the advances came with the development of open storage designs. Open storage is not a particularly new idea, in theory it is similar to “cabinets of curiosity” and other early museum displays, but it is currently being presented in updated ways to the public. While a private collector would arrange their “cabinets of curiosity” to impress friends and family members, an open storage exhibition is a particular marketing and engagement strategy (Institute of Museum Ethics 2009). This type of exhibition has an advantage in all types of museums as it brings more of the collection into the public view.

New Technology and New Media

New media has an ever-growing influence on our society. Museums in particular are in a moment of flux in regard to new media. Increasingly, new media technology is being utilized by museums in exhibitions as the institutions attempt to revitalize design and content and engage with a broader audience. New media is defined most simply as technology that is computer-based or digital (Henning 2006). In museums, new media affects everything from working practices to visitor relations to exhibition design. Often, new media in displays and exhibitions comes in the form of interactives such as touch screens with videos or other information content and/or games such as recording a video of yourself and emailing it to a friend. At the core the goal of the adaptation of new media to the museum setting is to democratize knowledge by making it more accessible (Henning 2006). In exhibitions, the technology is intended to enhance the displays by offering additional information and new ways to engage with the presented topic rather than simply looking at the artifact and reading the label.
New media and digital technology have the potential to be a positive tool for museums to expand on their exhibitions and connect with visitors. However, sometimes this intention is lost if the digital technology overwhelms the artifacts and takes all the focus of the visitors. Technology is designed to be attention-grabbing. This is especially true for younger visitors, who are used to using digital technology frequently in their daily lives. In archaeological exhibitions, utilize new media in a variety of ways. The most common include interactive screens with expanded label information, videos, or interactive media games (Cameron 2003). Sometimes, museum visitors tend to head straight for the technology and simply glance at or bypass the authentic artifacts. Understanding the potential negatives of new media is essential in finding a balance in the display of artifacts and use of technology within exhibitions. Balance is found through designing digital technology to help audiences engage with the objects rather than distract from or replace them.

There are many benefits to using new media in museum exhibitions. New media offers many opportunities to encourage participation by visitors that have previously felt overwhelmed by the traditional museum environment, which was that of a temple of knowledge (Bautista 2014). Children, for example, learn and engage better when they are engaged in hands-on learning and in participatory experiences (Dahl and Stuedahl 2012). Authentic museum artifacts are often too fragile and valuable to be constantly handled by many people. One advantage of digital technology is that it offers a bridge to hands-on learning without damaging artifacts. Another advantage of digital technology is the ability to present more information to the visitor. For example, in open storage exhibits, where large amounts of artifacts are put into cases with short or no text labels, having an interactive screen with additional information can be particularly beneficial. Interactive digital screens have
endless possibilities for use in all types of archaeological, and other, exhibitions. When paired with open storage, an interactive digital screen is a highly effective way to display archaeological collections and a model for successful incorporation and balance of digital technology with objects.

The use of digital technology allows museums to display more objects and have all of the text information in one location rather than on large text labels. The Smithsonian Institution’s *First Peoples* exhibit in the Anchorage Museum of Alaska is an example of a successful use of digital technology in an open storage gallery (FIG 4). The Anchorage Museum, opened in 1968, is the largest museum in Alaska. *First Peoples* is a collaborative exhibition between the Anchorage Museum and the Smithsonian’s National Museum of Natural History and National Museum of the American Indian (Anchorage Museum 2018).

The exhibition has four long rectangular cases in the center of the room filled with archaeological artifacts from the many Alaskan Native groups. Around the exterior walls of the room are stories and photographs of Native peoples along with video screens. At the end of each of the long, open storage cases in the exhibition space is a touch screen with information about the objects in the case. Each object is represented by a high resolution scan on the screen that allows the visitor to zoom in and examine small details that the distance and glass case prevents the viewer from noticing. Information is also included on Native language, how the artifacts were made, and what their uses were. None of this information would fit effectively on a traditional text label. Visitors can view and engage with the authentic artifacts while gaining extra knowledge with the technology. The placement of the screens is successful as well. As the screens are located at the ends of the cases, they do not disrupt studying the original artifacts on display in the cases. While this exhibition is successful in its use of
technology to enhance understanding, it also brings up an important issue—at what point do
visitors cease to look at the artifacts and only focus on the information presented on the
screen?

Figure 4. The Smithsonian’s First Peoples exhibit at the Anchorage Museum. The flat
interactive screen is seen at the end of the case. (Image courtesy of the Anchorage Museum
2016).

Guy Debord’s *Society of the Spectacle* discusses our society as one that is covered and
repressed by spectacle. The spectacle, which Debord argues is reinforced as we continue to
pay attention to it, is produced from a combination of power, money, and images from the
media (Debord 1967). This spectacle is easily seen within the museum environment. The
increasing inclusion of technology in exhibits plays into the consumer culture as visitors begin
to expect the best and newest technologies. There is an entertainment value that has begun to define museum institutions (Weil 1999). People expect to see something or learn something new presented in an exciting and enticing way. Additionally, if there is a problem with the technology and it is turned off or not working properly, some visitors feel dissatisfaction with the museum despite being surrounded by historically and culturally significant artifacts (Gammon 2010). Technology-generated spectacle threatens the authenticity of the objects in the exhibit.

Debord theorizes that authentic social life is being replaced by its representation. He states in the opening of *Society of the Spectacle* that “[a]ll that was once was directly lived has become mere representation” (Debord 1967: 10). This idea directly applies to the use of new media technologies in museum exhibits—the authentic artifact is being replaced by its representation. Interactive technology can hinder genuine interaction with displayed objects as people are distracted by the technology. For example, in the aforementioned Anchorage Museum interactives, visitors can become so wrapped up in looking at the scanned image on the screen that they hardly look at the authentic object in the case next to them (Heath and vom Lehn 2003). Enhancement through technology has turned into distraction. However, even when distracting, technology can provide a learning experience and knowledge the visitor may not have otherwise gained. As mentioned above, interactive screens have the potential to be highly effective for archaeological exhibitions. Such installations can tie the authentic artifact into the digital space and move past distraction into engagement.

New media technology is a promising tool for museums. However, it is important to understand the discourse between the positives of new media use and the issues of falling into inauthentic interactions between the visitors and the artifacts (Henning 2006). Recognizing
this relationship highlights the importance of finding the balance between authenticity and virtual reality. One of the most important aspects of the museums is that they can display authentic objects. Artifacts should not get lost within the spectacle.

In addition to the screen in the museum, new media allows for audience interaction in a variety of other ways. Outside of the museum walls, museum websites can hold online collections that allow users to browse objects that will not fit on exhibit or are too fragile to be displayed (Jewitt 2012). The use of 360 images and virtual reality tours allow not only the museum collections but the museum building itself to be seen by groups of adults and students who may otherwise never have a chance to see these artifacts and institutions. This can enhance lessons and give a whole new group of people a love for the museum (Dahl and Stuedahl 2012). Virtual reality tours also have the potential to inspire new visitors to come into the actual museum space as they desire to see the building behind the virtual space. Inside the museum, interactive exhibits and informational screens within exhibitions utilize new technology in an attempt to further engage visitors.

**Interactivity**

Digital technology in exhibitions often comes in the form of interactives. Interactives can include a touch-screen with object information (instead of a text label) or videos, a computer and a green screen that lets visitors take and email photographs, or a computer-based game related to the exhibition. Technological interactives have become common place in many museums. The terms interactive and interactivity are interesting when discussing new media in museums (Witcomb 2006). The two terms are often used interchangeably; however, they mean different things. Interactives do not just mean technology that is intended to be a
game or activity for visitors but includes any screen that the visitor can touch and browse through. Interactivity is not simply the outcome of an interactive. Interactivity is the immersion of visitors in the museum exhibition in order to produce a dialogue (Witcomb 2006). Understanding interactivity is vital and provides a way to most past technology-driven spectacle in the museum environment.

Technology also demonstrates an ability for museums to connect with visitors on a more personal level. In allowing the visitor more control over their visit, in the information that they choose to see and the objects they choose to focus on, technology can create unique experiences for each visitor that comes through an exhibition space. One example of this can be seen in the Cleveland Museum of Art’s ArtLens, a mobile application that allows the visitor to create a personal tour of the Cleveland Museum of Art as they choose from objects that interest them the most (FIG 5). The ArtLens application also includes additional historical and thematic information on certain objects in the collection which are marked on the walls of the galleries with an ArtLens symbol (Cleveland Museum of Art 2018). In the case of an interactive touch screen, there is still opportunity for personalization as the user chooses what information to click on and explore more in-depth. In this way, it is more likely that everyone will find something in an exhibit that interests them and be less likely to pass by unfamiliar artifacts or artworks. Touch screens are a particularly popular form of interactive included in exhibitions. Visitors, especially young people and children, tend to be very comfortable with the touch screen interface as it is a familiar one used on a daily basis (Gammon 2010). Older visitors are also comfortable with touch screens, which are typically easily accessible.
An important aspect of any museum exhibition is *dialogue*. The same way that classrooms use seminars, museums can use exhibitions as the basis for conversation about objects and cultures. Andrea Witcomb, Associate Professor at Deakin University in Australia, discusses dialogue as a key component in understanding interactivity in exhibitions. She argues that understanding the way dialogue effects exhibitions “would break the association between a mechanistic understanding of interactives and attempts to democratize the museum, as well as too uncritical a reliance on technology, as the basis for the way forward” (Witcomb 2006: 360). A museum visit is not only an intellectual but is a social event as well. That means that interactivity does not simply entail interacting with a piece of technology, but interacting with knowledge and with other visitors. Social interactions in museums deepens understanding as knowledge passes from the individual into the collective.
Sometimes, exhibition interactives do little to help foster interactivity (Heath and vom Lehn 2003). Often, these technological tools are designed for one person to which limits or even excludes dialogue. There is also a challenge in positioning interactives in a way that makes connections with the objects accessible to visitors (Heath and vom Lehn 2003). Some exhibitions provide dominating interactive screens and/or videos that prevents connections between the technology and the rest of the exhibition. Interactives should be designed in a way that examining the authentic artifact still feels necessary for the visitor. Dialogue and meaningful experiences are fostered through education. New media technology creates interactive learning experiences.

User Experience and Use of Space

The key to a successful incorporation of technology into an exhibit lies in use of space and user experience. The balance between objects and technology here is crucial. If the technology overwhelms the objects, then authenticity is lost as visitors only focus on the screens. However, if the technology is underutilized then the exhibition has not been enhanced by the use of new media installation and the technology is nothing more than spectacle. The content on the screens also impacts the effectiveness of the exhibition space (Heath and vom Lehn 2010). Content is key. If visitors do not gain anything from or feel dissatisfied by the technology, then it affects their entire experience. Dissatisfaction is also fostered if the technology does not work the way it is supposed to, which can be frustrating for users.

Use of space in an exhibition is vital to the successful incorporation of digital technology. In order to foster connections and understand the relationship between the content
on the screen and the actual artifacts, the interactives need to be close in proximity to the objects without being distracting (Heath and vom Lehn 2010). This is why the placement of the screens at the end of the display cases, as seen in the Anchorage Museum, is so successful. The flow of visitors through the space is another factor. Interactives need to be easily accessible from every direction of approach (Heath and vom Lehn 2010). Dissatisfaction can also be caused when a patron wants to see the technology but cannot get to it, due to a group of people constantly huddled around the piece of technology (Heath and vom Lehn 2010). The interactive should be interesting and captivating, but should still have a distinct ending, so people know when to move on.

**Open Storage and Interactive Screens in Vancouver, Toronto and Buffalo**

Open storage exhibitions are a unique use of space in museums. Open storage is not a completely revolutionary idea. As previously mentioned, cabinets of curiosity and early museums worked with an open storage design as the collectors wanted to show as many of their objects as they could to the visitors (FIG 1). As time went on and narratives became more important in exhibition design, fewer objects were displayed so that a particular story could be told (Institute of Museum Ethics 2009). However, museums are the caretakers of hundreds to thousands of objects. Only a very small percentage of these objects are available to the public. Open storage has become a more popular solution to this issue. With open storage more objects are able to be shown, usually arranged in large cases or drawers, and often arranged by culture of origin. There is no specific narrative to guide the visitors on a certain path, rather they are free to explore the objects on their own terms (Institute of Museum Ethics 2009).
Due to a focus on showing as many objects as possible, labels are kept to a minimum for information. Usually restricted to the title of object, date, culture, accession number, and credit line, there is often little narrative or opportunity for more information. The audience is able to see more objects but the narrative is lost as is much of the opportunity for more information about the different objects. This is where new media offers an opportunity for more engagement with the objects, as technology can assist in making information about the objects and their cultures readily available (Bautista 2014). Technology can also make the information available in a more engaging way to visitors rather than simply reading text from a label or a screen. Making information obtainable this way is also a more inclusive way of presenting information. These screens can have the text size much larger for people with visual impairments, or the screens can even read the information to the visitor. The information can also be presented in several languages, something that can’t always be achieved on a traditional text card. This can ensure that visitors from all over the world are being presented with the same experience and relevant information without a language barrier that often comes with more technical terms.

The University of British Columbia’s (UBC) Museum of Anthropology, in Vancouver, British Columbia, Canada, is an example of an open storage exhibit that utilizes technology to provide visitors with a more engaging experience. The UBC Museum of Anthropology was established in 1949 as part of the Faculty of Arts at the University of British Columbia. The department moved to a proper museum building in 1976, which also holds the Laboratory of Archaeology. The UBC Museum of Anthropology underwent renovation in 2010 and opened a new Gallery of Northwest Coast Masterworks in 2017 (University of British Columbia 2018). As a university museum, the UBC Museum of Anthropology uses its collection in the
educational and research environment of the University of Vancouver. Part of their mission is understanding the place of and engaging in a dialogue with the culturally sensitive materials in their collection (University of British Columbia 2018). Sensitive objects include ceremonial artifacts from other cultures that are not meant to be seen by those that do not belong to that culture. Such objects were brought to museums during the collecting craze of the 19th and 20th centuries (Schwarzer 2006). Part of the management of the UBC Museum of Anthropology’s culturally sensitive objects includes a committing to repatriation and understanding the importance of provenance.

The Museum of Anthropology displays part of their archaeological collection in open storage galleries called “Multiversity Galleries” (FIG 6). These galleries were developed through collaboration with members of the communities whose ancestors created the displayed objects. The collection is also organized according to the classification system of the community members who helped curate the installation. Artifacts are stored in glass cases designed to provide maximum visual access (University of British Columbia 2018). The objects in the cases have no labels, only inventory numbers. These galleries have multiple touch screens, “Innovative Digital Catalogue Terminals” or MOACAT, throughout the exhibit. MOACAT terminals connect to information available as online collections on the museum’s website. The homepage of the terminals has a 3D rendering of the exhibition room. Users can select the specific case with the object they wish to learn more about and a list of artifacts displayed in that case appears on the screen (University of British Columbia 2010). Allowing visitors to select cases from the 3D rendering of the actual space helps contextualize the visitor in the room and so maintains a connection to the artifacts.
Figure 6. The Museum of Anthropology open storage exhibit at the University of British Columbia, Vancouver campus. The placement of one of the touch-screens is visible between cases (Image courtesy of the University of British Columbia 2018).

Each touch screen terminal has information on different artifacts; they are specific to the cases closest to them. The interactives are placed at various points throughout the space, so that visitors are not reliant upon a single screen that is located far from the objects it represents (University of British Columbia 2010). This is an effective use of space as multiple screens support many visitors and the flow of the exhibition. Having each screen with different information also encourages the visitor to spend time at each terminal and thus learn about more artifacts in the exhibition. The screens contain information about the nearby objects.
including materials, culture, and geographic region of origin. Artifact images have a zoom function that allow visitors to study the objects in detail, similar to the screens in the *First Peoples* exhibit at the Anchorage Museum. The terminals also include a search capability that allows users to use keyword to find objects with the same name, materials, function, etc. Offering multiple ways of searching the screens inspires new ways of understanding the collection as different connections between the artifacts, other than the way they are displayed in the museum space, are discovered. Use of space in the UBC Museum of Anthropology exhibition is successful. In addition to textual information, the interactive screens also include audio and video files. The “Multiversity Galleries” also include a Presentation Circle with short, informational videos (University of British Columbia 2018). These videos provide supplemental information on the exhibition and community collaboration.

The Royal Ontario Museum (ROM) in Toronto, Ontario, Canada, is another museum that is using open storage concepts in their anthropology exhibition designs. The Royal Ontario Museum was founded in 1912 and was established in a building in 1914. The 1914 building was renovated and expanded in 1978 and then again in 2007 (Royal Ontario Museum 2018). The Royal Ontario Museum has extensive archaeological collections with world culture galleries ranging from Egypt to Ancient Greece to South Asia. In the Shreyas and Mina Ajmera Gallery of Africa, The Americas, and Asia-Pacific, on the third floor of the institution, artifacts are displayed in large, glass cases. These cases are arranged by culture, with the object labels grouped together on large labels at the bottom of the displays (Royal Ontario Museum 2018). In addition to using open storage concepts to make more artifacts accessible to visitors through exhibition design, the gallery also incorporates digital technology. However, the use
of space and digital technology in the ROM’s Africa, Americas, and Asia-Pacific gallery is not as effective as the UBC Museum of Anthropology and other open storage museum exhibitions.

The ROM gallery of Africa, The Americas, and Asia-Pacific includes multiple installations utilizing digital technology. These installations are touch-screens including supplemental, thematic information rather than more information on the specific objects in the cases. This includes audio and visual information about the cultural context of the exhibition. One is located near the Native American collections while another is located near the African cultures collections. Both of these interactive screens include videos in an attempt to provide the visitor with some cultural context for the nearby artifacts. The interactive screen near the Native American collections includes six videos, which the visitor can select from a main homepage (FIG 7). These videos include one of a donor speaking about her life and cultural practices, an example of Northwest Coast art in performance, a puppet story, a drum story, and two videos on coffins (use and fabrication). Each video has English and French subtitles, increasing accessibility for hearing impaired and/or at least one group of non-English speaking visitors. While the videos delve a little deeper into the culture from which the artifacts originated and contextualize some of the objects with cultural stories and performance, the placement of the screen is ineffective. Instead of being placed next to the Northwest Coast Native artifacts, this interactive screen is next to a case of South African artifacts (which marks the end of the wall of Native American artifacts and beginning of African culture cases). Removed from the immediate space of the artifacts whose heritage the screen is meant to expand on, the interactive installation loses its potential to enhance visitor experience and foster dialogue.
The interactive screen with content relating to the African artifacts (FIG 8) is located directly across the Native American one. This interactive, entitled “Maps, Borders and Mobility in Africa,” includes nine videos featuring different artists and activists. Like the Native American interactive screen, subtitles are available in English and French. While the videos are interesting and work to bring contemporary relevance to an archaeological exhibition, they are given no context for the exhibition, the cultures, or the artifacts. It is unclear how the videos relate to the objects other than the speakers are also African. The cases to which this interactive screen is related include archaeological and ethnological artifacts from many African cultures. The interactive screen does not provide textual context for the relation of the videos to any of these cultures and their artifacts. In this way, the relationship between the digital technology and authentic artifacts is unbalanced.

Figure 7. The homepage of the ROM’s Native American interactive screen. Each video is opened by clicking on the icons and French subtitles are activated with the “FR” icon in the upper right corner. (Image taken by Kristin Hatch, 2018).
As a compliment to the displayed artifacts, these interactive screens are not very effective. Videos are an effective learning tool and foster audience engagement through a dynamic format (Gammon 2010). However, the videos are included on the screen without any context. In this way, this digital installation is more of a technology-driven spectacle than an effective engagement tool. There is no textual information on the objects or on the significance of the videos. This lack of information makes the connection between the content on the
screens and the objects in the exhibition difficult. The videos exist in isolation and therefore are less likely to make an impact on the visitors.

A final example of open storage utilizing digital technology and interactive screens is found at the Buffalo Museum of Science. The Buffalo Museum of Science, in Buffalo, New York, was established in 1861 with the formation of the Buffalo Society of Natural Sciences. In 1929, the Society moved into the building that is now known as the Buffalo Museum of Science. Since 2010, the Museum has been renovating all of its major permanent galleries, including their anthropology exhibit (Buffalo Museum of Science 2018). Now featuring an open storage design, the Museum’s anthropology exhibit, *Artifacts*, is a successful use of space and engagement with digital technology but is problematic in certain aspects. *Artifacts* is not designed to keep artifacts from the same culture together but rather follows a thematic design. Displaying artifacts by theme, such as musical instruments or burial objects, inspires cross-cultural comparisons and new ways of understanding human aesthetics and knowledge. This exhibit incorporates multiple examples of digital technology including a touch screen with object information, video screens, an email hieroglyphic message computer, and a game to identify musical instrument sounds. These interactive installations are placed at various points throughout the gallery, so the visitor does not feel overwhelmed by the presence of digital technology within the exhibition. The exhibition also makes use of interpretive labels to foster participation from visitors through text as well as new media. While the interactives are fun and entertaining they are also ineffectual to some degree. The discussion here will focus on the touch-screen interactive at the beginning of *Artifacts*.

*Artifacts* opens with a large, rectangular case centered between the two entrance doorways (FIG 9). This case contains artifacts from all cultures but does not focus on any
particular theme the way the rest of the exhibition displays do. There are two touch screens spaced out evenly in front of the large case. Similar to the UBC Museum of Anthropology, each screen contains information on the objects in their half of the case. Culture of origin, date (if known), and other basic information are provided when users select an object for further information. In addition to this standard metadata, digital artifact files elaborate on cultural practices associated with certain objects such as ceremonial information. High resolution artifact images are also included on the screen. A zoom function makes the artifacts more accessible as details that are difficult to notice from behind the glass are made apparent through the use of digital technology. This function points out certain features of the artifacts as text on the screen directs visitors to highlight certain areas of the objects. Maps of the object’s country of origin are also included in the digital artifact file, expanding on the visual context of the artifact and culture. All of these elements on the digital screen make the exhibit more engaging than if the visitor had only had small text labels. Expanding on cultural context, artifact materials, and providing high resolution images are ways to work toward the democratization of knowledge by making the artifact more accessible to the visitor. However, the placement of the screens directly in front of the objects draws the viewer’s attention away from the artifacts and to the technology. This makes the technology more of a spectacle and negates its intended use to scaffold the viewer’s understanding of the object itself.
Figure 9. The Buffalo Museum of Science *Artifacts* exhibit featuring an open-storage layout. This image illustrates the placement of the touch-screens within the exhibition (Image courtesy of the Buffalo Museum of Science 2016).

**University at Buffalo’s Anderson Gallery**

The University at Buffalo (UB) in Buffalo, New York, is the home of two art galleries—the UB Art Gallery and the UB Anderson Gallery. The UB Art Gallery, located in the Center for the Arts, supports emerging artists in the creation and exhibition of their works. This institution also focuses on temporary exhibitions that examine cultural and political topics influencing the current art world. The UB Anderson Gallery focuses on the education, research, and maintenance of The University at Buffalo’s permanent collection. Located at 1 Martha Jackson Place near UB’s South Campus, the Anderson Gallery is an integral part of the University community and a major contributor to research and education. The Anderson Gallery collaborates with University classes in the Arts Management and Museum Studies
programs, other cultural institutions, and the surrounding community with a variety of programs. A May 2018 exhibition, Classroom Conversations, incorporated University at Buffalo graduate student research and collaboration with Highgate Heights Elementary students (Johnson 2018).

**Historical Background**

The Anderson Gallery is located in a renovated elementary school, once part of the Buffalo Public Schools system and originally called Public School 83. The building itself was built in 1931. In 1991, David K. Anderson converted the school into an art exhibition space. David K. Anderson is the son of Martha Jackson (1907-1969), a prominent gallery owner in New York. Anderson studied business at the University at Buffalo while working at his mother’s gallery in New York City (University at Buffalo 2018). He began business as an art dealer in 1959, specializing in abstract expressionist prints. In 1961, Anderson opened a Paris gallery before returning to run the Martha Jackson Gallery in 1969 (University at Buffalo 2018). Anderson ran the institution as a commercial gallery until 2000 when he donated the building to the University at Buffalo.

There are three major collections at the Anderson Gallery- the David K. Anderson Collection, the Martha Jackson Gallery Archives, and the Cravens Collection. The David K. Anderson Collection is comprised of over 1,200 works of art from the private collections of David Anderson and Martha Jackson. Some of the artists represented in the collection include Joan Mitchell, Norman Bluhm, Michael Goldberg, and Paul Jenkins (University at Buffalo 2018). The David K. Anderson Collection also includes a significant collection of works on paper. The Anderson Gallery is additionally the repository of the Martha Jackson Gallery.
Archives, which document the Martha Jackson Gallery and its artists from 1952 to 1969. In addition to the Martha Jackson Gallery Archives, the Anderson Gallery also cares for the archives of Allan D’Arcangelo (1930-1998), a pop artist and UB alumnus (University at Buffalo 2018). The third collection at the Anderson Gallery is the Annette Cravens Collection, the focus of this project.

**The Cravens Collection**

Annette Cravens (1924-2017) was a Buffalo native and daughter of Dr. Edgar McGuire, a student of Dr. Roswell Park and a professor of surgery and medicine at UB (Buffalo News Staff 2017). Annette Cravens taught at the East Side Settlement House in New York City before returning to Buffalo and eventually becoming a social worker at Children’s Hospital. Cravens traveled extensively for nearly 40 years of her life, gathering archaeological and ethnographic objects from all over the world. Cravens was also an artist, one of her paintings is included in the Burchfield Penney Gallery collection (Buffalo News Staff 2017).

Annette Cravens donated a major collection to the Anderson Gallery that includes more than 1,100 ethnographic and modern art objects spanning 6,000 years and hundreds of cultures. Some of the art works were created by local artists, while the majority was gathered by Cravens from her world travels. The University at Buffalo acquired Annette Cravens’ collection in 2009 (Biehl and Harrison 2012). The Cravens Collection is the focus of an innovative exhibition space in the Anderson Gallery, known as “Cravens World: The Human Aesthetic” which opened in 2010. The exhibition is an alternative design for open storage that features a central globe (FIG. 10), designed by Mehrdad Hadighi formerly of the UB School of Architecture. The globe is a circular shape made of rectangular cases stacked on top of each
other. The cases are completely made of glass which allows the visitor to appreciate the artifacts from all angles. A break in the circle allows the visitor to walk inside of the globe, making the objects even more accessible to observation. Cases begin at the floor and reach toward, but do not touch, the ceiling. The artifacts are arranged outside the usual cultural designations and organized within six cross cultural themes: storage vessels, masking tradition, human figure, ritual, status and prestige, and personal adornment (Biehl and Harrison 2012). The objects are arranged in this manner to encourage visitors to make aesthetic comparison between the artifacts rather than simply understand them surrounded by objects all from the same culture. The globe was intended to let visitors look at the objects without bias. In addition to the central globe, artifacts are arranged in cabinets with glass fronts along two of the room walls. Under the cabinets are drawers that visitors can pull out to study more objects. The cases and drawers are arranged thematically by continent of origin.
The Cravens Collection is used extensively in collaboration with the University and in K-12 educational programs. K-12 field trip groups have developed curricula to align with the New York State educational standards (Biehl and Harrison 2012). Graduate students in the University at Buffalo’s Arts Management, Critical Museum Studies, and other programs utilize the gallery space and collections in classes. Educational programs with the Cravens Collection are designed to be hands-on and to explore different ways of using museum objects for learning experiences (University at Buffalo 2018). For example, UB Critical Museum Studies students contribute to the research of the objects in the collection with an annual exhibition of selected Cravens Collection objects. Objects are also selected to be photographed, researched, and 3D scanned in order to further the study of the collection and deepen knowledge of it. Another goal of the Anderson Gallery is to use the Cravens Collection as a place for collaborative encounters and engagement with a wide variety of audiences (Biehl and Harrison 2012).
The Cravens Collection is primarily an archaeological collection. It includes objects ranging from masks to ceramics to figurines and statues representing cultures from all over the world. The Collection’s place as an archaeological collection in an art gallery is interesting. Many artists, such as Pablo Picasso, have been influenced by archaeological collections and cultural artifacts. Increasingly, the Anderson Gallery is working to integrate the archaeological artifacts into the art gallery space. One example was the 2017 exhibition, *The Language of Objects*. In this exhibition, artists used a selection of African masks as the inspiration of new artworks and a dance performance that took place in the Anderson Gallery. Exhibitions like this one highlight the continuing influence of historic objects on contemporary art and performance.
Proposal for Cravens Collection Digital Screen

The Anderson Gallery is undertaking a project to continue to build and improve the Cravens World exhibition. Part of this project includes the design and installation of an interactive digital screen in the exhibit to give visitors better access to and a better understanding of the objects. Previous work has already been done on a digital screen for the Cravens Collection exhibition. One of the first iterations of the interactive screen included a homepage with a map of the world. The map allowed visitors to click and explore different regions and the artifacts originating from those regions.

A second project for an interactive screen was for a touch screen installed with one of UB’s Critical Museum Studies annual exhibitions in 2016. This interactive included a small-scale example of what the Cravens Collection touch screen could include. This interactive device was designed by a former student of the Critical Museum Studies program using a website builder. The project includes a home screen with links to five subsections—“Discover”, “Education”, “Research”, “Media”, and “Comments” (FIG 12). Presented information includes the history of the Cravens Collection and Annette Cravens, educational uses of the collection, and some object information. While the format is accessible and user-friendly, and the device includes excellent information, the content may be more appropriate for a website than an interactive in the gallery. Too much information is included in this design for an effective interactive. Some historic background on the collection and Annette Cravens is beneficial, however, this type of information should be kept minimal. Additionally, information on how the collection is used in educational programming is unnecessary as it only applies to a specific group of people and not the general public. For an interactive in the gallery space, the focus should be on the objects and getting the visitor to engage in a dialogue about them, both
internally and with the other visitors. The main aspects to include in the interactive would be information about the object, culture of origin, function of the object, and artifact images. Videos are a helpful inclusion that can provide artifact information in an alternative format from text.

Figure 12. Screenshot of the homepage of the previous Cravens World interactive. (Designed by Rory Skylar 2016).

Currently, Cravens World is designed to show as many objects as possible. The objects have no labels, only numbers that refer to a catalogue, which is available to visitors on the windowsill of the room. The catalogue is a binder with pages that include images, where available, of the objects in the Cravens World and information on their country of origin and time period. The catalogue is an attempt to provide information on the objects without interrupting the flow of display within the exhibit. However, there are many issues with this form of catalogue. It is awkward for users and difficult to walk back and forth between the
catalogue and the numbers associated with the objects the visitor is interested in learning more about. This takes away from the experience of the space as the visitor is flipping through pages to find information. It is also a poor use of the visitor’s time in the gallery.

A digital screen has the potential to enhance the Craven World exhibit. It would be able to allow visitors to browse through the objects to get more information about when they were made, where they came from, and who made them. The design for an interactive screen for the Cravens Collection considers standard design element found in other, similar open storage
exhibitions as well as the potential of other types of information for inclusion. Cultural context should be an important aspect of provided information. While the Cravens World globe attempts to bridge cultural boundaries by focusing on the aesthetic of the objects, it is important to ground the objects with information about the cultures that they originated from. Historically, objects from European cultures were researched thoroughly while objects from non-Western cultures were collected without much context given and sometimes with incorrect or inaccurate information. Working to correctly document and catalogue artifacts from all cultures is an important undertaking.

The Anderson Gallery is currently exploring implications of the use of 3D scanning with the Cravens Collection. Laura Harrison, former curator at the Anderson Gallery, has been working to create 3D models of some of the artifacts in the Cravens Collection. The current director of the Anderson Gallery, Robert Scalise, envisions utilizing these, and future models, in the Cravens World exhibition with the touch-screen interactive. 3D models have the potential to further engage the audience as visitors can touch and handle these models. Other museums have also been exploring the use of 3D models to elaborate a virtual or interactive exhibition (Tucci, Cini, and Nobile 2011). The inclusion of these models with the interactive screen adds another layer of information. There are also important educational implications as the actual artifacts cannot be handled by visitors but the models can.

University museums, such as the Anderson Gallery and the UBC Museum of Anthropology in Vancouver, are in a unique position in that they are directly tied to a learning community. University museums have the advantage of having access to the latest information and research on the objects within their collections, as well as passionate students with fresh ideas and insights. Digital technology can foster the connection of this information to the
museum, and so to the public, because it is more adaptable and changeable than traditional labels and text panels. It is much easier to update and revise data on a digital screen and in a digital database than it would be in traditional methods. This has the advantage of collaboration with University at Buffalo students, as they can build and interact with the collection by contributing research.

Design

There are currently more than 600 artifacts on display in the Cravens World: The Human Aesthetic exhibition. Objects are stored within the globe as well as in cabinets and drawers around two of the outer walls. On the wall directly next to the doorway, there is a display of weapons from various cultures. The touch screen is currently located on the wall with the windows, where there are no other objects housed but can still be seen from the display so that people will know to go there for additional information. From standing near the touch screen, visitors still have a good view of the objects in the globe and one of the walls of cabinet cases. In this way, the touch screen is in a good location as it does not distract from the objects and is in a location where visitors can linger and explore the information on the screen without feeling in the way of others in the exhibit space.

Currently, the screen is hanging with the center at 60 inches from the ground (FIG 14). This follows the museum standard for hanging artwork. However, hanging the screen at 60 inches places it above the reach of many visitors. The interactive screen should be treated, in terms of placement, as a text label rather than an art installation. Labels are placed in a location accessible to most visitors and so should an interactive screen. In the above examples from the Anchorage Museum, University of British Columbia, Royal Ontario Museum, and Buffalo
Museum of Science all of the interactive screens were placed below the standard 60 inches eye-level. Relocating the Cravens Collections screen from the wall to a pedestal or floor mount allows better accessibility for all visitors. The screen would then be at a better height for children to use it but would also be angled upward for adult visitors to use as well. This screen placement is also better for accessibility to those visitors in wheelchairs. It is important that the mounted screen is not placed in a way that the user’s back is facing the objects in the room. Placing the screen in a location that forces the visitor to turn their back to the objects isolates the technology from the artifacts. Connection between the interactive and the artifacts is lost. In contrast, setting the screen in a location that keeps the user facing the objects maintains the connection between the information on the screen and the artifacts on exhibition. From this viewpoint, the user can still look up and glance between the digital representation and the authentic artifact (except for those inside of the drawers).
Figure 14. The current placement of the touchscreen in *The Human Aesthetic* exhibition. This image demonstrates the screen above the eye-level of the children using the screen (Image courtesy of the Anderson Gallery, 2016).

The Anderson Gallery has a diverse visitor demographic. The Gallery has visitors including K-12 public and private students, college-aged students, as well as adult and older adult visitors from the surrounding community. It is important to include information on the touch screen that will be interesting for and engage with this wide range of visitors. A primary objective of the screen is to relay information; however, it is vital to make sure there is something interesting for younger visitors due to the collaboration of the Anderson Gallery with area K-12 schools. However, as a gallery connected to higher education institution, the text and content of the Cravens Collection interactive screen should reflect the scholarly tone of the university. Museum exhibitions and displays should represent the work of the university (Kim 2007).

Part of being at the cutting edge of research and knowledge-base is being transparent about these findings to the public. Considering the public nature of museums and the common belief that the collections are for the benefit of everyone, it is the responsibility of the museum, especially a university museum, to be transparent with their collections. As previously mentioned, when museums first began collecting, there was often a lack of evidence that the objects were acquired legally (Schwarzer 2006). Including provenance information on the artifacts would not only offer insight into a part of a museum’s collection that is not usually part of text labels but would also engage the visitor in a dialogue. This would not be possible for every object because details on the provenance of some of the objects would be difficult to
find but is valuable where possible. The visitor would begin to think more deeply about the connection around them and make a connection with a larger issue.

Important design elements, other than the specific content, include use of sound and style of the text on screen. Including short videos make the content more dynamic and give the visitor a break from reading text. Younger visitors, who tend to have a shorter attention span than older ones, also are more likely to enjoy short videos. The style of the text on screen is about accessibility for visitors. Additionally, scrolling is frustrating for visitors. If all of the information does not fit on a single screen, then a button to a new page should be included rather than having a scroll bar (Gammon 2010). This element is something that also appears in website design, which advises against excessive scrolling on website pages. Website design concepts are applicable to designing an interactive touch-screen for object information as the format of the two digital technologies is similar. The goal of both is to make a user-friendly interface that is eye-catching and makes text, images, and videos accessible to a wide audience.

Homepage and Artifact Metadata

The Cravens Collection interactive screen begins with an introductory page “The Cravens Collection.” This page includes brief historical information about the collection and the mission of the Anderson Gallery to use the collection as an educational tool and resource and the collaboration with the University at Buffalo students as well as K-12 students (FIG 15). This page would also act as the default page for the screen. If the screen is not in use for an extended period of time, this screen should automatically reappear so the next visitor can start at the beginning. Below is an example of introductory text for the opening screen:
Welcome to the Cravens World! This collection came to the Anderson Gallery in 2009 as a gift from Annette Cravens. Ms. Cravens traveled extensively for nearly 40 years of her life, gathering archaeological and ethnographic objects from all over the world. Her collection is used as an educational tool for programs with K-12 schools as well as with the University at Buffalo. Educational programs with the Cravens Collection are hands-on and explore unique ways of using museum artifacts for object-based learning.

You are standing in an innovative open-storage space, surrounded by objects from the Annette Cravens Collection.

Here you will find access to thousands of artifacts spanning 6,000 years of world art history. Scroll through the pages into new cultures as you discover information about the artifacts on display around you. Explore by clicking on images of artifacts or search at the top for a theme or material you are interested in.
Figure 15. Design proposal for the Cravens Collection introduction screen. The boxes in the
top corners represent images of objects while the bottom rectangle represents an interactive
arrow that leads to the next page. (Wireframe created by Kristin Hatch using

The touch screen would need a main page and a navigation bar or button for visitors to
return to the main screen. The main page would also indicate that the information is available
in Spanish and French as well. This will provide accurate understanding to visitors from other
countries as well as a sense of inclusion for the many Spanish speaking students found in the
area schools as well as French speaking refugees from Caribbean and African nations that now
call the Buffalo area their home.

The homepage/main page of the touch screen needs to offer the visitor a way to
explore the room and select the object they are interested in. Using the Anderson Gallery’s
collaboration with Jim Dailey, Coordinator of Technology Services Staff and Curriculum
Development of Erie 1 Board of Cooperative Educational Services (BOCES), is one way to
accomplish this. Through this collaboration, a 3D scan of the Cravens Collection exhibition
room was created. Incorporating this scan into the Cravens Collection interactive would make
an interesting and engaging homepage. A similar example is found at the University of
Vancouver’s Museum of Anthropology, as discussed in the Open Storage and Interactive
Screens in Vancouver, Toronto, and Buffalo section above, with their 3D rendering of their
Multiversity Galleries (FIG 16, University of British Columbia 2010). Visitors could pan
around the scan to view the scan of the room and click on the object they want to learn more
about. The ability to zoom in on the scan is essential to usability. A zoom function ensures that
the user will select the correct object. This is particularly important in the case of the globe,
where many objects are stored close together, and for the drawers, which are stacked on top of each other. Incorporating a scan of the room, rather than using a map like the prior interactive screen design, contextualizes the collection within the actual space of the museum. Clickable images of the four points of object storage in the room (the globe, two walls with cabinets and drawers, and the wall with weapons) can be used as an initial homepage until the 3D scan is made available to use in this capacity.

![3D rendering of the University of British Columbia’s Museum of Anthropology.](image)

Figure 16. 3D rendering of the University of British Columbia’s Museum of Anthropology. This is used as the navigational page for their exhibit interactive terminals (University of British Columbia, 2010).

On these images, the visitor can select the object they wish to know more about. The object file would then be pulled onto the screen. In the case of the cabinets and drawers, the visitor can select which cabinet or drawer they are interested in exploring and a list of objects included in that display would be pulled up. From there, the visitor can select the specific
object they want to see the file for. In the upper left corner of each object file page is an arrow to return to the previous level page- either the homepage or the list of objects within the cabinet or drawer. A search capability, similar to the one used at the University of British Columbia’s Museum of Anthropology, is included on the homepage. This allows visitors to type in a key word and pull up an object list of artifacts that are related to the word searched. With this function, new connections are facilitated between objects outside of the way they are currently displayed.

Each artifact page contains an object ID number, the title of the artifact, culture, country and continent of origin, materials, dimensions, and provenance. These metadata are those that typically appear on traditional printed labels. To move beyond a traditional label, additional elements such as images, maps, a detailed object description, and videos will also be included for artifact files (FIG 17).
Figure 17. Example of design for object pages in the touch screen. The top left image is one of the artifact while the bottom left image represents where the culture area map would go. Attributes of object ID, materials, country of origin, culture of origin, and measurements are listed under object name. The bottom of the page includes the artifact description. If needed, an arrow leading to a second page can continue the description (Wireframe created by Kristin Hatch, 2018).

Images of each artifact will be included on each page as well as a map of the country of origin. The images should be able to be enlarged, similar to the images on the screen at the Buffalo Museum of Science Artifact exhibition and at the Anchorage Museum (FIG 18). Allowing visitors to pan and zoom in on high resolution images fosters new connections as details unable to be noticed from behind glass are more accessible in the image on the screen. This is also as engaging feature for younger visitors. In the case of indigenous cultures, a map of traditional cultural area outside of current country borders will be included as well (FIG 19). The inclusion of culture area maps rather than country maps reflects different world understandings and better represents objects of indigenous cultures. The description section offers the most opportunity for engagement and growth.
Figure 18. Example of the zoom capability from the Anchorage Museum First Peoples interactive screen (Image courtesy Anchorage Museum 2018).
Figure 19. Example map showing the Baule cultural territory in central Cote d’Ivoire. This is an example of depicting traditional cultural boundaries as well as arbitrary country borders. (Vogel 1991).

Additional Artifact File Elements

Most of the objects in the Cravens Collection do not have a strong description with the object. This is due to lack of documentation at the time of collection, as discussed above. Many of the artifacts in the Cravens Collection have significant functions within the culture of origin that have been lost or are not articulated in the current object files. Ideally, the description for each object would include a discussion of the function of the object and its significance to its culture. Included below is an example of the type of description to be included in the artifact files. This example is for an African mask, object ID 2380, shown in Figure 20. The example text for ID 2380 would read:
This mask originates from the Côte d’Ivoire, or Ivory Coast, in West Africa. It comes from the Baule people; whose territory makes up most of the country’s central region. The Baule culture use masks in a variety of dance performances and ceremonies. Masks for a type of Baule performance known as *Goli* are often painted. In this mask, one of the most striking features is the color—red is clearly visible. A special type of clay, called kaolin, was used in the paint, making it glossy. *Goli* performances feature dancers wearing costumes along with the masks. The holes around the edge of the mask are part of a costume; clusters of straw or grass would protrude from these holes while the mask was being worn.

Another notable feature of this mask is its asymmetry. The Baule carved masks to represent specific, prominent people in the village. The mask’s asymmetry reflects the fact that real faces are not perfect. Another personal element of this mask is the hair represented at the top of the mask. Each Baule mask has a unique hairstyle, again highlighting the fact that each mask represents a specific person. However, other features of the mask represent stylized or idealized features present in other examples of Baule masks. The high, arched eyebrows, long, skinny nose, and closed, small mouth with carved designs on either side are consistent elements of similar masks in the Baule culture. Thus, Baule masks are a combination of stylized and individual features (Hatch 2017).
Building descriptions for each object on display in the Cravens World exhibition is an opportunity for a collaborative project between the Anderson Gallery and surrounding students in the community. As aforementioned, there are more than 600 objects on display in the Cravens Collection exhibition. To be able to give proper descriptions for the artifacts on display, research needs to be done on each object in the exhibition. This may seem like a daunting task, however, it presents an interesting opportunity for interactivity at a behind-the-scenes level for the Anderson Gallery. Students in the University at Buffalo’s Critical Museum Studies are already contributing to object research in their coursework creating an annual exhibition at the Anderson Gallery. This project can be expanded to include research interns at
the gallery, perhaps opening the opportunity to universities outside of the University at Buffalo and including students from the surrounding community with an interest in museum work.

A similar collaboration between Erie 1 BOCES and the Darwin Martin House, a Frank Lloyd Wright architectural complex in Buffalo, NY, developed a junior docent program. A curriculum was developed using Common Core Learning Standards. The end result was students from Heritage Heights Elementary School in the Sweet Home Central School District leading tours of the Darwin Martin House complex. The students were the experts during the tours (Erie 1 BOCES 2017). While student-led tours cannot help an interactive, the collaborative curriculum has interesting implications for creating the object descriptions on the touch-screen. Developing a curriculum with surrounding schools to conduct object research is an opportunity to engage the community with the Cravens Collection and the Anderson Gallery. This type of collaboration is also important in fulfilling the Anderson Gallery’s role as a university museum, where education is the major mission. Student collaboration builds a strong connection to the artifacts and pushes past the technology-driven spectacle. The digital technology is not a distraction but represents the culmination of student work from a hands-on learning experience. Including student research on the interactive screen would help build a community and dialogue around the Cravens Collection by giving students, and their families, a sense of ownership and purpose in the creation of content.

In some cases, a thorough description of the object might not be possible even after researching. Provenance information might be scarce or information on the specific type of artifact is simply limited or nonexistent. If this occurs, a brief discussion of why a description is not available should appear on the artifact page to engage the audience with why information may be missing instead of simply moving on. This type of text opens a discussion
that moves beyond the artifact and introduces concepts of how and why artifacts came to museum collections as well as lost knowledge of original contexts. Below is an example text in the case of lack of information on researched objects:

Museums and galleries strive to document each of their artifacts as they take responsibility to care for and protect thousands of examples of human cultural history. However, in the early days of museum collecting, proper documentation of objects cultural history did not always take place for a variety of reasons. Mainly, we did not yet understand how important documentation and object research was. This is the case for some of the artifacts in the Cravens Collection.

A final element to be included on the some of the artifact pages is an expansion on provenance information. This would include information on those artifacts that may need to be repatriated under laws such as the Native American Graves and Repatriation Act of 1990 (NAGPRA). NAGPRA was passed by the United States Government in an effort to regulate the collection and trade of Native American artifacts. A provision of this legislation revolves around Native American remains and artifacts already in museum collections. Museums are required to make a list of Native American cultural objects available and take repatriation requests seriously. Including text on what is often a controversial topic demonstrates the Anderson Gallery’s acknowledgment of its role as a university museum to democratize knowledge and engage with all aspects of a research project. The Museum of Anthropology at the University of British Columbia strives toward a similar dedication to repatriation and dealing with culturally sensitive artifacts. These pages would also offer a chance for dialogue on a topic not often openly discussed within an exhibition. Not all objects would have
repatriation issues but for artifact files where the inclusion of this information is possible, a link to the provenance information will be included by letting the user click on “Provenance” in the list at the top of the object file page. The word would be highlighted to let the user know there is something else to explore and that the word leads to another page.

Design examples from other institutions highly suggest the inclusion of video or use of sound with an interactive (Gammon 2010). The use of sound helps to engage more visitors and makes the interactive more dynamic. Supplemental material on the cultures of origin, examples of the artifacts in use, and the creation process of the objects can be made available through videos. In the case of indigenous artifacts, videos of contemporary craftsmen and artists contextualize objects in modern times. This type of information also widens the dialogue around the exhibition by expanding the knowledge base and information made available to the user. In the example of the Baule mask mentioned above, a video about the Baule people or about their process of woodcarving/mask making would be appropriate. For ceramic objects, a video about the cultural specific ceramic making process would be beneficial.

All of the aforementioned design elements come together to make a comprehensive interactive screen for the Cravens Collection. Table 1 offers a summary of elements to be included in Cravens World: The Human Aesthetic touch screen. These elements incorporate object research, high-resolution images, and opportunities for collaborative experiences tied together in an interactive screen. Put together, the balance of technology and authentic objects is maintained in the Cravens Collection as the interactive screen provides opportunity for engagement and dialogue. Not all of these design elements will be available at once, but they
can be added as they become available to the Anderson Gallery. Adaptability is a major attribute of digital technology.

Table 1. Summary of design elements to be included in the Cravens Collection interactive screen as they become available to the Anderson Gallery.

<table>
<thead>
<tr>
<th>Element</th>
<th>Description</th>
<th>Availability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mount</td>
<td>Mount for screen that brings it to a lower level and increases accessibility</td>
<td>Screen currently mounted on gallery wall</td>
</tr>
<tr>
<td>Welcome Page</td>
<td>Default screen/screen saver with brief historical information on the collection</td>
<td>Information currently available to gallery</td>
</tr>
<tr>
<td>Homepage</td>
<td>3D scan of the room with images of the objects clickable that lead to artifact files</td>
<td>Information currently available to gallery</td>
</tr>
<tr>
<td>Metadata</td>
<td>Object ID, title, country/culture of origin, dimensions, credit line</td>
<td>Information currently available to gallery in artifact files</td>
</tr>
<tr>
<td>Object Description</td>
<td>Detailed description of object including function and cultural importance- incorporates student research</td>
<td>Some information currently available to gallery in artifact files and existing student research; project to include further research</td>
</tr>
<tr>
<td>High Resolution Images</td>
<td>Object images that are able to be zoomed in on allowing for further study of details on artifact</td>
<td>All objects currently have images</td>
</tr>
<tr>
<td>Culture Maps</td>
<td>Map that includes not only country boundary but traditional cultural area of the culture of origin</td>
<td>Information available; maps need to be designed for culture areas and inclusion on screen</td>
</tr>
<tr>
<td>Videos/Audio</td>
<td>Supplemental material on culture of origin, seeing similar objects in use, creation process of objects etc.</td>
<td>Information to be gathered for inclusion on screen</td>
</tr>
<tr>
<td>Provenance Information</td>
<td>Discussion of repatriation efforts, if any, and of the idea of culturally sensitive material</td>
<td>Information currently available to gallery in artifact files; repatriation research needed</td>
</tr>
</tbody>
</table>
Table 1 continued. Summary of design elements to be included in the Cravens Collection interactive screen as they become available to the Anderson Gallery.

<table>
<thead>
<tr>
<th>Element</th>
<th>Description</th>
<th>Availability</th>
</tr>
</thead>
<tbody>
<tr>
<td>3D Scans</td>
<td>Replaces standard artifact images with scans that can be zoomed, panned, and present a highly detailed view of the artifacts</td>
<td>Scans exist for some artifacts; more work needed on scans of the collection</td>
</tr>
<tr>
<td>Languages other than English</td>
<td>Translation of the information into Spanish and French</td>
<td>Translation needed for information currently available to gallery</td>
</tr>
<tr>
<td>Research</td>
<td>Collaboration with students from UB and surrounding schools for object research</td>
<td>Curriculum and projects involving students to be developed</td>
</tr>
<tr>
<td>3D Models</td>
<td>Models of objects as supplemental material with the touch-screen</td>
<td>Scans exist for some artifacts; more work needed on scans of the collection</td>
</tr>
</tbody>
</table>

Conclusion

In an increasingly digital age, it is imperative to think about the place that technology may take within various cultural institutions. In the case of museums, this is particularly important. Many museums utilize technology in highly successful ways. Technology has a great advantage of making information available in ways that it never was before. For example, the use of 3D scanning and photogrammetry is accomplishing great feats in the fields of cultural heritage management and can be used by museums to study objects. In the museum space, 3D prints of objects have the potential to further visitor experience, as these would be a version of the authentic objects that people could touch and handle.

Finding the right balance between technology and artifacts is dependent on the available resources, space, and mission of a museum. Technology is a valuable resource to
museums and used correctly it democratizes knowledge and enhances visitor experience. Visitor experience is diminished when the technology overwhelms artifacts by lack of appropriate content or poor physical placement. Use of space in an exhibition is vital to the successful of a technological interactive. Knowledge is democratized through technology’s ability to provide more information to visitors than standard text labels. Information that was not available to the public before, such as in-depth cultural information and provenance information, is accessible with the inclusion of technology. Additionally, when museums and galleries work collaboratively with members of the community, the authoritative voice of the museum wanes as the public sees their own impact on the knowledge presented in the institution. Particularly in university museums, such as the Anderson Gallery, technology can be used to keep the visitors up to date with the latest research about the objects and so engage on a deeper level with the institution and its collections.

An interactive screen in the Anderson Gallery provides an opportunity to use technology to further engage the audience with an archaeological collection. Including basic content such as object title, country and culture of origin, date of origin materials, accession number and dimensions as well as deeper content on the culture of origin and the use of the objects will complement the open storage display by giving visitors who want more information the chance to dig deeper. This is also a way to collaborate with the work of students into the exhibition as research by University at Buffalo students can be incorporated into the interactive screen. Interactivity in the Cravens World can be further developed by building a dialogue around the exhibition. This can be done by including information such as provenance and repatriation attempts into the files of certain objects.
Finding a balance of technology within an exhibition is invaluable. This balance revolves around content design and use of space in the exhibition. Additionally, balance comes from bringing dialogue into an exhibition through unique content, engaging with contemporary issues, and involving the community in a collaboration with the museum and exhibition space.
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The Charleston Museum

Cleveland Museum of Art

Field Museum

Harvard University

Royal Ontario Museum

The Tang Museum

University of British Columbia

University at Buffalo