

HATS, CAPS, AND HEADDRESSES: HEADPIECES

FROM AROUND THE WORLD

A Thesis

Presented

to the Faculty of

California State University, Chico

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Master of Arts

in

Anthropology

Museum Studies Option

by

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Spring 2018

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ABSTRACT

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In the past 20 years, the Internet has become one of the most important tools for Americans in everyday life. The increase usage of the Internet has made it imperative for museums, of all sizes, to not just look into, but to use the Internet as a source for sharing information. In recent years, developments in technology, software, and online programs have made it much easier and cost effective for small museums to venture into the World Wide Web and create state-of-the art websites, online exhibitions, and interactives. Sharing information and providing another source of education outside of the museum's four walls are in line with the ideals of critical museum theory, which champions the engagement and development of visitor relationships through transparency, democracy, and communication. In order to show that it is possible for small museums to create online exhibitions, this thesis project oversaw the development and completion of *Hats, Caps, and Headdresses: Headpieces from around the World*, an exhibit on various head-

pieces from for the Valene L. Smith Museum of Anthropology. The pieces used in this online exhibition were from the CSU, Chico anthropology department. By applying the case study of the Valene L. Smith Museum of Anthropology, this thesis project aims to show how small museums can create online exhibits with minimal cost through the use of inexpensive programs and user friendly tools and technologies. Through the completion of this project, this thesis proposes that small museums should not neglect the tools available to them online because the opportunity to create programs and engage with the public through shared information is too great to be ignored.

CHAPTER I

INTRODUCTION

The Study

Today's society is increasingly becoming dependent on the Internet. Because of this, it is imperative for museums, in particular small museums, to go online and meet the demands of the public through virtual exhibits. Small museums have, for a very long time, struggled to continually adapt and implement advancements in technology. This is not for a lack of trying, but rather, small museums often suffer from lack of funds, staff, and time. Without these three things, many small museums have not been able to create the types of online programs that large and medium-sized museums are developing. As technology continues to evolve, advances in software and competition among programs will prove to be beneficial for small museums. Small museums can now create websites, virtual exhibits, and online interactives for a minimal cost.

A quick Google search of online exhibits produces hundreds of thousands of options, but none of the top results are from small museums. This shows that, while large museums are at the forefront of online development, small museums are not. Creating an online exhibit, no matter the size of the museum, involves time, funding, staff and other resources that often deter small museums from creating virtual exhibits. In recent years, website builder programs have sprouted with different functions and abilities. Many of these programs are free and require no prior knowledge to coding. Because of such programs, one person can develop an online exhibit with limited funds.

One of the newest technologies to enter the museum realm is three-dimensional 3D imaging. Three-dimensional imaging gives objects a virtual model that many can enjoy looking at and inspect thoroughly. There are free programs available to help create 3D images, but there are also programs that are relatively inexpensive to purchase that can help create very accurate images. Three-dimensional images give museums the option to introduce interactives to the online community. With 3D images, visitors can have a unique experience with an object in the comfort of their own home. Three-dimensional images give online visitors the chance to inspect an object thoroughly and move it around, which cannot be done in a physical museum setting.

Online exhibits are an extension of a museum's overall mission: to educate the public. They are supplemental to museums and give audiences, from far and wide and not just the immediate community, another way to participate and communicate with the institution. This new way of sharing allows everyone to take part in the educational programs and exhibits that museums have to offer. Small museums must experiment and share the unique information they have to offer.

This idea of sharing, educating, and communicating through a virtual space is an important trait for museums to have. Accessibility and inclusion, the major themes of critical museum theory, are essential. Online exhibits are democratic in that they include the public and are transparent. While these are important characteristics and an advantage for museums, questions are now arising about the future of technology and sharing online. As online museums show collections, the images are made public. Objects that were once solely in the possession of the museum can be openly shared for the public to

view, and potentially, manipulate. Authorship is also in question. Museums once relied heavily on the information provided by curators or scholars. In the Internet era, curators and scholars are not the only ones with important information to share. Others can contribute to what is said or published. What kinds of information that should be shared are also questioned. Although these challenges are important to consider, the potential and the advantages online exhibits have to offer are limitless.

Developing an online exhibit requires a similar process to that which physical exhibit would follow. A topic needs to be decided on, research needs to be conducted, labels need to be drafted, and layouts need to be created. There are also differences. Online exhibits require images of the objects to be virtually displayed. The greatest difference lies in the actual development of the online portion of the exhibit that will eventually be published. In the case of this project, *Hats, Caps, and Headdresses*, 3D images provided the framework for an online exhibition. Multiple images needed to be taken, scanned into a program, cleaned, and developed in order for the final 3D image to be completed.

In the fall of 2014, I began working in the anthropology collection. I was involved in accessioning, condition reporting, database inputting, and rehousing of objects in the collection. During this time, I became aware of the many objects in the collection with interesting stories that were not told. I realized that these object might never be displayed and could potentially benefit from a virtual space. The idea of a virtual space evolved into the possibility of creating an online exhibit for the headdresses in the collections of the Valene L. Smith Museum of Anthropology.

I began to conceptualize the project in the spring of 2015 and over the summer and fall of the same year I completed research and created labels for each headpiece. In the spring of 2016 I began the development of the online exhibit. I, with the help of Dr. Brazeal, took photographs for the website and for the 3D images, created the 3D renderings, and created the online exhibit, which was published online in May 2016.

The purpose of my thesis project is to investigate such programs to see if it is indeed possible for a small museum to create an online exhibit within the constraints of available resources and funding. With the help of museum-centered online web builder, Omeka.net, *Hats, Caps, and Headdresses: Headpieces from Around the World* was created for the Valene L. Smith Museum of Anthropology, a small museum on the California State University, Chico, campus. This online exhibit incorporates labels, photographs, and 3D imaging. All of this has been developed with a camera, computer, and less than two hundred dollars. Over the course of a year and a half, *Hats, Caps, and Headdresses* was developed, published, and analyzed.

How and why museums display what they do is important in understanding the relationship between the institution and its constituents. Visitors visit the museum with the intention of learning through their own understanding and view of the world. This type of learning is dependent on the relationship between visitor and museum in which there is trust in the visitor that the museum is presenting something real and the information provided is accurate. Visitors expect to see objects and learn about them, but with the development of computer technology, these same visitors expect more. Museums must find ways to captivate audiences in ways that are innovative, exciting,

and educative. Museums must also find ways to reach out to larger audiences, ones that cannot easily access a museum because of distance, emotional, and financial constraints. This thesis project is important to the study of anthropology as it investigates the challenges and benefits of a small museum in adapting to changing society surrounded by constantly evolving computer technology. It investigates why small museums have historically struggled to remain relevant and how a small museum can jump through hurdles using free, or inexpensive, software to create state-of-the-art online exhibits that aims to captivate and educate an eager audience.

This project entailed looking into the history of computer technology within museums in order to understand the trajectory museums are currently in and heading towards. A look into Internet usage helps us understand the increasing growth of online traffic and how and why museums should be online. Three-dimensional images as interactives are discussed as well. Surveys were conducted to gather information on visitors, professionals and people in related fields. These surveys are crucial to understand who visits museums, why, and what they think of online exhibits. These surveys also help capture a snapshot of what professionals think about going online.

Chapter II gives a background to this thesis project and why I decided to pursue developing an online exhibit. Chapter III provides an in-depth look at the theoretical concepts—critical museum theory and cognitive learning theory—that helped structure this thesis project. These theories are implemented in the study of museums and are important in understanding why museums should have an online presence. Chapter IV gives a literature review on the history of computer technology and online exhibits,

Internet usage among American adults, and investigates why small museums struggle to go online. This chapter also takes a look at interactives online and how 3D imaging in the context of online exhibits have had a great impact on museums. Chapter V describes the methodology of creating this online exhibit from start to finish. Images are provided to show the making of the online exhibit and the rendering of the 3D images. Chapter VI shows the data collected from two separate surveys conducted. The first survey takes a look at the thoughts, ideas, and critiques of visitors to *Hats, Caps, and Headdresses*. The second survey conducted is specifically geared towards professionals in the field of museology as it aims to capture a better idea of what these professionals think of online exhibits and how they are developed. This chapter also takes a look at Google Analytics and how it can be used to have a more comprehensive idea on who the visitors to *Hats, Caps, and Headdresses* are, why they visit, and where they come from. Chapter VII brings forth the challenges and advantages of having an online exhibit. I speculate as to what the future may have in store for online exhibits. I describe what I learned from creating an online exhibit, and what can be done to improve online exhibits in the future. Lastly, Chapter VIII offers a summary and discussion.

CHAPTER II

BACKGROUND TO THE STUDY

I was first introduced to online exhibitions at St. Bonaventure University, where I completed my undergraduate degree. In the spring of 2012, I was a History intern in the university's archives. The first project I was given involved research on the Lubenthal collection, which consisted of presidential campaign pins from 1896 to 1972.

In the fall of 2012, I continued my internship at the St. Bonaventure University archives. At this time, the archivist, Dennis Frank, was toying around with the idea of developing online exhibitions for all the student and intern projects. Over the course of the semester, I created a simple online exhibit of the presidential pins using labels and pictures. I created the online exhibit using Microsoft FrontPage, a program used to develop and create websites. Microsoft FrontPage was relatively easy, but the overall project looked aesthetically simple. Mr. Frank was interested in using another program he had heard about, Omeka.net. I briefly tested out Omeka.net and my initial impressions of Omeka were negative, as I thought the program was neither easy nor user-friendly. At the time, I was not aware of the immense benefits online exhibits could have for an archive, but developing the online exhibit left a lasting imprint on me.

While I was working in the anthropology museum's collection I saw many objects that had interesting stories, but might never be displayed. I remembered creating a small online exhibit for St. Bonaventure. I thought of how difficult it was to create, but how rewarding it was to have a completed project. I also thought about how online

exhibitions could be beneficial to a small museum. I looked into museums that had online exhibits and in doing so I realized that most of the online exhibits were created by large-sized museums. I saw a few medium-sized museum exhibits, but rarely any small-sized museums. I was very much aware that small museums had a lot to offer and the most to gain out of creating online exhibits.

I was intrigued by the idea of creating an online exhibit for the Valene L. Smith Museum of Anthropology. I was particularly interested in finding out why small museums were falling behind in the development of online exhibitions. Since it was obvious that most of the online exhibitions were created by large and medium-sized museums, I also thought about whether or not it was possible for a small museum to develop an online exhibit from start to finish. In order to find the answer to these two questions, I decided to create an online exhibit for the Valene L. Smith Museum of Anthropology, a small museum on the campus of California State University, Chico. Over the course of nine months, I created *Hats, Caps, and Headdresses: Headpieces from around the World*, using objects from the museum's collection. This project became my thesis case study.

I initially had no intention of adding Three-dimensional images to my online exhibit. I thought it might be too difficult and time consuming, but Dr. Brazeal gave me information on a 3D rendering program called Agisoft PhotoScan. I did not have any prior knowledge to 3D imaging, so embarking on this part of my project was daunting, exciting, and stressful. PhotoScan turned out to be a fantastic user-friendly program. While there was a learning curve involved, the finished product came out wonderfully.

Omeka.net is the program I used to create my thesis project, but in 2012, Omeka.net seemed very complicated to me and not necessarily user-friendly. I struggled to understand how to use the program and did not think it would be the best software going forward. My coding knowledge, at the time, was nonexistent and going online to create an exhibit, let alone a website, did not seem possible.

Now, Omeka is much more user-friendly and not as difficult as it once seemed. Over the course of a few years, I learned basic Hypertext Markup Language (HTML), which was incredibly useful in developing *Hats, Caps, and Headdresses*. While I never used 3D imaging before this project, Agisoft PhotoScan made it possible to create state of the art images that looked sharp and accurate.

This thesis project aimed to see if it was possible to create an online exhibit, as a small museum, with minimal financial funding. It also, and most importantly, investigated why small museums are lagging behind in the development of online exhibitions. Online exhibits are beneficial to all museums. They provide virtual spaces to display objects and present information. This display of information online is crucial, especially today, as it shows that museums are inclusive, transparent, open, and democratic, which are all characteristics of critical museum theory.

CHAPTER III

THEORY

Introduction

The basis of this project relies on two theoretical concepts. These theories are from two different disciplines, but are interrelated in multiple and necessary ways. Critical museum theory and cognitive learning theory all have important impacts on how museums imagine, develop, and publish online digital works such as online exhibits, virtual tours, and online databases and catalogues.

History of Museums

Many Americans assume that museums are neutral and uncontested spaces, but this has not been the case (Marstine 2008:4). In 1989, museologist, Peter Vergo, published *The New Museology*. In his anthology of works from different theorists, scholars, and museologists, Vergo stated that the old museology was stagnant in nature and that if museums did not change, they would soon be considered “living fossils” (Vergo 1989:3). These concerns were valid, as museums had failed, for the most part, to adapt to the changing outside world. Museums focused too much on museum methods and neglected the actual purpose of museums, which was a public service mission through education (Vergo 1989:3).

Education was the root of the public museum and the central reason for their development in the United States. It was believed, by some elites that immigrant populations needed to be educated on how to act in a democratic society. Charles Willson

Peale, the founder of the first natural history museum in the United States, believed that emphasizing the importance of natural history to the layman could teach them that natural history and democracy went hand-in-hand (Conn 1998:37).

These teachings had a religious undertone. By teaching the lower classes, through collections, observation, classification, and displaying of objects museums could demonstrate the workings of a higher purpose (Conn 1998:42). These early museums followed an “object-based epistemology,” which assumed that objects could tell the stories and inform the “untrained observer” (Conn 1998:4).

Object-based exhibits and an over-reaching focus on collections created a disconnection between the visiting public and the curators who created the exhibits for that public. Audiences were simply learning what curators and collectors wanted them to know (Conn 1998:5). Objects on display, and held in collections, were seen as sources of knowledge and tradition that represented social norms and culture, and what society should value (Bautista 2014:1). These tendencies, to use objects as the absolute source of knowledge, permeated into museum culture well into the late twentieth century.

By the 1970s, many museologists were growing concerned that museums were not paying attention to their audiences. This idea, that museums should focus more on the audience, was not new. John Cotton Dana, founder of the Newark Museum in New Jersey and library and museum director throughout his life, wrote extensively on what the principles that American museums should follow. Rather than collections focusing on mimicking the cultural, economical, and social views of European society, Dana believed that American museums should be built around helping and adapting to the community

surrounding it. Museums, at the time, were fixated on copying European models. Dana came up with solutions to try and remedy the issue. Some of his suggestions involved centralizing the museum by locating the institution in a place where a large amount of people could readily and easily visit (Dana 2012:25). He believed that museums should be built in such a way that is inspired by the culture and community where it is being erected (Dana 2012:26). He also warned museums that in time, their collections would become too large. These collections may not keep the audiences in mind and would confuse them with the amount of unrelated works (Dana 2012:27). Lastly, he advised museums that over time, they would have to adapt to changing trends, but through these changes must keep in mind that education and teaching is the primary goal (Dana 2012:30).

Dana saw that American museums lacked an identity, thus they were quick to use European institutions as the reference and guide in creating their own. American museums sought to collect objects solely based on the ideals of European aristocracy. This meant that objects collected had no real connection to American society, but instead were chosen for their rarity, their likeness to objects found in European museums, and for their monetary value (Dana 2012:23). With so much importance placed on the objects, any supplementary information was based on curatorial research. That research often lacked any insight into cultures or peoples being exhibited. Along with these concerns, museums were failing at innovation. Museums were being perceived as being old and stale and were losing out to other leisure activities such as movies, theme parks, and shopping malls.

There was a growing concern that museums were steering away from the community. Stephen Weil, celebrated museologist, championed the idea of museums educating and exhibiting collections with the community in mind. He saw that a museum who used its, “competencies in dealing with objects to contribute positively to the quality of individual human lives and to enhance the well-being of human communities,” was needed to focus more on the community and what they wanted, needed, and liked in order to develop museums with sustenance (Weil 2012:171).

The Beginnings of Critical Museum Theory

Critical museum theory was a direct response to the growing concerns of the declining state of museums. Museologists saw that museums were still retaining the vestiges of colonialism, and excluding the “voices” of those exhibited, whether it was people or objects (Macdonald and Fyfe 1996:7). The people and objects exhibited were framed in such a manner that museums controlled the viewing process in order to suggest a tightly woven narrative of progress and authenticity without conflict or contradiction (Marstine 2008:5). There was a push, however, to implement fundamental changes within museums. Such a push was seen through the development of the International Movement for New Museology (MINOM). The International Movement for New Museology was founded in 1985 and was directly inspired by the General Conference of the International Council of Museums (ICOM) in 1983 and the first international Ecomuseums and the New Museology Workshop in Quebec, Canada in 1984 (MINOM-ICOM 2013; Mayrand 2015:115). At the General Conference of ICOM and the Ecomuseums and the New Museology Workshop, there was growing dissatisfaction with the way in which museums

were headed. This dissatisfaction was due to the museum's inability to come to terms with contemporary, cultural, social, and political developments (Mayrand 2015:115). The International Movement for New Museology adopted the Declaration of Quebec—a list of basic principles for a new museology—which was developed at the Ecomuseums and the New Museology Workshop (MINOM-ICOM 2013).

In this list of principles, the underlying goal of MINOM was for museums to adopt a global approach. This global approach meant that the new museology needed to extend the traditional roles of the museum to initiatives that were far-reaching so that the goals of new museology could more readily integrate into the human and physical environment (Maynard 2015:116). This was to be accomplished through communication with its museum constituents (Maynard 2015:116). Thus, the new museology should be primarily concerned with community development, understand the driving forces behind social progress, and implement them into plans and projects in the future (Maynard 2015:116). New museology could and should use all the resources at their disposal, such as collections, scientific research, and creativity and adapt them to each environment and project (Maynard 2015:116).

The new museum manifesto that members of MINOM adopted was mainly concerned with society and the actions of the museum. With the museum's preoccupation with objects, museums needed to find a way to also be transparent with the public (Vergo 1989:45). Museums needed to better understand their constituencies and what they wanted. There was sense of social exclusion, where museums intimidated potential audiences. There was a feeling that museums were a place for social elites and many

thought that museums only pertained to those with an understanding of the arts and sciences. Proponents of critical museum theory sought to change these conceptions of museums in order to make museums more about people than the objects.

In this transitional period of museum culture, museums needed to re-evaluate their exhibit content. Once objects became part of a museum's loan or permanent collection, objects could lose their original meanings, thereby gaining a new "museum reality" (Hein 2000:69). In essence, the object was reborn and became a "data carrier," or a transmitter of perceived and interpreted information (Hein 2000:69).

Critical Museum Theory and Technology

Long before the advent of the Internet, Andre Malraux stated that, with all the available information in forms of art books, replicas, and pictures, museums could move from within walls to without walls (Malraux 1974:16). In order to work "without walls," museums need to adapt to the changing world and by doing so museums could provide accessibility, inclusion, and education through different methods besides going to a physical museum. Such methods were highlighted by the MINOM manifesto, which stated that museums should use all the resources at their disposal in order to create an environment in the fashion of new museology. One resource in particular that the museum could adopt is the Internet.

Since the early 1990s, the Internet has been changing how society communicates, interacts, and shares information with the world. The Internet has obligated museums to have an online presence. Museums must be available online or they will become irrelevant among other institutions with online presences. This force

brought upon museums to digitize has also forced museums to democratize (Runnel and Pruulmann-Vengerfeldt 2014b:35). The Internet has created another way for museums to open up a dialogue with its audience and to become part of the democratic process (Runnel and Pruulmann-Vengerfeldt 2014b:35). In the museum context, the Internet embodies the changes that critical museum theory aimed to bring forth and has brought the idea of a museum “without walls” into full fruition.

At its core, critical museum theory aims to be more inclusive, democratic, and representative of diverse communities (Krouse 2006:170). Critical museum theory advocates a break from the “old museum” view of educating the public. It calls for the transformation of the museum from a site of worship to one of critical reflection committed to examining sensitive histories, transparency in decision-making, and willingness to share power (Marstine 2008:5). It also looks to the future of museums and how museums can adapt to changing demographics. Traditional museums limited their activities within the “four walls” of the building. As critical museum theory matures and museums remove these traditional layers, their activities are no longer limited to being inside a building. Museums begin to create projects and develop programs that involve being outside the museum. This type of open museum could be achieved using the Internet. This openness embodies the very essence of what defines critical museum theory.

This openness has changed the way museums present information. Museums are aware that the Internet provides a way for sharing information. As a shared, open, and free space, the Internet provides the platform for museums to use and publish online

catalogues, databases, virtual museums and tours, and online exhibits. These methods provide accessibility, education, and social inclusion. As museums begin to use these tools to develop online exhibits, they also need to be aware of the types of visitors they are attracting and how they can help these users benefit from the information presented.

Cognitive Learning Theory

Educational curriculums should involve the use of learning theories in order to develop comprehensive programs that are inclusive to all types of learners. Although online exhibits are not part of a curriculum, they are educational and follow a certain process to present a viable program. Therefore, it is important to mention the learning theories that provide the framework for contemporary exhibition planning in general. When creating an exhibition, cognitive and constructivist learning theories are implemented. Cognitive learning theory states that learning involves, “the use of memory, motivation, and thinking, and that reflection plays an important part in learning,” (Ally 2008:19). Cognitive learning theory involves more than just reading and memorizing facts; it involves memory, thinking, reflection, abstraction, and motivation (Ally 2008:22). Since cognitive learning is based on the use of memory, thinking, reflection, abstraction, and motivation it is imperative that what is presented to the learner is impactful. The more impact a learning opportunity has though, say, an exhibition, the better it might be retained in the learner’s mind (Ally 2008:22).

Constructivist learning theory claims that interpretation is the most important part of learning. Learners interpret the information that is given to them through their own personal reality that they learn by observation and processing (Ally 2008:19).

George Hein advocated for the implementation of constructivist learning theories in museums. Hein (1998:138) understood that the typical museum visitor spent little time at individual exhibits and barely read labels. Hein (1998:156) also understood that people learned in museums by having meaningful experiences. These meaningful experiences were a reflection of the connections people made between what they were seeing in museums with their own lives and experiences (Hein 1998:156).

Content in online exhibits must have a powerful message. These impactful messages are necessary in order for learners and visitors to, not only stay online, but to also take something from that experience. As learning moves more and more online, for example, online college courses, the control of learning is shifting from teacher to learner (Berge 2002:183). This shift shows that time is more valuable and that individualized learning is becoming exponentially more critical (Berge 2002:183). Online, learners aim to set their own pace, time, and place where learning can occur as well as use other sources on the web to supplement their learning (Berge 2002:183). Online exhibits provide this kind of environment. Online exhibit visitors can spend as much time as they want on any page. They can pick and choose what they want to read and can do so in the comfort of their own preferred environment.

The Contextual Model of Learning

The works of John Falk and Lynn Dierking help to understand who visits museums, why and what they learn. Over the course of twenty years, Falk and Dierking have carefully studied and researched physical museum visitors prior to them visiting the museum, their thoughts on the museum during the visit, and their thoughts of the museum

experience long after visiting. This research has given them insight into who the museum visitor is and how they learn. Falk and Dierking (2013:745) have come up with the contextual framework for learning. This framework shows that learning, “can be conceptualized as a contextually driven effort to make meaning in order to survive and prosper within the world” (Falk and Storkdieck 2005:745). Falk and Dierking (2013:26) state that there are so many museum visitors, all of who are unique in how they view and understand the world, that trying to understand why visitors go to museums, what they do there, and how they make meaning from these experiences is challenging.

Falk and Dierking find that there are three contexts in which people go and make meaning of their museum experience. These contexts are personal, sociocultural, and physical. Personal context relates to the very unique experiences and knowledge each visitor has as well as the visitor’s developmental level and preferred modes of learning (Falk and Dierking 2013:27). These unique personal contexts shape the type of experiences a visitor seeks when visiting a museum (Falk and Dierking 2013:27). Sociocultural context is a combination of two sub-contexts: 1) the visitor and his or her cultural upbringing, which can affect the visitor’s perceptions of museums in society and experience in the museum; 2) the institution and its own sociocultural environment which is the social interaction between the visitor, his or her friends, family, or colleagues, and the museum (Falk and Dierking 2013: 27); 3) The physical context involves the visitor’s choice in going to a certain museum and includes the physicality and emotional feeling of visiting the institution. This physical aspect of the museum visit influences how visitors

make their way throughout the museum, what they choose to see, and what they remember from the experience (Falk and Dierking 2013:28).

While their research does not directly relate to online exhibits, the contexts in which visitors go to museums can be beneficial in understanding how online visitors may gain knowledge or have a unique experience online. Falk and Dierking do mention some motivations as to why visitors go online: 1) visitors go online to gather information for an upcoming visit (Falk and Dierking 2013:50); 2) visitors go online to engage in very casual online browsing (Falk and Dierking 2013:50); and 3) visitors go online to search for specific content related to self-motivated research or specific content information for assigned research from work or school (Falk and Dierking 2013:50).

Learning Theory and Interactives

In the past ten years, 3D images have become immensely popular. Three-dimensional imaging was once considered a highly expensive technology that required a lot of equipment. Today, 3D imaging is relatively inexpensive. Several programs provide free services. Museums are using 3D imaging for an array of different reasons, museum exhibit among them. Three-dimensional imaging provides an interactive for museums since visitors can click on an object, spin it around, magnify, and learn more about the object. This kind of advancement in technology has removed many of the pre-existing barriers between visitor and object (Marty 2008b:131). Three-dimensional imaging is the latest technology to be used by museums, which shows that museums are willing to venture and experiment. For the most part, this has always been the case for large

museums. Historically, large museums have been able to implement advancing technologies into their programs, which have left small museums lagging behind.

CHAPTER IV

LITERATURE REVIEW

History of Technology in Museums

To remain relevant in a constantly changing world, museums have had to adapt to advances in computer technology. Today, museum professionals are more than willing to adjust and adapt to the constantly changing need for improved technologies. In the past, however, many professionals were concerned with computer technology and its implications for the future of museums and their publics. Initially, museums were not using computer technology, but the overall success of many libraries across the nation using databases to keep track of their physical data encouraged large institutions to test out the possibilities.

Libraries were the first institutions to use computer databases as a way to try to efficiently maintain order and organize the locations and documentation of books and papers. The success of some of these databases led large museums to consider using similar technology (Parry 2007:23-24). Although library systems were somewhat successful for libraries, they lacked certain functions that museums needed in their own upkeep and documentation. More importantly, library systems could not accommodate the overall expansion of museum collections.

By the mid-1960s, a handful of large museums were developing and using databases to document their collections (Jones 2008:9). In the early 1960s, the Smithsonian created a scientific staff committee, which focused on the potentials of data

processing and how it could benefit the museum community (Parry 2007:15). By 1969, databases such as, Self Generating Master (SELGEM) and General Retrieval and Information Processor for Humanities Oriented Studies (GRIPHOS), were already in use (Jones 2008:10). By 1974, over 50 institutions across the United States were implementing computer technology into their collections management routine (Parry 2007:16).

The 1980s were pivotal for museums and computer technology. Computer technology was expensive, and only the large and wealthier museums used databases. By the 1980s, there were multiple museum applications on the market. It was no longer necessary to rely on computing groups or software consultants like those created by the Smithsonian in the 1960s (Jones-Garmil 1997:42). This helped remove database systems from the realm of exclusivity and allowed more museums to reap the benefits of such systems. Databases such as the Detroit Arts Registration Information System (DARIS), Quixis, and Mimsy became popular (Jones-Garmil 1997:43). As databases became widely available to museums, another advancement in computer technology would soon change the way museums saw themselves and how they interacted with the public that was the Internet.

The Internet and the Museum

In the late 1980s and early 1990s, universities were using electronic mail to communicate, something that many museum professionals saw as a potentially useful tool (Jones 2008:17-18). The introduction of the World Wide Web to the public instantaneously proved to be useful to many museums worldwide. Between 1994 and

1998, the first fully formed websites were developed by the Peabody Museum of Archaeology and Ethnology at Harvard University in Massachusetts, and the Museum of Paleontology at the University of California, Berkeley (Jones 2008:21). The Museum of Paleontology website featured information on the museum and an online exhibition on dinosaurs (Jones 2008:21). Such websites provided general information on the museum, but would eventually include databases, catalogues, and online exhibitions. By today's standards, these museum websites were aesthetically and technologically simple, but they paved the way for museums to engage with the public via the Internet.

Computer and Internet Usage and Growth

The Internet has been a platform for museums to interact with the public. During its infancy, the Internet raised questions on the impact it would have on the relationship between the public and the museum. While Internet usage in the 1990s was not as popular as it is today, the Internet's rapid growth has coincided with the museum's need to meet the demands of the public. Over the past 20 years, Internet usage has grown exponentially, and understanding this growth is important in understanding the need for museums today to be online.

In 1995, the Pew Research Center conducted a survey to have a better understanding of computer and online users. According to the survey, approximately 18 million Americans had a modem-equipped computer, but of those 18 million, only 8 million Americans used it to go online (Pew Research Center 1995:2). The Pew Research Center concluded that many online users viewed the Internet as not necessarily essential to them, and that no online feature, except for E-mails, were used regularly (Pew

Research Center 1995:2). A similar survey was conducted by the United States Department of Commerce in 2000. This survey compared statistics from surveys conducted in 1984, 1989, 1993, 1997, and 1998. The percentage of household computers in 1984 grew from 8.2 percent to 36.6 percent in 1997 (US Department of Commerce 2001:1). By 2000, 51 percent of American households had a computer. The US Department of Commerce did not conduct a survey on households with Internet access until 1997. In 1997, 18 percent of Americans had Internet access (US Department of Commerce 2001:1) and by 2000, 41.5 percent of Americans had Internet access in their households (US Department of Commerce 2001:1).

These surveys show the rapid growth of Internet and computer usage in the past 20 years. Understanding such growth provides a better understanding of why museums need to adapt to a changing society. Twenty years ago, museums did not need a website or any sort of online presence, but today, museums need to be present or be irrelevant to the public. The public uses the Internet daily in order to find information. If something cannot be found online, many move on to something else. Museums have to adapt in order to remain relevant.

Technology, the Internet, and the Museum

As more people have access and use the Internet, it only seems logical for museums to also use the Internet to interact with potential visitors. As Paul F. Marty (2008a:181) notes, new information technologies are paving the way for new possibilities for museum visitors. These new possibilities also create competition among other Internet activities, thus bringing forth new expectations for users (Marty 2008a:181). Exactly

what these expectations are in relation to museums are varied. Whereas ten years ago, museums simply needed an online presence to remain relevant among visitors, today, museums need to be more accessible, transparent, and open.

Interactives, in general terms, refer to multimedia activity that involves the user. Multimedia can take the form of audio, visuals, texts, and images. Interactives, in the museum context, use these multimedia forms to create activities that are multi-faceted, fun, and educational. In this sense, an online exhibit, in itself, is an interactive, but the rapid evolution of technology is allowing museums to develop other alternative methods to communicate, interact, and attract audiences. Such technologies include virtual exhibits, where visitors can virtually walk through galleries or 3D images, images of objects that look almost identical to the physical object. These forms of technologies are bridging the gap between audiences and museums. While museums are providing exciting online exhibits today, online exhibits and immersive interactives have come a long way from the exhibits of the past.

The Birth of the Online Exhibit

The idea of having a virtual exhibition space in which visitors could roam and learn gained traction among many museums in the early 1990s. Apple Computer developed one of the first virtual museums called *The Virtual Museum* in the early 1990s (Huhtamo 2002:2). *The Virtual Museum* was on a CD-ROM, not an online space. The CD-ROM allowed visitors to explore the museum in a three dimensional space (Huhtamo 2002:2). There were more CD-ROMs of this nature that followed suit, made by museums like Le Louvre in France and the Hermitage in Russia, but these interactives were

considered more of a novelty item and lacked information and were limited in their scope but they paved the way for the future influx of virtual museum spaces online (Huhtamo 2002:2). These virtual spaces, with interpretative labels, extra information, and images, would become known as online exhibits.

Now that museums were aware of the possibilities of the Internet and the opportunities of creating virtual spaces, they could connect both and create online spaces. At first there were only a few museums willing to take the first step towards an online presence of this type (Jones 2008:21). By 1996, there was an explosion of online exhibitions by museums, libraries, and archives (Kalfatovic 2002:xv). The creation of online exhibitions opened another door to the possibilities the Internet and technology could provide to museums. This new frontier, for many museums with the necessary funding, was exciting; however, it also raised concerns over the increasing gap between large and small museums.

The Small Museum and Technology

Large and medium-sized museums tend to have more money, staff, and time to work on a variety of online projects. Small museums, on the other hand, face various obstacles, such as lack of money, staffing and time. Small museums cannot invest in many areas that could help increase attendance, which could in turn lead to more funding and economic well-being. One way in which small museums can cost effectively reach out to a large audience is through the use of the Internet. While many small museums across the United States do have an online presence, not all of them are using the Internet to their full advantage to garner the attention of online audiences.

The Institute of Museum Services (IMS), which eventually became the Institute of Museum and Library Services (IMLS), conducted a survey in 1992 to assess museums in the United States. The IMS found that 75 percent of museums in the United States were small museums and that these small museums were continually struggling to meet the demands of the public (Katz 1995:15). The demands of the public related to the competition between larger museums that had the monetary requirements to create bigger and better exhibitions (Katz 1995:16). The lack of funding has remained a fundamental issue and has hindered small museums from using technology.

American museums are generally funded by four different sources: government grants, private donations, earned revenue, and invested income. Government funding account for 24 percent of the museum's overall funding. Government funding falls under the federal, state, and local level. Most museums receive the most funding from state and local levels (Bell 2012:1). Museums also receive funding from donors and the private sector. This includes individuals, charities, philanthropic foundations, and corporate sponsors (Bell 2012:2). These funds usually go to special exhibitions or initiatives (Bell 2012:2). The third revenue stream for museums is earned revenue. Earned revenue includes funds from museum exhibitions, programs, retail sales, and rentals (Bell 2012:2). Lastly, museums get funding from investment income. The largest of museums have endowments, which account for 11.5 percent of the typical museum's overall income (Bell 2012:3).

The balance among these four sources is highly dependent on the status of a museum. While all museums receive some form of government funding and donations,

large museums receive much more than small museums. Many large museums have departments dedicated to writing grants, whereas small museums usually only have up to five hired staff. Many large museums receive large donations from wealthy contributors as well. Small museums lag behind in earned revenue. Large museums have the disposable income to build more facilities to attract people such as adding restaurants (Bell 2012:3). Large museums can also earn income through the use of rentals. Museums with impressive architectural buildings rent out their location to corporate gatherings, ceremonial occasions, and weddings (Bell 2012:3). While admission is also accounted for in earned revenue, it does not account for much. The average admission fee is seven dollars, with about 37 percent of museums offering free admission (Bell 2012:2).

In 2006, more than ten years after the IMS published their museum assessments, the overall issues remained the same. The recent IMLS published research revealed the average budget of small, medium, and large museums. The study showed that small museums had a budget of less than \$250,000 compared to medium-sized museums (\$250,000-\$1,000,000), and large sized museums had significantly higher budgets (\$1,000,000-\$25,000,000; IMLS 2006:16). Similarly, the American Association of State and Local History (AASLH) found that the definition of a small museum was a budget size of \$250,000 or less and that a staff of 0 to 3 people (AASLH 2007:1).

The IMLS conducted another separate survey, which looked into the status of technology and digitalization in United States museums and libraries. In this survey, conducted in 2006, IMLS received 475 total responses from museums across the spectrum (IMLS 2006:5). The IMLS concluded that even though small museums were

making progress in technological usage, they still lagged behind larger museums (IMLS 2006:5). Larger museums were using video tours, virtual reality tours, and web portals or gateways for services or collections, none of which were commonly used by small museums (IMLS 2006:21).

Although these surveys were taken 10 years ago, the issues outlined still persist. Lack of funding, staffing, and time prove problematic for small museums and seem to be the reason behind why many struggle to go online. Although the struggles and issues remain the same, there is a fundamental difference between museums online from ten years ago and today. This difference relates to advances in technology. Technology of today allows museums of all sizes to go online inexpensively and easily.

Small Museums and Online Exhibits

Small museums have a lot to contend with and they have to deal with competition. Not only must small museums compete with leisure activities, they must also compete against large and medium-sized museums to attract visitors. Thanks to ever-evolving computer technologies, smaller museums now have an opportunity to have a much more vibrant online presence. Small museums can benefit from the myriad of free software available online. Even if some software is not free, many are increasingly inexpensive due to their own internal competition.

Small museums must, and some have, venture into creating online websites and exhibits. Online exhibits are a great way to provide accessible knowledge and information for all those who seek it. Online exhibits also satisfy the growing expectations of visitors and audience members. As small museums look into the

development of online exhibits, they must also become aware of public expectations and audience participation in order to create informative and successful exhibits.

Public Expectations and Audience Participation

New computer technology has forced museums to open up and be more accessible. As technology advances, there are more ways for museums to reach a wider audience, something that is necessary and expected today. Opening up the museum to allow for audience participation has been seen as a democratizing effort. The digitization of museums (i.e. online museums, virtual tours, online databases and catalogues) has forced museums to focus on communication and open conversations with audiences (Runnel and Pruulmann-Vengerfeldt 2014a:13). Democratizing museums is important as it allows for resources of cultural heritage to be made available through digital technologies (Runnel and Pruulmann-Vengerfeldt 2014b:35).

While lack of funding, time and staff are the main inhibiting factors to increasing the use of technology, and by extension, online exhibits, there have been developments and advances in interactive techniques and new and inexpensive software. These advancements can help museums achieve their goals of educating the public (Sylani et al. 2009:520). They can also help museums compete against other leisurely activities such as theme parks, sporting events, and movies (McNichol 2005:239). Museums must carefully and strategically attract audiences while also being aware of public demands (McNichol 2005:239). The continual advances of technology also mean that the public is becoming more information savvy (Marty 2008a:181). Since technology

is something that many museumgoers have come to expect of museums, it is only logical for museums to venture into the various online platforms such as online exhibits, virtual tours, online databases and catalogues. With these new ways of capturing the audience's attention, museums need to be aware of who their online visitors are and why they visit.

Virtual museum visitors go to museums because they seek information and knowledge. While the overlying bases for visiting an online museum are information and knowledge-seeking, motivations are different. Research conducted has shown that the motivations behind visiting a museum online relate to gathering information for an upcoming museum visit; engaging in casual online browsing; self-motivated research for something specific; and assigned research for particular content information (Goldman and Schaller 2004). Of all those who visit online museums, the majority of visitors of museums are students, teachers, and scholars (Goldman and Schaller 2004; Kravchyna and Hastings 2002; Fantoni et al. 2012). Goldman and Schaller conducted visitor reach in 2004 in order to see who visited online museums. In their analysis, they concluded that 54 percent of those who responded to the questionnaire were students compared to 24 percent who were teachers (Goldman and Schaller 2004). When asked why they came to the website, 20.4 percent of the respondents stated that they were searching for information, and 17.3 percent thought that it might be an interesting place to explore (Goldman and Schaller 2004).

Visiting online museums offers the opportunity to experience exhibits with incorporated interactives. Interactives are captivating, entertaining, and educational. They can be simple or complex, but are mainly participatory, which is important for

audiences. Interactives can take the form of quizzes, puzzles, games, or any other activity that directly involves a participant. One method of participation is 3D images. Virtual 3D images are a representation of an object through the perception of height, width, and depth. Three-dimensional images are relatively new among museums. As a tool, 3D images have played an important role among museum professionals.

Three-Dimensional (3D) Imaging in Museums

Three-dimensional imaging has been discussed within the setting of cultural heritage since the early 2000s. In these discussions, 3D imaging has been brought forth as a new and technically-advanced platform in which professionals, as well as others, can view and study museum objects, paintings, artifacts, and ruins. Research into the use of 3D imaging has focused on the implementation of the technology within museum work such as collections management, conservation, research, and the interpretation of collections for the public (Younan 2015:25). Three-dimensional imaging is helpful to these museum departments as it provides a “handless” approach to researching and viewing objects. Three-dimensional imaging allows objects to enter a virtual workroom where researchers can virtually examine an object without having any impact on the object’s physical integrity (Wachowiak 2009:143).

Museums can take advantage of advancing technologies in 3D imaging. Today, there is highly accurate software that can provide the most representative virtual proxy of an object. These advances make it easier for museums to go online and publish 3D images. Publishing 3D images for the public to view can seem to be a daunting task, but can be beneficial for any museum. Using 3D imaging online, specifically for online

exhibits, can provide invaluable experiences for viewers as well as an educative relationship with the object.

Thorough scholarly research on the impact of 3D imaging within museums has been limited throughout the years. Many of the articles and journals found speak to the future and possibilities of 3D imaging (Younan 2015; Wachowiak 2009). There are also a handful of guides on how to complete such a task, but many articles state the issues and concerns that arise because of 3D imaging (Mudge et al. 2010; Cameron and Kenderine 2007; Younan 2015).

Issues and Concerns with 3D imaging

Some concerns involve the true accuracy of the 3D image to its physical counterpart (Mudge et al 2010:3). There are also the issues in interactions between the viewer and virtual object and the threat of undermining authority (Whitcomb 2007:36). Another concern lies in the ambiguity between replica and authentic objects (Cameron 2007:51).

These concerns arise from the fact that there is a possibility that the objects in question will become virtual items where there is no protection from a museum or caretakers. While the physical object will always be in a museum, its virtual counterpart will be at the hands of the online public, which leaves it vulnerable to manipulation (Younan 2015:26). Concerns also arise with authority. The museum owns the physical object, but online, ownership becomes murky, where 3D objects can be placed anywhere in space and time, allowing users to control the digital objects (Younan 2015:26). With advancements in 3D imaging, 3D images can now be used to create physical replicas

with the emergence of 3D printers. Thus, ownership can take on different meanings in the digital age. Fears also arise from future 3D simulations becoming more and more convincing, enough for surrogates to form and affect the emotional response and memory of the physical object causing viewers to struggle with distinguishing replica from real (Cameron 2007:51). These surrogates, with such precision and accuracy, could mean that collections could become obsolete; leaving museums without the very thing that has defined the institution for over a century (Cameron 2007:51).

These concerns are valid, but 3D imaging can also be beneficial for museums and the public. Three-dimensional imaging is an opportunity for museums to reinvent themselves and ensure their own survival into the twenty-first century. Online exhibits are becoming more abundant with all the available software. With such abundance, the need to appeal to the wider public is constantly increasing (Witcomb 2007:36). Online, viewers are in charge of where they go, what they see, and what they like. They are in charge of their experience and how they interpret what they see. Three-dimensional imaging can help improve upon these experiences, especially in online exhibits. Three-dimensional images can be considered an interactive since viewers toggle with the 3D image. They can expand, zoom in and out, and spin the object however they please. There is no one in their immediate surroundings to dictate how closely they can inspect a museum object or anyone telling them what they can or cannot view.

Three-Dimensional Images as Interactives

Three-dimensional images, as interactives, have important benefits for any online exhibit. Interactive exhibits help viewers learn and have a better experience online.

Individuals learn better from words with graphics or pictures than from words alone (Fahy 2008:172). Three-dimensional images are an extension of pictures, as they represent an object three dimensionally on a computer screen. This form of interactive allows viewers to “play” with the object. The viewer is partaking in something virtually that could not be done physically. This kind of participation with the museum and its object is an important activity for the viewer to have. Not only is it a fun exercise, but also interactivity is part of, “a strongly held and culturally based desire to participate in the creation and transformation of the text that has effectively been denied by previous technologies of recorded media production and distribution” (Cover 2004:174).

A democratic museum focuses on participation and the idea of an open, transparent, accessible, and available platform for audiences. Online exhibits are part of this ideal and the inclusion of interactives means that audiences can join in on the conversation and also explore different forms of learning. From a learning perspective, interactives are better understood through cognitive and constructivist learning theories. Cognitive learning theory incorporates memory, thinking, reflection, abstraction, motivation, and metacognition (Ally 2008:22). Constructivist learning theory understands that learners interpret information and the environment around them through observing, processing, and interpreting, which they then compute into personal knowledge (Ally 2008:19).

Under these two models, time is important as there is only a small time period in which something can be learned depending on how impactful it is and how it is stored in the mind (Ally 2008:23). The impact of an online exhibit is relative to 3D imaging as it

can give audiences a new experience in which they use various sensories to understand the object through their own eyes. Learning, through interactives, thus, could promote higher-level learning and social presence and help develop personal meaning (Ally 2008:32).

Interweaving 3D imaging and Online Exhibits

The future of museum education is online. While virtual museums will never be able to replicate or replace the physical museum they can supplement the museum in ways that audiences could never imagine. There are so many possibilities online for museums to venture into that not doing so seems counterintuitive in the contemporary museum. Online exhibits are not a new concept, but the advancing technologies of today are allowing all types of museums to create online spaces to curate, develop, teach, and participate.

Three-dimensional imaging is a new and developing platform for museums online to take advantage of. Online exhibits can use 3D imaging to create a new type of environment and atmosphere for users. In the past, online exhibits could only exhibit photographs of objects, but now, 3D imaging can give audiences experiences very similar to physical exhibits.

Conclusion

Museums have gone through many transformations in their use of technology. At first they used computer technology to create digital databases to track information and objects. Museums now use the Internet to share digital databases with the outside

world. In conjunction with the rise of critical museum theory, museums saw that opening up and providing access to information outside of the physical museum could benefit everyone. As online exhibits continue to evolve, so does the software available. These new technologies allow not just large and medium-sized museums to reach out to everyone, but also opens the field to small museums. Small museums, for a long time, have suffered for the lack of funding, staffing, and time to complete or even begin projects. With advances in technologies, small museums can now benefit from free to inexpensive programs to capture the attention of the public. With these new and readily available products, small museums can compete with leisure activities and larger museums. Museums, no matter the size, need to be aware of who their audience is and what they expect of museums. Without being aware of such things, museums run the risk of beginning fruitless projects.

CHAPTER V

METHODOLOGY

Introduction

Online exhibitions are a great medium for museums because they make institutions accessible to all types of visitors and viewers. Large museums are using online exhibitions to supplement their physical museum. Small museums are lagging behind. Today's technology can provide small museums with the tools necessary to create online exhibitions. This thesis explores the advantages and disadvantages that small museums can face when creating an online exhibition it shows that it is possible to create state of the art virtual exhibits with minimal cost to a small museum's budget.

Developing an online exhibition requires the same attention as creating a physical one. My goal was to create an interactive online exhibit that used objects from the collection of the Valene L. Smith Museum of Anthropology. The Valene L. Smith Museum of Anthropology has over 30 headdresses in its collection. Of these headdresses in the collection, 17 pieces from different parts of the world were identified and chosen.

In the fall of 2014, I began working in the anthropology collection. During this time, I became aware of the many objects in the collection and the fact that many would not be exhibited for a very long time, if at all. With all the objects in the collection I thought that a virtual space to display objects would be beneficial to both the museum and the community. The community would be able to view the objects, and the museum

would be able to display the objects in its collection. The idea of a virtual space evolved into the creation of an online exhibit for pieces in the anthropology's collection.

There were multiple stages in the development and creation of the online exhibition *Hats, Caps, and Headdresses*. In April 2015, I began looking through PastPerfect, the collection's database, in order to find objects that fit the criteria I had set for my online exhibit. The criteria I set for myself included: find objects that had a unifying theme (e.g., weapons, arts and crafts, tools, costumes, and textiles); find at least 10 objects with this unifying theme; and lastly, make sure there was enough information among these objects in the database. In order to find these types of objects, I manually searched through PastPerfect. In this preliminary phase, I found objects that could be classified as arts and crafts, tools, and costume and textiles. I used headpieces (classified under costume and textiles) for my exhibit since there were many headpieces to choose.

In May 2015, I began looking through the information in PastPerfect. I needed objects that had enough database information to aid me in the research phase of my project. I did not need a lot of information, but I needed to know the cultural affiliation of the piece and its name. With these two pieces of information, research on the headpieces was possible. Out of the 25 pieces in the collection, I chose 14. Between October 2015 and January 2016, I conducted research from sources such as books, articles, other museum and university databases, newspapers, and documentaries.

In December 2015, I began looking for viable online website creators to help develop my online exhibit. I initially wanted to use Wordpress.com or Weebly.com since they both seemed very easy and provided many of the functions I wanted to incorporate

into my online exhibit. Certain university policies prevented me from using either, so I used Omeka.net. In January 2016, I began writing my labels and developing the online exhibit. I went through three drafts of my labels, which were complete by April 2016.

In March 2016, Dr. Brian Brazeal and I began taking photographs of all the headpieces. This photo shoot was done in one day. In March 2016, I also began taking photographs for the 3D rendering of each headpiece. Between March and April, I took photographs and created the 3D renderings for all the headpieces. With all the labels, photographs, and 3D renderings ready, between April and May 2016 I began creating the online exhibit. During this month, I worked on coding and hosting images. The online exhibit was ready and published mid-May 2016.

Choosing a Topic

The headpieces were chosen for a variety of different reasons. First, information was gathered from PastPerfect, the museum's database. From PastPerfect, details of each headaddress included cultural affiliation, donor, year donated, physical description, and sometimes, the meaning of an object. If a headpiece did not have any information in regard to cultural area,¹ it was skipped.

¹ The use of "culture area" is commonly used in museum databases to designate where objects originate from, but the term has controversial connotations. Anthropologist Clark Wissler is attributed with theorizing the concept of culture area in the early 1900s. Wissler's culture area theory used geographical grouping of social units, in particular to North America, in order to have well-defined culture areas based on physical barriers that supposedly restricted inhabitants within these borders (Freed and Freed 1983:812). He used material traits to distinguish between areas and cultures (Freed and Freed 1983:812). Recent anthropologists view this term as a reflection of the western world's ideals of hierarchy and dominance over those who they are studying (Wolf 1983; Appadurai 1988). This type of grouping is a construct of the western society, similar to the use of "natives" to describe peoples who live in distant and far removed parts of the world (Appadurai 1988:37). These types of terms are problematic, as they tend to confine people to one area and place a link between intellectual and spatial confinement (Appadurai 198:38).

There are many reasons as to why certain information was not in PastPerfect. I worked on a large collection donated by Arthur Lehmann, an anthropologist who spent many years doing fieldwork in Africa. The Lehmann collection consisted of African art, instruments, tools, and weapons. Many of these objects had very limited amount of information. I could not even do the most minimal search on Google because I did not know how to describe or classify objects. The most information I could input into PastPerfect was physical descriptions and information given by the donor. When objects are donated to a museum, it is crucial to collect as much information as possible. If an object reaches a museum and has no information, the potential to incorporate that object in the exhibit can be lost. It is important to know the cultural affiliation of the headpiece because it was necessary during the research portion of the project. Without an idea of where the headpiece originates from further research would be needed to find more information on the headpiece.

The headpieces chosen were: 1) a feather Pillbox hat, worn in the United States; 2) a *Mecapal* head strap and a gourd cap used in Mexico; 3) a basket hat worn in the Klamath River region in Northern California; 4) a *tzute* head cloth used in Guatemala; 5) a *Chullo* often worn by the indigenous peoples of the mountains of Peru, Ecuador and Bolivia; 6) two *Joq'ollo* skullcaps worn by men and women of Tarabuco, Bolivia; 7) a Dogon bonnet used by the Dogon from the Sangha region of Mali; 8) a Fulani straw hat worn by the Fulani people, a nomadic group of herders from West Africa; 9) two *Tijiwara* headdresses worn by Bambara men from Mali 10) a *Muykeem* headdress worn by the king of the Kuba Kingdom in Congo; 11) two baby Hmong caps used by the

Hmong; 12) a Nassa shell headband from the Mount Hagen region in Papua New Guinea; and 13) a chief's hat worn by men from the Orang Ulu on the island of Borneo.

The headpieces used encompassed cultures from different parts of the world, meanings, and features. None of the headpieces used were the same, which made this exhibit all the more meaningful. While headpieces are used in most parts of the world, their meanings are very different. Aside from creating an informative exhibit, showcasing the physical differences was also very important.

After research was completed in December 2015, the exhibit labels were created between January and March 2016. Keeping in mind Beverly Serrell's *Exhibit Labels: an Interpretive Approach*, the online labels needed to be concise, yet informative, interpretive, and intriguing. Online Exhibits give visitors more freedom to pick and chose what they want to view. It is a personal experience, which also means that visitors may spend less time on a webpage if there is something more interesting to view. For this reason, these labels were maintained at a maximum of two paragraphs. Each label attempted to answer five questions: who, what, where, when, why. Out of these five questions, when each piece was used typically was the most difficult to answer.

Choosing the Website Builder

Research was also conducted on which website creator program to use. There are a variety of website creator programs available to the public. Many of these are free. Most commonly used platforms include Weebly.com, Wix.com, and Wordpress.com. These programs provide free services and easy-to-use formats in which creators can make any kind of website. Unfortunately, none of these programs provided a voluntary product

accessibility template (VPAT), which is a web-based checklist that allows vendors to show how their product did or did not meet the various requirements for providing equal access to those with disabilities.

According to the United States Social Security Administration, Section 508 of the Rehabilitation Act is a federal law that requires agencies to provide equal access to electronic information and data to those with disabilities (Social Security Administration n.d.:1). The information Technology Industry Council and the General Service Administration thus created the VPAT in order to provide a comprehensive tool that would help federal contracting and procurement officials in fulfilling the requirements specified by Section 508 (Social Security Administration n.d.:1) The VPAT is a web-based checklist that allows vendors to show how their product did or did not meet the various Section 508 requirements (Social Security Administration n.d.: 1) Since the VPAT is a voluntary checklist, not many website programs offer this document.

There are a few website creator programs that are specifically made for online exhibitions. Some of these include: Omeka, collectiveAccess, and the Google Cultural Institute. Of these three, Omeka was chosen because of its easy accessibility. CollectiveAccess mostly caters to cataloging, which would be a fantastic program to use if a museum wishes to provide an online catalog of their collection. The Google Cultural Institute program is also a great program, but a museum must apply and be invited by Google to join. This process can take many months.

Omeka caters to two types of museum website creators: advanced and novice. Under the Omeka umbrella, there is Omeka.org and Omeka.net. Omeka.org provides

users with the needed coding skills to begin creating complex online exhibitions, cataloging, and websites. In order to use Omeka.org, institutions must already have a hosting site in which to input Hypertext Markup Language (HTML). The standard language for building webpages, HTML is, “text displayed on a computer device and contains links to navigate to other hypertext documents” (Coremans 2015:1). Omeka.org provides users with templates and code to create intricate designs. Omeka.org requires a deep understanding of coding languages while Omeka.net, on the other hand, is designed for those with little to no coding experience. Omeka.net offers different plans that range in prices. They do offer a free plan, which can be used to create an exhibit, but with very limited tools. The other plans range between \$50 and \$999 and offer many extras to help further personalize websites.

Small museums will find that the free and Plus plans are ideal for their online endeavors. It would be ideal for a small museum to invest into, at least, the Plus plan. This project used the Plus plan, because it provided more plugins and unlimited themes. The plugins are tools that can be added to the website to further help creators make a personalized website. Plugin tools include Exhibit Creator, which provides an easy to use template to create simple exhibits, Simple Pages, a platform in which creators can develop websites, Google Analytics that help developers monitor how many viewers visit the site and for how long, and Social media add-ons. For this project, the Plugin tools were crucial in analyzing data and sharing the exhibit on social media.

Developing the Online Exhibit

In the process of creating my online exhibition, *Hats, Caps, and Headdresses: Headpieces from Around the World*, I consulted the helpful guide, *Creating a Virtual Tour Design Guide for Museums with the Centre of Accessible Environments: An Outline of Inclusive Recommendations for Virtual Tour Creation*, which was published in 2006. This guide was developed by the Centre of Accessible Environments, and was intended to help museums develop accessible museum exhibitions. Bedard et al. (2006:35) suggest that museums use one of the four types of online exhibits: text-based exhibits, which are mostly text oriented with little to no visual aid, but inexpensive; a photo-based exhibit, which contains many images of objects with text descriptions; panoramic exhibits, which used 360 degree imaging along with text to give the viewer a greater feeling of reality, but expensive and requiring a significant investment of time; and video exhibits, which consist of videos to present a museum visit with the help of audio and text (Bedard et al. 2006:36). Of these four types, photo-based online exhibits are encouraged for small museums as they are inexpensive, do not require extensive technological knowledge, and are relatively simple to make. Following the suggestions of this guide, my online exhibit project used a mostly photo-based exhibit with the inclusion of 3D imaging as well.

After deciding upon using Omeka.net, photographs were taken of all the objects using a Canon EOS Mark 5D II (see Figures 1 and 2). The photo shoot, which was set up in the Department of Anthropology's Heritage Resources Conservation Laboratory on the Chico State campus, took a full day to complete and required a variety of different tools. Along with the camera, a dark background was needed as well as lights



Figure 1. Photography set up.



Figure 2. Taking photographs of the Mukyeem mask. I

to make the photographs look as professional as possible. The dark background was created using a black cloth and three professional quartz lights, *Viper 1000*, were used on both sides of the object and on top. The images were downloaded onto an iMac computer. Each headpiece required at least two images, but most had four images showing the front, left, right, and back-sides. Once the images were uploaded, each photograph was touched up to better to illustrate the object. Each image was edited to remove excess lighting and noise. The small *tijiwara* headdress and Dogon bonnet were both photoshopped out of their original background. This was done because the headpieces were very dark and it was difficult to remove the excess lighting in the background without drastically changing the look of the pieces. For this reason, these pieces were removed and placed along a black background.

After the photographs were taken, the next task was to create a 3D rendering of each object. This proved to be extremely complex and time consuming. To create a 3D rendering, a special program was needed, Agisoft PhotoScan, a 3D rendering program created in Russia.

Agisoft PhotoScan 3D Imaging

Agisoft PhotoScan is a fantastic program for creating 3D renderings. The program is not free though. Agisoft offers a 30-day trial, but with the trial, users cannot save projects, and can only test and get to know the program to see how it works. Agisoft offers a standalone license for the professional edition and the standard edition. The professional edition costs \$3,499, but offers a wide variety of features that help create more complex 3D renderings. The standard plan is \$179 and offers only the necessary

features needed to create 3D images such as photogrammetry triangulation, dense point cloud, generation and texturing of 3D models, and panoramic stitching. Although PhotoScan is expensive, they offer an educational license which allows colleges, universities, and institutions to purchase the program for a much more economical price. The price for the educational license is \$59 (as of 2016).

Although there are plenty 3D rendering programs available for use, Agisoft stood out as a professional, and relatively easy to use, program. Although the program needed to be purchased, it was well worth the investment as it created very accurate 3D renderings. Using PhotoScan did involve a learning curve. For someone who does not have experience in 3D rendering programs (like myself), it took a lot of trial and error to eventually come with a sharp and clean finished product. When this project was first started, I took images using my iPhone. The renderings were not coming out very well. Eventually it became necessary to invest in extra tools. Before developing a 3D rendering, there are some important considerations to be taken into account. These include determining whether extra tools are necessary to develop a 3D image, the type of camera being used, how the images will be taken, and the kind of backdrop required. The type of computer should be determined, as well as what type of lighting is required for the best possible images. Finally, it is important to figure out how many images should be taken of each object to make the 3D application possible.

Agisoft offers a manual on their website that should be read in its entirety, especially if past experience is limited or non-existent. Agisoft was downloaded and used on a MacBook Air. While the camera on a phone can be used, it is not advised since a

DSLR camera will produce a cleaner and sharper completed image. For this project, a Canon EOS 5D Mark II was used. Other tools I found necessary for the 3D rendering included a light-colored backdrop, turntable, tripod, and photography lights.

I experimented with the background many times. Occasionally I used the wall as a white background along with a white board placed on top of a table. On other occasions I used a light blue board against the wall and on top of a table. The key was to create a light background to make the 3D modeling process easier. I used an Ethafoam mannequin head for the placement of each headpiece (see Figure 3). I also used a turntable to help rotate the mannequin head for all the photographs.



Figure 3. Example of how images were taken for the 3D renderings. Image shows a basket hat worn in the Kalamath River region in Northern California. Image by the author.

A tripod was absolutely necessary as the camera needed to be steady throughout. Approximately 20 to 60 pictures were taken of each headpiece depending on

its complexity and shape. For example, the Mexican gourd only required 25 photographs since its shape was even throughout and simple, whereas, the Kuba headdress required 60 photographs from a variety of different angles to capture finite details. Every angle of each headpiece needed to be photographed, such as the front, top, and bottom. Evenness was very important throughout this process. Images needed to be the same in terms of distance from the camera. Any differences in distance could create a problem when creating the 3D image.

Lighting also needed to be the same through the photographic process. Calibrating the camera was necessary to remove tints and continuous photography lights with soft box diffusers were very helpful in maintaining evenness. Professional quartz lights were placed on the left and right of each headpiece. Once the images were taken, all photographs were downloaded onto the MacBook Air. I created 3D images one at a time in order not to overload the laptop with too many photographs. All images of a headpiece were then uploaded onto PhotoScan, where the 3D imaging could begin.

The first step in PhotoScan is to mask each image. Masking cuts out the background, or anything other than the headpiece and mannequin head, from the image. The end product should only be the headpiece and mannequin head, which meant that the turntable and backdrop needed to be eliminated. Figure 4 shows the process of masking each photograph. Once the masking process was completed, PhotoScan was used to align each photograph using photogrammetry, which takes measurements of each photograph from a set of images to create the data necessary to create the 3D rendering. This process takes between 10 and 30 minutes, depending on how many images are masked. After a

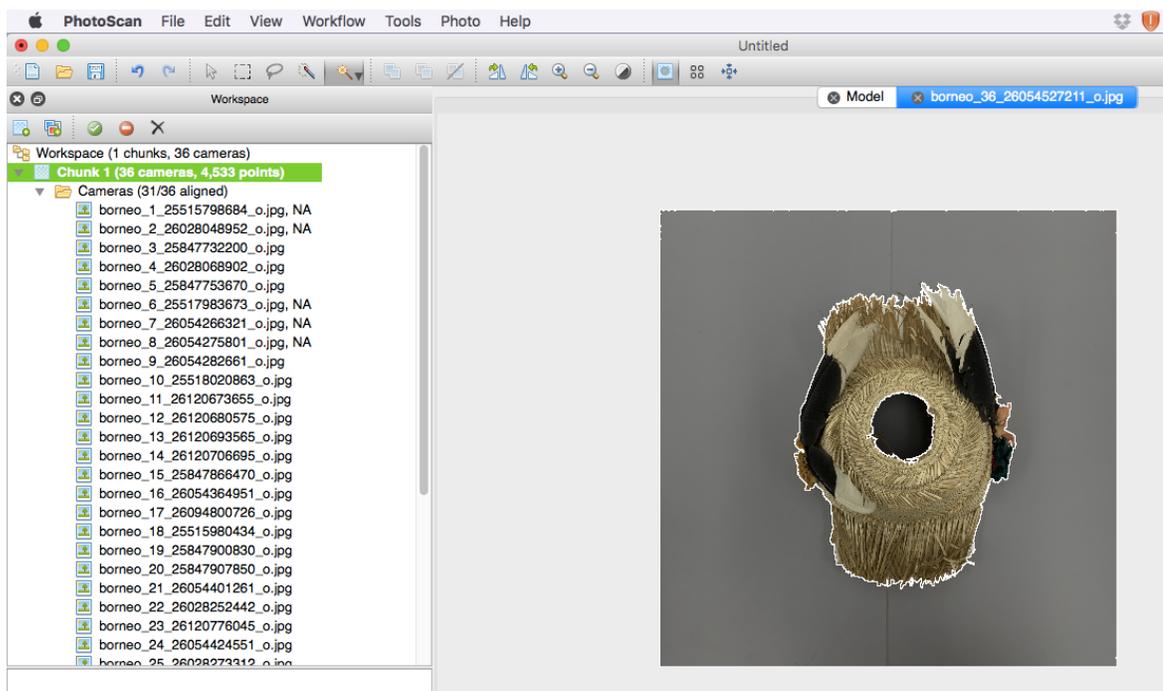


Figure 4. An example of “masking” one of many photographs in Agisoft PhotoScan. Image by the author.

set is aligned, thousands of points that make up the headpiece show up on the screen. Points show other unnecessary portions of the background, which need to be cleaned up or deleted, to only show what is desired.

At this step, there should be a sufficient number of points that make up the headpiece. Figure 5 shows an example of what “points” on a photograph looks like. If there are parts that show too much space or holes, then it is likely that more images are necessary (see Figures 6 and 7). After the points have been cleaned up, the dense cloud can be built, which analyzes the photographs further and creates more points. The points need to be cleaned up further before moving on. After the points have been cleaned up, a mesh can be built. In the “mesh” process, all the points are compiled and connected to

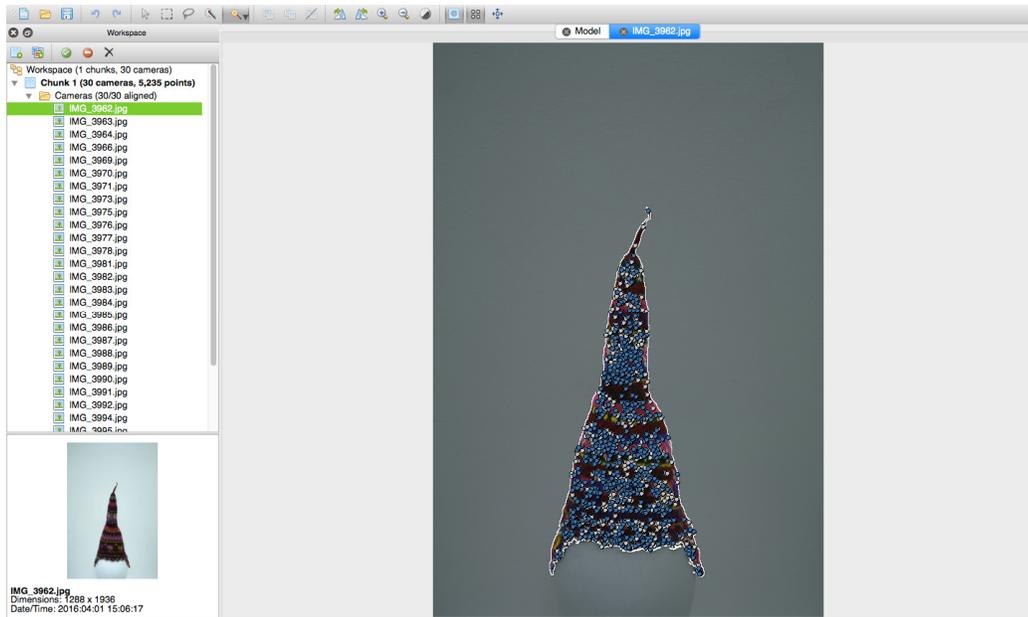


Figure 5. An example of “points” generated after “masking” the photograph.

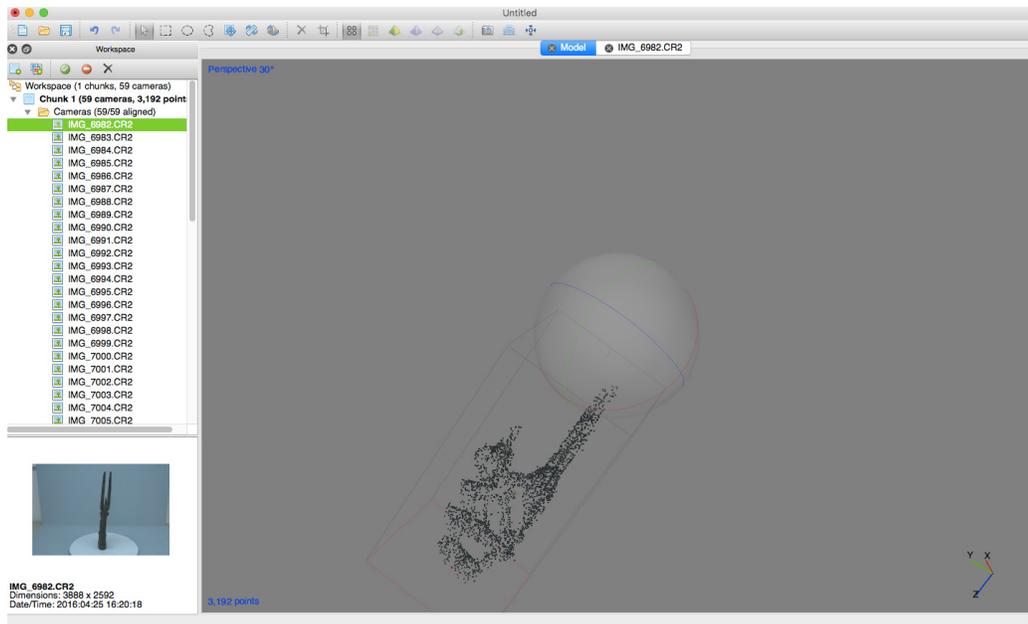


Figure 6. An example of when not enough images are taken. There are not enough points generated, which leaves empty space. Empty space will not fill out in the final rendering.

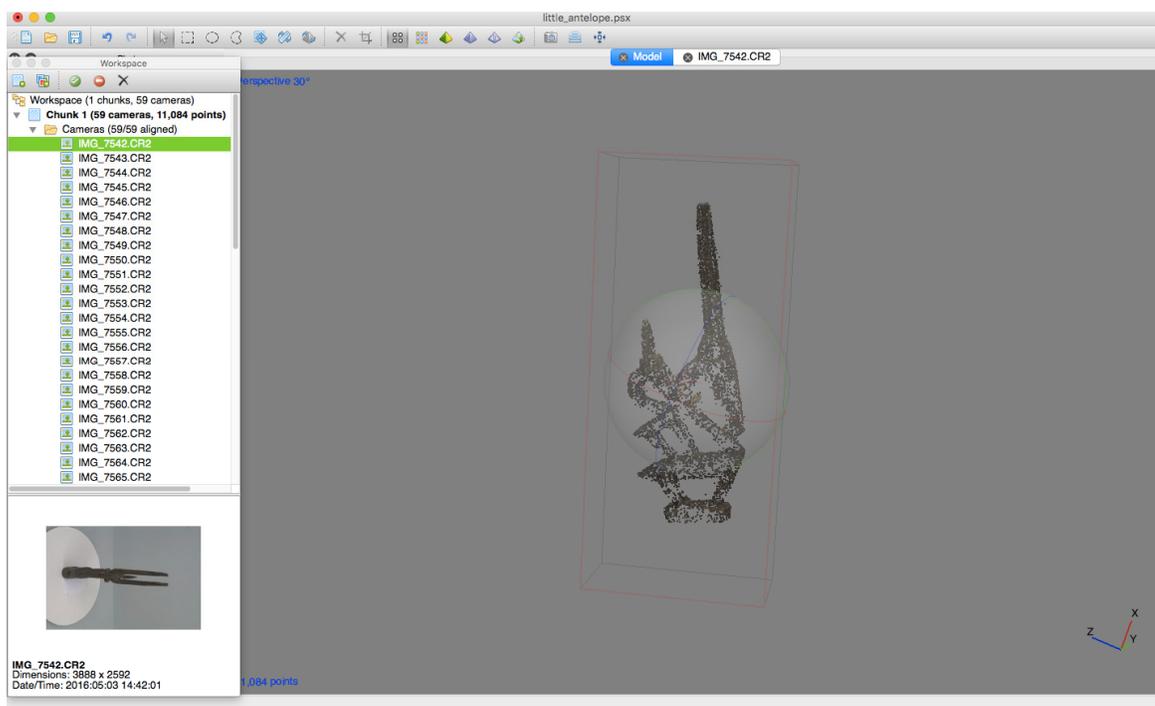


Figure 7. An example of what enough points look like.

create the overall shape and form of the object being created. The last step, building texture, can be generated after building the mesh (see Figure 8). After building the texture, which fixes coloring and binds all the points together to create 3D image. Then the image can be saved and exported to other programs. Figure 9 shows what the final rendering looks like.

Creating the Online Exhibit

Omeka.net does not allow the embedding of 3D images, which means that 3D images cannot be loaded onto the Omeka.net hosted website. A different website had to be used to host the 3D renderings. Sketchfab.com was chosen because it is easy to use and PhotoScan allows users to export 3D images directly onto Sketchfab within the

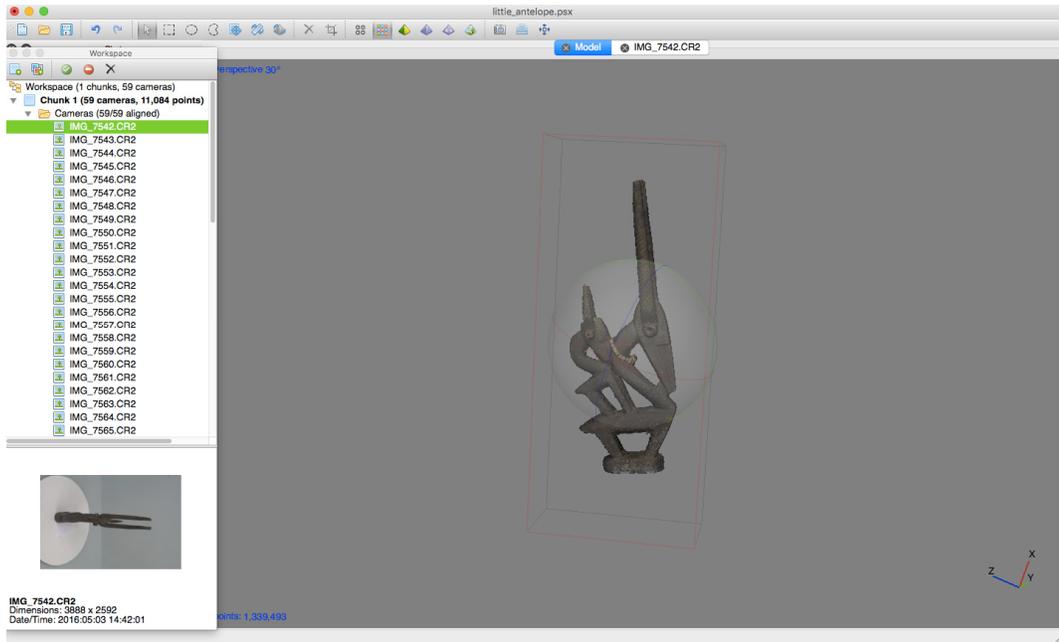


Figure 8. An example of what the 3D rendering looks like after the “mesh” process.

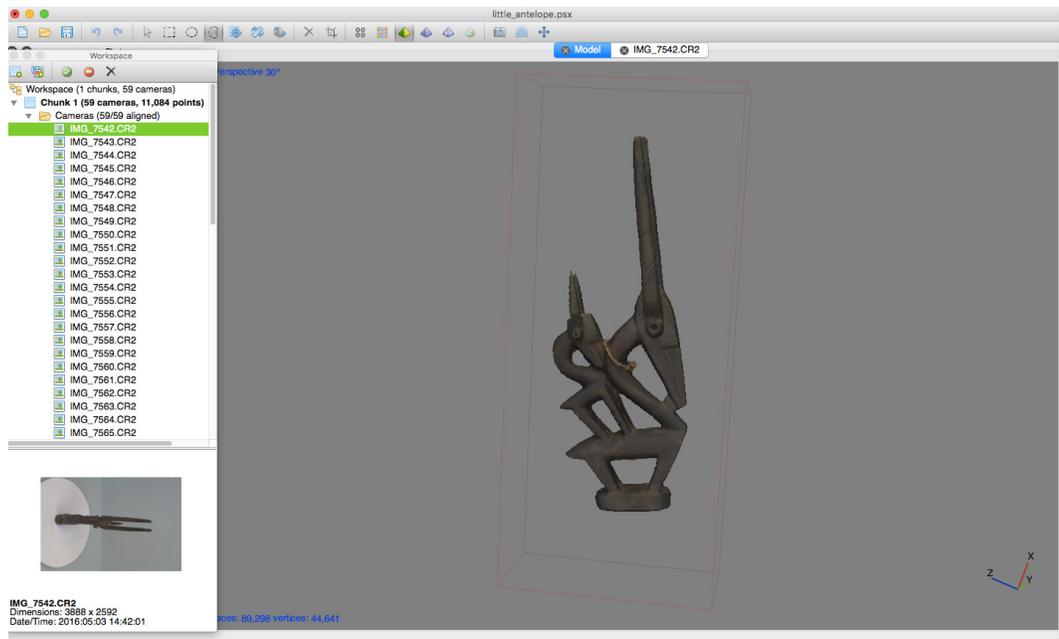


Figure 9. The final step, building texture. Image by the author

software. Once all the photographs, labels, and 3D images were ready, the final process of placing and creating the online exhibit could be done. Omeka.net provides an exhibit builder, but it did not look very clean and had too much going on around it that would take away from the exhibit. Instead, I used Simple Pages, a plugin provided by Omeka.net, which gave me the liberty to create the exhibit the way I wanted. A disadvantage of Simple Pages is that it requires a basic understanding of hypertext markup language (HTML) coding language. For the Internet, HTML is a basic language of coding. There is much more to coding and creating a website, but Simple Pages only allows for simple HTML, which is perfect for someone with minimal coding experience. On the Internet, there is a plethora of information on how to code. There are thousands of guides that can help people with no HTML experience understand coding. There are even code generators that can be copy and pasted to create fonts, colors, and styles for websites.

A problem encountered with Omeka.net was image hosting. Omeka.net does not provide image hosting necessary to embed photographs into Simple Pages. Images can be embedded using Exhibit Builder, but the layout of Exhibit Builder could not be manipulated in a way that could make the online exhibit clean and sharp. Because of this issue, the images needed to be hosted elsewhere. The Internet also has a plethora of options for image hosting. I chose to use Imgur.com, mainly because it is free and also because I am familiar with the website. Another problem encountered in using Omeka.net was magnifying the photographs. There was no way to magnify images on Omeka.net, so images needed to be uploaded elsewhere. Images were uploaded onto Google Photo.

Each image seen on the online exhibit is hosted by Imgur so it can be seen on the website, but linked to Google Photo so viewers can have an up-close look at the headpieces. On Google Photo, viewers can magnify the images to see each headpiece more closely. A drawback to this is that Google Photo opens up on a different web page, breaking the flow of the online exhibit.

The layout of the exhibit mimicked that of many other online exhibitions. The photographs were placed to the right and text placed to the left side (see Figures 10 and 11). Some headpieces had supplemental pictures that showed how some headpieces were used or how a headpiece was constructed. Below the text and photograph were smaller thumbnails of the headpiece showing different angles. These were made smaller as to not take away from the label and main photography. When a viewer hovers over the smaller headpiece photograph, they are told that they can zoom in by clicking the photo. After clicking, visitors are taken to Google Photo on a separate page. Below the main photograph, viewers can see the courtesy line, which shows the accession number, donor, cultural affiliation, and a link to view the piece in 3D on Sketchfab. Again, visitors are taken to a different website on a different page.

Sketchfab shows an album of all the headpieces in 3D. Figure 12 shows the homepage for the 3D images. The only headpiece that was not created in 3D was the tall Antelope headdress. The tall Antelope headdress was broken in certain parts and it was too large to safely rotate on a turntable, thus I decided against making a 3D rendering of the piece. Instead, I used a smaller Antelope headdress, which was about a foot and a half tall. On Sketchfab, each headpiece has a one to two sentence description of what the

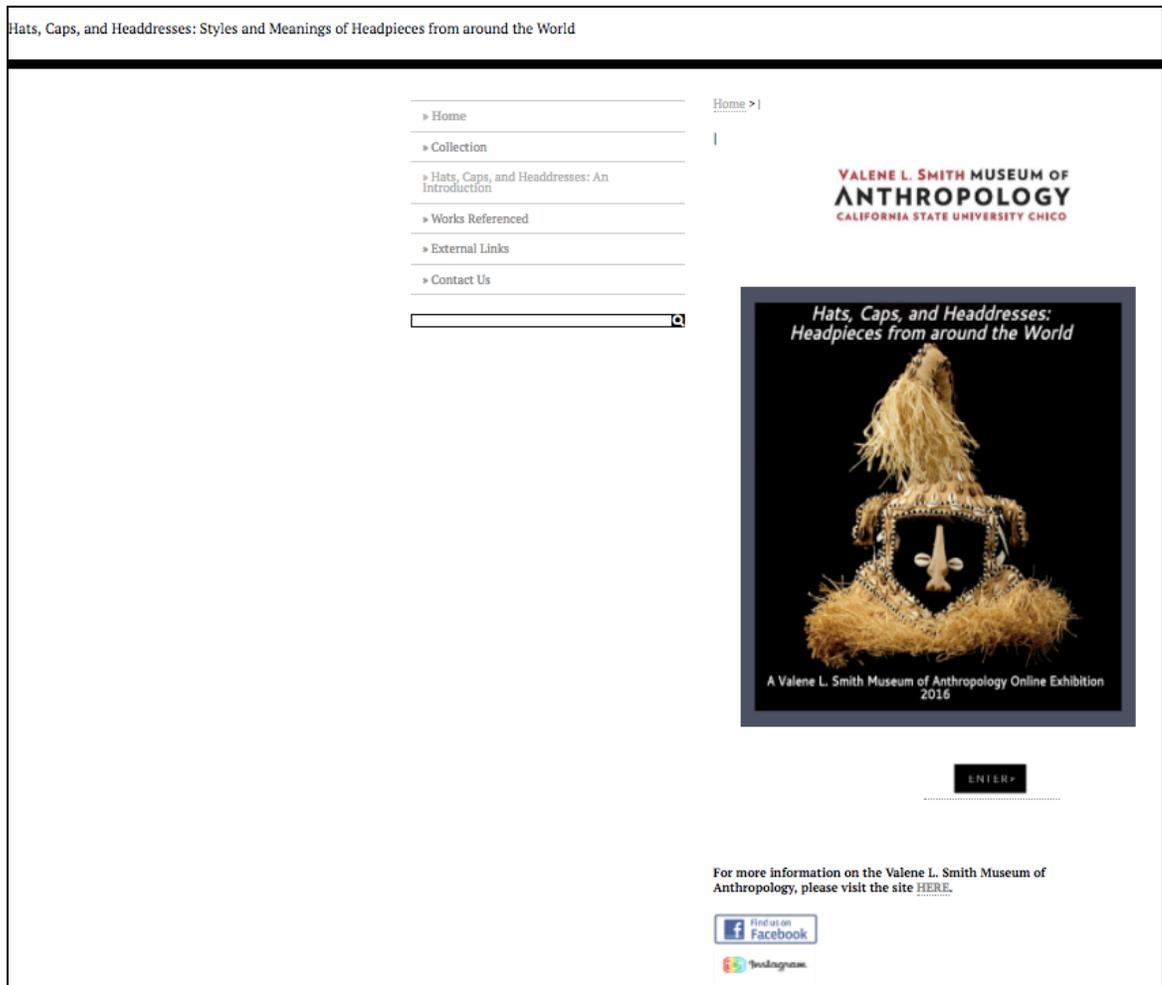


Figure 10. The homepage for *Hats, Caps, and Headdresses*.

piece is, where it is from, and why it is used. There is also a link to the online exhibit, so Sketchfab users can give the online exhibition a look if they would like to learn more (see Figure 13).

The Online Surveys

After the exhibit was uploaded and made available through the Valene L. Smith Museum of Anthropology website, two separate online surveys were created. The

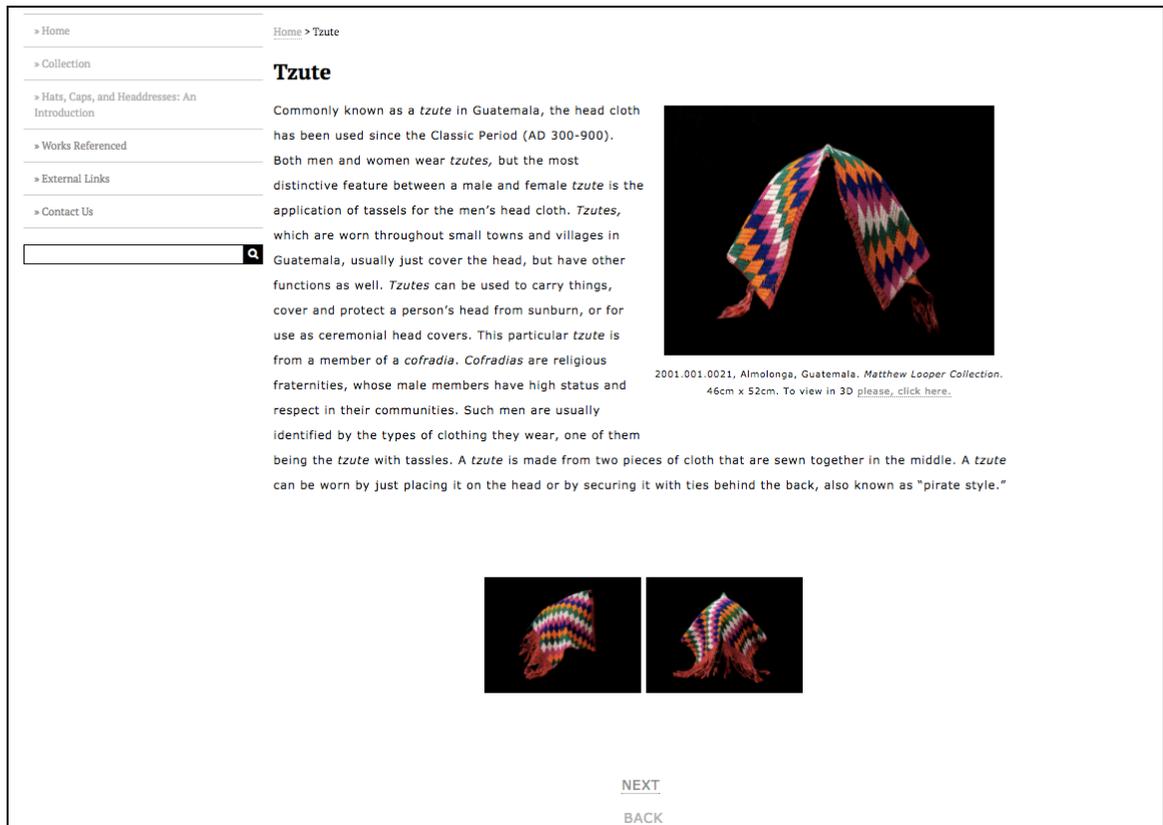


Figure 11. Image of the page for the *Tzute* headpiece. Image by the author.

first survey was created to gather information from the online exhibit visitors. The second survey was created to understand the current feelings of museum and other related professionals on having an online presence. I chose to have two separate surveys for a couple reasons. First, I wanted to gather information on visitors and how they generally felt about online exhibits and what they thought about *Hats, Caps, and Headdresses*. Secondly, I wanted to have a better understanding of the views and thought processes of museum and other related professionals using Omeka to create their online programs.

Currently, there are three different links that can take visitors to the Google Photo album, the Sketchfab album, and the accompanying Qualtrics survey, where

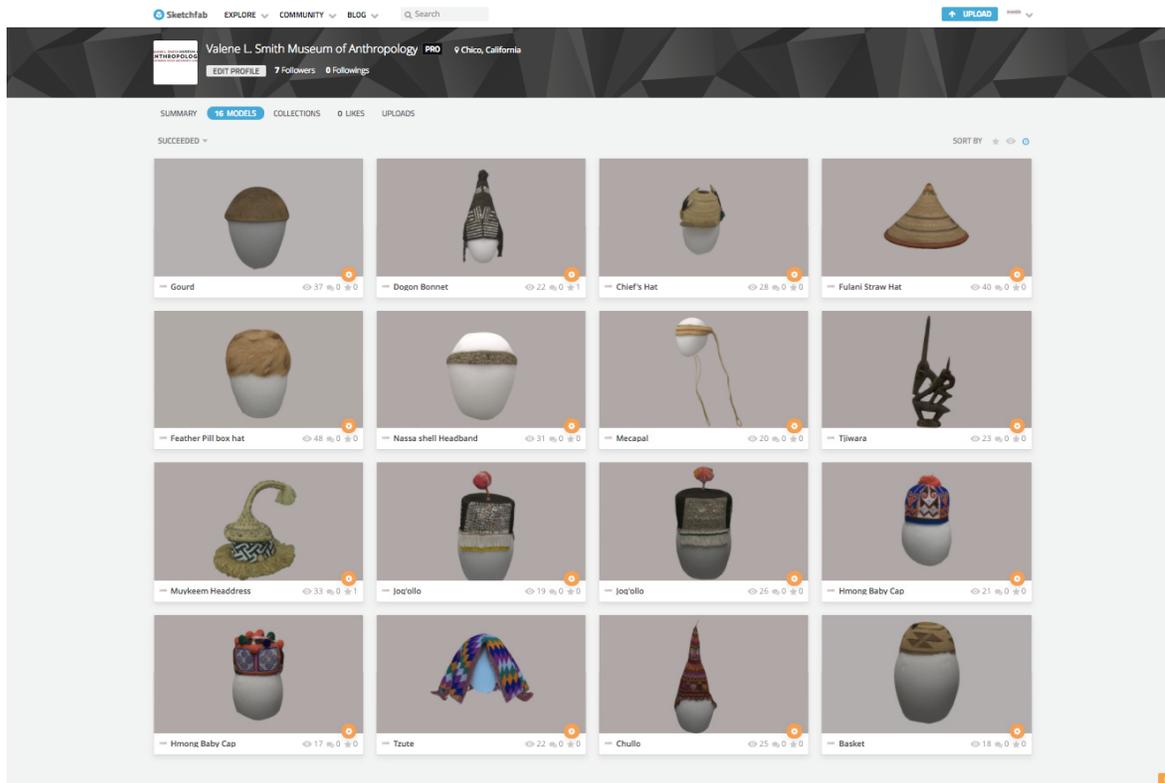


Figure 12. Image of the Sketchfab homepage showing all the headpieces that have 3D renderings.

visitors can give their overall thoughts on the online exhibit. The survey included nine questions. The first few questions were devised to gauge the general level of comfort visitors experienced in using technology and the Internet. These questions were created to see what kinds of visitors are attracted to online exhibits. The rest of the questions were more personal as they related to visitor feedback on *Hats, Caps, and Headdresses: Headpieces from Around the World*. Questions queried visitors as to whether visitors liked the layout of the exhibit, what their thoughts were on the subject matter, and their overall thoughts on the exhibit in particular.

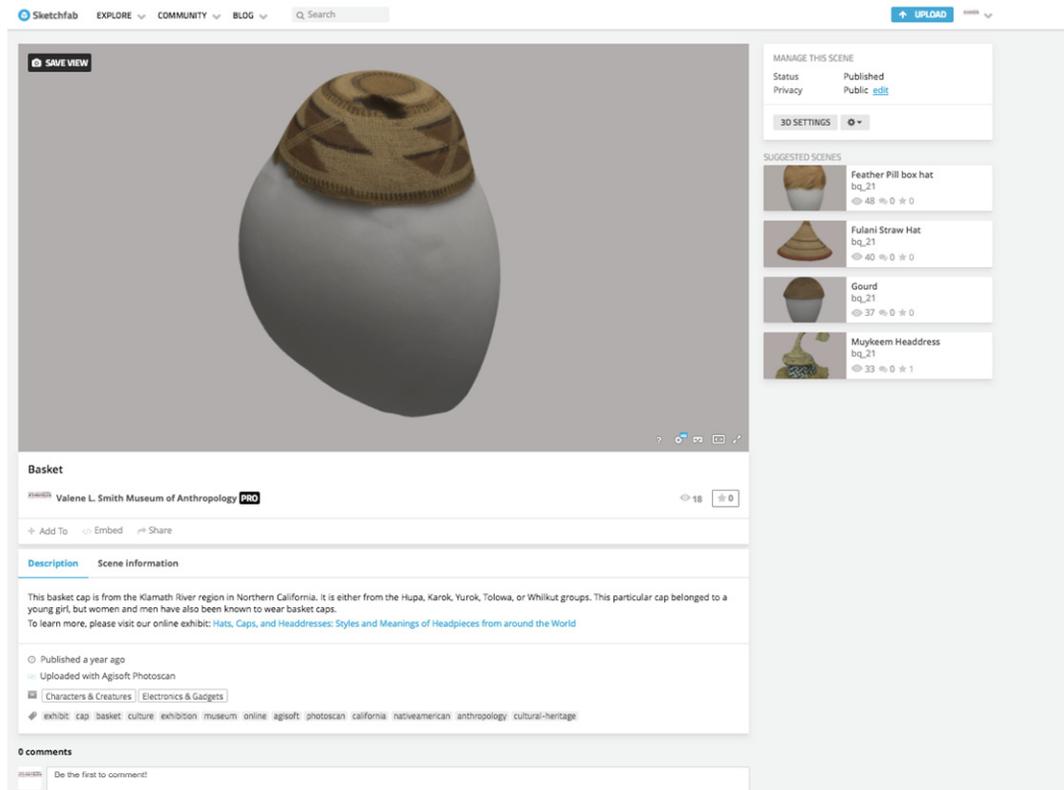


Figure 13. Image of what the 3D rendering looks like on Sketchfab.

The second survey, which was geared towards museum and other related professionals, was sent to over 75 professionals. This survey was sent to professionals who use Omeka for their institutions. On Omeka, there is a list of users and their websites. I went to each individual website and searched for contact information in order to send an email. This email gave a brief explanation of who I was, the goals and objectives of my thesis project, and why I was sending them a survey. This survey proved instrumental to my thesis research as it helped me have a better understanding as to why online exhibits are, and will continue to be, important to institutions. In the following chapter, the data and information gathered from these two surveys will be discussed and analyzed.

CHAPTER VI

DATA AND ANALYSIS

Introduction

The project for this master's thesis was the development of an online exhibition, *Hats, Caps, and Headdresses: Head Pieces from Around the World* for the Valene L. Smith Museum of Anthropology. The online exhibit consisted of headpieces from the museum's permanent collection, which is largely comprised of almost 3,000 ethnographic objects donated over the last 45 years since the museum's beginning in 1970 by former faculty member Keith Johnson, as part of the Department of Anthropology's Museum Studies Program.

The exhibit was developed using Omeka.net, a website builder that serves museums, libraries, archives, and other similar institutions. The main purpose of this online exhibit was to highlight this collection, which may not be exhibited in the near future. In line with the ideals of critical museum theory, this exhibit aimed to be accessible and easily available to the wider public, not just the California State University, Chico campus and Chico community.

Hats, Caps and Headdresses went live in May 2016. For the purpose of this research, data gathering, and analysis, I allowed the online exhibit to be up for at least one year. The research and data in this thesis are from a full-year run of the online exhibit, from May 2016 to May 2017. As of September 2017, *Hats, Caps, and Headdresses* is still viewable on the Valene L. Smith Museum of Anthropology's website.

Two separate online surveys were administered, one for visitors and one for museum and other related professionals. Each survey served a different purpose, but both were very important to my understanding of the public's feelings of online exhibits and programs. These surveys also helped me to find ways in which online exhibits can be improved upon in the future. I decided to conduct two separate surveys because I wanted to gather two types of data: I wanted to see the overall feelings of the visitor after visiting the online exhibit and gather information on the general views of museum and other professionals in the field.

Social media was used to promote the online exhibit. It was shared on Facebook and Instagram, through my personal page and the Valene L. Smith Museum of Anthropology website. The online exhibit's 3D imaging page, powered by Sketchfab.com, was shared on Instagram and Reddit.com.

Issues and Limitations with the Surveys

The design of my surveys for both visitors and professionals aimed to see the overall feelings towards the Internet and museum programs online. These surveys were conducted online, which may have created a bias in the answers received, especially since some questions asked about comfort levels in using the Internet. The issue in these answers arise because those who are able to navigate the online exhibit are more than likely comfortable in using the Internet in general. My online exhibit did not have a clear path (as explained in the methodology chapter) because of restrictions laid upon by Omeka, which may have caused navigational difficulties for some visitors. Compared to other online exhibits such as exhibitions created by the many Smithsonian museums, my

online exhibition required many clicks in order for visitors to look at photographs and 3D images.

Another limitation was to whom my surveys were promoted to. My online exhibit was promoted to people who followed the Valene L. Smith Museum of Anthropology Facebook page as well as my personal Facebook page and Instagram account. This caused an inherent bias in the answers received since those who follow the museum's Facebook page are museumgoers. While my personal Facebook page and Instagram account have a wide variety of different people, some who enjoy going to museums and others who do not go, none of the answers to my surveys had the sound of non-museum goers. Most of the respondents went to a museum at least once a year. Museums are not typically visited by people who do not want to go, thus the same can be said for online exhibit visits. The online exhibit was created with museum visitors in mind. Information gathered from my surveys, thus, helped me for future projects that might involve potential museumgoers.

The surveys conducted for professionals in related fields also had some limitations and issues in terms of the responses. I gathered my data from professionals who used Omeka as their web builder of choice. Because Omeka is a service that caters to institutions, many of the answers reflected this. One particular question asked respondents what type of online programs their institution ran on Omeka. I was aware that the large majority would respond with "online exhibit." Omeka is also known for their cataloguing and database features, which is why I asked this particular question. Some institutions do not have online exhibits, but do have online catalogues and

databases, so while I was aware that many would have an online exhibit, I was not expecting 100 percent of the respondents to say they had one.

Omeka's functions as a web builder are catered to institutions and their many needs. I decided to gather my data from Omeka users because I wanted to see what other Omeka users thought of the program and what they used it for. Using Omeka, at the very least, requires developers to learn how to use Hypertext markup language (HTML) to create a website. One of my questions asked users if they had any prior coding experience before creating their website. I asked this because I knew that there are some people who do not know much about coding. Many web builders market their software as easy-to-use with no coding experience required. This means that while someone can create an online website, they are not necessarily forced to learn basic HTML in order to develop their site. Omeka also offers this type of service, but if someone wants to create something more complex, coding is necessary. Even though some respondents did not have any prior knowledge of HTML, the large majority either did or had staff that had an idea of how to code.

In my research, I have learned that small museums are lagging behind in using technology to reach a wider public. They are lagging behind because of monetary constraints, small hired staff, and lack of time. While many museums may think that having an online presence is important, they may not be able to implement such programs because of these limitations. I asked professionals how important having an online presence is to their institution because I was aware of these constraints. This question was biased because it asked professionals about how important having a website was. It is

now apparent that museums are aware of the necessity of having an online presence, thus this question may not have been necessary. This question, if asked to nonprofessionals in the field, may have garnered the same results as well, since many people believe that Internet is very important for any institution, company, or program. In the same vein, I asked professionals if maintaining a website was in their long-term goals.

In the future these types of surveys would need to reach a larger pool of people. The ultimate goal of museums is to provide educational programs that benefit the community. Museum visitor responses to these types of surveys are important in this regard, since it keeps the visitor in mind and helps museums see what people might want to see implemented or what they already like. This is not to say that these types of surveys would not benefit from non-museum goers. Those who do not visit museums also have valuable thoughts that could help museum program developers to see what things to implement in order to bring in these types of public. These types of surveys would also benefit from in-person interviews and survey taking as it would gather data from different types of people.

In terms of the professional and other related fields, this type of survey would benefit from a larger pool of people as well. This type of survey could be sent to other small museums that do not have an online presence, which would help to see the real issues as to why certain museums are not going online. If such a task would be taken, I believe that questions relating to HTML knowledge would result in many more people having no experience at all.

Visitor Survey

The visitor surveys conducted were important to my research as they helped me understand the visitor, their museum background, what they liked and did not like, what they expected out of an online exhibit, and what they thought about the exhibit I created for the Valene L. Smith Museum of Anthropology. This survey also gave me an idea of what visitors wanted to see, how they wanted to navigate online, and what they thought would be impactful to them. This information is something that can be beneficial to other online exhibit developers as it shows how online exhibits can be improved upon. Although the data gathered was only from 24 respondents, the responses of these participants were, for the most part, similar.

Before creating the visitor survey, I knew that I could not make my survey more than 10 questions long. I feared that if my survey was too long, I would lose out on potential participants. I aimed to make my survey out of five questions, but after writing out the first five questions, I realized that I wanted to know more about the visitor. Thus, I made my survey into nine questions. I knew from the beginning that I would not get many responses because not many people like to take surveys and also because online, there are a variety of different things to do. While I would have preferred all viewers to stay on my online exhibit for its entirety, I knew I would lose viewers.

The survey was also administered at the end of the online exhibit, meaning that visitors would have to finish the whole exhibit before getting to the survey. Even though the responses were low in number, I knew that those who did respond visited my exhibit enough that they could give a thorough and critical response to my online exhibit.

This survey was also promoted by the Valene L. Smith Museum of Anthropology, which means that those who answered the survey were individuals who visited museums frequently. In the future, I think that this type of survey, along with the exhibit, would need to be promoted outside of just the museum community to gather a more comprehensive set of answers from a larger pool of different types of people. Even though the respondents were more museum-oriented, their answers were still helpful. This survey was mainly qualitative in nature. Since my sample size was relatively small, the answers to my questions were more substantial and thought out.

Analysis of the Visitor Surveys

The first question set the tone for the entirety of the survey since it asked participants about their comfort level using technology. This question was multiple-choice and aimed to gauge general attitudes toward technology as a whole. There are many people who are extremely comfortable when it comes to using technology, while there are some who might feel extremely uncomfortable using technology. For this reason, I chose to make this question into a multiple-choice question because comfort levels of technology vary widely from person to person. I wanted to provide as many choices as possible by giving respondents different levels of comfort (i.e., extremely comfortable to extremely uncomfortable). There were 24 responses and all responses were positive in that the majority was comfortable with technology. Table 1 shows the responses of all those who answered this question. Most of respondents (13 in total) felt moderately comfortable using technology. Ten respondents felt extremely comfortable,

Table 1. Summary of responses from question one regarding comfort levels in using technology.

Q1 – How comfortable are you with technology?		
#	Answer	Count
1	Extremely comfortable	10
2	Moderately comfortable	13
3	Slightly comfortable	1
4	Neither comfortable nor uncomfortable	0
5	Slightly uncomfortable	0
6	Moderately uncomfortable	0
7	Extremely uncomfortable	0
	Total	24

and one respondent felt slightly comfortable. This question was further expanded with the follow up question regarding comfort level in navigating the Internet.

The second question was also multiple-choice and asked visitors how comfortable they felt navigating the Internet. My second question may seem redundant, but technology can mean different things to different people. This is why I chose to make my second question particular to the Internet. Similar to the first question, comfort levels vary when navigating the Internet so I made the second question into multiple-choice as well. Out of the 24 responses received, 13 were extremely comfortable in navigating the Internet. Eight respondents were moderately comfortable and only three were slightly comfortable. No one else responded with anything below neither comfortable nor uncomfortable. Table 2 gives a summary of the second survey question. It was expected that the large majority of online visitors would be comfortable navigating the Internet. Individuals who do not feel comfortable using the Internet typically do not go online, and if they do, engage in minimal navigation. With the majority feeling extremely

Table 2. Summary of responses to question two regarding the comfort levels in navigating the Internet.

Q2 - How comfortable are you in navigating the Internet?		
#	Answer	Count
1	Extremely comfortable	13
2	Moderately comfortable	8
3	Slightly comfortable	3
4	Neither comfortable nor uncomfortable	0
5	Slightly uncomfortable	0
6	Moderately uncomfortable	0
7	Extremely uncomfortable	0
	Total	24

comfortable in navigating the Internet, searching, finding, and engaging in an online exhibit is very much a possible activity for the average online user.

The Internet is becoming increasingly available to the public, especially in the United States. In 2000, 52 percent of American adults were using the Internet and by 2016, 88 percent of American adults were online (Pew Research Center 2016). Americans between the ages of 18 and 29 use the Internet the most, with 99 percent of the population online (Pew Research Center 2016). These numbers reflect how widespread the Internet is and how many people use it daily.

Because these numbers are so high, it is understandable that those who responded to this survey question were at the least, slightly comfortable navigating the Internet. This is not to say that everyone uses the Internet. There is still a small percentage of individuals who do not go online. In 2016, about 13 percent of U.S. adults did not use the Internet. The Pew Research Center analysis has shown that the lack of Internet usage correlates with age, educational levels, income, and community type (Pew

Research Center 2016). The Pew survey saw that individuals over the age of 65 were less likely to be online as well as individuals with less than a high school education (Pew Research Center 2016). Adults who made less than \$30,000 annually were also less likely to use the Internet (Pew Research Center 2016). Americans who lived in rural areas used the Internet less than those who live in urban or suburban areas (Pew Research Center 2016).

The third question asked a more general question regarding physical museum visits. I asked this question because I wanted to know if those who visited the online exhibit were also visiting physical museums. Twelve respondents visited a museum four to six times a year compared to just one respondent who did not visit any museums within a year. Three respondents visited seven to eight times a year and eight visited one to three times a year. Twenty-three respondents visited a museum, even if only once or twice, which is a positive outcome, especially as it relates to online exhibits. Physically visiting a museum entices visitors to learn more about the exhibits, objects, or ideas they see. Table 3 shows the results of this survey question.

Table 3. Summary of responses to question 3 in regard to museum visits a year.

Q3 - How often do you visit a museum a year?		
#	Answer	Count
1	0 times a year	1
2	1-3 times a year	8
3	4-6 times a year	12
4	8-7 times a year	3
	Total	24

Museums have been very popular over the past few years. According to the American Alliance of Museums, there are approximately 850 million visits each year to American museum (American Alliance of Museums 2018). Of all these visitors, the typical museum visitor fits a certain type of profile (Ellenbogen et al. 2008:188). The museum visitor usually values learning, seeks the challenge of exploring new things and ideas, and places a high value on doing something worthwhile during leisure time (Ellenbogen et al. 2008:188).

The museum visitor also tends to fit a certain demographic. Visitor studies have shown that the typical museum visitor in the United States tends to be educated, more affluent, and have better paying jobs than the average citizen (Falk 2009:28). These psychographic and demographic profiles show that there is some form of exclusion among museum visitors. Those who do not visit museums do so because they view museums as formal and formidable places that are inaccessible to them because they are not educated enough to prepare themselves for museum conduct (Chang 2006:173). The online exhibit is a great way to try and include individuals who feel left out or uncomfortable at a physical museum. Online exhibits do not require a large crowd or disciplinary conduct, which could be comforting to someone who fears going to the museum. Online exhibits could potentially ease someone into visiting a museum by providing information so that the potential visitor can feel ready.

The fourth question asked if visitors had ever visited an online exhibit and if so, which ones. Twenty-two respondents answered this question. Out of the 22 responses, 14 had never visited an online exhibit before compared to eight who had visited at least

one online exhibit. The majority of respondents had not visited an online exhibit before, thus these responses were telling of the popularity of online exhibits. Although online exhibits are sprouting every year, they still face the challenge of capturing a potential visitor's attention. There are a variety of options online that people can choose to visit, thus, online exhibits face a lot of competition. Of the few who had visited an online exhibit, three respondents mentioned visiting the Smithsonian Institution. These respondents did not clarify or mention which particular Smithsonian online website they visited. One respondent had visited an online exhibit before, but only as a homework assignment. Although this respondent may have been required to visit an online exhibit for schoolwork, it indicates one of many ways museums online can benefit the public.

Online exhibits can, and are, supplemental for schools. Teachers and professors can browse online and find an online exhibit that relates to the topics they are teaching in a class. One respondent explicitly mentioned that he/she did not intentionally visit online exhibits because they favored visiting physical museums. This response is not surprising. Physical museums have things to offer that cannot be experienced online.

The fifth question followed up on the fourth, asking visitors if they believed all museums should have online exhibits. This question aimed to gauge the interest level of potential visitors. Out of the 23 respondents, 22 believed that all museums should consider having online exhibits. One respondent believed that it was up to the board and staff of the museum to see if an online exhibit was viable and integrated well into the mission of the institution.

The other respondents had a mixture of responses that included positive and negative views on online exhibits. Many thought that an online exhibit was a valuable resource and a great opportunity to show off the museum's collection. Almost everyone thought that online exhibits offered accessibility to those who could not visit the physical museum. Some also saw online exhibits as more of a supplemental opportunity for the physical exhibit. A few respondents preferred to go to a physical museum and mentioned that online exhibits could not replace a physical museum. It is interesting to note that a few respondents could see the limitation that some museums faced in trying to go online. These respondents stated that budgeting and staff is limited for smaller institutions, which could prevent museums from creating online exhibits.

The sixth question followed up on the fifth question and asked visitors if they thought online exhibits could potentially replace physical museums. Out of the 24 responses, 22 stated that no, an online museum could not replace a physical museum. Overwhelmingly, many mentioned the term "experience" in their answers. The experience of going to a physical museum outweighed visiting an online exhibit. Although an online exhibit could provide supplemental information and showcase what the museum is like, the experience of physically visiting a museum and getting to walk around and get to see actual objects was very important to the visitors. In this sense, online exhibits are lacking.

There are, undoubtedly, differences between physical and online museums. Physical museum visitors want an experience, whereas, online visitors seek sharing and

communication (Ellenbogen et al. 2008:192). The experience of going to the museum includes the resonance and wonder of seeing the museum's exhibitions in person.

The physical museum can still invoke a sense of wonder for contemporary museum visitors. In this regard, the Shakespearian scholar, Stephen Greenblatt, discusses this in his book chapter, *Resonance and Wonder*. In *Resonance and Wonder*, Greenblatt differentiates between the two words as they relate to museums. Resonance reflects the power of the displayed object(s) to reach out beyond its boundaries to evoke the complex and dynamic cultural forces from which it has emerged (Greenblatt 1991:42). Wonder, on the other hand, is the power of the object to stop the viewer and bring forth the sense of uniqueness and awe the object inspires (Greenblatt 1991:42).

For the seventh question of the survey, visitors were asked what they thought of *Hats, Caps, and Headdresses*. This question was mainly asked to see how people reacted to the topic and whether they thought it was a good exhibit or not. Overall, visitors enjoyed the exhibit. Some mentioned that they never thought about hats or their many meanings, but after viewing this exhibit, some visitors had a newfound appreciation for what people wear. Many thought that the 3D imaging was enjoyable and fun. Some had issues with the technical aspects of the online exhibit, which the last question asked.

The eighth question asked respondents what could have made their overall experience better. This question was devised to gauge the effectiveness of the technical aspects of the online exhibit. Many thought that more interactives would improve the exhibit. For example, in the exhibit, the headpieces were organized by continent. A map was introduced that showed the general area in which the headpiece was made and worn.

On these maps, there was an arrow that indicating the general location of a hat's place of origin. Participants in the survey thought that these pages would be a great place to create more interactives and have "clickable" links. It would also make the whole experience of the exhibit personalized, because a visitor would have more choices and be able to pick and choose where he or she would like to go. Thus, online, visitors highly preferred a less linear path. Some wanted larger images, fewer labels, more colors, music to accompany the headpieces, and voice descriptions. Some mentioned that the exhibit was not as easily useable on mobile and that a light color background in the images would make the object more visible.

This particular question was insightful in the many ways the online exhibit could improve, technically. Omeka.net has its limitations making all of these suggestions difficult to accommodate, but some things, for example making images larger and changing the background colors, can be fixed. Unfortunately, Omeka.net dictates how a webpage can look with pre-chosen templates. The only way someone using Omeka could accommodate these suggestions is if omeka.org were used. Omeka.org is coding centered though, which means that users need to have a very good understanding of a coding language. Omeka.org allows for highly customized pages that would not require images of 3D imaging to be hosted outside of Omeka, unlike *Hats, Caps, and Headdresses*, which needed Google Photo and Sketchfab to host object and 3D images.

The ninth and final question asked visitors if they would be interested in visiting an online exhibit by the Valene L. Smith Museum of Anthropology if it were created. Out of the 24 who responded, 22 said yes while two said maybe. This question

mainly was asked to gauge interest levels in visitors. No one said no, but the question to be asked here is would these visitors try to visit an online exhibit on their own?

Museum and Other Related Professionals Survey

The second survey was separate from the visitor survey. This survey was intended to reach museum professionals as well as other professionals in similar fields such as archivists and librarians. I chose to conduct a second survey because I wanted to get an understanding of what the consensus was in regards to going online from the perspective of the developer. For this separate survey, I did not link the questionnaire to my online exhibit as I had for the visitor survey. Omeka.net offered a Showcase page on their website, which had a long list of institution—museums, libraries, special collections, archives—that use Omeka to make and publish their websites. From this list, I gathered contact information from 75 institutions. I drafted an email that explained who I was, where I went to school, my area of study, a brief description of my thesis, and why I was contacting them. In the email, I also provided a link to my online exhibit as well as a link to the survey. I had no way of knowing if all the websites were up-to-date or if they were still updated often. After I sent out the emails, I did receive 10 to 15 error emails, which meant that the email was either no longer in use or the contact email on the website was not accurate. I also got replies from survey takers wishing me lucking on my project. Overall, I received 19 completed surveys.

This survey was not geared towards receiving feedback on my online exhibit. For this reason, the questions in this survey were more general. I wanted general

information first, such as what type of institution was being run, the size of the institution, and what type of programs were being run online. Then I wanted more personalized and qualitative information. This survey had 11 questions. Most of them—8 in total—were multiple-choice. Most of the questions were multiple-choice because I wanted to know more about the perspective of the developer. I also thought that if I added more multiple choices respondents would not leave the survey. For the visitor survey, I did not want to exceed 10 questions because I was concerned about the attention span of the respondent. But this was not the case for the museum professional survey. I did not think that museum and other related professionals would stop mid-way through a survey; however, in retrospect I should not have made that assumption. In the future, all surveys should be created with the assumption that not everyone will complete them.

Even though the response level was low with only 19 full responses, I think that the answers were informative. The qualitative responses were well thought out by respondents with honest answers about their views on online exhibits. All answers were helpful for me in my research. Many of the answers reflect the views of many of the books and articles I have read throughout my research.

Survey Analysis

The first question in this survey asked what type of institution the respondent worked for. It is common for institutions to run more than one type of department, thus this question was multiple-choice with the option to choose as many that applied. Respondents came from museums, archives, libraries, special collections, historical societies, library consortiums, and a waterfront non-profit. There was one respondent

who replied that they were not attached to an institution, but were a collection of enthusiasts who created their own digital library to gather and share information. Table 4 shows a summary of the responses to the first question.

Table 4. Summary of responses to question one regarding the type of institution run by the respondents.

Q1 - What type of institution do you run? Please, choose all that apply.		
#	Answer	Count
1	Museum	2
2	Archives	7
3	Library	5
4	Special collections	5
5	Historical society	2
6	Other (please explain)*	6
	Total	17

*Other (please explain):
 Library consortium
 Waterfront non-profit with a strong interest in history
 We have no official institution; we are a collection of enthusiasts who created our own digital library to gather and share information.
 State govt library/archives
 Library Consortium
 University professor

For the second question, respondents were asked what size they considered their institution to be. All 18 responses were either small or medium. Eleven of the responses were small-sized institutions and eight of the responses were medium (see Table 5). None responded with large sized or “not sure.” This question was asked mainly to see the demographic of who was using Omeka to power their institution’s website. Because Omeka offers free services, many small museums use the program. Although certain things cannot be customized using the free services, such as templates or the look

Table 5. Summary of responses to question two regarding the size of the respondent’s institution.

Q2 - Do you consider your institution to be:		
#	Answer	Count
1	Small	11
2	Medium	8
3	Large	0
4	Not sure	0
	Total	19

of the website, institutions can still create a website, catalogues, databases, and online exhibits. Paid services offer more freedoms in customization and institutions with coding knowledge can create state of the art pages with Omeka.

The third question asked what type of online presence these institutions had. I decided to make this question into multiple-choice because I am aware of the different programs institutions run on websites. Websites from institutions offer content ranging from online exhibits to online shopping. For this reason, I wanted respondents to have an option. These institutions had online exhibits, databases, catalogues, blogs and video blogs (better known as vlogs) Facebook, and a general website. Of the 17 who answered this question, 100 percent of the responses stated that their online presence involved online exhibits. This particular question offered respondents the opportunity to pick as many options as they seemed fit. Of the 17 responses, 12 institutions used databases, 11 used catalogues, and 7 used blogs and Vlogs. There was an option for respondents to provide their own answer through “other,” which two responded with having a Facebook page and a website. Table 6 shows the summary of responses from this question. These responses reflect the present nature of museums. Many institutions are no longer one-

Table 6. Summary of responses to question three regarding the type of online presence the respondent’s institution has.

Q3-What type of online presence does your institution have? Please, choose all that apply.		
#	Answer	Count
1	Database	12
2	Catalogue	11
3	Online exhibit	17
4	Blog/vlogs	7
5	Other (Facebook page, website)	2
	Total	49

dimensional. In the past, institutions might have a website; today, institutions are almost required to have more. Thus, this question aimed to see what other programs these institutions were involved in to entice visitors.

There are many reasons as to why institutions should consider going online. The fourth question in the survey asked respondents why they chose to have an online presence. The overall theme to the answer of this question revolved around sharing and publishing. Twelve respondents decided to go online to provide some sort of education (such as online exhibits, databases, and catalogues), three respondents chose to simply using the Internet as a different platform to share information (see Table 7). One respondent mentioned that their physical space was too limited and thus, they couldn’t exhibit everything they wanted to. The Internet provided this institution with a limitless virtual space where they could use an online exhibit to display their collection. Another respondent mentioned that there was no existing web-based resource for sharing information that they felt would be of interest, so they decided to create one. This response was intriguing, because it speaks to the potential of online exhibits,

Table 7. Summary of responses to question four asking respondents why their institution decided to have an online presence.

Q4 - Why did your institution decide to have an online presence?		
#	Answer	Count
1	Teaching purposes (i.e., teach students how to use research methods and publish information)	1
2	Educational purposes (i.e., publish information for the public)	12
3	Testing purposes (i.e., practice or learn how to use the Internet to publish information)	0
4	Other (if other, please explain in the following question box)	3
	Total	16

programming, and interactives. As the Internet continues to provide accessibility, more and more individuals and groups will be able to provide their own information to the public. Without institutions attached, individuals can create their own online exhibits. The idea of who publishes information and from where this information is sourced is an issue to be considered, but the prospect of other groups, communities, or individuals with knowledge can benefit others.

Since Internet usage among museums continues to grow rapidly, the fifth question asked respondents how long they had been online. Out of the 17 who responded, 10 said that they had been online for two to five years. Six respondents had been online six-10 years, with three being online for 10 or more years. Only one respondent had been online for a year or less. In order for institutions to be online, developers need to have the ability to create and develop websites. The levels of experience vary widely and creators do not necessarily need to have extensive knowledge on coding.

The sixth question asked respondents if they had any coding experience prior to creating a website. In response, 12 participants responded yes, while five responded no (see Table 8). The majority of responses were yes, which was not expected, but also telling of today’s society. With more and more individuals having access to Internet and gaining more experience in navigating the web, there is more interest and availability in learning how to create websites. Today, there are countless website builders that help individuals create their own websites. Through these programs, people with little to no experience can gain confidence in learning basic coding.

Table 8. Summary of responses regarding coding knowledge of respondents.

Q6 - Did you (or staff) have any coding experience prior to creating the website?		
#	Answer	Count
1	Yes	12
2	No	5
	Total	17

The varying levels of experience were important to note as well. For the respondents who had coding experience prior to creating a website, the seventh question asked them to use a scale to rank their level of experience. In the previous question, 12 respondents said that they did have some sort of coding knowledge. Of the 12, only one stated that he/she was very experienced. Five respondents were experienced, followed by three respondents who were slightly experienced. Two respondents were neutral—neither experienced nor inexperienced—while only one respondent mentioned that he/he was not

experienced in coding. Overall, most people who responded to this survey had prior knowledge of coding (see Table 9).

Table 9. Summary of responses regarding experience levels of coding knowledge.

Q7 - From a scale of 1 to 5, 1 being not experienced and 5 being very experienced, how experienced were you (or staff) in coding?		
#	Answer	Count
1	1-not experienced	1
2	2-slightly experienced	3
3	3-neutral	2
4	4-experienced	5
5	5-very experienced	1
	Total	12

The eighth question asked participants how important it was for an institution to have an online presence. In response, 13 participants stated that it was extremely important, whereas three said that it was very important, and only one thought it was moderately important (see Table 10). Institutions understand the importance of going online. With so many different activities aiming to capture the audience’s attention, it is

Table 10. Summary of responses regarding the importance of having an online presence.

Q8 - How important is it for your institution to have a website presence?		
#	Answer	Count
1	Extremely important	13
2	Very important	3
3	Moderately important	1
4	Slightly important	0
5	Not at all important	0
	Total	17

imperative for institutions to understand that audiences seek access to information. It is assumed and expected that this information will be presented online (Marty 2008:181).

The ninth question asked participants what, if any, were the limitations of their website. Some stated that Omeka was limited in its technical capabilities. There were concerns over lack of time as well. Small museums are limited by staff, time, and budget constraints. There is a correlation between what defines a small museum and the concerns of some of the respondents. Small museums and institutions need to prioritize programs and website development might not be as important as other museum concerns.

Another interesting limitation mentioned was the inability of synchronization between databases and Omeka. Some databases have systems that allow certain information to be uploaded onto an Internet database for the public to view, while other, more confidential information is only accessible within the institution. These databases that provide synchronization are more expensive. The costs of these types of databases, thus limit some institutions and makes them use programs like Omeka, which cannot synchronize and determine the difference between private and public information. Using programs like Omeka makes institutions manually input new information rather than having it synchronize immediately, which is time consuming and can be complex.

The tenth question asked respondents what they thought the future had in store for institutions going online. There was mixture of positive and negative comments regarding this question. There was an overall concern about sharing too much information online. This concern mostly relates to the possibility of information and data manipulation. There is no doubt that with all the positive things that the Internet can

provide, the manipulation of information is definitely a possibility. Information can also be stolen, which brings into question the validity of what is represented online, who owns what, and who allows the information to be published online. Concerns over competition within the profession were also brought up.

In time, more and more online exhibits and programs will surface, crowding the space and creating competition. Although this may be a concern, competition may be a good thing for online exhibits. Competition will create more exhibits online with more innovative ways to appeal to viewers. Overall, having an online presence is imperative for museums and institutions. It allows educational programs to reach the public, which is the underlying objective of all museums and institutions.

The eleventh and final question asked respondents if they planned on keeping their institution's website online for the foreseeable future. The majority—14 of the respondents—replied “definitely yes,” whereas only one responded with a “definitely not.” Without asking the respondents who replied with “definitely not,” it is very difficult to conclude why they would not continue having an online presence in the future. Respondents might feel like it is too much labor to continue updating their websites or they may see that their sites are not too popular and not worth having. Two respondents were not so sure but still responded “probably yes” (see Table 11). These responses are positive. It reflects the overall sentiment that museum professionals have in regards to online exhibits. It is necessary now to be online, and by being online, these institutions can show the public that they are in the present and in the future rather than in the past.

Table 11. Summary of responses regarding the respondent’s future plans in keeping their online website.

Q11 - Do you plan on keeping your institution's website online for the foreseeable future?		
#	Answer	Count
1	Definitely yes	14
2	Probably yes	2
3	Might or might not	0
4	Probably not	0
5	Definitely not	1
	Total	17

Analyzing Google Analytics

Google Analytics is a program developed by Google to help website developers see and understand who their viewers are, what they do, and how they arrive to any given website that is loaded onto Google Analytics. Google Analytics is useful for online businesses, blogs, or any other website. Google Analytics needs to be set up for the website, and once it is done, a variety of data is registered.

Google Analytics was set up for *Hats, Caps, and Headdress* when it was first published in May 2016. Since May 2016, Google Analytics has been recording information such as sessions, users, page views, pages per session, average session duration, bounce rate, and new sessions. These terms are important to define in order to have a better idea of who exactly was visiting *Hats, Caps, and Headdresses*.

Google Analytics Terminology

A session is defined as an interaction or multiple interactions done within a website (Mangold 2017). These sessions also expire after 30 minutes, which means that, if a user has a tab open, but has gone to do something else, after 30 minutes the session

has ended and at 31 minutes, a new session begins (Kohler 2016b). A user is a person who browses the website at any given moment. In Google Analytics, users are unique which means that, if a user comes back to the website at a different time, the user will not be counted again (Kohler 2016b). Pages per session are the average amount of how many pages are visited per session (Mangold 2017). Page views are the amount of times a website's pages have been viewed. In Page views, it does not matter if one visitor visits different pages multiple times; each visit to each individual page is included in the overall count (Kohler 2016c; Mangold 2017).

The average session duration is the average amount of time spent on a website. These averages are not always accurate, as they also include averages of visits that are clicks and exits (for example, someone who lands on a page and leaves immediately) which amount to 0 seconds (Kohler 2016b; Mangold 2017). Average session durations also include sessions that last for a long time, which sometimes means that someone has a tab open and has forgotten about it (Kohler 2016b). As mentioned before, a session expires at 30 minutes, so if someone forgets to exit out, this amount of time is also recorded into the average session duration.

Bounce rate is the percentage of visitors who do not interact with the website (Mangold 2017). This means that a visitor has landed on the website, but has decided to look no further and exits the page. Bounce rates help to determine if a website is garnering enough attention and if it has enough power to captivate a viewer (Kohler 2016b). Websites want to have a low bounce rate, because the higher the bounce rate, the

more likely a website needs to make adjustments and changes to attract visitors (Kohler 2016a). Lastly, new sessions refers to the percentage of new sessions started.

Analyzing Hats, Caps, and Headdresses

Hats, Caps, and Headdresses had a total of 763 sessions, 555 users, and 3,323 pages viewed over the course of a year. On average, visitors visited 4.36 pages per session and had average session duration of three minutes and 16 seconds. The bounce rate was 36.83 percent, and there were 72.74 percent of new sessions.

Google Analytics shows how long each of these sessions ran. The majority of sessions only lasted between 0-10 seconds, but following that, the second largest majority of sessions lasted between three to 10 minutes. Thirty-four sessions lasted between 11 and 60 seconds. There were 21 sessions that lasted 10 to 30 minutes and 13 sessions that lasted for 30 minutes or more. Many of these sessions did not surpass interacting with more than one page. Next, 117 sessions surpassed five pages, with 45 sessions going past 20 pages.

Sessions help by understanding the overall interaction the audience is having with a website. By looking at these statistics, it is noticeable that online audiences need something eye-catching to stay on a website. Many sessions did not last long, and some left after visiting a couple of pages. This poses a problem for online exhibits since the first few pages of an exhibit are spent explaining the topic and providing an introduction to what will be presented. By looking at the data from the sessions page depth and duration, it seems apparent that audiences do not prefer a linear path and would rather be captivated from the beginning. This goes in line with some of the answers received from

the online survey. Many respondents thought that the online exhibit could use less linearity and more options for visitors to click and pick what they wanted to see.

Google Analytics also collects data on who visits websites and helps identify those who did not interact with the website at all. About 34.21 percent of those who visited *Hats, Caps, and Headdresses* were from the United States. Further analyzing this data shows that the majority of visits came from California, New York, and Washington. Within California, visitors who accessed the exhibit hailed from Chico, Los Angeles, San Francisco, Sacramento, Beverly Hills, Oroville, Redding, Yuba City, Paradise, and Petaluma. This data shows that the online exhibit reached cities surrounding Chico, California, where the Valene L. Smith Museum of Anthropology resides as well as other parts of the state and the country. This data is also reflective of how the online exhibit was promoted on social media. *Hats, Caps, and Headdresses* was promoted through the Valene L. Smith Museum of Anthropology's Facebook page and Instagram as well as my personal Facebook and Instagram. This reached the immediate Chico community.

Google Analytics offers the ability to see where users are coming from online. Visitors to *Hats, Caps, and Headdresses* came from organic and direct traffic as well as from csuchico.edu and reddit.com. Organic and direct traffic mean different things. For example, organic traffic means that visitors are coming from Google or other search engines, whereas direct traffic means that visitors are directly inputting a URL—the website's address—into the search bar. Google Analytics shows organic traffic brought visitors from different countries such as France, Malaysia, and Peru. Direct traffic came

predominantly from the United States. Traffic also came from referrals from csuchico.edu and reddit.com.

The data also shows what types of browsers and operating systems are being used. Chrome, Safari, and Firefox are the top three most user browsers, and Macintosh, IOS, and Windows are the top three used operating systems. More importantly, Google Analytics takes note of mobile usage. There were 156 sessions, which used mobile devices to view the exhibit. Both iOS and Android were the only mobile operating systems used, with 92.31 percent of sessions coming from iOS compared to 7.69 percent of sessions coming from Android. Mobile usage is a recent phenomenon, especially since today, many adult Americans rely heavy on their mobile devices to connect online. As of 2016, 95 percent of adult Americans own a cellphone and 77 percent of adult Americans own a smartphone (Pew Research Center 2015). Additionally, 100 percent of young American adults (ages 18-29) have a cellphone and 92 percent have a smartphone (Pew Research Center 2015). More interesting is the fact that one in 10 American adults are using their smartphones as their primary source of online access at home (Pew Research Center 2015). The increasing numbers of people using their mobile devices means that museums need to cater to mobile development. Omeka does a decent job of providing mobile friendly services, but as visitor surveys mentioned, loading times are slow and images do not come out as perfectly as one would like. In the future, it is more likely that website creators will provide more mobile capabilities, which will benefit the small museum. Even now, with the website creators available, websites can be created with mobile usage in mind.

3D Imaging and Sketchfab

Google Analytics did not record any data for the 3D imaging portion of the *Hats, Caps, and Headdresses* online exhibit. The 3D imaging had to be hosted on a separate website called Sketchfab. Online visitors had to click on a separate link provided underneath the image of a headpiece in the online exhibit. From there, a separate page would pop up and take the online visitor to Sketchfab and the 3D image of the headpiece. From the beginning, I was worried that visitors would be sent to a different site. Omeka.net did not allow for 3D images to be hosted on their predisposed templates. I was concerned that visitors might lose interest in the exhibit if they had to move to a different site and then go back to the online exhibit. Another concern was that visitors might not be happy with all the separate pages opening up each time they wanted to see a 3D image. Although these concerns were valid, the possibility for these headpieces to have a 3D image done and published was highly positive. Online participants enjoyed playing around with the 3D headpieces and found it fun to move them around and see the pieces in-depth.

Although Google Analytics could not record views, Sketchfab did. Sketchfab recorded how many views each individual headpiece produced. Since Sketchfab is separate from Omeka, there are different types of visitors to this page. Viewers from Sketchfab may not have visited the online exhibit. Viewers from Sketchfab may have come from recommendations, other followers, hashtags, tags, or searches. Unfortunately, it is not possible to tell who the Sketchfab demographic was, but it is possible to tell the overall viewership in numbers. Overall, 404 visitors viewed at least one headpiece. The

most popular headpiece viewed was the feather pillbox hat, with 47 views. This is not surprising, especially since it is the first headpiece presented in the exhibit. Other popular headpieces were the Fulani straw hat, gourd cap, and Muykeem headdress with more than 30 views.

Conclusion of Google Analytics and Sketchfab

Google Analytics provides insightful data and statistics that can prove to be beneficial for any website, not just museums. Google Analytics can help users see where and who visits websites and, most importantly, indicate who is not visiting the website. Understanding who is not visiting a website is important, because website developers can try to focus on fixing certain parts of a website to garner more users. In terms of *Hats, Caps, and Headdresses*, Google Analytics shows that users tend to wander off after visiting a few pages. This could cause issues as the first pages are introductory pages, which gives viewers a sense of what they are going to read and see.

Research has shown that online viewers would rather not have to deal with a linear trajectory, one that is often found in physical museums. In this sense, a future online exhibit can focus on giving the audience more of choice in what they want to view from the very beginning. For example, some online participants stated that they would have liked to be able to click on the hats seen on the world maps. This is something that can be implemented in the future.

Another strategy that can and should be implemented is to encourage more visitors through social media. *Hats, Caps, and Headdresses* was promoted on Facebook,

Instagram, and Reddit. There are other platforms that could have been used as well, such as Twitter. Other strategies should include constant promoting and the use of hashtags, which allow websites or pages to be seen by a wider public.

As an educational platform, it is inevitable that those who visit the website are looking to learn about something in particular, have to visit because of school, or are casually interested in a general topic. These potential viewers should be the focus of an online exhibit developer. Google Analytics shows that viewers from different parts of the United States and, to an extent, outside the US, visited the online exhibit. Although Google Analytics cannot detail why someone viewed the exhibit, it shows that there was, at the very least, some sort of interest to in the topic. The information gathered from the surveys and Google Analytics is incredibly insightful as it shows what needs to be improved upon when creating an online exhibit. These necessary improvements will be discussed in the following chapter.

CHAPTER VII

DISCUSSION

Introduction

The movement of museums going online has grown exponentially in the past 20 years. Museum presence online has been the focus of conference presentations and myriad discussions among museum professionals. This leads to the discussion of the challenges and advantages as well as, the future of online exhibits.

The Challenges

Moving online offers many advantages and challenges. Among these challenges is the concern that online exhibits could threaten actual museum attendance. Some museum professionals believe that online exhibits will impact attendance to brick and mortar museums. One of the leading arguments claims that if an entire collection, or even part of a collection is made available online, then audiences will not find it necessary to visit a museum (Katz 1995:16). Many museums such as, the Metropolitan Museum of Art (MET), The Smithsonian Institution, and The Getty Museum, already have a large portion of their collection online. These online collections are not in the form of exhibits, but are catalogues. These catalogues have been published for some time, and even so, museum attendance has remained the same. It is unlikely that museums will see a decrease in attendance, even if there are just simple catalogs or databases made available online. Concerns also arise with the power of the physical object. Visitors go to museums, not just to learn, but to also see objects, paintings, artifacts, animals, flowers,

and so forth. Some arguments say that simulations may pose a threat to the “real” object and works of art, which would lead to the loss of their important and iconic qualities (Cameron 2007:51). Online exhibits cannot be a substitute for these objects since they are only visible through a screen. Visits to physical museums are also social events. Many visitors go to museums in groups, whether it is a field trip or a family and friend trip. Even when visiting a museum alone, there is an indirect interaction since the museum itself is a socioculturally constructed product (Falk and Dierking 2013:148). Social interactions in museums are an important aspect of learning. In museums, social interactions include questioning and discussing exhibits and labels, which have a critical role in shaping the museum visit (Falk and Dierking 2013:148). According to data conducted the social aspects of a visit are rarely forgotten and are sometimes the moments that visitors remember vividly (Falk and Dierking 2013:149). Although online exhibits are exciting, museums, in their physicality, provide a completely different and unique experience, including sharing exhibit space with other visitors. This is a key components of the contextual model of learning that encourages dialogue among museum visitors in the museum space, where they share ideas and learn together. The emotional power experiences in visiting a museum cannot be substituted by the online exhibit.

Another challenge to online exhibits is the blurry line between authorship. Whether a giraffe or a Rembrandt painting, museums (which includes zoos and aquariums) “own” their collections in a legal sense. This ownership becomes more complicated online. Having an online exhibit means that museums put forth information in the form of words, ideas, images, and interactives. As a widely accessible platform, the

World Wide Web is open to anyone and everyone who accesses content. In light of the digital revolution, museums are increasingly becoming aware of the issues with copyright laws, who owns what and to what degree. With the emergence of the Internet, there is an ongoing struggle in striking a balance between society's interest in public access to works and the creator's interest in reaping commercial benefits from their works (Malaro and DeAngelis 2012:417). Currently, laws are still unclear on certain issues relating to copyright and the digital domain. Copyright laws refer to works such as texts, images, motion pictures, art works, computer programs and much more (Crews et al. n.d.:26). Works are protected by copyright laws if the "originally work of authorship" and "fixed in a tangible medium of expression," (Crews et al. n.d.:26). Courts agree that digitizing is a form of reproduction, something that is an exclusive act reserved for the copyright owner, which would mean that museums and other cultural institutions would need to make sure the works they publish online are not restricted and are under their copyright ownership (Malaro and DeAngelis 2012:456). If the institution is the copyright owner of the work, they have the freedom to publish online, but once online, these works become vulnerable to anyone online. This vulnerability leads to potential manipulation.

Manipulation comes in different forms. Online users can steal ideas, images, and even 3D images. These appropriated materials can be manipulated and reproduced without the museum's knowledge, potentially losing out on revenue if images are used by others for monetary gain. For art museums, artist's concepts and ideas can be plagiarized as well.

Digital technologies also have the potential to create new kinds of histories (Trendinnick 2013:43). Advancing technologies have given more power to everyone and

the ability to intervene in the structure and make-up of cultural disclosure (Trendinnick 2013:43). This threatens the authority of a museum because histories can be manipulated. One example is Wikipedia. Although Wikipedia is a valuable resource, it is only to a certain extent. It can be updated constantly without regard to the standards of traditional scholarship. There is also the ever-present threat of hacking. Museums without cyber insurance are vulnerable to hacking, which can cause disruption and a loss of valuable information and authorship. Museums that venture online have to make careful decisions on what they decide to present online. This in turn can affect the quality of what is published as well as what the public gets to enjoy.

Accessibility is also a challenge for online exhibits. Even though online exhibits are heralded as an accessible means of providing wider audiences to museums, they can also discriminate against disabled audiences. Being accessible to disabled audiences is a challenge for any online website, including those operated by museums. There are ways to implement functions for the disabled, such as audio labels for accommodating visually-impaired audiences. However, this requires funding as well as an understanding as to how to build these aids into an online exhibit.

The Internet is widely used in the United States, but there are still some who cannot access the web. Those without Internet access are alienated from online museums as well as physical museums. Accessibility in terms of language barriers is another concern. Online exhibits that only present an exhibit in one language alienate those who do not speak that language. Although it is nearly impossible to include all languages into an online exhibit, larger museums are building different languages into their exhibits.

The Advantages

Although the challenges of online exhibits are not to be taken lightly, the positive impact such programs have for museums is invaluable. Online exhibits are accessible, democratic, supplementary, and have the potential to provide necessary safekeeping for fragile or valuable objects.

Accessibility offers museums a wider audience. The audiences that may be reached are not near the physical museum. The most important aspect of accessibility is sharing information. Information shared has the potential to reach global audiences. Accessibility also plays into the ideals of critical museum theory in that it is democratic. Critical museum theory has championed the idea of a democratic museum; a museum that is accessible, allows participation, and shares information. This type of museum makes itself available to the public easily and cherishes the opportunity to develop important relationships with audiences. The basis of this relationship is transparency. Museums open up to the audiences and show them would otherwise be behind closed doors.

Availability is another advantage for online museums. Being online essentially keeps an online museum's door open all hours of the day and night. With online exhibitions, visitors who may be unable to physically visit a museum exhibits can do so in the comfort of their own home (Marty 2008b:132). With this kind of availability, museums online can be supplementary. Online exhibits can help visitors prepare for an actual visit to the museum by becoming aware and familiar with what the museum tends to display (Marty 2008b:132).

Safekeeping is becoming an increasingly important aspect of museums online. Online exhibits have the ability to provide high-quality examples that can be displayed and examined without causing any unnecessary damage to the original object (Economou 2008:149). Online exhibits can offer fragile and valuable objects a longer life through the exhibition of high quality photography as well as 3D imaging. 3D imaging is becoming an increasingly popular way for museums to exhibit objects and gives audiences a unique experience.

Looking to the Future

The future of museums lies online. The Internet is changing human interaction and communication at a rapid pace and is an integral part of many people's lives. Online, people work, socialize, play, learn, and research. Small museums must enter into the digital age in order to stay relevant. Many museums have already taken the plunge and have experimented with new ways to interact with the public.

It is difficult to predict where museums are headed, but it seems very likely that more museums will begin to implement 3D imaging as well as other technologies into their online exhibits. Virtual museums are already popular, and 3D imaging of objects will be common among museums in the near future. Additionally, 3D imaging is already in use by museum professionals in the form of mount-making, conservation examination, and research.

In recent years, Virtual Reality, also known as VR, has become increasingly popular. Virtual Reality is another step above 3D imaging in that it brings audiences into the virtual world through the use of goggles. Virtual Reality is something that museums

are exploring as well as Augmented Reality technology. Audiences will be able to virtually visit a museum and “walk” through exhibits and “read” labels on the wall. This concept will challenge the notion that the virtual cannot replace the physical, as there will be a different form of “awe” through the use of technology.

Learning from Hats, Caps, and Headdresses

Overall, this project aimed to see if it was possible for a small museum to create an online exhibit from start to finish. *Hats, Caps, and Headdresses* took six months from the beginning stages of research to the actual creation and development of the online exhibit. There was a learning curve involved, in particular the 3D imaging and scanning portion of the project. Prior to beginning the project, there were no particular studies that looked into audience perceptions of online exhibits. Audience surveys were outdated and did not offer questions that related to some of the newer aspects of technology, such as 3D imaging. Prior studies lacked information from Google Analytics or any other program that took data from the online audience. These two types of analysis would have been invaluable assets prior to creating *Hats, Caps, and Headdresses*.

After analyzing both the surveys and Google Analytics, there were some notable observations. Audiences enjoyed the novelty of the online exhibit. Many thought that the 3D imaging was fun and exciting, but upon looking at the overall views on Sketchfab, not everyone who visited the online exhibit visited the 3D images. There are various reasons as to why people may not have gone to visit Sketchfab. Omeka did not offer the capabilities for embedding 3D images onto the same page. This meant that an

external link needed to be added onto the webpage. This external link, once clicked, would then open a new tab and send the viewer to another site, Sketchfab.

Another reason viewers may not have viewed the 3D imaging could simply be the way the link was presented online. On the exhibit, the link to send viewers to Sketchfab was rather small and underneath the photograph of the headpiece. Viewers may not have paid attention to the link or may not have been aware that the link was actually a link. To have online visitors visit the 3D images, in the future, it may be worth it to look into other web developers that offer embedding, or having the 3D image on the same page as the labels and photographs. By doing this, viewers will not be required to find a link and click it. If a web developer is not available, then maybe larger links to the 3D image could be used.

The creation of *Hats, Caps, and Headdresses* was done in order to see if it was possible to create an online exhibit with limited funds and tools. This project shows that it is possible to create an online exhibit with limited financial resources. One of the main technical challenges of this project was the limitation in what website builder could be used. For this project, Omeka.net was used. This program provides web hosting. Omeka has also developed Omeka.org, but Omeka.org does not provide web hosting, the institution must have a hosting site already in place. If Omeka.org were used, it would have been possible to embed still images and 3D images. It would also have been possible to use other functions and customizations. Omeka.org does require a standing knowledge of coding language, and while Omeka.org does have helpful forums, it would be difficult for someone with limited knowledge to create an online exhibit in a limited

amount of time. For this reason, I chose Omeka.net. Omeka.net is undoubtedly a great program, which is beneficial to cultural institutions worldwide, but its limitations in what can be embedded and customized are problematic when creating an interactive online exhibit. More funding may not have changed the way the exhibit looks or functions. I think that maybe using another website builder would have helped in my issues with embedding and hosting images. In my search for a website builder, there were other programs that would have helped developed the website I envisioned. Some of these builders included Weebly.com, Wix.com, and Wordpress.com. They all allowed for embedding and hosting. They also allowed for extensive customization. I could not use these sites though because they could not provide a VPAT, which Omeka.net did.

Google Analytics showed that the attention span of most viewers is short. On average, viewers only visited up to four pages of the online exhibit. This means that viewers looked at the home page, welcome page, introduction, and map. Although these pages are important to the overall flow of the online exhibit, the welcome and introduction page are label heavy. Like a physical museum with labels, viewers do not stay to read the entirety of the labels. This is even truer for an online exhibit, especially because viewers are not required to stay. There are many other things online visitors can do. The viewer survey revealed that some viewers thought that the exhibit was too wordy as well. Without the introduction page, the overall theme of the exhibit is not explained, but also according to Google Analytics and viewer surveys, it is not entirely necessary. In the future, online exhibit developers should investigate how to best convey exhibit content for the online user. This means that text-heavy introductions and explanatory

materials will need to be replaced by a much more effective means of delivering information. This will pose a challenge in a profession that is steeped in the more traditional mode of label-heavy exhibition content that characterizes most contemporary museum exhibitions.

CHAPTER VIII

CONCLUSION

Today's society has many expectations concerning technology and Internet use. Because of these expectations, it is imperative for museums, large or small, to go online to reach out to their constituencies. In the past, only the wealthiest museums could venture into the world of the Internet, but there have been advances in technology, making online exhibits affordable for the small museum.

There are challenges that small museums face when going online. Small museums lack funding, staffing, and time, all of which are important when developing a website or online exhibit. Yet, the benefits of going online are too advantageous for small museums to neglect. While large and medium sized museums have the funding and might not require extraneous efforts to create online exhibits, small museums must look at all the possibilities when going online. As technologies continue to advance, it becomes financially easier to use access affordable computer software.

Internet usage among American adults has increased dramatically; as users become more adept in using the Internet, they demand more in terms of information and sharing. As educational institutions, small museums are in a position to take advantage of new technologies to enhance their educational programming, exhibit collections, and engage the intellectually curious. New ways to interact with the public play a part in the ideals of critical museum theory, which champions the idea of transparency and cooperative communication with the wider public. Because of this, small museums can

only gain from venturing into the online world, not just by creating websites, but also programs that involve the public beyond their immediate communities.

An online presence for small museums allows them to interact with communities 24/7 and provide accessibility outside of the four walls of the museum. Small museums can further enhance their online exhibits with the use of interactives, some of which include 3D imaging, as this thesis has demonstrated.

This thesis project examined the possibilities in creating online exhibits for the small museum that required little money and software available online. In conclusion, this project demonstrates that small museums can develop and publish polished online exhibits that meet the expectations of the public. This project also shows that the future is bright for small museums as technology becomes more user-friendly and inexpensive. This will help small museums in developing programs for online viewers.

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APPENDIX A

HUMAN SUBJECTS CLEARANCE

California State University, Chico
Chico, California 95929-0875

Office of Graduate Studies
530-898-6880
Fax: 530-898-3342
www.csuchico.edu/graduatestudies



May 24, 2016

Bella Quijano
3339 Oakhurst Ave
Los Angeles, CA 90034



Dear Bella Quijano,

As the Chair of the Campus Institutional Review Board, I have determined that your research proposal entitled "Developing an Online Exhibit at the Valene L. Smith Museum of Anthropology, California State University, Chico" is exempt from full committee review. This clearance allows you to proceed with your study.

I do ask that you notify our office should there be any further modifications to, or complications arising from or within, the study. In addition, should this project continue longer than the authorized date, you will need to apply for an extension from our office. When your data collection is complete, you will need to turn in the attached Post Data Collection Report for final approval. Students should be aware that failure to comply with any HSRC requirements will delay graduation. If you should have any questions regarding this clearance, please do not hesitate to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read "John Mahoney".

John Mahoney, Ph.D., Chair
Human Subjects in Research Committee

Attachment: Post Data Collection Report

cc: Georgia Fox (400)

**HUMAN SUBJECTS IN REVIEW COMMITTEE
Post Data Collection Questionnaire**

Under Federal law relating to the protection of Human Subjects, this report is to be completed by each Principal Investigator at the end of data collection.

Please return to: Marsha Osborne, HSRC Assistant
Office of Graduate Studies
Student Services Center (SSC), Room 460
CSU, Chico
Chico, CA 95929-0875

Or Fax to: Marsha Osborne, 530-898-3342

Name: Bella Quijano Chico State Portal ID# 006521815

Phone(s) (310) 766-0958 Email: bquijano@mail.csuchico.edu

Faculty Advisor name (if student): Dr. Georgia Fox Phone (530) 898-5583

College/Department: Anthropology

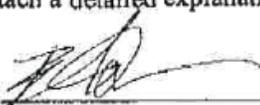
Title of Project: Developing an Online Exhibit at the Valene L. Smith Museum of Anthropology,
California State University, Chico

Date application was approved (mo/yr.): 05 / 2016 Date collection complete (mo/yr.): 05 / 2017

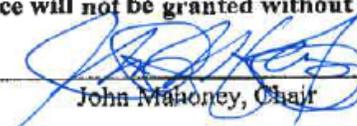
How many subjects were recruited? 125 How many subjects actually completed the project? 43

*HARM--Did subjects have severe reactions or extreme emotional response? No

If yes, please attach a detailed explanation: _____

Your signature:  Date: 9/13/2017

***Final clearance will not be granted without a complete answer to this question.**

Approved By:  Date: 9/25/17
John Mahoney, Chair

VERY IMPORTANT: If you will or have used this research in your project or thesis you are required to provide a copy of this form (with John Mahoney's signature in place) to your graduate committee.

Do you want a photo copy of this form emailed to you? Yes

If yes, provide email address: bquijano@mail.csuchico.edu

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APPENDIX B

INFORMED CONSENT FORM

My name is Bella Quijano. I am a graduate student of Anthropology at California State University, Chico. I am conducting a research project on the development and creation of an online museum exhibit. I hope to learn more about how viewers and professionals view online exhibits. I would like to interview you. This interview should take less than fifteen minutes.

If you do not want me to use your name, then I will use a pseudonym to refer to you in any presentation of my research.

If you have any questions about this project, please contact me at bquijano@mail.csuchico.edu.

If you have any questions about your rights as a participant in this project or if you think that I have caused you any harm you may contact Marsha Osborne, at the office of Graduate Studies and Human Subjects, at (530) 898-5413. Please let me know as well.

You only need to participate in this study if you want to.

If you do not want to participate, you do not have to.

If you decide that you don't want to participate any further, that is fine. You can stop at any time.

If I find anything out that I think you should know about, I'll let you know.

If for some reason I have to stop doing this study, I will tell you.

Thank you for your willingness to participate.

APPENDIX C

SURVEY QUESTIONS AND RESULTS

Please explain your other reason for having an online presence.

- We are a library consortium that supports the library online catalog for 66 member libraries. We also have a digital collection for the libraries that choose to digitize items.
- Organization currently has very limited exhibit space. Exhibit is about the water history of a neighborhood. A virtual exhibit connected to a map works well for that. Since the exhibit is place based having a virtual exhibit that can be viewed in that place works well. Also virtual exhibit allows us to bring in and curate digital information from sources not our own
- There was currently no existing web-based resource for sharing information that we felt would be of interest, so we created one.
- promotion, outreach
- Access to original material.
- We are a library consortium with 66 members. The our library catalog is online for patrons to search and place holds for items. They also use it to look for materials via our statewide catalog.
- Promotion of collection and to create a better perception of the care and use of collection.
- a project for students to work with Omeka
- To reach and engage with greater audiences

What, if any, are the limitations to your website?

- Technical structure and know-how do not always jive with our idealized vision. Time available to devote to the site.
- There are functions we wish Omeka could offer, such as more robust features for batch editing. Also, because the content providers are not tech-savvy, we need to make tech requests to our webmaster. Creating exhibits, while easier now than in earlier versions of Omeka, is still not as simple as one might wish. You can't do drag-and-drop creation, for example, since everything must fit into an Omeka format.
- Too much information to share - hard to manage that much info for users easily
- not enough time to do custom coding, custom coding makes it harder to migrate in future
- Our website is designed for our member libraries. Our online catalog is dependent on the functionality provided by our current vendor. We can make some changes but we do not have control over everything. At this time, our opac isn't very mobile friendly.
- Content creation is extremely time consuming and use metrics are hard to interpret.
- As part of a larger institution, we must use their CMS for our website. This can present some restrictions in terms of formatting, etc.
- tied to the Omeka.net template(s?)

- We use a different cataloging software offline (PastPerfect) and use Omeka instead of the online version of PastPerfect (because Omeka is much cheaper and being open-source gives us much more flexibility), but this means that the website does not automatically sync up with our cataloging program. I have to export records out, and then format them into CSV sheets in the correct format for importing into Omeka in order to get them into Omeka. And if I updated a record, I have to manually update it in both in PastPerfect and Omeka. While I have thought about just using Omeka, which I mostly prefer, it lacks some of the essential features that we need PastPerfect for, such as accessioning.
- We are lacking mobile-optimisation

What do you think the future has in store for institutions that go online?

- I think the virtual exhibit world will be come crowded and competitive.
- The challenge in the digital arena includes designing systems to allow for easy and safe addition of information; those two adjectives hint at conflicting values. Open source could allow for many people to edit information (a la Wiki) but the more people have access the greater the risk of incorrect information being included and potential data loss. On the other hand, having everything go through a gatekeeper is safer but can lead to bottlenecks. In the case of Omeka, my experience is that IT departments are unfamiliar with it and would prefer than users stick to more familiar programs that they already administer. There is also the issue of who decides what information is digitized and made available, and the necessity of paying for reliable storage of large data files, especially in the world of moving images.
- if done correctly, more public awareness
- digitizing and publicizing more large swaths of collections, and adding datasets as collections
- Improved access and visibility of resources.
- Unclear, but it seems like its become an imperative. Not having a online presence gives the perception that the institution is not particularly active,
- More success in reaching people. But will they know who they're reaching, how they're reaching them?
- Greater engagement and relevance with the broader community

Before viewing Hats, Caps, and Headdresses, have you visited an online exhibit? If yes, which museum and online exhibit did you visit?

- As part of personal interest and research, I view online exhibits and collections frequently, from many different museums and institutions, including the Morse Museum, which features a number of Louis Comfort Tiffany exhibits.
- I've visited many online exhibits, including many from the Smithsonian, Library of Congress and many other US and international sites.
- No, I have never viewed an online exhibit.
- I have not visited any other online museums. I tend to avoid them in favor of visiting a museum.

- no
- No
- No I have not
- I have not
- No
- I have visited online exhibits occasionally, but don't remember what most of them were and it was mainly for school assignments. If I remember correctly there is a walk through of the Spy Museum and online exhibit that I looked through.
- San Diego Zoo, the Exploratorium, Bend Science Myseum, Klamath Historical Museum
- Yes, once. It was a women's group but I don't remember the title, it was something ironic.
- No
- Not that I recall.
- No, but what a great idea for museums we cannot get to.
- none
- Yes but I don't remember exactly which one
- Yes - I visited the Smithsonian's (Natural History Museum) online exhibit on human origins / evolution.
- I've looked at many of the Smithsonian's online exhibits. Anything that deals with archeology or anthropology are of interest to me.
- No.
- No
- No, this is the first time

Do you think all museums should have online exhibits? Why or why not?

- I think online exhibits and/or collection catalogs are valuable resources for education and research, and can be beneficial for those who aren't able to travel and visit exhibits in person, but it is impractical for many smaller museums that are run on shoestring budgets and with strictly volunteer staff.
- Online exhibits provide a way to share collections for "visitors" who would not be able to get to the physical location. They also provide a useful way to promote the museum's collections and attract positive attention.
- Yes. This was an interesting experience and a fun way to use my 15-minute work break.
- I think it would be useful to display collections that would otherwise be kept on storage. If more museums had the time to manage an online exhibition then I would definitely like to see more of them.

- yes, can give an idea of what museum has plus it is very hard to travel the world to visit museums
- Yes, because it is accessible to everyone around the world. If the museum wants to appeal to a worldwide audience, an online exhibit in my opinion is a good way for the museum to reach people easily.
- Yes I think it would be great. Not only could you see the exhibits online but also in person
- Maybe one or two exhibitions, but not the entire museum. I love going to an actual museum and seeing the physical items.
- I don't necessarily think it is necessary, but it could be useful especially for people who are unable to visit a museum but still would like to see it. I'm curious though if it decreases physical museum visit numbers though.
- Yes. So people who cannot visit museums can see them.
- It would be cool, but I think physical exhibits should be primary
- Yes; they supplement the actual physical museum.
- They're OK, but personally I like to see the real stuff.
- Sure! It is a very convenient format and can be viewed at any pace.
- Yes. Some people cannot travel and would love to see online exhibits. Plus, you get to sit in the comfort of your own home and avoid crowds and too many people around an exhibit so you can't take the time to read about it.
- Great idea as so many properties are in storage and not available for viewing.
- Yes, a few exhibits
- Yes - it's a great way to show the collection and it makes it easy for people to see what kinds of objects the museum has before they go for a visit.
- Yes. Museums should explore the possibilities that technology such as the Internet have to offer. Exhibits online will make it possible for anyone to really enjoy and learn about different art, history, culture, etc. This also opens the opportunity to see exhibits such as this one in places where museums are not very big or in places that don't have any.
- Not everyone can travel to the world's marvelous museums so, yes, online exhibits allow stationary viewers to "visit" and enjoy what the museums have to offer.
- If you cannot physically visit the exhibit the next best exhibit would be online. I also liked the 3D app.
- I think it has to be a question addressed by the staff and/or Board of each museum, assessing relative value to expenditure of resources.
- Yes, because they are accessible to everyone

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After visiting this exhibit, do you think online exhibits could potentially replace physical museums? Why or why not?

- After visiting this exhibit, do you think online exhibits could potentially...
- No, online museums most definitely cannot replace physical museums. While they are a valuable and time-saving alternative, they are a mere shadow of what a physical museum experience provides.
- Online exhibits will remain an accessory to physical museums since there will continue to be utility in seeing the actual artifacts. As 3D and holographic projection become reality, that will change to an extent, but still come up short when compared to visiting the original artifacts.
- No; however, online exhibits would be beneficial for people who are unable to travel to a museum to view a particular exhibit.
- I do not think that online exhibitions could replace physical exhibitions. Even with 3D images I still do not get the same presence from an object as I do walking around it physically.
- no, there is something about being there and the architecture of the building itself
- No, there is a different experience one gains if one goes through a physical museum. An online museum is a good informative alternative but will never replace an actual museum.
- I don't think they should replace physical museums, it's always better being able to see museums In person.
- Yes because it gives the people who are unable to visit the museum in person, it gives them another alternative and the chance to enjoy the museum
- No. I think people still like going to an actual place. Although it is extremely helpful for anyone who cannot make it to that museum and see things that they are interested in.
- I think that it's possible as people seem to be using the Internet more and more, but honestly I don't want it to replace physical museums
- No. Some of them are not easy to see online.
- No. It's an excellent resource but the atmosphere and experience of a physical museum exhibit.
- NO. It's not the same as visiting the real thing and taking in the whole experience.

- No. The real stuff is at issue here. If one really wants to see photos, one can stay home and read a book or catalog.
- Never. It is the same difference as looking at pictures of a location or visiting the location in person - no comparison. They both have their own unique value for learning and enjoying.
- No, there is still something special about going to these majestic buildings to see exhibits and hear docents speak.
- No. It is only an introduction--let's you know if there is something you would really like to see in person.
- They are a good option and a good substitute, but visiting a museum in person is a more all encompassing experience that is different from viewing an exhibit online (though 3D definitely adds to the depth of the experience). I like having the options though, depending on how much time I have and or my locational accessibility. The more ways to spread and share information the merrier! This exhibit was very impressive and enjoyable!
- I think they could be very popular but I'm not sure if they would ever be able to fully replace the experience of seeing an object up close and personal and with a group of people.
- I think there is a place for both. Exhibits online are important to show things that don't make it to actual exhibits like Artwork or pieces that don't make it to the exhibit floor. Museums that people physically go to are still needed due to the experiences people can have or connections one can make while physically present.
- If the physical museums are accessible to visitors then, by all means, go to them. However, in answer to the previous question, not everyone can visit all museums. I enjoy visiting the (very) few museums in my area but would love to be able to physically visit so many more. This is not possible for me so, while I love actually going to museums, I would appreciate being able to "visit" more museums online.
- No. there is nothing better than seeing the artifacts in person.
- No. Seeing the "real thing" can never be replaced by photos. However, a museum's value and influence can be greatly expanded by on-line exhibits and create incentive to visit the actual museum when a person from far away is traveling. It also could be a tool to help travelers decide which museums to visit in a limited amount of time in an area.
- No, as they do not give you the texture or the focus of the objects. Online is looking at pictures but it is not the real thing. The buildings that house exhibits are often interesting in their history.

In two to three sentences, what are your overall thoughts on Hats, Caps, and Headdresses?

- It was a very interesting and informative introduction to the variety of headwear that can be found worldwide. The option of viewing in 3-D added greatly to the experience, though the format was a bit slow to load. Overall, I enjoyed it!
- It's an attractive site. I enjoyed the description of the origins of the various headware and would be interested in seeing a site that dug even deeper into the subject.

- It's not a topic I was particularly interested in prior to viewing the exhibit; however, it was fun to learn about hats in different locations and the symbolism behind some of the hats. The written information was appropriate and informative without being too wordy.
- Hardware is pretty ubiquitous but still has an incredible amount of variability between cultures.
- pretty cool
- It is an interesting exhibit that exposes the visitor to different cultures around the world. I did not imagine that hats and headdresses can actually broaden my perspective about the world.
- I thought it was a good online exhibit. Pretty cool that all these different types of hats come from all over the world & how they are so different.
- My over all view is that hats, caps, and headdresses are important in culture and religion, an in order to understand other cultures and ways of living it's good to be aware of such things.
- I like it very much. The 3D aspect was very cool to play around with and actually see how the hats were worn and utilized
- I love the visual aspect and that you can look at 3D images of all of the "hats". It looks very clean and professional. There is also not too much text about each hat which is nice. I'm looking at this exhibit on my phone when I would prefer to on my computer normally and perhaps I'm missing things by being on my phone but it would be nice to be able to jump around to different hats and stories if possible (unless there is a reason that you want us to go in a particular order).
- They're an interesting window into a culture that most people don't consider.
- I think headdresses are really cool, especially looking at them cross culturally.
- Lovely exhibit, and the 3-D rotation is really fun and a great way to view the hats from all angles, especially from the inside.
- Good photos, but most are too small; black background becomes a bit distracting. Could improve by showing more objects in context - people actually wearing the hats, using them in real life; size scale or measurements would be helpful.
- The content is informative and very well researched. I like the flow of the information, with overview, maps, photos, descriptions. The topic is interesting and universal - everyone can relate to hats and understand their various uses in different cultures.
- It was very informative, educational and new knowledge for me. Some of the photos with a black background were too dark to really see well. It would have been nice to see native people wearing their hats, caps or headdresses.
- I like the topic. I presume this covers ALL the hats, caps and headdresses owned by the museum? Would like to see more detail in the presentation, esp--names of the noted countries need to be on each map. The wonderful Calif native hat needs to be identified--is it Karouk or Hupa, or do they all make the same design? This tribe dances in a pit and the audience can see the pattern on the top of the hat and the skill of the basket weaver. A picture of the top of the hat is needed.

- The exhibit made me realize that online exhibits can stretch the boundaries of interaction potential and accessibility of objects with online exhibits. It was very visually/ aesthetically pleasing (beautiful photography and 3D imaging) and very interesting! The content was very communicable.[]
- The photographs were very professional and showed a good variety of hat styles from around the world, the hat descriptions were easy to read and had interesting content, and the website itself was easy to navigate.
- Hats, Caps, and Headdresses has a good lay out that helps people see where these garments where at in a geographical area. The information clearly shows the writer has vast knowledge on the subject. Overall, I enjoyed learning how different yet similar these cultures are, right down to the cap.
- I was impressed with the varieties of the hats and appreciated the narratives with history and usage included. Well done!
- Nicely organized. The maps were very helpful in locating where the hats came from as well as the info on each hat.
- Lots of excellent information. Title a bit grandiose for content. While many areas of the world are represented, many are not. If someone were studying headpieces it would be useful, but I found myself spacing the lengthy written explanations. Perhaps move to more multi-level written material, with an option that is shorter, before launching into the longer one.
- The idea is interesting and gives you a perspective of the individual wearing the hat. Details of the hats are individually interesting. A physical exhibit of "Hats" would be very interesting. The writer needs to review the present text for typographical errors and punctuation (which detracts from the conversational flow). Overall, it is a great idea and wonderful innovation!

Q7 - After viewing this online exhibit, is there anything else that could have made your overall experience better? Please explain.

- Perhaps links to further information and a wider variety of related objects in the collection would add to the experience? I would also enjoy more information about the collection groupings and their donors/collectors.
- I wished that the images on the map pages were "clickable" so that I could go directly to those pages. The linear path through the site is fine, but allowing for more browsing would have made it easier to revisit pages.
- I particularly liked the "3-D" viewing option; however, I did not like how the 3-D viewer opened in a new window. Also, the resolution on the 3-D image was poor, but that may be an issue with my computer.
- If the maps were more interactive I think I would remember which hat belongs to what specific geographic area better.
- More interactive pages instead of just pictures and reading.
- I think that everything was pretty good. Maybe add a little bit more color into it.
- No

- Nothing that I can think of
- Oh, I think I kind of answered that in my last response. I also like that the focus is on the objects but maybe a slightly more interesting or engaging webpage could be beneficial.
- It is not the easiest to read and view on the phone.
- It was great! Maybe audio. I really liked the 3D models.
- A back-button on the survey!
- See statements in previous question. Again, context, not labels, would make this a more anthropological exhibit.
- I would have liked even more photos.
- It was simple and to the point. I stated earlier that some of the black backgrounds made the photo hard to see.
- More and larger pictures.
- Regional music that could accompany some of the hats, maybe?
- Maybe a page that displays all of the hats and allows you to click on them in any order you'd like.
- Voice descriptions?
- The three small photos showing headpieces from different views were too small to really see well. Overall, though, this was an really enjoyable piece of work.
- Explained in previous answer. Maybe this question should be eliminated.

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