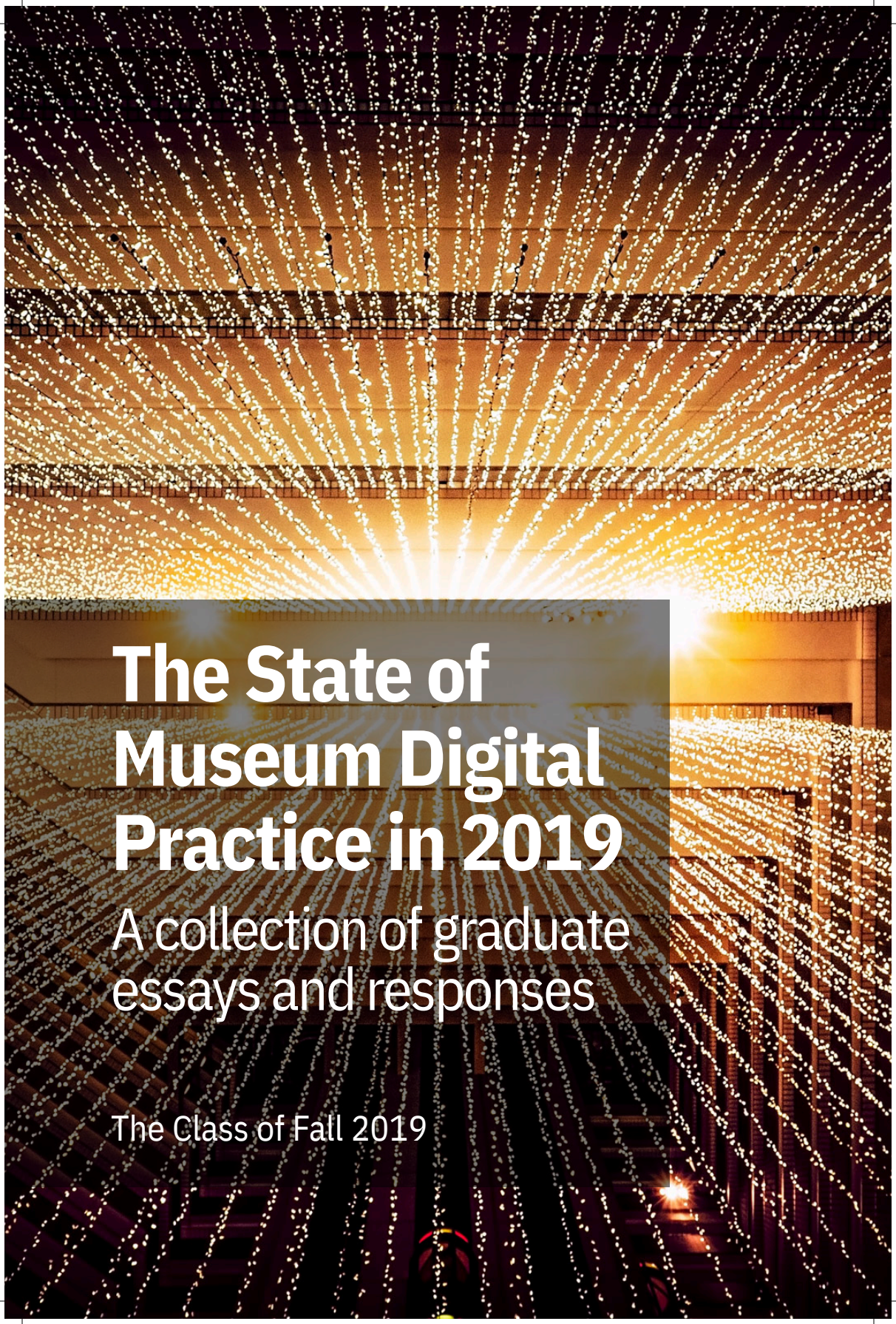

The State of Museum Digital Practice in 2019

A collection of graduate essays and responses

The Class of Fall 2019

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AD HOC MUSEUM COLLECTIVE, WASHINGTON, D.C.

Contents

Teaching Museum Digital Practice in 2019

The *Master of Arts in Museum Studies* program at The George Washington University responds to the evolving museum profession by combining hands-on training with future-focused theoretical engagement. Students who enrol in the program gain foundational knowledge about the state of museum work today, practical skills and the ability to critically engage with developments in the field.

In *Museums and Digital Technology*, these goals are met in the form of a syllabus that concurrently gives a broad overview into the issues related to technology in museums today; a deep engagement with a topic of personal or professional interest through a research project; experience in a collaborative creative environment through the peer review process; and practical skills in Markdown language. At the end of the semester, each student has a published piece to share with peers, colleagues and friends.

Each student is responsible for defining and researching their topic and writing their paper. Dr Suse Anderson, Assistant Professor in Museum Studies, working closely with Greg Albers, Digital Publication Manager at the Getty, was responsible for compiling the final book.

This project, which is intended to run annually, was designed by Dr Anderson, informed by her experience co-editing several digitally-informed publishing projects, including *CODE|WORDS Technology and Theory in the Museum*, which brought together leading museum thinkers and practitioners to explore the impact of digital technology on the nature of museums, and *Humanizing the Digital: Unproceedings from the 2018 MCN Confererence*, which responded to the *MCN annual conference*. Produced in less than four months, *Humanizing the Digital* contains 17 reflections, case studies, conversations, essays, and an experimental in-book zine, from 34

different contributors. It also marks a specific moment in time. Likewise, it is intended that each book in the *The State of Museum Digital Practice* series will stand as a marker of each cohort of students and their concerns and interests in a specific timeframe.

We hope you enjoy this publication, produced by the fall class of 2019.

I

Empathy + Technology: Digital Testimony in Holocaust Museums

Jonathan Edelman

In the 21st century museum, technology seems to reign supreme as a tool intended to enhance the visitors experience. Museums are looking to mobile applications, virtual reality, augmented reality, and countless other forms of technology to create a more immersive experience. Bruce Wyman attributes this to a "trend towards personal interactivity." [1] Visitors want to take a more active role in the learning environment. But often, it seems that technology is being used more as a shiny object to get people through the door, as much as a tool to assist in opportunities for learning. All museums must be careful to utilize new technology only when it enhances learning, not simply because it is new. Holocaust museums have to get over the additional hurtle of utilizing technology that elicits empathy in their visitors. The interactive oral history experience, Dimensions in Testimony, which offers visitors the opportunity to "ask" questions of a lifelike digital avatar of a Holocaust survivor, is an ideal case study to unpack the complexities of this issue.

Brief History of Oral History

Before exploring the specifics of this new format of testimony, it is helpful to give a brief history of oral history. The perception of oral history as a source in academia has greatly shifted over the years. The scholar Steven High has written extensively on the subject, revealing the criticism, skepticism, and overall hesitation by historians in seeing the value of oral histories as a legitimate source. Much of this uneasiness

comes from the claim that unlike much historical documentation, oral history is not objective. It is susceptible to what High refers to as the "problem" of memory. [2] Recall can -at any point- be skewed, but as time passes, events and experiences in life can affect how memories are recalled. Of course, the same argument could be made for other historical documents, which can often be just as subjective. After all, as Churchill famously said, history is written by the victors.

Oral history's highly subjective nature may just be its greatest strength. It has the potential to reveal something much deeper, much more human than many other kinds of documentation. Yes, the passing of time allows memory to create errors, but it also allows the individual to create perspective on their lived experience. [3] Furthermore, seeing and hearing a person's testimony- every hesitation, intonation, and body movement can tell us things the written word cannot.

High makes an important distinction between testimony and life story. Testimonies are eye-witness accounts of an event or moment in time, whereas life stories, in widening the lens out on a person's whole life, "finds meaning in the context of a life lived."[4] What happened before and after the event is important in better understanding the event itself and how and why the person remembers it as they do. Oral histories related to the Holocaust are typically recorded in this life story format. Interviews with survivors, witnesses, and liberators do not begin in 1933 or end in 1945, but rather entail their whole life lived up until the moment of recording. So, by High's definition, this technology should really be called 'Dimensions in Life Stories.' However, the 'lingua franca' in the world of Holocaust scholarship is to use testimony, so I will do so for the remainder of this piece.

One organization that has been a leader in recording and preserving oral histories on a monumental scale is the Shoah Foundation (SFI) at the University of Southern California. After directing *Schindler's List*, Steven Spielberg felt the need to have a permanent record of the lives of survivors of the Holocaust. Since he founded the Shoah Foundation in 1994, the organization has amassed more than 55,000 video testimonies from 65 countries, recorded in 43 languages.[5] Though initially founded to record survivors of the Holocaust, SFI has expanded their work and recorded thousands of testimonies of survivors of other genocides.

Dimensions in Testimony

In 2010, Heather Maio approached SFI with the desire to create an interactive exhibition where people could simply walk up and talk to a Holocaust survivor. Maio is the director of *Conscience Display*, a company that creates exhibitions around Holocaust survivors. SFI began a partnership with Maio and the *USC Institute for Creative Technologies* that led to the development of Dimensions in Testimony.

A tech team, content team, and exhibition team worked together to create an interactive exhibit that would make Holocaust testimony more accessible to museum visitors. DIT began as a research and development project, only recording its first testimony some four years after its founding. According to SFI, an advisory committee of three Holocaust survivors also played a role in the process. [6]

The average length of a standard testimony in the SFI collection is 2.5 hours.[7] The survivor usually sits for anywhere from 2-8 hours, typically in their home, and answers about 200 questions. DIT is a much more significant undertaking. To create what SFI Director Stephen Smith dubbed the "interactive video biography," the team had to build a recording space comprised of 116 cameras and over 6,000 LED lights that envelope the survivor. An average DIT testimony takes 15 hours and the survivor is asked to answer between one and two thousand questions. [8]

Though it is recorded with 360 camera technology, early formats of DIT were displayed on a standard 2-D screen. SFI says they used this technology so that these recordings could be displayed on other future technologies- including those not yet available. [9] Some of the latest versions of DIT are being displayed in a hologram-like format.

The final product has thus looked different in its many versions to date, but it essentially boils down to a video that responds to human voice commands. Rather than watching a traditional linear testimony from start to finish, the testimony is broken up into short clips that are unlocked by the user's questions and active participation. A visitor can speak a question into a microphone placed across from the display, prompting a prerecorded response from the virtual survivor. Using a natural-language-processing software, visitors can ask questions in any way they would naturally speak, similar to Apple's *Siri* or Amazon's *Alexa*.[10] The software is constantly learning and improving based on visitor language use. In beta testing at various Holocaust institutions around the U.S., DIT was accompanied by docents who went through three days of training to help facilitate user interaction.[11] Today, docents still assist visitors in using the technology to varying degrees.

Who Will Use This Tech?

As stated above, most standard-format testimonies are between two and eight hours long, so it would be rare to find one in its entirety in an exhibition. Curators and museum staff know that visitors will not sit (or more likely stand) for six hours straight to hear these stories. In the past, curators have created much shorter clips of testimony and brought them into the exhibitions in order for visitors to make contact with this source material.

The permanent exhibition at USHMM offers visitors two opportunities to hear

testimony. First, audio of Auschwitz survivor testimony plays on a loop in a glass room adjacent to an exhibit on concentration camps. Second, at the end of the permanent exhibition, 79 minutes of video testimony excerpts from multiple survivors and liberators plays in a small theater. Narration between clips further contextualizes the stories being told.

In my two years working and giving tours at USHMM, the testimony theater was always the place visitors wanted to stop for the longest amount of time. Yes, it could have something to do with the fact that after walking through three floors of concrete exhibition space, the seat was a nice break, but I also believe that after all the photographs, documents, text panels, and artifacts, the human connection made the greatest impact.

Yet, visitor interaction with recorded testimony usually begins and ends here. Typically, researchers and scholars are the ones watching the full testimonies. They are often only accessible in a museum's library or resource center, not the main floor or exhibition spaces. So, it seems that DIT has the potential to make testimony more accessible to the average museum visitor, both by being interactive and broken down into shorter, more accessible clips, visitors can hear part of a survivor's testimony. It still will not allow the average visitor to experience a full testimony, as that would require the user to ask the digital survivor all 2,000 questions. However, in making it easier for the visitor to experience this testimony, DIT risks dramatically shifting agency away from the survivor, to the user.

Survivor Agency and Decontextualization

In 2017, SFI's annual international conference was centered around digital approaches to genocide studies. One of the panelists, Dr. Noah Shenker of Monash University, expressed deep concerns about DIT as it relates to survivor agency. "The experience," Shenker said, "now focused on the user – the agency of the survivor was moved to user-driven imperatives."[12] He explained that the survivor no longer speaks to listeners from start to finish. Instead, the user must ask questions to trigger sporadic narratives. Often times, that user comes in with agency that is decontextualized.[13] In a standard video testimony, a trained interviewer has researched the individual's story and asks questions to help guide a conversation that contextualizes the survivor's life. With DIT, users would not automatically come prepared with that context and may not know what questions to ask in order to learn that survivors' story.

The Illinois Holocaust Museum and Education Center (IHMEC) is among the first institutions to make DIT a permanent feature of their exhibition, set in a theater-like space. In an attempt to provide context to their users, IHMEC begins the experience with a seven-minute documentary about the Holocaust survivor that will be featured.

During Howard Reich's visit for the Chicago Tribune, the virtual survivor presented was Fritzie Fritzshall. In this opening video Fritzshall speaks about her family's arrest, the harsh conditions of the ghetto, the terrifying boxcar ride and the experiences of the concentration camps. At the end of the video, the house lights come up, and the hologram Holocaust survivor appears out of thin air with the opening line, "I have so much to tell you. So please, ask me questions."[14] Although the opening documentary may provide some context, interactions with DIT will vary immensely in a way that allows for the possibility of multiple narratives. While this has potential benefits for users, and aligns with movements in museum storytelling towards nonlinear and personalized experiences, it deprivileges the survivor's capacity to define their own story.

Furthermore, as I watched videos of people using DIT for my research, something began to feel oddly familiar to me in a way I couldn't quite place. Then, one visitor began each of her questions by stating the survivors name: "Pinchas, when were you born?" "Pinchas, do you remember liberation?" "Pinchas, do you have a family today?"[15] It hit me, she was talking to this technology -this Holocaust survivor- like it was a home smartspeaker. A question is asked, there is a brief delay, then an answer is generated. In Wyman's *Digital Storytelling in Museums*, he speaks about how, because the iPhone made touch-screen technology so commonplace, museums can assume visitors would walk up to a screen and automatically know to use two fingers to zoom in and out without being instructed.[16] This may just be how visitors will approach DIT. With our daily use of Siri and Alexa, will it feel natural to verbally ask a piece of technology a question and expect to receive a human-like answer, even when that question is about ghettos and concentration camps?

At the same SFI conference, a scholar in attendance asked about the "vulnerability of this virtual agent."[17] Often times, people like to play with *Siri* or *Alexa* by asking them trick or even inappropriate questions. Like *Siri* and *Alexa*, the DIT survivor does not have the agency to defend themselves. Dir. Smith had two interesting responses to this criticism. First, he said that in all the testing at conferences, in museums, and at tech shows, the only people who have tried to fool the system are "historians and techies."[18] He went on to explain that in all their testing, they had not seen any misuse by teenagers. He attributed that respect to the setting of the museum and the structured environment the students were in. Second, Smith said he consulted with survivors extensively on the possibility of being asked inappropriate questions through the system. Survivors told him that they put themselves in front of the public eye every day in real life and run that same risk.[19]

Visitor Interaction

So, what has actual visitor interaction looked like? In a blogpost for SFI, former USHMM staff member Elissa Frankle reflected on the experience of running the team

that beta tested DIT at the museum in 2016. Frankle wrote that going into it, the staff assumed all visitors would want to ask a question. In reality, visitors who sat in the back and listened told evaluators they felt they had just as powerful an experience as those actively participating.[20]

This earlier version of DIT was displayed in 2-D on a flat screen. Frankle attributed visitors' comfort with this technology to its similarities to Skype or FaceTime. "The idea of asking questions of a face displayed on a flat screen, and having them answered in real time, is pretty natural for a number of our visitors."[21] That comfort may have allowed the content to triumph over the content. But what of the new holograms being used today? Is that technology also able to fade into the background or is a distraction, a game, a form of entertainment and wonder?

In another article published by SFI in 2016, the institution touted the sophistication of the technology by pointing out how surprised one teenager was when the virtual survivor gave a proper greeting response after the teen "sarcastically asked 'whazup?'"[22] Herein lies part of my unease. Would that same teen have been so sarcastic and silly if she were face-to-face with a real Holocaust survivor? Would she ask 'whazup' and then follow up with 'so, did any of your family survivor the Auschwitz?' Once again, the virtual agent does not have the ability to defend itself.

There is a trend among museums towards both non-linear storytelling and visitor agency. I will be among the first to step up and advocate for giving the voice of the visitor more importance in the museum space. However, one key does not unlock every door. There will still be times where the visitor's role must be more passive, as a listener or observer. For Holocaust testimony, survivor agency and the capacity to shape their own narrative is more important that the agency of the user. Dimensions in Testimony fit both these trends, but they do so at the expense of survivor agency that should remain unaltered.

The ways in which we communicate with one another is changing because of technology. When not face-to-face, some barriers are dropped and people feel more comfortable saying things they may not necessarily say in person. Whether over text or on Twitter, not speaking to the person directly seems to change how people interact. As we saw with this teenager, this seems to be the case with our 'virtual survivors' as well. Is it better to just listen to a standard oral history recording rather than allow for the potential of people interacting with one in an inappropriate matter? Does it diminish the horror survivors went through when people can say whatever they want to this virtual survivor without consequence?

While technology breaks down some barriers in communication, it also allows us to build up others. Steven Cohen notes how as humans, we are psychologically equipped to protect ourselves.[23] Whether watching a full oral history or just clips put together by curators for an exhibition, if visitors choose to watch these films, they

must face difficult subjects. In theory, a visitor could ask dozens of questions to the 'virtual survivor' and not once broach the topic of the trauma they experienced. In her work *From Empathetic Understanding to Engaged Witnessing: Encountering Trauma in the Holocaust Classroom* Liora Gubkin stresses that it is important for those choosing to learn about the Holocaust to recognize that "pain is a critical element of the other's experience," the 'other' in this case being survivors.[24] This technology can allow visitors to skirt around the most difficult subjects, which silences the pain these survivors experienced and defeats the whole purpose of testimony.

There's a diagnosis for everything these days, isn't there? Don't believe me? Well I can even put a name to my uneasiness interacting with DIT. In 1970, Japanese roboticist Masahiro Mori coined the term uncanny valley, referring to a mental uneasiness triggered by a robot or virtual character with human characteristics. "A viewer's familiarity drops sharply into the uncanny valley once the artificial figure tries but fails to mimic a realistic human."[25] Karl MacDorman, a robotics researcher at Indiana University is conducting tests to understand how the uncanny valley influences emotional empathy during an interaction with a virtual character. Volunteers in the test will talk with either real actors or their digital doubles. MacDorman predicts that the uncanniness will "interfere with participants' normal empathetic response within this scenario."[26] The technology is DIT is not yet flawless, so its glitches may create a similar interference in creating empathy.

Museum Embrace

Despite all the potential issues I have laid before you, museums still seem to be embracing DIT. As newer, more interactive technology continues to be the hot trend, museums need to figure out how technology enhances the learning experience. For Holocaust museums, they – in theory – have the added task of figuring out the relationship between empathy and technology. It is clear that the intended use of DIT is for the museum space. So, it would seemingly be no surprise to see an overwhelming embrace of this technology in Holocaust Museums around the country. But I am skeptical about the motivation of museums in their adoption of this shiny new object.

After years of beta testing, DIT now exists in a more permanent form, debuting permanently in two major holocaust institutions. The Illinois Holocaust Museum & Education Center (IHMEC) became the first institution to permanently exhibit these survivor testimonies, followed soon after by the newly renovated Dallas Holocaust Museum & Human Rights Center.[27] Both institutions have gone all in, investing heavily by building special state-of-the-art theaters in order to display the experience in a more three-dimensional form.[28] How heavily? According to the Dallas Morning News, the museum put down a cool $2.5 million to build their theater for DIT.[29]

In order to see the success of their investment in this new educational tool, these museums are trying their best to spread the word to potential future users. On a recent trip to Chicago, I found myself in the back of an Uber, stuck in traffic on the highway. As we crept along, we came upon a massive three-story high billboard that read, "What can a hologram tell you about the Holocaust? Experience the first interactive 3D exhibit of its kind" with the words "World Premiere" slapped on the upper right corner. Similarly, on their website, the Dallas museum tries to attract visitors this way, "It's real time. It's groundbreaking. Interact with virtual Survivors in a specially designed space, where high-definition holographic interview recordings paired with voice recognition technology enable these incredible people to respond to questions from the audience, inviting one-on-one 'conversation.'"[30] Both museums use language to sell the tech, not the important or meaningful lessons that visitors can take away as a result of its use. Is DIT a technology that enhances the learning experience or is it merely a way of keeping Holocaust museums competitive, trendy, and relevant in the museum world?

Timing: Record Now, Display Later

From the technological perspective, DIT is coming into the museum world at just the right time. Wyman notes that the time of the voice of authority speaking to the public is dwindling away. Instead, he writes, there is a desire for a "multi-faceted experience that invites conversation and interaction with visitors."[31] Visitors want to have their voice be a part of the museum experience, and Dimensions in Testimony allows them to do so. But from a content perspective, I do not believe now is the right time for this technology to be exhibited.

One of the greatest privileges of my time working at USHMM was being able to work alongside the survivor volunteers, Holocaust survivors who come to the museum each and every day and give of their time, speaking to visitors, translating archival documents, and sharing their stories. The further we get from the events of the Holocaust, the fewer survivors there are left to speak first-hand about their experience. That was a major motivation behind the DIT project. But just because they have been recorded, does not mean they have to be displayed right away.

There are living Holocaust survivors coming into the museum every day to tell their story face-to-face with visitors, and while we still have the immense privilege to hear from them firsthand, we must not sideline them for some shiny object. Think about it, if a tech-obsessed middle schooler had a choice between sitting for an hour listening to a speaker or spending a few minutes with flashy new tech, which do you think they would choose?

New technology has the potential to greatly enhance the ways museums teach, reach, and engage with their visitors. But museums run the risk of falling into the

trap many in society have with wanting the newest and sleekest tech. Technology for technology's sake rarely succeeds in creating a meaningful, lasting learning environment for the visitor. Dimensions in Testimony does have the potential to create this enhanced learning experience. Its development may be a result of the shift in visitor desire for greater interactivity; or the 'chunking down' of testimony could simply be what Martin Bazley and Helen Graham diagnosed as a "symptom of an attention deficit society.[32] If nothing else, DIT can be a cautionary tale to Holocaust museums as they continue to invest time, money, and resources into innovation.

An Alternate Path

Before I finish, I'd like to tell you about a different kind of experience that was similarly non-linear and personalized for users, but involved a much more shared sense of agency and contextualization. In 2017, USHMM brought in *The Portal*, a traveling digital experience. This large, repurposed shipping container housed a bench, screen, and projector. Between 10:00am and 2:00pm each day, visitors could video conference with Syrians in refugee camps across Europe.[33] This exhibit was at the museum during the height of the 'migrant crisis' in Europe, when images of children's lifeless bodies washed up on the shores of Greece flashed across the screen of most news networks. Its placement in the museum could not have come at a more relevant time.

My first experience with *The Portal* occurred during a donor tour I was leading. My visitors sat at the bench, I behind them. We listened as three young Syrian men introduced themselves in broken English, then slowly and naturally an incredibly moving conversation unfolded. At one point, one of the visitors in D.C. asked whether they wanted to make a home in Berlin (where they were currently) or wanted to continue to America. "No sir," one of them said, "Damascus is our home. We just want to go back there, back to our normal lives." The visitor broke down, and told the Syrian men that after surviving the Holocaust, all his mother wanted to do was move back to Germany, her homeland.

This experience has stayed with me. Suddenly a face, a name, and a connection to the crisis was made. This is an exceptional example of a way to achieve empathy through technology. It was never about the technology itself, but the empathetic understanding Gubkin speaks of, the way the technology allowed us to sympathize with the other in real time.[34] Steven Cohen believes testimony has the potential to make the greatest impact when it is "directly relevant to key dimensions of [our] own lives."[35] For the visitor that day, the testimony of these Syrian refugees could not have been more relevant to his personal family experience. The technology faded into the background and succeeded to make a lasting impact.

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II

Shifting Paradigms in Visitor Participation: Digital User-Generated Content at the Portland Art Museum and the National Museum of African American History and Culture

Rachel Rosenfeld

Introduction

Over the past decade, American museums have increasingly turned towards technological resources for novel visitor engagement opportunities. Digital user-generated content (UGC) is one such avenue of museum participation that validates visitors' individuality and knowledge, and its utilization signifies a fundamental shift in museum's relationship to their visitors. The work of the National Museum of African American History (NMAAHC) and the Portland Art Museum (PAM) present two fitting case studies of successful digital UGC initiatives implemented by American art and history museums. In particular, NMAAHC's *Reflection Booth* and PAM's *Object Stories* represent two distinct implementations of digital UGC recording booths within exhibition spaces. These institution's adaptations of digital UGC illustrate the evolution of museum visitor participation and how museum's digital UGC initiatives share interpretive authority with visitors, fosters inclusive, collaborative dialogues,

and assist museums in achieving their institutional missions.

Defining & Contextualizing the Rise of Digital User-Generated Content

There does not appear to be a consensus across the sector on the definition of user-generated content or even firm distinctions between user-generated content and crowd-sourced content. Since some museums may use these terms interchangeably to refer to "anything shared by customers and patrons about an organization," digital UGC must therefore be further defined within the scope of this research.[1] Mia Ridge's *Crowdsourcing our Cultural Heritage* provides a succinct definition of crowdsourcing as "the act of taking work once performed within an organization and outsourcing it to the general public through an open call for participants… as a tool for digitizing or computing vast amounts of data."[2] The Library of Congress' (LOC) crowdsourcing campaign, *By the People*, exemplifies crowdsourcing within galleries, libraries, archives, and museums (GLAM) cultural institutions. LOC invites its visitors to assist with digitizing projects on people like Mary Church Terrell and Alan Lomax by tagging, transcribing, and reviewing their collections. [3] Crowdsourcing participants in this context operate within strict parameters to complete clear-cut, specific tasks. On the other hand, nearly anything, from videos to photographs and artwork, may constitute user-generated content. Museums typically solicit a diverse range of UGC from the general public for activities across all museum departments.[4] Likewise, digital UGC in *Object Stories* and the *Reflection Booth* are more free-form and center around participants driving the direction of content development themselves.

The rise of digital user-generated content across museums is due in part to the sector's utilization of twenty-first century technological advancements, particularly social web technologies. The internet enabled increased societal participation; newfound accessibility to content meant a growing number of people, regardless of their geographic limitations, were able to partake in community-building on digital platforms. Additionally, barriers to early online participation, such as computer programming experience and access to means of production like cameras and video recorders, were lowered over time. Smart phone technologies and social media in particular granted users easier access to the aforementioned means of production required for digital content creation. As the years progressed, social web technologies of the mid-2000s such as Facebook, as well as user-generated digital brands like YouTube and Wikipedia, utilized and monetized internet users' digital participation. American corporations concentrated on the lucrative opportunities' digital user-generated content initiatives presented to e-commerce.

By contrast, museums' draw towards digital UGC were more idealistic in nature and focused on democratizing the voices of authority within museums. Museums have

traditionally exerted authoritative control over their collections and rejected the idea that visitors' knowledge or interpretations of history were equal to museum curated or academic sources of knowledge. Such trends led museums to adopt restrictive "consumer-producer" relationships with visitors that perpetuated the myth of museums as the sole producers of content and visitors as the passive consumers of content. However, by the turn of the twenty-first century museums began to fully recognize how UGC, especially digital UGC, allowed museums to partner with "millions of creative community-minded people who are ready to visit, contribute, and participate." [5] Building these online communication networks through museum websites, Flickr! Commons, Facebook, Twitter, Reddit, and Instagram has exponentially expanded the global reach of museums. Staking claim in online communities further enables museums to share their authority with visitors which in turn allows museums to better understand their visitors and effectively serve their communities. To maintain relevance, museums must continue to provide visitors with powerful platforms of engagement with their cultural heritage that cannot be easily replicated outside museum's digital and physical sites.

Digital UGC at the National Museum of African American History and Culture

On December 16, 2003, Congress passed H.R.3491 – National Museum of African American History and Culture Act. [6] NMAAHC opened its doors to the public on September 24, 2016, making it the nineteenth museum in the Smithsonian Institution. This museum's 36,000+ artifacts comprise the only national museum devoted exclusively to African Americans. [7] NMAAHC's mission is divided into four pillars:

1. It provides an opportunity for those who are interested in African American culture to explore and revel in this history through interactive exhibitions
2. It helps all Americans see how their stories, their histories, and their cultures are shaped and informed by global influences
3. It explores what it means to be an American and share how American values like resiliency, optimism, and spirituality are reflected in African American history and culture
4. It serves as a place of collaboration that reaches beyond Washington, D.C. to engage new audiences and to work with the myriad of museums and educational institutions that have explored and preserved this important history well before this museum was created [8]

These four pillars can each be witnessed in NMAAHC's *Reflection Booth*, a key vehicle

for capturing digital UGC within the museum. There are three recording booths within the History Galleries. One is located at the end of the *Slavery and Freedom* exhibition which is centered around visitors' exploration of "the complex story of slavery and freedom which rests at the core of our nation's shared history." [9] As visitors pass through the Civil War and Reconstruction panels, the exhibition opens up to a row of wooden benches and the *Reflection Booth*. The benches are intentionally nestled between photographs and quotes from famous African Americans such as Harriet Tubman, Frederick Douglass, and Mary McLeod Bethune. This alcove offers visitors their first opportunity to rest in the History Galleries which stretches over a mile in length. NMAAHC expertly utilizes the architectural design of this space to invite visitors to absorb these inspiring words all the while gently nudging them to use their own voices at platforms in the *Reflection Booth*.

Interior of the *Reflection Booth*, Courtesy of Rachel Rosenfeld

Once visitors decide to participate, they enter a small recording booth fitted with two wooden chairs, a long wooden bench, a reflective rectangular screen, and a

touchscreen. Unlike traditional recording booths, the ample seating here encourages interpersonal dialogue within larger groups. The *Reflection Booth* prompts visitors to "record your thoughts about African American history and culture and contribute your voice to the museum by answering a series of key questions."[10] Several of its carefully constructed questions are listed below:

1. Does your family have ties back to slavery and, if so, how do they discuss slavery and the family history?

2. After Emancipation, African Americans held annual celebrations. What traditions have passed down in your family? Do you know when and where they were first celebrated?

3. Churches, schools, and other social organizations have held the African American community together during difficult times. What holds your family/ community together during difficult times?

4. What portions of the exhibition you just walked through, *Slavery and Freedom*, are most memorable to you and why? [11]

In *The Participatory Museum*, author Nina Simon posits that great questions are not just open to a variety of responses, but also make "visitors feel confident and capable of answering the questions" by drawing on "their knowledge, not their comprehension of institutional knowledge."[12] Each of the *Reflection Booth's* questions encapsulate Simon's guiding principles through their frameworks for visitor responses. Their open-ended nature encourages visitors to draw from their personal experiences as they ruminate on profound questions of family history, their place within society, the significance of our institutions, and reflections on NMAAHC's *Slavery and Freedom* exhibition. In other words, NMAAHC expertly grounds their questions in visitors' lived experiences, thus eliminating the possibility of a "right" answer to any question that could discourage visitors from participating. These question parameters can be easily replicated at other museums, regardless of the scope of a museum's digital user-generated content initiative.

Museum professionals must also be intentional with phrasing their digital UGC questions. NMAAHC excels at this in the *Reflection Booth* by tying its questions back to the four pillars of its mission. In doing so, they continually justify the presence of digital UGC within their institution. The first question on family ties to slavery directly echoes the second pillar's goal to help all Americans uncover the interrelated nature of "their stories, their histories, and their cultures" within a global framework.[13] The *Reflection Booth's* questions on community institutions and ways to commemorate participation in American society draws directly on NMAAHC's third pillar. For centuries, African American churches and schools have successfully cultivated black pride and unity within their community. These questions motivate visitors to consider the ways in which these sites were safe spaces to celebrate African American's

embodiment of American values such as "resiliency, optimism, and spirituality" in the face of rampant discrimination.[14] The *Reflection Booth's* fourth question is equally germane to the museum's mission. Its focus on the most memorable aspects of the exhibition is important because it grants visitors the opportunity to "revel in this history" of African American culture.[15] At the same time, this question prompts visitors to contemplate what aspects of the interactive exhibitions they connect most intimately with which can in turn inform future exhibition design at NMAAHC. Ultimately, each of the *Reflection Booth's* questions are thoughtfully constructed because the museum is genuinely interested in hearing visitors' responses.

Sustainability is central to the longevity of this digital UGC initiative. Beyond the initial construction costs, maintenance expenses were not overly burdensome for this federally-funded museum. Thankfully, digital UGC initiatives are naturally flexible and still achievable for smaller scale museums. Ravon Ruffin, the former Digital Engagement Producer at NMAAHC, believes "this project is adoptable by a number of institutions, at varying scales" because without recording booths, museums can still utilize DSLR or phone cameras to "quickly capture visitor experiences."[16] Throughout Ruffin's tenure, NMAAHC's staff took great care to sustainably archive each *Reflection Booth* response. She recalled working diligently with the staff oral historian who led "the team in cataloguing the thousands of videos, to excavate videos that represented a cross-section of the millions of Museum visitors."[17] This care and attention to detail stands in stark contrast to many museum's routine disposal of UGC response notebooks or flashcards due to storage limitations, budget restrictions, or general disinterest in visitor responses. Disposal of UGC tends to occur more frequently if UGC is simply put up for show and not germane to museum goals, but this is not the case with the *Reflection Booth*.

Transparency and trust between NMAAHC's staff and the *Reflection Booth's* participants is also an essential aspect to the interactive's sustainability. At the beginning of each *Reflection Booth* session, participating adults and supervised children must explicitly grant NMAAHC permission to feature their digital UGC in future exhibitions, the museum's social media platforms, and its website. Such clearly defined standards of consent and articulated project goals intentionally fosters transparency between NMAAHC and their audience. Additionally, NMAAHC expertly gains visitors' trust by granting them the power to create digital user-generated content that is only shared privately via email, not with the museum. While these components of the *Reflection Booth* may appear small in the grand scheme of the initiative, they collectively can make visitors feel safe, valued, and comfortable as they begin to engage with the recording booths.

In the twenty-first century, the internet is the most effective tool for NMAAHC to serve "as a place of collaboration that reaches beyond Washington, D.C. to engage new audiences."[18] Thus, NMAAHC has occasionally highlighted its digital user-generated content from the *Reflection Booth* on their social media platforms. The

Visitor Voices campaign is the clearest example of NMAAHC implementing digital UGC to serve the last pillar of its institutional mission. YouTube and NMAAHC partnered for the *Visitor Voices* video series which commemorated NMAAHC's first anniversary. The campaign sought to highlight visitors' "time at the Museum to empower them to see themselves as part of the Museum's history and community."[19] The month-long campaign shared thirty videos on NMAAHC's YouTube and Twitter profiles, and encouraged visitors to contribute even more by using the hashtag #VisitorVoices, commenting, and liking each post on social media.

NMAAHC's Digital Strategy Plan outlines the museum's drive towards social listening within their social media practices, and the digital UGC in the *Visitor Voices* campaign follows this plan.[20] Since visitors naturally expect and listen to heavily curated institutional voices in museums, NMAAHC's spotlight on digital UGC is notable because it broadens the scope of sources utilized in the museum's interpretation of African American history. There is an inherent power in the personal testimonies captured through digital UGC. Unlike reading exhibition text or glancing at photographs, digital UGC is more tangible, it allows visitors to see the speakers directly and hear their testimonies in their own words. *Visitor Voices* treats participants as individuals, not just members of a nameless crowd or an isolated quote on an exhibit panel. Ravon Ruffin commended the ability of NMAAHC's digital projects to "tell the unvarnished truth without editing visitor responses, [which] captured people's response to that truth."[21] For example, the delivery of Prince D. Holland's family history as sharecroppers or Johnny Fraiser Jr.'s traumatic experiences of being "brutally beaten and yanked off a bus" during the civil rights era are all the more gripping and impactful for consumers of the *Visitor Voices* campaign because of its digital format.[22]

While Holland and Fraiser Jr.'s testimonies stimulate conversations about racial discrimination, *Visitor Voices* also featured digital UGC about visitors taking advantage of NMAAHC as a platform for building a fairer, more inclusive future. In "You Should Take That Risk For Change," a visitor grappled with the fact that "if people weren't willing to take the risk, then people like me would still be in chains."[23] His struggles echo the speaker in "Are We Wasting All That Effort?" who proclaimed, "after this experience, I want to fight back. I want to stand up for something."[24] NMAAHC serves as a space for visitors to reflect on our country's checkered past and hopes to educate the general public so that they may learn from past injustices. The brutal murder of fourteen-year-old Emmett Till in 1955 is one such American atrocity that may never be undone or corrected. In "I Never Knew About Emmett Till," a young black woman channels her sorrow and anger over hate crimes into a call for action:

> *So, I would just like to ask to anyone who sees this to try your best to be a better person, to be a prouder person, to be proud of you and where you came from, but don't look down on others because of where they came from. To be positive and always lend a helping hand, to take care of others…That's something we should do and start*

as a nation, as a world, as a country, as a planet, love each other.[25]

Through NMAAHC's digital platforms, Foster's powerful call to action is amplified across the internet and viewers are invited to contribute their personal responses to her content. This museum not only respects its visitors' personal contributions to their institution, but craves visitor insight.

Ultimately, NMAAHC's utilization of digital user-generated content is a prime example of shifting dynamics amongst museums and their visitors. Museum professionals and academics are no longer the only sources of content, and NMAAHC's embracement of digital UGC centered on their visitors' perspectives signifies innovative changes in the sector for the better.

Digital UGC at the Portland Art Museum

The Portland Art Museum (PAM) was founded in 1892, making it the oldest art museum in the Pacific Northwest.[26] Its founding collection consisted of one hundred plaster casts of Roman and Greek sculptures, and over the past century, has grown to over 42,000 diverse objects. PAM is one of the leading cultural institutions in the Pacific Northwest, and its mission today is to "engage diverse communities through art and film of enduring quality, and to collect, preserve, and educate for the enrichment of present and future generations."[27] Its digital UGC initiative, *Object Stories*, channels this broad mission through personal storytelling with objects. While NMAAHC's digital UGC is but one component in a larger exhibition, digital UGC at PAM has evolved into an exhibition series grounded in its local community's testimonies. The ongoing iterations of *Object Stories* speaks to the evolution of digital user-generated content within museums and the ways such projects center their content on public contributions as opposed to solely museum or academic ones.

Object Stories was initially launched in 2010 through a partnership with the Northwest Film Center, the Milagro Theater, and Write Around Portland. The project was also funded by a MetLife Foundation grant for community engagement and outreach.[28] Similar to the *Reflection Booth*, PAM created an in-gallery recording booth for its digital UGC. By March 2011, they also created an app for visitors who didn't have access to the museum and organized *Object Stories Middle*, a partnership with local middle schools focused on personal storytelling experiences. The in-gallery recording booth became the main focus of *Object Stories*. Visitors had two options for their reservation-based sessions, they could tell a Personal Story about an object that they found to be meaningful or share a Museum Story about their personal connection to PAM's collection.[29] One might assume the effort required to register online for this digital UGC experience would draw out dynamic visitor responses, but this was not the case. In 2011, Christina Olsen, the former Director of Education and Public Programs, recalled the earliest iteration of the project delivered an underwhelming

product. The narrative structure within the Personal Story sessions granted visitors too much freedom over their content development. Olsen found that "people would go in, do their story, come out, say it was so powerful and cathartic, but then the videos would be really bad – boring, too, long, unstructured."[30] PAM encountered equally lukewarm results to the Museum Story sessions. Olsen admitted, "these stories were, frankly, often very banal" because the stories were often about "objects that they might come see once or twice and like, but not really have a deep connection with."[31] Upon further reflection of these roadblocks, PAM concluded guided, more structured participation was less daunting to participants and therefore more conducive to successful digital UGC.

Object Stories Exhibition, Courtesy of the Portland Art Museum

The Portland Art Museum began remedying the situation by first reformatting the digital UGC and including UGC examples for participants. The museum proceeded to nix the more stream of conscious video format in favor of digital UGC grounded in audio and photographs paired with carefully constructed prompts. *Object Stories* provided five prompts to visitors who then had forty-five seconds to respond. Examples of these prompts include, "when and how did you first receive, discover, or encounter your object? What was your first feeling or impression of it? Who was there?" and "If you had to give it to someone, who would it be and what would you say to them?"[32] Similar to the *Reflection Booth*, these prompts effectively guided visitors' experiences without limiting the scope of their responses to "right" or

"wrong" answers. It rather focused on their lived experience and personal knowledge. Following these audio recordings, visitors were invited to take photographs with their objects in different positions and create a six-word title for their content. It is important to note this iteration of *Object Stories* included cases to display objects as well as an online digital archive and browsing kiosk for museum visitors to expand the project's reach. Overall, each of these changes to the parameters of *Object Stories* drastically improved the digital UGC end product.

As PAM's staff worked out these kinks in *Object Stories*, they encountered several other roadblocks that changed the trajectory of this digital user-generated content initiative. In a 2015 Museum Computer Network (MCN) livestream, Kristin Bayans, the former Manager of Interpretive Media at the Portland Art Museum, granted viewers insight into the challenges of *Object Stories*. For instance, the design and production of their recording booths was no small cost. Additionally, the code for Fashionbudda, PAM's costly customized backend content-management system (CMS), continually broke and the company eventually went out of business, leaving the *Object Stories* team at a loss.[33] After regrouping, the Portland Art Museum staff opted for a standardized CMS and moved away from the in-gallery recording booth by shifting towards a more curated and completely mobile digital UGC platform that they hoped would allow for easier staffing and time management.

The final iteration of *Object Stories* has been the most successful version of this digital user-generated content initiative and is the clearest embodiment of PAM's goals. Yet, if one of *Object Stories'* missions is to subvert the authoritative curatorial voice of museums, doesn't implementing a heavier curatorial hand in this digital UGC exhibition series seem counterintuitive? In theory, yes, but *Object Stories* exhibits take distinct steps to avoid the paternalistic, curatorial voice that visitors traditionally expect in exhibitions. In practice, PAM does not heavily edit testimonies and deliberately implements curation only as a design tool in *Object Stories* to create a coherent, succinct platform "where Portland and the Pacific Northwest's many communities can directly address issues affecting their lives."[34] Even though *Object Stories* now only highlight fix to seven voices, its digital UGC is still centered on personal storytelling through objects and treats members of the general public as co-creators of museum content.

Object Stories' final iteration marks a dramatic shift towards embracing digital user-generated content as a primary vehicle for social justice activism within the Portland Art Museum. By spotlighting the ongoing struggles of marginalized Portlanders, *Object Stories* enacts PAM's philosophical and core value by creating "a deeper understanding of our shared humanity."[35] PAM rotates *Object Stories* three to four times a year, and since 2014 they have successfully implemented fourteen thematic exhibitions. Its iterations include, but are not limited to: *Invisible Me*, an exhibition centered on individuals with chronic physical, cognitive, and neurological conditions; *Powerful Self: LGBTQIA2S+ Lives Today*, an exhibition grounded in relationships

between intergenerational persons within the Pacific Northwest LGBTQIA2S+ communities; *Combat Paper*, an exhibition in which American veterans, active duty military, and civilians engage in discourse about reframing "how we think about war and military service."[36] Similar to NMAAHC's *Reflection Booth* responses, each of these digital UGC-based exhibitions gained visitor consent before utilizing the general public as the foundation for their narratives. PAM's visitors relish these unique opportunities to contribute their voices to the museum and spread calls to action across the community.

One Step Away is one of the Portland Art Museum's most recent iteration of *Object Stories*, and was on display from July 2018 – January 2019. The personal objects and individual testimonies center on the "compound and growing issues of homelessness and housing insecurity" in Portland today.[37] America's homeless populations are far too often treated as statistics, not as individuals. *One Step Away's* seven digital UGC recordings work to humanize homeless Portlanders by providing each person a platform to share their story on their own terms and hopefully garner support to enact long-lasting change. Joel' Waddell's entry is a particularly powerful example of digital UGC:

> *Before I became homeless, I just thought it was a disease or something... I got a job, I worked that and I got laid off and then I couldn't afford a place to stay. When I became homeless, I'm like, I'm not a drug addict, I don't have a record, but I'm here so you know, why? Why am I here? What did I do wrong to get here? Homeless people are not lazy, they just want opportunity, they want a chance. Sometimes you need help... I hope when I finish this journey that somebody that see this will understand.*[38]

Waddell yearns to impart empathy into his listeners, and *Object Stories* effectively amplifies his message through its exhibition space, the museum's YouTube channel, and its social media networks on Twitter and Facebook.

The sheer diversity of contributors to *Object Stories* speaks to the initiative's success at creating inclusive spaces within PAM for visitors from all walks of life. Without digital avenues for user-generated content creation, the Portland Art Museum would not have developed this dynamic campaign whose high-impact content symbolizes progressive challenges to the traditional scope and main subjects of traditional art exhibitions.

Concluding Thoughts

The rise in digital user-generated content in the museum field signifies a fundamental shift in how twenty-first century museums operate. By inviting visitors to actively contribute their lived experiences to exhibition development, museums affirm the value of visitor perspectives in every facet of their work. Museums must

respect their visitors, and digital UGC created through recording booths enrich engagement between these two groups in ways impossible without technology. NMAAHC strives to facilitate "a national dialogue on race…[and] foster a spirit of reconciliation and healing" across the country, and its *Reflection Booth* effectively provides visitors a digital and physical platform to do just that.[39] The Portland Art Museum's final iteration of *Object Stories* directly echoes NMAAHC's call to action through its exhibitions focused on social activism within the local community. As the National Museum of African American History and Culture and the Portland Art Museum's utilization of digital platforms continue to amplify their visitors' voices, one hopes these conversations around inclusivity and museum visitor participation will continue and encourage more museums to reap the benefits of digital user-generated content.

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III

#MuseumCrisis: Social Media in Museum Crisis Communications Plans

Amy Pollard

Social media is changing the way institutions communicate with their publics, but how should museums communicate in times of crisis? Due to the instantaneous nature of social media, museums now face a landscape wherein an external or internal institutional crisis can lead to an immediate response from a very vocal online community. When a crisis situation arises, museums are now expected to use social media to swiftly respond and honestly communicate with online communities. In order to do this, the institution should have a comprehensive crisis communications plan that includes communicating via social media platforms. Ultimately, a crisis can be split into three phases—pre-crisis, mid -crisis, and post-crisis—each of which should be addressed by a comprehensive plan for the museum's crisis communications. This paper will examine the various elements of an effective crisis communications plan, including establishing a social media plan, and demonstrating this plan in comparison to examples of successful social media usage in real-world institutional crises.

What is a Crisis?

Before identifying the phases of a crisis communications plan, the word "crisis" needs to be defined. There are three primary definitions of a crisis: situation-based

crisis, sequential crisis, and stakeholder-based crisis. The situation-based definition addresses, "a threat to humans, animals, or values at the museum or as a threat to the museum's reputation."[1] This definition focuses solely on the situation itself with no identification of the sequential nature of these types of events. A sequential definition addresses that events happen in succession, in which reasons are intertwined with results that lead to a loss of situation control and influence future trends.[2] The sequential definition acknowledges both the crisis itself and the impact that a crisis has on an institution's future. The situational and sequential definitions emphasize two very important aspects of a crisis, but both definitions are missing a crucial actor in institutions: the stakeholder.

For the purpose of this paper, the term "stakeholder" means any person who holds a vested interest in the museum. Stakeholders can be broken up into two groups: external and internal. External stakeholders define the organization's reputation and act as a source of revenue for an organization, like donors, visitors, and the general public.[3] Internal stakeholders are those who ensure the successful navigation of a crisis like museum staff and members of the board.[4] With stakeholders in mind, a crisis can also be defined as, "an unpredictable event that threatens important expectancies of stakeholders and can seriously impact an organization's performance and generate negative outcomes."[5] Museums operate for the benefit of the public, and the addition of stakeholders into the definition of crisis is crucial. With this in mind, this paper combines the three definitions above for a more nuanced definition of the term crisis. This new definition identifies a crisis as an unpredictable or anticipated situation, leading to a loss of situational control that threatens relationships with stakeholders and influences future trends in the institution.

In crisis situations, unresponsiveness via current technologies like social media can ultimately lead to a digital media crisis. Hilary-Morgan Watt, Digital Engagement Manager at the Hirshhorn Museum and Sculpture Garden, defines a digital media crisis as "any sudden and unpredictable online event, which provokes external scrutiny and is or has the potential to negatively impact operations, reputation, and relationships with internal and external stakeholders, employees and the community."[6] The digital media crisis definition shares the same elements of the above crisis definition but focuses on the crises that occur in digital environments like social media. Watt's idea of digital media crisis works hand-in-hand with how museums should view their own role as communicators in times of crisis.

Crisis situations stem from a variety of sources: natural disasters, hiring decisions, contentious exhibitions or programming, financial downturn, etc. In order to successfully weather a crisis situation, an institution should create a crisis communications plan. The institutional crisis communications plan must be broad enough to act as a working document for any crisis event yet specific enough to define a comprehensive communications plan for the three phases of a crisis.

Crisis Communications Plan

In a perfect situation, institutions would have a comprehensive crisis communications plan in place long before the onset of a crisis. However, it is often the case that a crisis event acts as the catalyst for the development of a crisis communications plan. The following proposed crisis communications plan provides a layout based on the three crisis phases: pre-crises, mid-crisis and post-crisis. At the heart of this framework is a dedication to communicating quickly and honestly, as well as utilizing social media in a way that helps rather than hinders the museum's interface with the public.

Pre-Crisis

In the pre-crisis phase, preparation and planning are important to successfully navigating future crises. In order to create a crisis communication plan, institutional leadership should assemble a team comprised of upper museum management, department heads, communications staff, and most importantly, the social media manager. The individual in the social media manager role is often a gateway to the various stakeholders and is a crucial communicator in times of crisis.[7] Despite the important and demanding work completed by the social media manager, oftentimes they are not valued as an integral part of these crisis communications teams. As the staff person who interfaces the most with online stakeholders and conveys the everyday institutional tone to the museum's online publics via social media, it is essential that the social media manager be included in all crisis planning meetings and be an integral part of the crisis communications team.

During the planning meeting with the above staff members, this group must identify the museum's various stakeholders. Understanding stakeholders and their communication needs is the first step in crafting a plan for crisis response.[8] For example, most internal stakeholders will need to be informed of the crisis situation via email or telephone independently of social media, website posts, or news sources. During this planning meeting, the team needs to determine notification systems for internal stakeholders.[9] Deeply invested internal stakeholders can help with shaping the message, but in order to do so, they must be kept informed of the situation, as well as plans for navigating the crisis.[10]

An institution's external stakeholders will most likely be comprised of several smaller stakeholder groups, each of whom may use social media platforms differently, depending on demographics. There are many factors that shape an individual's social media use, including age, "race"/ethnicity, education, economic status and cultural background. However, user age often suggests platform preference. According to the PEW Research Center breakdown of social media usage by age demographic, 55 percent of adults ages 50 and older use Facebook and 56 percent use Youtube.

However, only 16 percent of this age group use Instagram and 14 percent use Twitter.[11] On the other end of the age demographic spectrum, the PEW Research Center found that 80 percent of adults ages 18-24 use Facebook, 71 percent of this age group are on Instagram, and 45 percent of this age group are on Twitter. Based on these figures, social media communications via Facebook are more likely to reach a wider variety of age groups, whereas communications via Instagram and Twitter will reach mostly younger social media users under 50 years of age. It is in the best interest of the planning committee to make a comprehensive plan for each social media platform utilized by the museum, with the intention of communicating crisis messaging to a broader range of external stakeholders.[12]

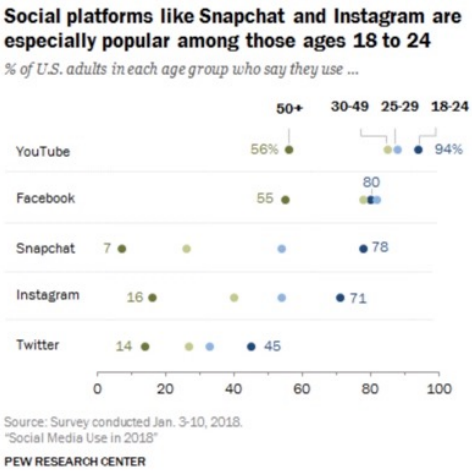


Figure 1: Pew Research Center's graph for social media platform usage by age group. The vertical axis indicates the social media platform, and the horizontal axis indicates percentage of usage.

This pre-crisis phase is also the ideal time to decide the institutional voice that will be used in the event of a crisis. Institutional voices used in regular social media communications range from informal, humanized voices to formal and academic. Retaining a consistent voice on social media platforms can be an essential part of developing a relationship with the museum's publics built on trust. The social media manager develops and often acts as the trusted voice of the institution and carries these responsibilities into crisis communications.[13] It is worth noting that many institutions have multiple contributors to social media platforms, and maintaining a consistent voice becomes more crucial, especially when institutions find themselves in a crisis situation. In planning an institutional voice for a crisis , this incident, the planning team needs to determine a voice that reflects the institution and continues

to build trust with online communities. Planning for the institutional voice in a time of crisis also involves understanding the types of language and interactions that occur on the various social media platforms. The social media manager is again instrumental in this conversation, as they should have the most knowledge about the intricacies of interacting with external stakeholders on each platform. Establishing a plan for the crisis institutional voice, as well as having a full understanding of the proper language used on these platforms will ultimately lead to more decisive and consistent communications with stakeholders in times of crisis.

The crisis communications planning team described above should also establish the staff members that will be a part of the crisis response team. This team will be the first line of defense in monitoring crisis situations and will be actively crafting the museum's responses over social media and other outlets like the museum's website. Ideally, this group should be comprised of three or four museum staff members with the chief executive making the decisions.[14] Like the crisis communications planning team, this crisis response team must include the social media manager, as well as the head of communications, as both of these individuals will be monitoring platforms, crafting messaging, and responding via the institution's social media accounts. Although typically supervised by the head of communications, the social media manager should always be included in the crisis response team. Depending on the situation, a fourth staff member should also be included in the crisis response team. For example, in the event that controversial programming causes a crisis situation, the crisis response team should most likely include the director of the education department. Whereas, in a financial crisis situation, the head of finances should be part of the crisis response team. To reiterate, each situation will warrant different expertise, but the crisis response team should always include the director of the institution, the head of communications, and the social media manager.

Lastly, the pre-crisis phase includes actively monitoring social media accounts for mentions of impending crisis events that will warrant a response from the institution. As stated by Jonathan Bernstein, "Failure of organizations to anticipate and prevent potential crises is a rampant crisis of its own."[15] Anticipating a crisis event will depend on the type of situation. For example, in anticipation of a controversial exhibition, the social media manager may be actively monitoring for backlash from online stakeholders. By contrast, in the event of a natural disaster, the social media manager will have very little warning before an institutional response is needed. Most importantly, in monitoring for a crisis, the social media manager must look for certain indicators that warrant a response from an institution. **Hilary-Morgan Watt created a checklist** that can be adapted to monitoring for potential crises during this phase.[16] In the event that more than one of these checklist items can be checked in the "Crisis Yes" category, the social media manager should bring this incident directly to the crisis planning committee, who will activate the crisis response team. From this point, the crisis response team should move into the mid-crisis phase and focus on

active communication with stakeholders.

Figure 2 Hilary-Morgan Watt's checklist for indicators of crisis. Institutions can adapt this checklist in the pre-crisis phase as a means of identifying crisis situations that warrant a response.

In 2018, the Brooklyn Museum in New York City hired white curator, Dr. Kristen Windmuller-Luna, as a consulting curator of African Art. The institution received criticism from external, online stakeholders for hiring a white curator of African art. Online protests began on March 27th on Twitter, Facebook, and Instagram, with many stakeholders on these platforms including the hashtag #africansforafricanart on the museum's posts.[17] Two days later, **the Brooklyn Museum responded via Twitter (pictured below)**[18] **and Facebook** with a prepared statement that highlighted the museum's commitment to listening to the conversations being had on social media and the museum's continued emphasis on equity.[19]

Brooklyn Museum's Twitter post responding to backlash from the hiring of Dr. Kristen Windmuller-Luna.

The institution's quick response on March 29, 2018 highlights the social media manager's vigilance in monitoring the museum's posts and tags and anticipating backlash from online stakeholders. The museum's situation corresponded with several items on Watt's checklist. The museum responded after 48 hours passed, indicating that the issue persisted past the 48-hour mark. Negative social media posts increased in frequency and vitriol and the issue began to reach news outlets. Lastly, the museum's reputation was at stake, eventually resulting in the Director Anne Pasternak's response during the mid-crisis phase, in which she "unequivocally" stood by the museum's decision to hire Dr. Windmuller-Luna.[20] Despite the negative responses from the public, the institution worked quickly to mitigate additional tensions with online stakeholders by actively monitoring responses during the pre-crisis phase and responding accordingly.

Mid-Crisis

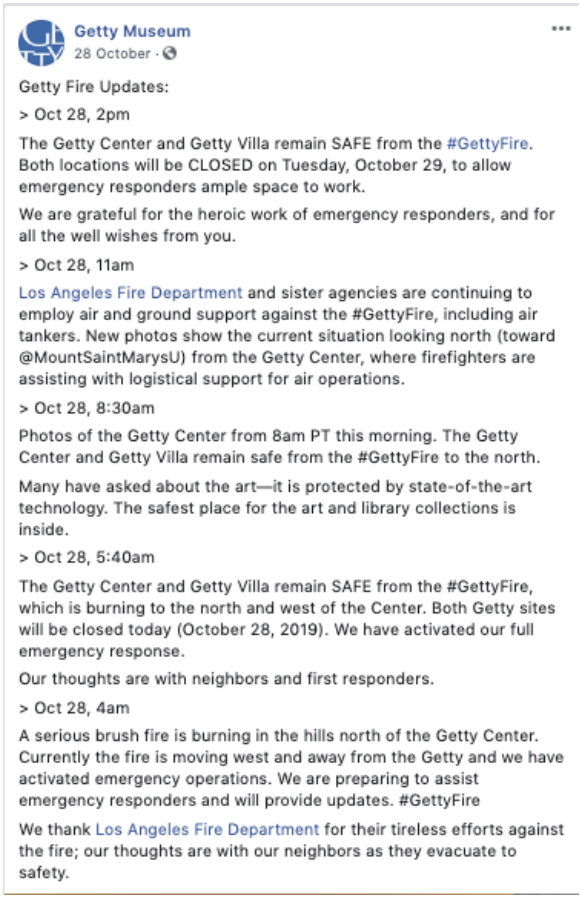
The mid-crisis phase relies on both effective institutional operations and quick social media responses from the crisis response team. During this phase, the museum's crisis response team should immediately prioritize containment of the damage. Internally, the crisis communications team must first decide the scope of the

problem, including identifying whether this is a self-made issue or an external issue like a natural disaster.[21] The crisis response team may already be aware of a self-made issue if the social media manager was monitoring social media and anticipating negative online responses. The response team must also designate a spokesperson who will act as the face of the institution. This person will typically be the museum director who can speak to decision-making during the incident and moving forward from the incident. Again, the social media manager is instrumental in this phase, as they will act as the digital spokesperson and interface often with online stakeholders. Finally, the crisis response team also needs to be in constant contact with each other, as well as continually updating pertinent internal stakeholders as the crisis event unfolds.

After pinpointing the problem, the social media manager and crisis response team should craft a first response that is both straightforward and decisive.[22] The institution's first response will set the tone for the rest of the crisis. Due to the reactive nature of social media, museum responses need to address issues and update the public in a timely manner. A slow response may lead to an increased divide between the institution and stakeholders. Generally, short form media like Twitter, Facebook, Instagram, and Tumblr allow the institution to best address stakeholders with concise messaging.[23]

For example, the J. Paul Getty Museum in Los Angeles was in the direct path of a brush fire on October 28, 2019. **The museum's first Twitter[24] and Facebook[25] responses to online stakeholders were posted at 7:02 a.m.** The Getty's Twitter response effectively utilized the platform's word limit to post a clear and concise message that conveyed the serious threat of a fire, the activation of emergency operations, and a promise to provide updates. In comparison, the institution utilized Facebook's lack of a word limit to continue updating the Getty's status throughout the events of October 28, 2019. The social media manager also incorporated the #GettyFire hashtag in the very first posting and all subsequent postings. This was particularly important for keeping track of this thread, especially on Twitter. Overall, the Getty's messaging during this crisis event was consistent between these two platforms and effectively communicated the museum's status from the very first post.

Getty Museum's first Twitter response to the #GettyFire crisis.



Getty Museum
28 October ·

Getty Fire Updates:

> Oct 28, 2pm

The Getty Center and Getty Villa remain SAFE from the #GettyFire. Both locations will be CLOSED on Tuesday, October 29, to allow emergency responders ample space to work.

We are grateful for the heroic work of emergency responders, and for all the well wishes from you.

> Oct 28, 11am

Los Angeles Fire Department and sister agencies are continuing to employ air and ground support against the #GettyFire, including air tankers. New photos show the current situation looking north (toward @MountSaintMarysU) from the Getty Center, where firefighters are assisting with logistical support for air operations.

> Oct 28, 8:30am

Photos of the Getty Center from 8am PT this morning. The Getty Center and Getty Villa remain safe from the #GettyFire to the north.

Many have asked about the art—it is protected by state-of-the-art technology. The safest place for the art and library collections is inside.

> Oct 28, 5:40am

The Getty Center and Getty Villa remain SAFE from the #GettyFire, which is burning to the north and west of the Center. Both Getty sites will be closed today (October 28, 2019). We have activated our full emergency response.

Our thoughts are with neighbors and first responders.

> Oct 28, 4am

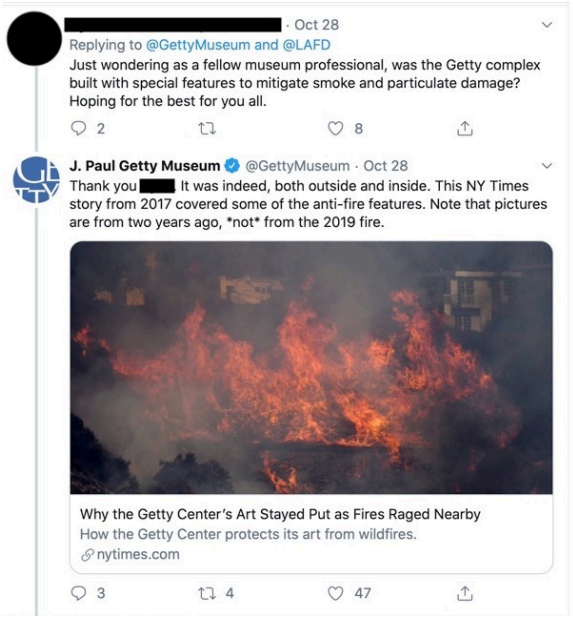
A serious brush fire is burning in the hills north of the Getty Center. Currently the fire is moving west and away from the Getty and we have activated emergency operations. We are preparing to assist emergency responders and will provide updates. #GettyFire

We thank Los Angeles Fire Department for their tireless efforts against the fire; our thoughts are with our neighbors as they evacuate to safety.

The Getty Museum's Facebook post about the Getty Fire. This was updated throughout the day on October 28th, 2019.

After the initial online communication, the social media manager should continually monitor all social media accounts and news outlets, even outside of the normal 9-to-5 hours of the typical workday. As events unfold, the social media manager should use the previously agreed upon institutional voice to monitor and respond to real-time social media comments when appropriate. Carefully crafted responses allow for increased museum transparency. Social media gives the public the ability to see behind closed doors and further connects the museum to its stakeholders.[26] Often stakeholder comments will include questions, and the social media manager should only answer them if they feel they can have a constructive conversation. **For example, during the Getty Fire the social media manager responded to several Twitter users who asked about the Getty Center and Villa's fire preparedness**[27].

Seeing the potential for a learning opportunity in the midst of crisis, the social media manager linked to an article that described the museum's state-of-the-art system, while still maintaining a conversational and approachable voice. This response showcases the museum's consistent institutional tone yet continued emphasis on actively engaging with the public through informative conversation.

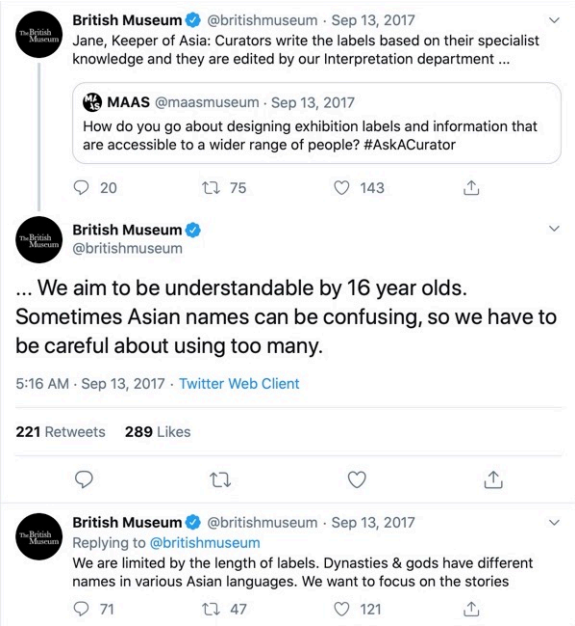


Getty Museum's Twitter conversation with an external stakeholder, which links to a past *New York Times* article about the museum's fire protection procedures.

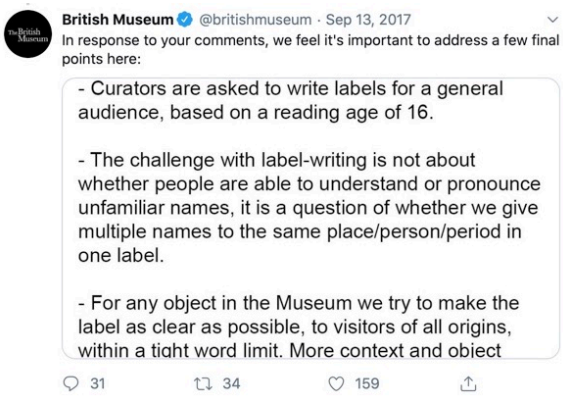
Through the process of monitoring social media platforms, the social media manager will have the important task of acting as the digital spokesperson who provides updates and clarifications to further mitigate alienating stakeholders.[28] This can be done on social media platforms by continuously updating the original post or creating new posts. Depending on the crisis event, providing clarifications to a misstatement might be best done through one continuous post, whereas creating short updates on new posts may be better for a natural disaster crisis event. The social media manager, as well as the other crisis response team members have the duty to make the best decision for crisis containment based on the circumstances of the situation.

On September 13, 2017, British Museum's Keeper of Asia Curator, Jane Porter, took to

Twitter on Ask a Curator Day to answer questions about her curatorial process. When asked about designing exhibition labels and accessible information, she responded by saying, "...We aim to be understandable by 16 year olds. Sometimes Asian names can be confusing, so we have to be careful about using too many."[29] **Porter adds two additional clarifications to this same post before signing off. The social media manager then addresses the same thread twice more to further clarify Porter's meaning in her Ask a Curator session**[30]. In providing this Twitter thread in one place, the museum's social media manager was better able to address the issues in context of the original tweet.



British Museum's Twitter post from Ask a Curator Day on September 13, 2017. The museum's social media manager posted all of the museum's responses to the same Twitter thread of the original post.



Social media is 24/7 and doesn't stick to normal office hours.[31] The day-to-day job of the social media manager can cause burnout, or a state of mental, emotional, and physical exhaustion caused by prolonged stress.[32] This state of burnout can exist long before the onset of a crisis. However, the act of constantly being online, paired with the vulnerabilities of the position during a crisis event can put the social media manager at an increased risk of this phenomenon. During a time of crisis, the social media manager and other members of the crisis response team need to be vigilant

for signs that the social media manager is experiencing burnout. Burnout can appear as ambivalence, emotional exhaustion, and/or depersonalization.[33] In these instances, staff should focus on providing physical and emotional support through temporarily assisting with crisis responses or possibly providing a safe space to talk and decompress. Eventually, the crisis will end, and the institution will transition into the post-crisis phase. However, the social manager will return to the typical workday, still be plagued with the potential for social media burnout even after the crisis has ended.

Post-Crisis

The aftermath of a crisis, or the post-crisis phase, will be a time for the institution to reflect on its responses over the course of the event. For continued transparency with the public, institutions should use long-form media like blogs and wikis to publish analyses of the crisis event. In these long-form media sources, institutions can admit weaknesses and lessons learned from the crisis event.[34] This increased transparency of the museum's successes or failures allows for relationship building with existing or even new stakeholders.

Beyond using long-form media sources, the social media manager should also continue to use short-form media sources as a way to communicate the museum's plans moving forward from the event. It is important to remind stakeholders that institutionally the museum is making progress moving forward from the crisis event.[35] Periodically reminding stakeholders of improvements also further helps to rebuild the museum's reputation, particularly after a self-made crisis event. The social media manager should still remain an integral part of the post-crisis communications phase, continuing to use the institutional voice to seamlessly create content that engages the public yet rebuilds relationships with stakeholders.

The Walker Art Center in Minneapolis, MN acquired artist Sam Durant's sculpture *Scaffold* (2012) in 2014 and exhibited this piece in the Walker sculpture garden in 2017. Depicting gallows that recall the hanging of the Dakota 38 in 1862, this piece caused outcry and protests from external stakeholders for its trivialization of a traumatizing event in Dakota history.[36] In conversation with members from the Dakota community, Sam Durant, the Walker Art Center, and the Minneapolis Park and Recreation Board, it was decided that *Scaffold* would be removed and ceremoniously burned by members from the community. The Walker's then executive director, Olga Viso recognized the institutional need to rebuild trust with native communities following this crisis.[37] In the post-crisis phase, the Walker Art Center continued to keep external stakeholders updated with its attempts to rebuild relationships with native communities. **In July 2018, the museum posted on its Twitter platform**[38], announcing that the institution formed a committee to find an indigenous artist who will create a new piece for the sculpture garden. It is important to note that the

institution provided an update a year after the crisis event, showing that the museum is continuing to make an institutional shift in relations between the Walker Art Center and its external stakeholders. Updates via short-form media like this should be actively utilized in the post-crisis phase. This ultimately aids in crucial relationship rebuilding in the aftermath of the crisis.

Walker Art Center's post-crisis post, indicating the creation of an Indigenous Public Art Selection Committee.

Institutionally, as part of processing the crisis event, the crisis communications planning team should reevaluate the crisis communications plan based on the events of the most recent incident. This analysis should occur in the week following a crisis, while the staff still has the event and responses clearly in their memories. The crisis communications plan is a living document and should be kept up to date with new best practices or updates to communication technologies. Ultimately, the post-crisis phase allows for the most institutional self-reflection and any necessary changes made to the crisis communications plan will ultimately leave the museum with a better plan for future crises.

Conclusion

"Plan as if you live in a transparent world. Because you do."[39] Institutions must live by this idea, especially when planning for future crisis events. No matter the crisis incident, institutions should create comprehensive crisis communications plans that involve communicating through online resources like social media. The three phases of a crisis—pre-crisis, mid-crisis, and post-crisis—are equally important to the stages of a crisis. Pre-crisis should determine how the museum will stay on top of the

messaging, the mid-crisis stage should determine the relationship with online stakeholders, and the post-crisis phase should determine the museum's institutional changes moving forward, as well as future crisis communications plans. Ultimately, the crisis communications plan is a living document that should change with each crisis event and updates to social media technology. Social media platforms change constantly, and the institution needs to be well-equipped to weather the storm of controversy by having an effective communication plan in place. Consistent and open communications with stakeholders will ultimately allow for increased transparency and trust between an institution and its stakeholders.

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IV

Selfies Worth Saving? Social Media Collecting in Museums

Caitlin Hepner

There is no doubt that in 2019 social media is an inexorable part of life. As of this paper's publication, some 50 billion images have been uploaded to Instagram,[1] 6,000 tweets on Twitter are generated every second,[2] and 2.7 billion active users hold accounts with Facebook and its combined affiliates.[3] From food photos, to expertly filtered selfies, and long winded video rants, each digital snapshot is embedded with information about its poster. What kinds of opportunities do such vast troves of data pose for today's cultural institutions? One intriguing possibility comes in the form of social media collecting: a term which, for the purpose of my research, refers to a series of recent initiatives by museums to gather, document, and study content posted to a variety of social media platforms, including photos, text, and metadata.

In this paper I will situate the phenomenon of social media collecting within broader conversations taking place in the field of museums concerning curatorial authority, audience participation, and the effects of social media. I will then explore a variety of case studies that showcase how various institutions have developed tools and processes to collect content from social media, and how their conclusions could prove beneficial to the field. I will discuss two types of social media collecting initiatives: social media as an archiving tool and social media as a source for visual content analysis. Despite differences in the motivation behind these case studies, specific techniques used, and the types of information generated, collecting through social media shows how museums can move beyond traditional authority structures. It has the potential to allow museums to better preserve and understand what is

meaningful to their communities while simultaneously involving audiences in the creation of, and giving them a greater stake in, museum collections.

Changing Technology, Changing Attitudes

The conversation about museums and authority began as early as 1971, when Duncan F. Cameron argued that museums should shift from functioning as a "temple" which enshrines objects deemed important by academics and the elite, to functioning as a "forum" where matters of public importance are interpreted and discussion and debate is encouraged among visitors.[4]

Over the course of the next fifty years scholars continued to validate and expound upon this idea, yet as of the early 2010s many museums still had not embraced the shift from "temple to forum" in practice.[5] Around this time, the conversation about museum-audience relationships also took on a new dimension. As the Internet and social media had developed and expanded in influence, museum scholars began to take stock of how these technologies were shaping the museum field and contemplate how they could be harnessed in the future. They explored how the Internet had altered traditional authority structures by changing the way museums were relating to their audiences through exchange of information. In many cases these scholars advocated for more museums to embrace these changes. According to this thinking, museums are a part of the digital world whether they actively choose to be or not. Because of the sheer volume of knowledge shared online and the ubiquity of social media, audiences expect to be able to find, share, and discuss museums and their collections on the Internet. Museums must be prepared to embrace those online venues by meeting audiences where they are if they want to have control of the messaging and conversation around their collections and interpretation.[6] [7]

Nancy Proctor, then Digital Editor of *Curator: The Museum Journal*, argued that due to the vast amount of knowledge circulating on the Internet the role of the curator has shifted and expanded. Once the ultimate authority on their chosen subject matter, the proliferation of voices and alternating perspectives made possible by social media has brought such a role into question. Many curators now sift through a variety of sources and discussions in order to help shape the conversation *around* their chosen subject matter. The rigorous training in research and critical thinking that curators undergo, when combined with detailed knowledge of their own museum's collections, make curators uniquely qualified to consider the abundant information circulating online, and filter and validate this input. They can then make connections between all of the networks of knowledge and resources in order to provide a more holistic interpretation of their subject matter which encompasses their own expertise but also considers the perspectives of many. Proctor offers examples of this type of curatorial ethos, including online "crowdsourcing" initiatives undertaken by various

museums in which online users were empowered to vote for works to be exhibited, as well as the Powerhouse Museum's effort to crowdsource enhanced information on their collections through online tools. This was achieved by allowing users to submit their own research relating to objects whose records were incomplete in their online database . Through these efforts, curators demonstrated how knowledge from "citizen curators" could be effectively integrated into their own work. Proctor concluded that curators should be mediators of information, collaborators, and storytellers; no longer positioned at the top of a conceptual pyramid, but a node at the center of an information network. This reflects a subtle, yet important shift in the nature of museum and curatorial authority.

Rob Stein presents similar ideas, referring to curators as "content specialists" and relating them to reference librarians who are trained to support researchers and scholars by sorting through vast resources to find relevant information.[8] Much like Proctor, he argues that curators must be mediators of information within a network, in which they connect scholars and audiences with "important concepts, facts, and narratives that drive the mission of the museum."[9] He believes that curators should foster a "participatory culture" in museums in which barriers to artistic expression and civic engagement are low, there is support for sharing one's artistic creations, and what is known by the experienced is passed along to novices.[10] He argues that participatory culture is on the rise thanks to social media and the ability it grants individuals to widely distribute their thoughts and ideas. Audiences not only expect to find information about museums online, but they expect to be able to participate in the creation of this knowledge through engagement with museum social media channels. Stein emphasizes that while this information may seem unimportant or frivolous at first, it has the potential to be insightful and useful to museums. Acknowledging and inviting public input helps museums to determine what is important to their audiences and fosters a relationship with their communities. Ultimately, he argues that more museums must embrace and develop new forms of participatory culture in order to meet audience expectations and give audiences a stake in their continued success.

Taken together, these scholars present a new picture of authority in museums, in which information no longer flows in one direction from the museum to the audience, but is exchanged between the parties in a mutually beneficial arrangement. Museums are able to meet their audience's expectation and desire to participate, gain new kinds of knowledge and insight pertaining to their collections, and increase community support and buy-in. As we approach the turn of the next decade, these sentiments continue to ring true. When museums choose to gather and scrutinize content from social media, they are demonstrating this exchange of information with audiences, and validating this content as worthy of consideration and study. Thus, social media collecting by museums is an expression of evolving technologies, audience expectations, and attitudes about museum authority.

Social Media as an Archive

Some museums have embraced social media collecting as a sort of digital archive. Haidy Geismar's research on Instagram, calling it an "unruly and instant archive," first provided the rationale for why social media could be considered through this lens.[11] This conceptualization is useful because it sheds light on how contemporary culture is created and shared as social media and the practice of communicating through images has evolved to become "a new kind of institution within our everyday lives."[12]

Geismar explains that like an archive, Instagram presents images in a chronological stream, which can be gathered into sub-groups with the use of hashtags or geolocation tags. The hashtag is an important archival tool because it allows users to generate a sort of folksonomy, or a classificatory system for the content they create.[13] Using hashtags, users can cluster their images around any number of specific themes and ideas such as events or commodities. This allows Instagram users to generate a shared visual culture around these topics, build communities, and engage in conversation across the platform. Thus, Instagram is a place where new visual culture is simultaneously created and recorded. Geismar concludes that Instagram is an "archive of the everyday" which provides the digital infrastructure to see "assemblages of taste."[14] By viewing Instagram as an archive, one can understand what is valuable and meaningful to people.

This argument has been applied to the museum field and expanded through an ongoing research project entitled *Collecting Social Photo* (CoSoPho), which was devised by a group of researchers from various Nordic institutions. Like Geismar, the researchers of CoSoPho argue that social media is where visual culture is increasingly created and captured. However, they move beyond the idea of social media as an archive in itself; they also aim to develop comprehensive procedures for museums to collect and disseminate their own collections of social media photography.[15]

The project website proclaims that the evolution of digital photography and social media has drastically changed how people use photos in their everyday lives. Social media photos differ from traditional photographs because they are not static, physical objects. They are instead assemblages of digital image, text, and metadata. They are not simply "scientific evidence, memories or art," but are also "part of a dialogue, an ongoing online conversation."[16] However, the members of CoSoPho observe that museums are not currently equipped to collect and preserve these ephemeral images and their associated meanings for future generations. Despite this, they urge other museums to be proactive in the effort to collect social media content. These individuals have undertaken several projects within their own institutions to serve as case studies, such as collecting photos associated with the holiday season in Aalborg, Denmark, and documenting online representations of the city of Södertälje, Sweden, through which they hope to test various social media

collecting strategies. From this research they aim to develop recommendations and procedures for collecting and disseminating social photography collections. They also hope to establish work practices around the co-creation of photography collections between museums and audiences in order to explore the potential for people to be involved in the generation and preservation of their own digital cultural heritage.

Interestingly, the members of CoSoPho have organized their projects around three themes: places, practices, and events.[17] Place-based collecting is an effort to digitally document a specific town or physical community by collecting social media content associated with that place through hashtags and geolocation tags. Practice-based collecting involves tracking the social media practices of a particular individual over a period of time, encouraging them to reflect on their own habits, and interviewing them in order to gain a narrow but deep insight into these habits. Event-based collecting represents an effort to create a framework for how museums can collect social media content in real time in order to capture and document how important events and cultural movements manifest online.

For the purpose of this paper, I will expound upon an example of event-based collecting from The Nordic Museum and Stockholm County Museum in order to offer insight into some of the collection methods and conclusions that can be gained from social media archiving.[18] Following the terrorist attack in Stockholm in April 2017 researchers directed audiences via social media to contribute images to two purpose-built digital collecting websites and utilized an unnamed third-party application to download metadata from images of the attack posted on Instagram.[19] In their conclusions the CoSoPho researchers highlight the importance of having the digital infrastructure and workflow in place ahead of time in order to be prepared to collect spontaneously as events transpire, as well as proper outreach surrounding the event in order to achieve as much engagement as possible. They posit that the stories and data generated from this type of collecting could be useful for new forms of interpretation and visualization to demonstrate how real-world events unfold in the digital sphere.

Utilizing social media as an archive allows museums to better preserve the cultural heritage which is increasingly being created and stored online while simultaneously gaining a deeper understanding of what is meaningful to audiences. When users submit their own content to these digital archives they are actively engaging in the creation of these collections. In this way, these initiatives demonstrate how museums can foster participatory culture and share curatorial authority with their audiences.

Social Media for Visual Content Analysis

Other researchers have developed social media collecting techniques in order to study visitor engagement with objects and exhibition spaces through visual content

analysis. Visual content analysis is the process of examining and analyzing a group of images for patterns or embedded codes in order to draw greater conclusions about their meaning.[20]

Kylie Budge used visual content analysis to interrogate the role of social media in audience experience in her article, "Objects in Focus: Museum Visitors and Instagram."[21] She situated her study within the previously summarized conversation relating to museum authority, articulating that museums now encourage social media users to initiate the sharing and creation of cultural knowledge, which represents a shift away from the traditional one-way flow of information from museum to audience, and towards an exchange of information between the two. This sort of study is useful, she argues, because of its potential to illuminate "meaning-making" by museum audiences. This is a term she uses to describe, "how people interpret their environment and understand their lives through what they know, believe, and experience."[22] Collecting and analyzing visitor generated social media content allows museums to know what is meaningful to their audiences, which could then potentially be used to inform curatorial and exhibition practices and foster deeper engagement with future visitors.

In her study, Budge applied visual content analysis to Instagram posts associated with a temporary exhibition, titled *Recollect: Shoes,* at the Museum of Applied Arts and Sciences in Sydney, Australia. She focused on Instagram because of the visual nature and widespread popularity of the platform. Using a program called "Gramfeed" [23] she tracked posts containing the hashtag #recollectshoes and relevant posts associated with the museum's geolocation tag. She then saved the posts to a Microsoft Word document where they could be referenced during different stages of analysis. Additionally, she printed each post in color and pinned it to a wall so they could all be seen and considered at once, which allowed visual patterns to be more easily identified.

Through these methods Budge identified four main types of user generated images, and from them drew a number of potentially useful preliminary conclusions. 49% of images featured shoes in some way, including single shoes (27%), pairs of shoes (13%), and multiple shoes (9%). These photos often focused on the decorative details, form, and materials of the shoes. The second largest category, at 17%, included images of a main feature of the exhibition: a wall-mounted collection of shoe molds or "lasts." Within the data set the shoe lasts were always represented as a group, never individually. Taken together, this demonstrated a focus on the material and aesthetic qualities of exhibit objects, such as the patterns, colors, and textures of the shoes, as well as the aesthetics of many similar objects presented as a collection through repetition, such as the wall of shoe lasts. The third largest group, at 11%, contained images of large banners associated with the exhibit. These banners included shoe-related quotes from well-known sources such as "The right shoe can

make everything different," by Jimmy Choo. Some of the quotes were shared more often than others, perhaps indicating which quotes audiences found most relatable or meaningful. The final significant category, at 9%, consisted of images that included people. Yet even in these photos, objects and elements from the exhibition remained as the focal point, and none of them could be considered "selfies" in which a person is the main subject. This fact, argues Budge, coupled with the overall infrequency of photos that even contained people, provides evidence to counter the concerns of some in the museum field who express worry that visitors taking in-gallery photos are primarily interested in documenting themselves rather than engaging with exhibition content.[24]

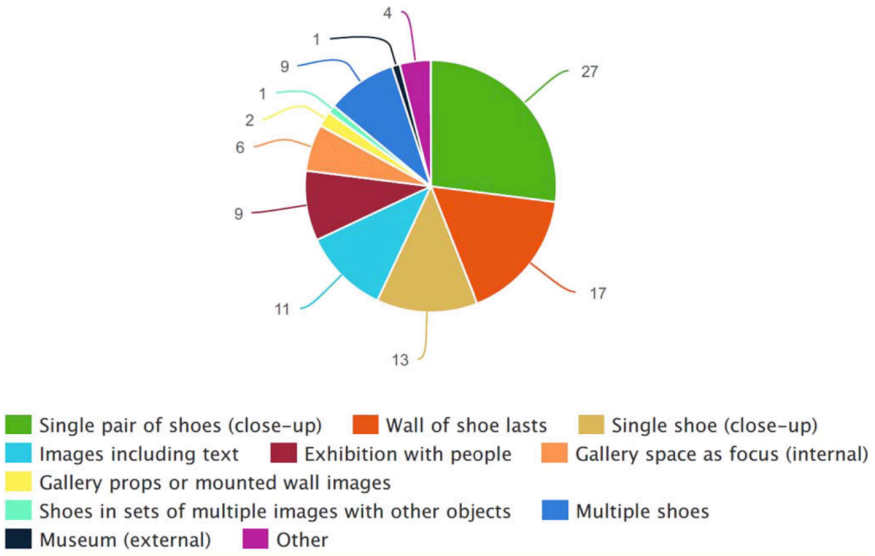

Figure 1: Pie chart depicting the content focus of visitor-created Instagram posts which featured the *Recollect: Shoes* Exhibition. The numerical values represent the percentage of each image type found in the posts. This graphic is excerpted from Kylie Budge, "Objects in Focus: Museum Visitors and Instagram," *Curator the Museum Journal.* vol. 60, no. 1 (2017): 75. Used with permission of the author.

In summary, the results of Budge's visual content analysis indicate that visitors to the exhibition were primarily interested in the objects on display rather than people. She also posits that the parts of the exhibit that were aesthetically appealing and those that had more personal meaning to the visitor were more likely to be represented on Instagram. While some of these conclusions may seem obvious to the seasoned museum professional, what is useful about this strategy is its ability to either bolster anecdotal observations with data, or in some cases, unsettle widely held ideas about

how museum visitors are using social media to interact with objects and exhibition spaces.

In a second case study, Kylie Budge and co-author Alli Burness expanded their scope to a museum-wide approach in their article entitled, "Museum Objects and Instagram: Agency and Communication in Digital Engagement."[25] For this project they collected and analyzed every photo with a geolocation tag associated with the Museum of Contemporary Art (MCA) in Sydney, Australia, over a period of seven days. Similar to Budge's solo project, their guiding research question was "How are visitors who take photos and post them to Instagram engaging with museum objects?" For the purpose of their research they designed a semi-automated data collection technique. First, they set up a dedicated Instagram account for the project. Then, using a web service called "If This Then That" [26] they set a series of conditions to allow Instagram images and metadata to be exported to a variety of savable formats. The exportation was triggered when researchers favorited images from the Instagram account, thus allowing them to select and collect images associated with the MCA geolocation tag for analysis. Once again images were printed and posted on a wall together, where they could be examined for visual patterns and themes.

The researchers identified three major subgroups within the data. 47% percent of photos depicted museum objects, 28% depicted museum objects and people, and 17% depicted people. A handful of preliminary conclusions became readily apparent. Three quarters of the photos gathered contained a museum object in some capacity, suggesting once again that museum objects were of primary importance to visitors rather than people. It also quickly became apparent which objects were posted most often, which could lend insight into which objects were most popular with audiences, or at least made the greatest impression upon them.

Category	No of Images
Objects	**183**
Aleks Danko exhibit (74) external or architectural (30)	
Objects + People	**109**
Aleks Danko exhibit (38) external or architectural (19)	
People	**67**
people only (55) venue hire events (8), food (4)	
Other	
tourism, shop products	
Total	390

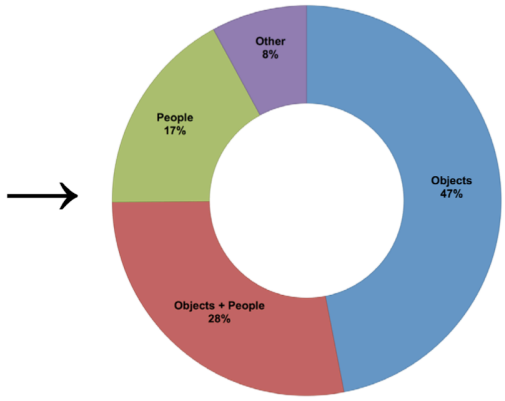

Figure 2: Pie chart depicting categories of MCA visitor posts to Instagram. This graphic was excerpted from Kylie Budge and Alli Burness, "Museum Objects and Instagram: Agency and Communication in Digital Engagement." *Continuum: Journal of Media and Cultural Studies.* vol. 32, no. 2 (2018): 143. Used with permission of the authors.

After more consideration and study two themes emerged across the three categories. The first theme the researchers identified was "agency and authority."[27] When visitors take photos of themselves alongside objects and express their own thoughts and opinions about the objects in their captions, they are inserting themselves into the museum exhibition both physically and figuratively. In their captions they draw connections between themselves, the objects they are viewing, and their own thoughts and feelings. In this way, the user has the "agency" to take interpretation of the exhibition materials into their own hands, and the platform gives them the "authority" to do so. These types of emotional, cognitive, and behavioral investments show that audiences are using social media to engage deeply with museum objects.

The second theme that emerged was the idea of communicating a shared experience through photography. Posts in this vein are like windows into the visitor's experience of the museum and also lend insight into how they conceptualize themselves and signal belonging to their own communities. For example, one visitor chose to post a collage of many snapshots from their visit. This is a method of sharing many separate impressions in order to communicate a summary of their time at the museum. The caption included the phrase "Imma do me" suggesting that they felt the works they choose to share were in some way emblematic of who they are. Additionally, the inclusion of a hashtag "#somanyhipsterartgrads" suggests a, "humorous identification or sense of affiliation with such an imagined community also in

attendance at the MCA." [28] Through this post, the visitor shared their personal art preferences and signaled (ironically) their belonging to a group of so called "hipster art grads" to their own social media audience. Through this form of visual communication visitors can share their experiences involving museum objects and connect them to themselves and their online communities.

Returning to their research question, Budge and Burness found that museum visitors use social media to engage with objects and exhibition spaces as a means of expressing their own agency and authority over the concepts presented to them onsite and as a means of communicating and connecting with others. They conclude that the insights generated through visual content analysis could potentially inform future curatorial and exhibition choices and illuminate methods for museums to more deeply and meaningfully engage their audiences.

These findings explicitly link to ideas presented by Proctor and Stein, who argued that social media has created a proliferation of voices around museum collections, and that users now expect to actively participate in the sharing and creation of knowledge around museum objects and exhibitions. Visual content analysis therefore is a means of gathering these perspectives, studying them, and making curatorial decisions based on them. When museum professionals treat content created and shared by visitors as a valuable source for information, they demonstrate a willingness to share curatorial authorship with the public, and foster participatory culture within their institutions.

Conclusion

Social media is now where culture itself is created, expressed, and captured. It is often the first place people go when they want to learn something new or share their thoughts, feelings, and experiences. It is vital for museums to develop the tools and processes for collecting, studying, and sharing the relevant elements of social media in order to connect what happens there to their own collections. In this way museums can meet evolving expectations for user participation and foster deeper connections with audiences.

However, this area of research is still incredibly young. The members of CoSoPho, Budge, and Burness have all acknowledged in their work that their findings are preliminary, that they should not be taken at face value, and that much more testing and follow-up is needed in order to fully realize the potential benefits that social media archiving and visual content analysis could contribute to the museum field.

Techniques and procedures for collecting and archiving social media content are far from standardized. Researchers will need to continue to experiment and test methods and procedures for efficiently gathering, storing, and possibly distributing

this data. They must also contend with ever-evolving audience expectations and proprietary social media platforms.

More study in general is needed in order to gain a representative understanding of how social media collecting as a tool can be implemented within a diverse set of institutions of varying sizes, locations, and types of collections. Additionally, because the aforementioned case studies are so recent, little has been written about how institutions have implemented the information gained through this research. Future follow-up studies could shed light on the challenges and successes stemming from these early social media collecting initiatives.

Finally, it is of utmost importance that researchers in this field commit to having conversations and developing guidelines concerning the ethics of the practice of social media collecting. Is it appropriate for museums to circulate a call for photos and testimony in the immediate wake of a traumatic event such as a terrorist attack? Is it acceptable to archive, analyze, or publish public social media content without the express permission of the original creators? How would ethical considerations vary between a large-scale social media archiving project, a user-submitted archiving project, or the collection of content for internal study purposes? Many of these questions have already been raised in the research summarized in this paper. However, they will need continued debate in order for professionals to reach an adequate conclusion as the practice of social media collecting becomes more accepted and uniform.

My hope is that museum professionals will continue to experiment with techniques to collect and analyze social media, to develop appropriate technical and ethical guidelines, and to implement positive change at their institutions based on their findings.

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V

Time-Based Media Waits for No One: Creating Collections Management Policies and Procedures

Corrie Brady

Time-Based Media are works of art which "employ technology like film, video, sound recording, and software as artistic materials."[1] This medium consists of the physical components and the temporal elements of the digital technology. Because of its performative nature and complexity, wherein content is represented physically and digitally and requires a specific level of care and maintenance to properly function, traditional and current museum practices cannot fully support this material. However, the practices of modern museums should reflect the needs of digital technology and its objects because it "must be fully materially understood to collect."[2] The institutions which collect Time-Based Media into their collections should create Collections Management Policies and Procedures to specifically address how to properly acquire, loan, exhibit, and ultimately care for the objects.

Time-Based Media

Time-Based Media (TBM) consists of physical components and digital elements resulting in a digital, time-sensitive, technology. TBM is comprised of three major physical components: the information carrier, the playback equipment, and the

display equipment.[3] For example, the information carrier could be a VHS tape which stores the data of the images and sound in its film, the playback equipment could be the VHS player which processes the data on the tape, and the display equipment could be the TV which exhibits the processed data to the viewer. The original configuration of the three elements of TBM "cannot survive for an extended period of time unless the equipment undergoes continuous and carefully managed change."[4] The technology used to showcase TBM can have a short lifespan due to its inherent vices.

A Destructive Nature

TBM risks becoming obsolete through the degradation of the hardware and equipment. These two challenges can be reconciled with the proper care, storage, and techniques of its stewards. Obsolescence originates from the decay of the physical hardware and can result in outdated and unusable equipment. If the equipment ceases to function, the components will "no longer be able to be exhibited as originally manufactured."[5] There are challenges if the equipment continues to go unused as well, whether it is obsolete or simply not exhibited, due to its improper storage. The electrical component of the equipment, known as the electrolytic capacitors, contains a gel comprised of electric energy. This material is inherently corrosive, to itself and to other materials, and will leak out of the capacitors and damage the objects.

The destructive nature of the electrical equipment involved in TBM, and one of the factors contributing to obsolescence of the materials, can be combated through emulation of the equipment. Emulation is software which simulates the functionality of the obsolete system and is a current "active effort to make [TBM] accessible" for a longer period of time.[6] This particular technique is easier to accomplish when the media is created with and on one piece of software. Thus, emulation is not a solution for every work of art in this medium.[7]

Equipment Significance

Joanna Phillips, the Senior Conservator at the Guggenheim Museum, suggests another method of opposing obsolescence by questioning the significance of the equipment in relation to the total work of TBM. "The way in which devices and technologies may or may not be exchanged is dependent on their significance in relation to the identity of the individual work."[8] According to Phillips, museum staff and artists should collaborate during the acquisition process in order to identify which equipment should be considered significant to the meaning of the artwork. It is essential for the museum to work with the artist during this process in order to provide "crucial information on whether the equipment has a purely functional value or if conceptual, aesthetic, or historical values are attached to a specific device."[9] An

example of an artist who placed these values on their artwork was Nam Jun Paik. Phillips claims the most vulnerable works of art are those which are reliant on their equipment because the components are unique to the overall work due to the designed or manipulated nature created by the artist.

The Guggenheim Museum initiated a categorization system for the significant equipment of TBM in their collection. The system places the playback and display equipment on a scale from one to three: one is dedicated equipment, two is shared or obsolete equipment, and three is variable equipment. The assigned numbers ensure a balanced approach to actively determine and manage the inherent change over time while the TBM retains its identity.[10] Proper detection of equipment significance requires a framework of collection care and a reliance on the artists, or artists' foundation if they are no longer living, to decide on the power and identity of the work and its equipment. Phillips' argument throughout the article further justifies the need to create policies and procedures surrounding TBM and its various complexities.

Collections Management Policies and Procedures

Collections Management Policies (CMPs) and Procedures work in tandem with the Collections Management Plan. The plan sets the tone for the policy and consists of a definitive statement on the needs, gaps, and priorities of the museum's collections. In the case of this paper, the needs and priorities are for TBM in the collections of museums that aim to preserve and care for this medium of artwork.

Policies and Procedures are two separate documents which work together within collections management as an agreement to care for collections in perpetuity and to minimize risks to the collections.[11] The CMP establishes standards and provides a framework for decision-making, such as accepting or denying an acquisition for the collection. It should advance and support the museum's mission and operations, as well as receive approval from the governing authority. The Collections Management Procedures provide the implementation for the policies in a series of action steps, such as what to do when the museum agrees to loan a TBM work. The designated procedures are formed by the staff and does not need the approval of the governing authority for its implementation. Due to this lack of approval, it is "easier for the staff to adjust or revise the procedures as necessary to carry out the policy."[12] These documents are both created in order to accomplish a specific goal or to address a particular issue, such as one which will "have a significant impact on the collections" via the acquisition, loan, and collections care processes.[13]

Collections Management Procedures, when developed and prepared, implement the CMP. These documents need to be reviewed and revised regularly to promote the growth of the collection and the museum as a whole. According to the American

Alliance of Museums, Collections Management Procedures should be revised more often than the policies.[14] CMPs and Procedures should be adapted to reflect the necessary changes after their revision. Due to the influence and the popularity of collecting TBM among museums, this change is imperative for these documents.

Acquisitions and Accessions

The criteria and action steps for adding objects to the collection should be outlined in the CMP and Procedure, as well as the acceptable methods.[15] For instance, the Metropolitan Museum of Art's CMP requires the institution to "be able to display, store, and care for the proposed acquisition according to generally accepted museum practices."[16] Later in the document the Met states its Collections Management Procedure for the methods of acquisition. For example: for all purchases, the curator who has recommended the object for acquisition must write a detailed report to justify its acceptance into the collection and a conservator must examine the condition of the object and compile an analysis.

Loans

The purpose of a loan is for museums to share information with other institutions and with the communities they serve.[17] The CMP is a tool for determining which museums can borrow your objects and the museums from which you will borrow objects. For example, the Met "lends works of art from its collection to qualified institutions... [and] wishes to cooperate with as many qualified institutions as possible."[18] The Collections Management Procedures then further explains that all borrowers must agree in writing to the Met's conditions for loans prior to the shipment of the object.

Collections Care

The museum cares for its collections which they hold in the public trust and in perpetuity through the proper preservation, conservation, and storage of objects.[19] Collections care ranges from the direct conservation of the object to the management of the object records. The museum should always maintain the physical and intellectual control of the objects within its collection.[20] The Metropolitan Museum of Art's Collections Management Policy states "The Museum shall provide a safe and appropriate environment for the collections, with effective security and environmental control, for the benefit of present and future generations."[21] The Met implements this policy by maintaining documentation on every object within its collection and setting standard guidelines for environmental controls.

Creating Collections Management Policies and Procedures for Time-Based Media

Time-Based Media is a complex medium of artwork and these complexities, mentioned above, should be reflected throughout museum policies and procedures for collections management. The Collections Management Policies and Procedures listed in this section must be required of any museum which collects TBM to ensure the intricacies of caring for and exhibiting this medium of artwork are fully comprehended and best practices are always followed.

Acquisitions

The point of acquisition is critical for TBM because the care and procedures of the acquisition process will dictate the future life and longevity of the media and the equipment.[22] The proper information and equipment needs to be gathered in order to ensure the care of the physical and digital components of TBM, which would occur during the pre-acquisition and acquisition processes.

Matters in Media Art, a collective information resource from various museums on the care of media art, suggest pre-acquisition questions when acquiring TBM:

1. What are the conceptual and technical elements of the work in order to provide authentic preservation of the objects?
2. What equipment is included in the purchase or gift? What equipment does the museum need to purchase in addition to the equipment included, or if the equipment is not included?
3. Is the required equipment significant to the work?
4. What are the dimensions of the components and is there storage and/or exhibit space for the work?

Museums acquiring TBM works of art must be prepared to ask questions similar to the examples above, because the collecting of objects in this particular and complex medium "requires a proactive approach" for its care and management.[23]

Another factor to consider during the acquisition process, which must be reflected in CMPs and Procedures, is the condition of the Time-Based Media. According to the Cooper Hewitt Smithsonian Design Museum, the condition of the objects must be reported based on its function and context. Documenting the "look and feel" of TBM during acquisition is accomplished via a video condition report.[24] Cooper Hewitt admits this is not standard practice, but it should be commonplace within the museum sector. Condition reporting the objects with a video recording will allow the

institution to properly report the condition of the media itself, not only the condition of the equipment. For example, when the media is viewed to guarantee it is running properly, capturing the video itself is dictating the future life of the objects.

Loans

The loaning of TBM to various institutions "provides an invaluable opportunity" to revise the documentation and knowledge of the museum's collection.[25] Matters in Media Art recommends asking the museum that wishes to borrow TBM the following two questions:

1. Can the borrowing museum install, manage, and maintain the work?
2. Is there an employee who is familiar with Time-Based Media and/or audio-visual technology for the installation?

Installation expertise, installation documentation, equipment lists, and exhibition formats of the TBM objects should be provided by the lending institution for the borrower.[26] These documents ought to be included in CMPs and Procedures as requirements of the loan process due to their importance for the proper installation of TBM by borrowing institutions.

The installation documentation should detail the agreement which was created with the artist and their intent for the display of their TBM artwork. The artist's beliefs surrounding the equipment and its significance to the artwork should be "recorded prior to loaning the object, and will guide the lender and borrower in honoring what is important for a good installation of the work."[27] Matters in Media Art recommends creating dialogue and documentation with the artist prior to the acquisition and loan of the work. They do not address the instances in which the artist's input may no longer be available. The installation documentation should also clearly state how to install the equipment. If there are multiple ways to install the work, it must also be noted.

The equipment list and installation components must be written in standard terms by the lending museum, in case those who install the work are not familiar with TBM's specific and complex terminology. For example: the media is on a DVD, the length of the video component is 60 minutes, the video is in black and white, and the video has sound. Along with the list of the installation components, the video condition report of the components is required. The video condition report allows the borrowing institution to experience the equipment and the media in order to compare it to how it is functioning and running during the installation. The "live document" of the work will "provide a basic framework to understand all of the elements required for a successful install and will maintain the integrity of the work."[28]

The exhibition format of the media is lent to the borrowing institutions in most cases. For example, a copy a DVD would be sent on loan in place of the original, master DVD.[29] It is important for the lending museum to be in contact with the artist, or artist's foundation, during the loan process as well. The artist may need to oversee the copying of the media and it should be clearly stated and specified in the loan agreement, and in the Collections Management Procedures, which institutions will provide and pay for the materials for the creation of the copy. A policy and procedure is also required in the instance of a copy replacement during the exhibition at the borrowing museum. The documents should address whether copies will be made for each loan and how many copies will be sent to the borrower for the exhibition. Certain display forms of TBM can cause rapid deterioration, thus a need for the specific action steps outlined in a Collections Management Procedure.[30]

Preservation, Conservation, and Storage

An important consideration for TBM is the preservation, conservation, and storage of the physical and temporal equipment. The Cooper Hewitt Smithsonian Design Museum defines digital preservation and conservation as the long-term care and storage of digital material.[31] This area of study is highly specialized and requires knowledge of traditional conservation practices and a deep familiarity with the functions of technology. TBM software will "always be intertwined with external databases, web services, and operating systems," and museums should either have the means to appropriately preserve the materials in-house or carefully choose the proper conservation laboratory to do so.[32]

Another factor to consider when acquiring TBM is how the museum will store the equipment and its media. The Cooper Hewitt Smithsonian Design Museum believes the media needs to be stabilized via a disk image format because the digital storage of the media within a database is not a long-term solution. This can be accomplished by storing the media on an appropriate preservation format. They also recommend using a disk image, which is a data storage device, such as a hard drive or a USB flash drive. If the process of migrating the media to a hard drive is not completed in a timely manner, the equipment may begin to consist of rare or completely obsolete components. The process of migration also requires "material connoisseurship," similar to conservation and preservation.[33]

Another storage necessity for technological equipment is the removal of electrolytic capacitors and batteries from the devices. The electrolytic capacitors, mentioned previously, can leak a gel which will erode the equipment and other objects. The museum should account for the extra storage space required for storing the components separately. Cooper Hewitt uses the recapping technique, which is the replacement of the electrolytic capacitor when TBM is exhibited. A CMP and Procedure would outline the proper and best practices, such as where and how to

store the objects, for the ultimate care of TBM equipment.

Exhibition

The exhibition of TBM's display equipment will eventually result in the failure and obsolescence of the components due to the continual operation of the equipment and the media.[34] The significance of the equipment, discussed above, needs to be determined in order to discover if the value of the materials is greater than the function it serves in the work. This would be decided by the particular artist, the artist's foundation, or the museum if there is no one to consult on the artwork and should be documented through a plan of action steps in the Collections Management Procedures. If the equipment is not significant to the TBM work, spare equipment can be used to substitute and replace the originals. CMPs and Procedures would benefit the museum in this situation because they will be more prepared if the equipment of TBM were to cease running or existing by collecting spare materials and ensuring the longevity of the artwork.

The Importance of Creating Policies and Procedures for Time-Based Media

Time-Based Media is a complex medium to acquire, loan, and exhibit in a museum. The need to have Collections Management Policies and Procedures is prevalent throughout the sections above. There are various situations and processes to consider when acquiring TBM and best practices are required in order to appropriately and correctly care for the objects. The objects must be fully materially understood by museum professionals before they are acquired or loaned.[35]

The Variable Media Network

The Variable Media Initiative was created by the Guggenheim Museum in 1999 to preserve media-based works: their efforts later formed the Variable Media Network. This "groundbreaking methodology" was one of the first that sought to define "acceptable levels of change within any given art object and documents [the] ways in which a work may be altered for the sake of preservation without losing that work's essential meaning."[36] This process is initiated by analyzing the equipment independently from its medium, such as TBM. The Network strives for artists to partake in this process in order for the work to be converted to a different technology if the original format becomes obsolete. Therefore, the artists "must envision acceptable forms their work might take in new mediums, and to pass on guidelines for recasting" the work in its new form once the original has expired.[37] Once the guidelines have been established by the artist, they should be readily available to the

appropriate museum professionals and should be included in the Collections Management Procedure as an outside resource to reference. The Variable Media Network also defines the differences between reproduced and duplicated material for digital technology objects. If the material is reproduced, it is a copy of the original master of the artwork and can result in the loss of the quality of the image and/or sound. If the material is duplicated, it is a copy which will not result in differences from the original. The Variable Media Network explains definitive terms and overarching situations in order for museum professionals to better understand digital technology and the necessity for standards to exist for TBM.

The National Portrait Gallery and Time-Based Media

The National Portrait Gallery in Washington, D.C. is one of many institutions with Time-Based Media works in their permanent collection. Over the last four years, the NPG has borrowed TBM works for various exhibitions as well. "Black Out," one of their traveling exhibitions, contained a TBM work by Camille Utterback, which is not owned by the museum.[38] The work consists of a hard drive, a projector, and a computer. At each venue during the exhibition, discretion was used by the borrowing museum to purchase the required equipment or tools to properly exhibit the work. The museum was also required to coordinate with Utterback to decide which equipment was needed for the work. The NPG also exhibited a show dedicated to Bill Viola, a prominent TBM artist. They exhibited works by Viola borrowed from the artist's studio and private lenders. Some of the borrowed works arrived to the NPG on hard drives so the NPG had to buy a significant amount of equipment for this exhibit, such as adaptors, wires, hard drives, and computers. The loan agreement created in conjunction with the lending museum required the NPG to purchase and/or supply the proper equipment in order to borrow the artwork. The purchased equipment remains in the custody of the museum and is being reserved for a future exhibition focused on and showcasing TBM.

The NPG stores the TBM in their collection on a Digital Asset Management System (DAMS).[39] If the NPG is lending one of their TBM works to another museum, they will provide the necessary equipment for the installation and exhibition. If the media or the equipment for a specific work is older in age, several issues arise for the artworks. There have been instances when the code needs to be replaced or parts of the equipment have become obsolete. The NPG strives to remain in contact and communication with the artist, or the owner of the work, to dictate which components of the TBM can or cannot be replaced.

The National Portrait Gallery is also determining the best way to condition report TBM. Currently, the Registrars complete condition reports on the physical components of the works and the Exhibition Specialist will view the media component and report any issues to the Registrars and Curator. Although the NPG

does not have a specific CMP and Procedure for TBM, they have made strides in the digital technology and museum sector by hiring several professionals specialized in TBM, such as a conservator and a curator.

Why Now?

Because the collection and maintenance of digital objects is currently in its infancy stage, the best time to develop policies and procedures is now. If preservation and conservation practices have adapted to the materiality of Time-Based Media, why not the collection practices with its policies and procedures as well?[40] Museums should create Collections Management Policies and Procedures which include TBM because action is required now to ensure its best possible care. In order to combat the arising problems of this medium, museums must create CMPs and Procedures in order to guarantee the necessary care required for TBM. If the museum wishes to collect an artwork of this type, they must ensure their facilities have the capability to expertly exhibit, preserve, and store the objects. These requirements should be expected of borrowing institutions as well and are also essential to the care of these objects. Time-Based Media requires maintenance, care, servicing, and repair similarly to other museum objects; but due to the intricacies of the medium and its risk of obsolescence, Time-Based Media necessitates an undivided attention because it waits for no one.

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Notes

1. “Designing the Future of Design.”
2. Park, “The Materiality of the Immaterial.”
3. Phillips, “Shifting Equipment Significance,” 139.
4. Ibid
5. “Designing the Future of Design.”
6. Ibid
7. Ibid
8. Phillips, “Shifting Equipment Significance,” 141.
9. Ibid
10. Ibid, 152
11. Simmons, “Collections Management Policies,” 24.
12. Ibid
13. Ibid, 26.
14. “Developing a Collections Management Policy.”
15. Ibid
16. “Collections Management Policy.”
17. “Developing a Collections Management Policy.”
18. “Collections Management Policy.”

19. “Developing a Collections Management Policy.”
20. Speckart, “Collections Management.”
21. “Collections Management Policy.”
22. “Designing the Future of Design.”
23. “Guidelines for the Care of Media Artworks.”
24. “Designing the Future of Design.”
25. “Guidelines for the Care of Media Artworks.”
26. Ibid
27. Ibid
28. Ibid
29. Ibid
30. Ibid
31. “Designing the Future of Design.”
32. Ibid
33. Ibid
34. Ibid
35. Park, “The Materiality of the Immaterial.”
36. “The Variable Media Initiative.”
37. Ibid
38. Marissa Olivas, Email, September 24, 2019.
39. Ibid
40. Park, “The Materiality of the Immaterial.”

VI

Bienvenidos: Multilingual Technology in D.C. Museums

Melissa Garcia

I am first generation, American born in my family. My grandparents immigrated with my mother to the United States from Cuba in 1968. On my 20th birthday, nearly 50 years later, I took my mother to visit her very first art museum and a few years after that, I found myself working at one. I grew up in Miami where many people will approach you in Spanish before they do English and visitors at a museum will often ask for resources in Spanish (and other languages). It wasn't until my grandmother visited, however, that I realized that for non-English speakers, like herself, the museum experience was much different. The museum where I worked, like all museums now, was working on being "more inclusive." As part of this initiative, the museum acquired a work by Cameroonian artist Pascale Marthine Tayou titled "Welcome Wall" and displayed it in the lobby. The work features over 70 flashing neon signs reading the word "welcome" in different languages. I'd watch from front desk as visitors would snap a picture pointing at the word in their own language, which perhaps did make them feel welcomed. I have seen welcome walls like this in other museums, inviting people of all backgrounds to enter. However, for non-English speakers like my grandmother, the word "welcome" may be the only thing she and other people from diverse non-English speaking cultures are able to grasp during their visit due to the lack of multilingual resources.

I now find myself in Washington, DC, surrounded by some of the most well recognized museums in the world. My studies have led me here and when asked what I wanted to write about I knew exactly what I thought needed to be said. As

museums in Miami, DC, and all over the world work towards being more inclusive and incorporating more technology, how does multilingualism play a role? Although I hope one day to be able to look at the role of multilingualism within museums nationwide (globally, if I am being super optimistic) for the purpose of this essay I will be looking at two different museums in Washington, DC to see what, if any, multilingual technology they offer. After discussing this, I will discuss the factors that go into adopting multilingual technology in museums and how these resources and their benefits.

For this essay, I have chosen to look at The Phillips Collection and The National Portrait Gallery. There are no specific reasons for choosing these two museums other than that I was able to easily access them and that I wanted to perhaps compare and contrast a smaller and larger institution. Although this essay may not yet lead to any conclusive results, it is my belief that technology can be used as an effective facilitator of multilingualism within museums and that it can be used to enhance the visitor experience for low-proficiency or non-English speakers. Additionally, as museums seek to create more inclusive, diverse, equitable, and accessible environments, an argument can be made that providing these technology-driven multilingual resources can also help raise the demographic of non-English speaking visitors by allowing them to feel more welcomed.

In this essay, when speaking of multilingualism within museums I am referring specifically to multilingual resources for visitor engagement. Although traditionally these resources can be things such as the wall text for an exhibition or a catalogue, my focus will be on multilingual resources provided through a form of technology. I will be looking at how using technology as a multilingual resource in museums will not only allow museums to be more inclusive to diverse non-English speaking audiences by allowing them the opportunity to engage with the museum in a more similar way as English speakers, but may also make these audiences more likely to visit.

Definitions

Before I continue, it may be helpful to provide some definitions for the key terms I've used in this piece:

Diversity: All the ways that people are different and the same at the individual and group levels. Even when people appear the same, they are different. Organizational diversity requires examining and questioning the makeup of a group to ensure that multiple perspectives are represented.[1]

Equity: The fair and just treatment of all members of a community. Equity requires commitment to strategic priorities, resources, respect, and civility, as well as ongoing

action and assessment of progress toward achieving specific goals.[2]

Accessibility: Giving equitable access to everyone along the continuum of human ability and experience. Accessibility encompasses the broader meanings of compliance and refers to how organizations make space for the characteristics that each person brings.[3]

Inclusion: Refers to the intentional, ongoing effort to ensure that diverse individuals fully participate in all aspects of organizational work, including decision-making processes. It also refers to the ways that diverse participants are valued as respected members of an organization and/or community.[4]

Limited English Proficiency (LEP): LEP persons are individuals who do not speak English as their primary language and who have a limited ability to read, speak, write, or understand English.[5]

Bilingual/Multilingual: Individuals who can speak, read, and write in two or more languages, especially with equal fluency. Multilingual resources within museums refer to museums that provide resources in two or more languages.[6]

Working Towards Diversity

Over the past several years, discussions around museum diversity and inclusion have surrounded the field. Concurrently, as technology has advanced, museums have begun to adapt new forms of technology. Promises of IDEA (inclusion, diversity, equity, and accessibility) and new technological initiatives are located within many museums' revised mission statement, vision and strategic plans for the future, including the ones discussed in this essay.

Below I will discuss my personal bilingual experiences within The Phillips Collection and National Portrait Gallery in light of these discussions. I had done no prior research on the multilingual technology that was being offered by either of these institutions. My reason for doing so is that I wanted to have a more genuine experience as a first time, bi-lingual visitor.

The Phillips Collection

Mission Statement: The Phillips Collection is an exceptional collection of modern and contemporary art in a dynamic environment for collaboration, innovation, engagement with the world, scholarship, and new forms of public participation.

The Phillips Collection (TPC) has made large strides in the past year to move towards becoming a more diverse and inclusive museum. Since the 2015 Andrew Mellon

Foundation report on diversity in art museums TPC has been a catalyst for change among DC institutions. In a statement in an article written by the Washington Post in 2018, Dorothy Kosinski, Director and CEO, challenged other institutions in the city to open its doors to all and shared that her goal is to "initiate the transformation of the arts industry in Washington so that it represents the true nature of the city."[7] Since then, TPC has achieved the goal of becoming a more diversified and inclusive museum in several ways. In April of 2019, TPC announced the appointment of the museums first Chief Diversity Officer, Makeba Clay, who I was able to speak with whilst researching this piece. The museum was able to secure this position and allow for a new program of paid internships and fellows by securing major funding through an endowment. TPC has also worked towards diversifying their collection and exhibits and is striving to "create an environment where stories of diverse audiences are shared."[8] Currently, along with their permanent collection and other exhibition, TPC has an exhibition titled Intersections: Cuba Va by the Cuban artist collective Los Carpinteros on view. The exhibitions offers bilingual wall text in English and Spanish.

Although The Phillips Collection does offer multilingual wall text for certain exhibitions, it does not currently offer any multilingual technology. The Phillips Collection does currently have an app which can be downloaded onto a mobile device. The app itself is a bit outdated compared to other apps I have used in museums and, in my experience, takes quite a long time to download. Once downloaded, however, the app is simple to navigate and is very straight forward, something I have come to appreciate after getting lost in museum apps in the past. My first stop on the app was for the Intersections: Los Carpinteros, Cuba Va exhibition. The only resource the app provides for this is a single image and a brief description of the exhibition in English. The page for this exhibition on TPC's website also fails to include text in Spanish, although the exhibition itself contains these resources. I found it interesting that although these materials had already been prepared for the wall text in the exhibition that they had not been used in any of the museum's technology.

I currently hold one of the paid internship positions at TPC that was funded through the endowment and am working in the Director and Development offices. Through this position I have been able to gain valuable insight on the work TPC has done to become more inclusive and how they plan to continue moving forward to continue making strides towards becoming a more inclusive institution.

National Portrait Gallery

Mission Statement: The mission of the National Portrait Gallery is to tell the story of America by portraying the people who shape the nation's history, development and culture.

I visited The National Portrait Gallery without having first done any research on what, if any, multilingual resources they offered. I was pleased to find that they offered bilingual exhibition labels in English and in Spanish. I have since discovered that The National Portrait Gallery considers itself a Bilingual institution. The museum underwent an initiative to become fully bilingual, included resources in English and Spanish. In 2016, the Smithsonian released the Smithsonian Diversity and Inclusion Initiatives report in order to assess the progress made in their goal to become a more diverse and inclusive institution. The report lists several multilingual initiatives that were undertaken by NPG. Two of the initiatives which are listed as completed on the report are having exhibition label translation for underrepresented groups of non-English-speaking individuals and website translation into Spanish. One of the initiatives that is listed as planned is providing mobile device tours for diverse audiences.

While walking through "Champions," an exhibition on American sports figures, I decided to test out the Smartify app which is advertised frequently around the museum. Smartify is used by many museums, which one can download onto their own mobile device, that works via image recognition software. To use the app, users are asked to hold the camera of their mobile devices up to the artwork which they want to learn more about. The app then pulls up information for the artwork. Upon opening the app, users are asked to choose from 13 different languages. I chose Spanish and began to explore. The first thing I noticed about the app is that all the menu and function buttons were in Spanish. After setting up the app to recognize that I was at NPG, I hovered my camera over Walter Chauncey Camp, an oil painting by Albert W. Hampson which is featured in the Champions exhibition. To my disappointment, the app pulled up the information for the painting in English, although having the Spanish wall text already existing at the museum. I tried this for several other works and got the same result, which left me a bit discouraged until I made my way to the exhibition "America's Presidents."

I would like for it to be noted that although I, as a bilingual speaker, am able to enjoy NPG using their many resources in English, for the purpose of this experience, I tried solely to rely on Spanish resources. As a Spanish speaker, I had never quite had an experience like the one I had in "America's Presidents" while visiting a museum. Downloading the Smartify app is immediately encouraged when entering the space for this exhibition. On the app, there is a section titled "tours de tendencia" (trending tours) which features an audio tour of the exhibition. I will admit that going simply off the app this was a bit simpler to navigate knowing English, as there is no instructions or indications that there will also be audio in Spanish. Still, if a visitor were inquisitive enough, they could find resources in Spanish. When clicking on one of the ten artworks for which there is an audio description the words "detalles de la obra" (details of the work) appear. After clicking this, users are able to read a description of the artwork in Spanish and also listen to an audio description in

Spanish. As I kept wandering throughout the exhibition, I came across a touch kiosk which visitors could use to learn more about the presidents and see other materials and works of art. I was very pleased to see that at the bottom of the main screen was an option to use the kiosk in Spanish. I found this to be particularly important because it allows non-English speakers (in this case Spanish speakers) to engage with the exhibition and learn from the technology being offered in the same way English speakers do.

After my visit to NPG, I continued to explore the Smartify app for any features I may have missed during my visit. After clicking "ver colección de esta sede," I was able to go through 960 images of works in the museum, almost all of which I clicked through had a description in Spanish. The app also includes a profile for users which saves into a collection the images which were scanned during the visit to the museum. I immediately went to the painting of Walter Chauncey Camp. Unfortunately, I could still not find the description in Spanish. At the bottom of the English description provided in the app, there is a link to the NPG website (which is also in English). After clicking the link, I immediately noticed the option to change the language of the website to Spanish. I clicked this but still saw no change. It should also be noted that although Smartify does offer differently 13 languages, I was only able to find resources in English and Spanish for NPG. Upon trying other languages, such as Italian and French, I was met with English-only resources.

Although I was able to have an experience like no other using the multilingual resources provided by NPG, the issue with the Walter Chauncey Camp painting left me wondering about how non-English speakers would have reacted to not immediately seeing resources in their language and the issues that may come from using technology as a resource. It also brought to my attention some of the decisions that go into incorporating resources such as choosing what languages to provide.

Benefits, Challenges and Things to Consider

Issues such as diversifying staff, exhibitions, and collections have begun to be tackled, but what are museums doing to enhance the visitor experience for limited proficiency or non-English speakers? Should they do anything and how should it be done?

Documented by a study created by the Association of Science-Technology Centers and further expressed by ongoing conversations in the field, museums are facing hurdles such as available time, money, staffing, the difficulty in determining audience desires, and the need to ensure the quality and consistency of translations.[9] Below I will discuss some best practices when it comes to facing these issues and provide recommendations for achieving multilingualism through technology and who can benefit from it.

Who can Benefit from Multilingual Resources and How?

Low-proficiency or non-English speakers in the museum's community: Non-English speakers can benefit from having multilingual resources by being able to share an equitable experience with English speaking visitors. Low-proficiency English speakers can benefit from multilingual resources for the same reason and also by allowing them the opportunity to enhance their English.

Underrepresented communities whose culture is being exhibited at the Museum: Some museums have begun to diversify their exhibitions to better represent their community. Multilingual resources could benefit the community whose culture is being represented in the exhibition by allowing them to feel more welcomed to the museum and be an active participator in celebrating that culture. It also allowed them to be able to better share their culture with English speakers by providing a bridge between language barriers that there may be.

Multilingual families: Multilingual resources can be used as a tool for intergenerational learning in families where parents may be low-proficiency or non-English speakers and the children are English speakers. Having multilingual resources allows parents and children to have a more meaningful experience at museums. The Bilingual Exhibits Research Initiative (BERI) Report found that bilingual interpretation promoted intergenerational conversation between family members and allows them to interpret exhibitions together.[10]

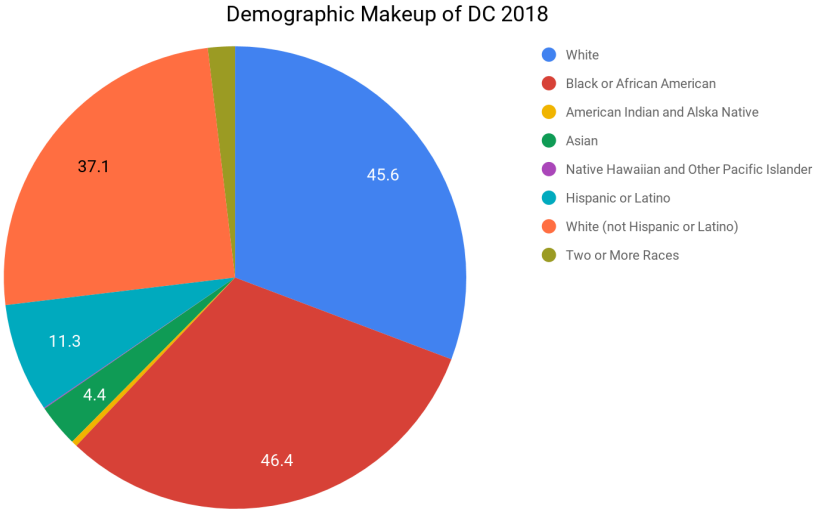
Tourists: Although many tourists may only visit a museum once when travelling, multilingual resources can still enhance their overall experience. Having multilingual resources could also attract more tourists who speak the language of the resources that are now being provided by the museum.

Look at and Talk with Your Community

I believe the first step to tackling the hurdles of multilingualism and assessing who can benefit best from multilingual technology is to look at the demographics, wants, and needs of the museum's community and audience. Museums in Washington, DC attract visitors from all over the world and have some of the highest visitor numbers per year. In 2015, DC attracted 2 million visitors from overseas. The greatest number of visitors coming from China, United Kingdom, Germany, France, India, South Korea, Australia, Italy, Spain and Japan.[11]

Washington, DC itself is a diverse city. Its community is shared with many cultures in which English is not the spoken language. According to DCPRESS, 17% of DC residents speak a language other than English at home and 14% of DC residents were foreign born. DC is also home to many international organizations, companies, international cultural centers and embassies.[12]

The following is a summary of the data collected from Washington, DC in the 2018 Census.[13]



A summary of the data collected from Washington, DC in the 2018 Census.

In 2004, the Smithsonian conducted a museum-wide survey. The survey found that 10% of visitors museum-wide lived outside of the United States. The survey also found that their visitors were becoming more ethnically diverse throughout the years. In 2004, 74% of visitors reported they were non-Latino white, while 82% reported the same in 1994.[14] The racial identification of visitors varied throughout the different museums. Most interestingly, however, was how visitors who identified themselves as belonging to an ethnic or racial minority rated the relevance of the exhibits in the museums to themselves personally. Eleven percent of minority visitors scored personal relevance to the exhibits as poor or fair.[15]

Even within a city such as D.C., which has specific demographic make-up, different museums may receive or want to target different audiences. As noted by bilingual writer Julie Schwietert Collazo, one of the many challenges of making museums multilingual is the way museums make decisions over the matter, such as choosing what languages should be prioritized and whether or not to consider new audiences rather than focusing on regular patrons.[16] When making these decisions, it is important for museums to consider and evaluate the wants and needs of their community and those who could benefit from multilingual resources. This can be

done in several ways, many of which the museum is most likely already actively doing. The study conducted by ASTC demonstrates that 42% of US institutions obtain feedback from local community members through surveys, focus groups, obtaining feedback through cards, advisory groups and directly from members of the public.[17]

Using Technology to Facilitate Multilingualism

As museums move into the future, there have been countless initiatives to better incorporate technology, especially in regards to how it can shape the visitor experience. Digital technology in museums can serve as a facilitator of multilingual efforts and allow for an equitable experience for low proficiency or non-English speakers. Although having non-digital resources such as exhibition labels in other languages is a step in the right direction when it comes to multilingualism, providing resources using technology can better benefit the museum and the visitor alike. When deciding which way to incorporate multilingual technology, museums have several options, some of which may work better than others for certain institutions or in different situations.

The most common way of providing digital resources for visitors is through BYOD (bring your own device) programs. This includes things such as the museums website or an app that can be accessed through a visitors own personal device. Through BYOD museums can offer countless multilingual resources such as visual exhibitions guides or audio guides. There are advantages and disadvantages with BYOD. One of the advantages is that each visitor will be able to access the multilingual resource if they wish, whereas with experiences that are contingent on being accessed at the museum may not be readily available. Another benefit to BYOD programs is that many of them can still be accessed from home, meaning that low proficiency or non-English speaking visitors can plan ahead or continue learning once they have left the museum. Disadvantages to BYOD could be that visitors may not want to use their phones or download an app while at the museum or simply that they don't even know it exists or what it offers. These are discussed in a study conducted by Frankly Green + Webb which analyzes the design of the mobile service being provided and the visitor experience. Editor Lindsey Green created a model to identify six key factors that go into the visitor experience when using digital technology: easy to understand, easy to purchase, usability, awareness, easy to use and value.[18] When discussing awareness, she notes that research showed a direct correlation between awareness and use and the importance of the museum doing a good job of ensuring that visitors know the resource exists. I found this to be particularly true through my own experience at museums.

Another form of provided multilingual resources is through technology that lives within the museum and can only be accessed once physically there. This can include things such as audio tours, QR codes, or in-gallery technology such as touch kiosks.

These digital resources are used to enhance the visitor experience and add an extra element to the exhibition. The disadvantage to these resources is that not everyone can use them at once, audio guides provided directly by museums may be limited and using an in-gallery interactive means having to share with the rest of the museum visitors. Still, I think it is worth museums considering making these forms of technology available to limited proficiency or non-English speakers to provide an equitable museum experience, especially within exhibitions which may be representative of a specific community or culture whose language may not be English. The model created by Green can also be used when developing these technologies as it shares many of the same concerns as BYOD.

Because technology is constantly evolving, another issue to consider is making sure the technology being offered by a museum is also evolving. As exhibitions and programs change, it is also necessary for museum technology to be updated to reflect what is currently being exhibited. For these reasons, it is important that museums develop a digital strategy in order to be prepared when these circumstances are presented. Because developing multilingual digital initiatives also requires discussion around budget, community, engagement, and translation it is important the museum involve their staff, board, and community to share the knowledge and resources they may have. Nonetheless, I believe the benefits of using technology to facilitate multilingualism when done correctly can definitely outweigh the concerns.

What the Future Holds

Although studies have shown there are clear benefits to providing multilingual resources within a museum, the conclusion of this essay is not one that yet offers definitive answers. Instead, I have done my best as an emerging museum professional and bilingual speaker to provide an analysis of what multilingual digital resources I have seen are being provided and recommendations for the future.

I believe museums in Washington, DC, such as TPC and NPG, can serve as an example for institutions across the nation. However, there are institutions that have already made significant strides and who already offer great multilingual resources through digital technology, such as the Fitchburg Art Museum in Massachusetts. In 2013, the museum embarked on an effort to become fully bilingual in order to better represent their community, 39% of which is Latino. FAM uses digital bilingual resources through their website which serves as a mobile app which can be used through a visitor's own device or Ipad provided by the museum. Although the site is intended to be used while at the museum, I was able to experience it from my device at home for the "Discover Ancient Egypt" exhibition. The guide offers images with descriptions, in depth explanations, and answers questions on the work presented in spanish.

Overall, if there is anything museum professionals who are considering providing multilingual resources in their museum can take from this is that someone, like my grandmother, will benefit from it and an effort is needed to be made.

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VII

Creativity is in the (A)I of the Beholder: Artificial Intelligence and the Visual Arts

Mary McCulla

Sold for over forty times its asking price, the *Portrait of Edmond de Belamy* stunned the art world when it reached Christie's auction block. Signed with the algorithm that generated the portrait, Edmond de Belamy was the first major work of artificial intelligence (AI) art sold at a major auction house. [1] Put forth by the artist collective Obvious, the 2018 entrée of *Portrait of Edmond de Belamy* captivated the cultural arts sector, sparking debates over how to conceptualize AI-created work as art and over the role of AI within the creative process. However, although many individuals are contemplating the use of AI for the first time, the practice has existed for decades stretching back to the late 1960s. [2]

Within this paper, I will discuss the rise of artificial intelligence within the cultural arts sector beginning by defining artificial intelligence itself and by briefly contextualizing the history of AI. I will then delve into the recent popularity of artificial intelligence within the visual arts sector sparked by the record-shattering auction of *Portrait of Edmond de Belamy*. Once I have established an appropriate framework for the current position of AI within the cultural arts, I will then turn towards how the arts industry conceptualizes and understands work generated using AI as art, focusing on the perspectives of artists and of casual art viewers. After establishing how people view the output from AI as art, I will examine the role that AI plays within the creative process using prominent artists who work within AI as examples. While I argue that

AI can inhabit a creative role outside of a simple tool for artists to use, it is the human artist that determines the role of AI within the creation of visual art.

The Rise of Artificial Intelligence

To begin, I would like to establish the definition of artificial intelligence that I use within this paper. Artificial intelligence according to cultural data scientist Vishal Kumar is when "computational tools start to possess cognitive abilities," or to put it simply, AI is when technology can copy or perform tasks that only humans could previously do. [3] Those who conceive of artificial intelligence as the prescient Hal from Kubrick's *2001: A Space Odyssey* might be surprised to find everyday staples such as Apple's Siri, Amazon's Alexa, and even Spotify's music recommendations listed among everyday AI technology.[4] AI pervades our modern world in many ways, but the concept of anthropomorphic entities capable of performing human tasks has existed long before today's era of digital assistants. Many credit the mythological Jewish golem (a clay creature brought to life by its creator) as the conceptual forerunner of artificial intelligence, while others also claim with Mary Shelley's Monster from *Frankenstein* as an early inspiration.[5] By creating the first algorithm, Ada Lovelace laid the groundwork for the future field of AI in the mid-1840s, while Alan Turing's mid-20th century Turing Test (wherein he attempted to determine whether a computer could pass as a human being) forced society to consider the possibility of computers possessing indistinguishable human characteristics.[6] While these developments formed the framework for the study of AI, it was not until 1956 that artificial intelligence became an established field, and not until 1968 that AI entered the cultural arts sector via Harold Cohen's experiments with algorithmic art.[7]

While artists like Harold Cohen worked with artificial intelligence for decades in relative obscurity, the artist collective Obvious shot straight to international fame with *Portrait of Edmond de Belamy.* Although many established AI artists criticized Obvious for using an opensource algorithm rather than creating their own algorithm, the auction at Christie's did have the noted benefit of bringing other AI artists into the spotlight.[8] On the heels of Obvious' success came Mario Klingemann's *Memories of the Passerby I* – the second work of AI art to be sold at a major auction house in 2019.[9] A prominent member of the AI art world, Klingemann's success heralded the true arrival of AI art into the mainstream. Faceless Portraits Transcending Time – the first solo gallery exhibition devoted to an AI artist (and organized by the AI artist's human counterpart) – became the next indicator of the success of AI art.[10] With the significant rise in visibility of this sector of the art world, it becomes crucial to establish how the cultural arts sector can conceive of these works as art and to debate the role of AI within the creative process itself

How Do We Understand AI Art?

While it may seem simplistic, one question pursuing AI artwork is how to think about it as art? While there is an openness to accepting the work generated using AI as a legitimate artform, the technical complexity of the practice as well as the semi-nebulous role of the technology within the creative process can result in confusion for the unfamiliar. To understand how AI art fits into the cultural arts sector, one must first understand a little of how artists who work with AI often use it within their practice. While not employed by all AI artists, much of the artificial intelligence in this art uses neural networks such as GANs. Similar to the human brain, neural networks (or neural nets) are algorithms designed to process datasets and recognize patterns within that data.[11] A GAN, or generative adversarial network, is a two-part neural network. While the first part of the neural network (often known as a generator) creates output in an effort to replicate the dataset it received, the second part of the neural network (the discriminator) attempts to find the difference between its own output and the initial dataset.[12] The GAN will continue to produce output until the discriminator can no longer distinguish between the initial input and its own produced work. In the case of AI art, an artist may feed a large dataset composed of thousands of Renaissance portraits to a GAN. The GAN would then generate an infinite number of its own Renaissance-style portraits, editing itself to align as closely with the dataset portraits as possible - a process similar to how Obvious produced *Edmond de Belamy*. A recent derivative version of a GAN, a CAN (or creative adversarial network) is also a two-part neural network fed by a dataset. However, while one network of a CAN encourages the output to be similar to the aesthetics of the dataset, the other network actively discourages the CAN from replicating the style within the dataset.[13] This difference aims to encourage greater creativity within the CAN's output. Artists using a GAN or similar neural network can adjust their algorithms and curate both the datasets fed to the algorithm as well as the output to exert control over the final works.[14] While not all AI art employs neural networks like GANs, these networks are one of the most common methods within the field and illustrate the complicated cognitive tasks that AI performs.

However, understanding the complexity of the algorithmic system involved in generating AI art is just the first step towards understanding this discipline within the broader arts sector. The next step is understanding how to measure the artistic merit of a work so that there is an objective working definition of what art is. Some follow the model of Marcel Duchamp wherein art is primarily preoccupied within itself and its artistry lies within whether it is innovative and expands the field of art.[15] For those not willing to accept that art is what you make of it, there are several mechanisms to determine the artistic validity of a piece beyond skill and creativity: the intentions of the artist, whether the work merits and receives display within institutions of fine art, acceptance of the work as art by the casual viewer.[16] It is safe to assume that the artists working with AI intend to produce artwork, and the discussion above provides

several examples of exhibitions and auctions of AI art within the cultural arts sector. It is the final qualification regarding whether the casual viewer accepts the work as art that holds the next step towards conceptualizing the place of AI art within the larger cultural arts framework. However, beyond just acceptance, it is crucial to examine how AI artists and how casual viewers conceive of the work produced by AI as art.

When discussing how their work fits into the larger narrative, some AI artists, such as Leonel Moura, ascribe to Duchamp's broad and inclusive definition of art while also relying upon validation from the arts sector to define AI art's significance.[17] Other artists, such as Trevor Paglen, describe the practice of AI art as similar to that conceptual art.[18] Within conceptual art, artists believe that the idea is the true art and do not believe the idea must be made manifest for the art to exist. Conceptual artists locate the creation of their work within their mind rendering the physical unnecessary. This aligns with how many AI artists believe the true art of AI occurs within the neural network and algorithmic process rather than the output.[19] While the art world did not accept the conceptual art movement until the 1970s, its ultimate inclusion allows the cultural arts sector to conceive of AI art using a similar framework.

While understanding how AI artists view their art undoubtedly informs the general understanding of AI art as a practice, it is also crucial to examine how casual viewers construct their own framework. Although it is undeniable that some people possess a bias against AI that renders them unwilling to accept that AI could ever produce art, there are objective methods to determine how casual viewers without this prejudice view AI art.[20] Many researchers have employed an updated interpretation of the Turing Test to test the casual viewers' perspective on AI art. Initially conceived of by AI forefather Alan Turing, the Turing Test had a participant ask questions of two respondents and determine which of the respondents was human and which was a computer.[21] If the computer could fool the participant into thinking it was human, Turing considered it a successful piece of AI technology since it was able to pass as a human. Adapted for contemporary AI art, the modern Turing Test asks viewers to determine whether an artwork was created by a human artist or by AI. The viewers' inability to distinguish between a solely human-created piece of art vs. a work generated using AI illustrates that casual art viewers are capable of conceiving of AI art as fitting within the current artistic canon.

Multiple studies have employed a variation of this modern Turing Test to evaluate how casual viewers appreciate, assess, and process AI art. Within a study conducted by Ahmed Elgammal, director of The Art & Artificial Intelligence Lab at Rutgers University, 75% of visitors to an exhibition containing both AI and human-generated art believed the AI art to be the work of a solely human artist.[22] Another study conducted by Rebecca Chamberlain, a psychologist who focuses on the psychological

and neuroscientific basis of artistic perception, asked participants whether they thought certain works of art were attractive without the participants being aware that some of the art was AI art. Ultimately, the study concluded that viewers were unable to tell the difference between the two types of art and found them both attractive.[23] However, within a study conducted by scholars Joo-Wha Hong and Nathaniel Ming Curran, participants were asked to rate the artistic value of multiple artworks and were aware which artworks were AI artworks and which were solely human-generated. While the study concluded that casual viewers did not believe the AI art held the same artistic value as the non-AI art, it also concluded that some of the participants believed that AI could not create art regardless of the circumstances.[24] Therefore, those participants with this bias were unable to truly evaluate the artistic value of the AI art as their mental framework precluded the possibility of AI possessing artistry, thus casting doubt over the study's overall conclusions. When taken together, these studies show that there is a definite subset of casual viewers who are unable to integrate the concept of AI art within the current cultural arts framework. However, outside of those who share this prejudice, even casual viewers who did not find the AI art to be of the same standard as solely human-generated art were able to evaluate and process the work as art using objective methodology around artistic and aesthetic value.

The Role of AI within AI Art

With a framework to understand AI art in place, we fall to what AI artist Leonel Moura considers the true controversy within the field – whether artificial intelligence can be creative, or if it is merely a tool in the hands of human artists.[25] The answer to this question lies within the juncture of the artist, the machine, the art, and the process. However, before addressing the role that AI plays within the artistic process, we must address the significance of creativity and establish how to objectively evaluate it. Creativity is the ability of an entity to produce new ideas or outputs based on its singular ability or imagination. It is "an uncensored, associative form of thought" that can both align with rules while also intentionally deviating from them.[26] Without creativity, any human or system is merely a tool – an algorithm becomes the same as an artist's pastels or clay. Beyond the traditional measurements of the novelty and the quality of a work, the 'creativity tripod' of appreciation, imagination, and skill provides an objective scale to measure whether artificial intelligence can be creative.[27] Within this tripod, appreciation requires a system to critically evaluate its own work; imagination is the ability to produce unique outputs with intention and meaning; skill asks that the AI's outputs possess quality and can be recognized as belonging to the intended group.[28] In the case of a GAN fed a dataset of Renaissance portraiture, the GAN would possess creativity if it intended to create and then created a portrait that viewers could recognize was of good quality and belonged within the category of Renaissance portraiture. Furthermore, the machine would then have to

evaluate whether this portrait was better (or more aesthetically pleasing) than a previous portrait or future portrait it created. While not all AI is capable of meeting these benchmarks, these standards allow the cultural arts sector to establish that AI can possess creativity and to evaluate which AI systems have it.

Even though AI systems are capable of creativity, it is the human artist that determines the role AI plays within the artistic process, including whether that role is creative or not. Within the AI art sector, there is an entire spectrum regarding how artists use AI's creative potential. At one extreme of this spectrum is AI-artist Anna Ridler who views the AI she works with as merely another tool to extend her practice.[29] While she acknowledges that the machine she uses is autonomous in certain ways and enables her to do things she wouldn't normally be able to do, she asserts that the machine would not be able to do anything at all without her direction.[30] Thus, she rests firmly with those who do not endow AI with any creativity. On a similar end of the spectrum is Harold Cohen and his AI-machine AARON. Cohen compared his decades-long working relationship with AARON to a cyborg "in the sense of having computational implants in the brain, only [his] implant is sitting on [his] desk."[31] While Cohen worked with AARON for over fifty years, he was adamant that the machine possessed no creativity of its own.[32] He believed that the artistic potential of AI was within its work with humans and that an AI machine's inability to either question or break rules negated its creative potential.[33]

At the other end of the spectrum, Leonel Moura believes his AI "artbots" possess a certain degree of creativity since they can produce pictures that he could not have predicted.[34] While he does not believe that AI systems can be artists in their own right, Moura likens his relationship to his artbots as that of a student and teacher. Just as an English teacher would not take credit for a successful novel created by one of their students, Moura believes the art produced by the artbots is unique and the result of the artbots' own creative ability.[35] However, he maintains that "the will and skill" of these systems remains with the human artist.[36] Ahmed Elgammal, director of the Art and Artificial Intelligence Laboratory at Rutgers University, takes Moura's attribution of creativity a step further and considers his system AICAN a creative collaborator.[37] Elgammal is the creator of the first CAN and believes that by feeding AICAN an uncurated dataset (at present it includes 80,000 images from five centuries of art), AICAN executes an inherently creative process since it uses its own creativity to draw inspiration from a random sampling of artwork.[38] In Elgammal's view, it is the human artist who sets up the conceptual and algorithmic framework, but it is AICAN that is the creative lead in terms of the elements it includes and the principles of the art it generates.[39] Considering AICAN a full creative partner in his artistic process, Elgammal gives credit to AICAN for the artwork in all of their joint exhibitions.[40]

What all of these artists in the AI field agree upon is that AI is not currently capable of

existing as an artist without human intervention or collaboration. While this may change at some point in the future, there is still uncertainty regarding whether viewers would ever accept an AI system as an individual artist outside of a relationship with a human artist. Twentieth century philosopher Michel Foucault posited the concept of an 'artist function' as the idea that the artist of a work is not necessarily the person who created it, but rather the construct that people build about the artist in their own mind.[41] In the realm of AI art, this means that if the viewer of AI art conceives of the AI system as a tool, then the viewer will consider the human who created or programmed the machine to be the artist, even if the AI system was the true artist.[42] With this in mind, the potential for AI to exist as a true artist not only requires technology not currently in existence but also a mental and theoretical shift within the minds of viewers.

Conclusion

Within this paper, I have examined the history and recent rise of AI art within the cultural arts sector. By examining the perspectives of artists and casual viewers, I have established a framework to conceptualize how AI art fits within the arts sector, and I have evaluated the role of AI within the artistic process, from tool to creative collaborator. However, AI art presents a multitude of challenges for museums in particular. With issues pertaining to how to license and copyright these works of art, how to collect them in a sustainable fashion, and how to organize their attribution within databases, the debates surrounding AI art are hardly finished. While there remain a multitude of questions to answer regarding the future of AI and AI art, it is clear that AI art is now part of the cultural arts sector zeitgeist.

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VIII

All Fun and Games? The Educational Value of Augmented Reality in Museum Exhibitions

Sheridan Small

In an age of increasing competition for attention and limited funding, the public exerts great pressure on museums to innovate, often through the introduction of new technologies. Even internally, museum professionals prescribe digital applications as a solution to staying relevant in an age when museums can often seem stuffy, elitist, old, and out of touch with current trends.[1] In this experience economy, museums seek to provide fun and novel opportunities for engagement and often look towards digital technology in order to do so.[2] One such technology is augmented reality (AR), which consists of supplementing a real environment with virtual objects, and thus is sometimes referred to as "mixed reality."[3] In this paper, I argue that although some museums have utilized AR in interesting ways, most museums are not at the point where they can effectively support AR. Instead, they should focus on low-tech alternatives to engagement. Although AR has great potential, museum professionals will need to think critically about how they incorporate it in exhibitions and the impact it has on visitors' experiences, learning, and memories.

Defining Augmented Reality

AR was first introduced as a simulation training tool for airline and Air Force pilots

during the 1990s, but only recently has become more common in educational settings.[4] It has rapidly evolved from a bulky computer-dependent system involving a backpack and glasses[5] to location-aware and context-sensitive AR apps that either track phones or scan and recognize 2D and 3D objects.[6] The most popular example is the Pokémon Go mobile app that uses location tracking and cameras to impose Japanese cartoon characters on the natural environment as seen through a phone camera lens.[7] More commonly, people use AR every day when using particular Snapchat or Instagram filters. Additionally, Google's AR Core and Apple's AR kit and other software has made it easier and less expensive to integrate AR into mobile experiences.[8]

How Are Museums Using AR?

Museums around the world have been using AR for years to bring their collections to life in various ways. The app ARART, which premiered in 2012 at an exhibition in Sapporo, Japan, brings famous paintings to life. For instance, visitors can see the *Mona Lisa* wink and move.[9] The Art Gallery of Ontario, Toronto (AGO) uses the app ReBlink to reimagine paintings in the twenty-first century by adding modern groceries, smartphones, and Starbucks cups to old paintings. At the Florida Museum of Natural History, AR on a wall-sized screen allows visitors to interact with life-sized animated mammoths alongside the rest of their group.[10] At the Kennedy Space Center in Florida, holograms of astronauts bring the space program to life.[11] In London, the Tate recently partnered with Facebook to create AR experiences that increase the depth of interpretation for eight paintings. In one, the painting is transformed into a three-dimensional landscape. In another, the artist is brought to life to finish her self-portrait.[12]

One of the best-known examples of AR in a museum is found at The National Museum of Natural History (NMNH), which released an app in 2015 called "Skin & Bones" that superimposes 3D models and animations onto skeletons in a hall that has not changed much since it opened in 1881. These augmentations are meant to highlight the animals' unique features, drawing visitors' attention to particularities of their functional anatomy.[13] However, when I tested the app in October, it felt like an awkward and unhelpful addition to the exhibit, and glitches prevented me from exploring all the features. The app contains a wealth of information, including videos, diagrams, and audio recordings, but almost none of it directly utilizes the skeleton on display. The app could easily be explored at home without the lack of the exhibit having any impact. Many visitors to the Smithsonian are tourists who want to see as many museums as they can in one weekend. As such, time pressure influences what content they choose to engage with in exhibitions, and many do not stay to watch videos.

Skin & Bones illustrates some of the challenges that museums face with AR. While all the information in the app is interesting, there may be too much for a visitor to absorb while they are in the museum trying to complete their visit. Technological difficulties were frustrating and limited the functionality of the app. While the content is interesting, very little of Skin & Bones relies on the objects in the exhibition. For digital technology to make a meaningful impact to the museum experience, it is critical for museums to design the tech to be an integral part of the overall holistic experience rather than just an add on for the sake of providing a digital engagement.[14]

Proposed Benefits of AR

AR is often touted as offering increased interaction, participation, personalization, and flexibility, yet many physical interventions can have the same effects. Museums are constantly looking for new ways to add layers of activity that provide successive surprises and discoveries for those who want to explore further.[15] This can be done simply by having drawers to open and panels to flip or by incorporating additional senses with smell jars or audio tours.

One argument in favor of AR uses the idea of "social presence" or the "sense of being in an environment."[16] The less people feel their experience to be artificial or mediated, the more strongly social presence occurs. For example, an audio guide is more mediated than smoothly integrated AR, so AR is considered more memorable and pleasurable and less distracting because it helps people remain aware of their surroundings. In a similar vein, there is the claim that having a device recognize an object itself without any kind of label or QR code allows visitors to focus more closely on examining the object, thus enhancing interactivity.[17] This kind of seamless integration of information is thought to promote Csikszentmihalyi's concept of "flow," a subjective psychological state of control, attention focus, curiosity, and intrinsic interest.[18] However, some studies have found that AR can prohibit the user from developing a relationship with the real world and their surroundings because of the distractions of the simulation.[19] Clearly, more work needs to be done to determine the true benefits of AR.

Can AR Improve Learning Outcomes?

Much of the research on AR has been about how to increase engagement, interest, and usability rather than on what visitors learn and how learning can be improved.[20] Museum theorists like Eileen Hooper-Greenhill have worked to redefine learning, especially in informal environments like museums. Museums are able to create unique learning opportunities that focus more on constructivist inquiry-based learning and dialogue rather than passive transmission of information.[21]

Constructivist theories of learning hold that learning depends on people's prior knowledge, experience, and interests, and that the needs and motivations of visitors should guide the structure of exhibits and programs.[22] Hooper-Greenhill expanded the concept of learning beyond memorizing facts to experiences involving knowledge and understanding, utilization of skills, changing values and attitudes, enjoyment, inspiration and creativity, and behavior progression.[23] In addition, John Falk and Lynn Dierking's holistic contextual model of learning has greatly influenced the museum field's conception of learning as involving the never-ending integration and interaction of personal, sociocultural, and physical contexts over time in order to make meaning of the world.[24] Therefore, the effects of a museum experience on a visitor's learning can be very hard to measure and might even manifest a considerable time after the museum visit.

Intrinsic motivation, choice, and control have great impacts on learning outcomes. In informal learning environments that encourage free-choice learning, like museums, many pathways and media are provided for visitors to exercise choice and control, thus encouraging lifelong learning.[25] Mayer's theory of multimedia learning states that incorporating emotionally and motivationally appealing design features (e.g. attractive content) can increase cognitive engagement and retain attention.[26] As stated before, AR can increase the psychological state of "flow" by enhancing learners' control over their experience. This leads to positive emotions that improve learning outcomes through their influence on motivational, cognitive, and meta-cognitive processes.[27] AR can help personalize a visit by offering variations based on user age, knowledge level, language, interest, time in the museum, and favorite exhibits.[28]

AR can help visitors visualize invisible and abstract concepts, as well as entities that are spatially and temporally distributed.[29] For instance, AR can be used to overlay old photos onto modern landmarks or buildings, helping people see how cities have changed over time.[30] Similarly, AR can be used to show visitors how a painting was first sketched out and then changed through different renditions.[31] At the moment, museums are doing this with photos, but as the theory of social presence argues, the less mediation there is, the more seamless and enjoyable the experience. AR can be used to reveal more about an object without damaging it. For instance, it is no longer considered appropriate to unwrap mummies, but scholars learn what is inside their wrappings with CT scans and other technology. AR can bring those images to life for the public. AR can be particularly effective in science museums for illuminating imperceptible phenomena like magnetic fields. Dynamic visualizations are often more authentic and informative than drawings or other static images. For example, in one study, students at an unnamed museum were able to see how their actions changed a magnetic field and to associate these changes with specific details and aspects of the magnetic field.[32] Similarly, AR can bring past contexts into the present, such as providing the literature, poetry and music of the time when an artist was working or

short commentaries by curators as audio clips.[33] Museums are already finding ways to do this in low-tech, cheap ways. For instance, in the Smithsonian American Art Museum's (SAAM) exhibit *American Myth and Memory*, the introductory text panel provided information about connecting to a curated Spotify playlist so visitors could listen to music related to the artworks as they navigated the gallery. While there are many ways AR could add new types of information to an exhibit, museums must question whether cheaper technology like static images on a tablet can accomplish the same effects before investing considerable resources in an AR app.

Drawbacks to AR

AR can absolutely increase the amount of information that is made available, but museums may need to be wary of providing too much information. An illustrative example of the challenges that opportunities for endless information create comes from the Getty Foundation's Online Scholarly Catalogue Initiative (OSCI), wherein eight museums developed online scholarly catalogues. They found that digital contains the potential for infinity, but the constraints of time, resources, and attention require limits. The curators had to be able to finish the project at some point, even as they kept open the possibility of additions and revisions, and they did not want to overwhelm the reader with a labyrinth of links and endless scrolling.[34] The same issue can be applied to museum exhibitions. A large study conducted by Beverly Serrell in the 1990s found that visitors typically spend less than twenty minutes in an exhibition, regardless of its topic or size.[35] Adding extensive layers of information might increase the time visitors spend in exhibitions but more likely will just exhaust them faster. Alternatively, visitors may be in such a hurry that they will not engage with the expensive AR at all.

Some of the potentially negative effects of using AR in exhibitions are due to practical considerations. Clusters of people trying to view an object through their phone screen could cause traffic jams in gallery spaces. Overcrowding leads to obscured lines of sight, which cause augmentations to fail. Inconsistent, poor lighting can cause the AR app to fail at environment recognition, but minimal lighting is typically required for conservation reasons in museums.[36] Increased time with each object could mean increased museum fatigue, requiring museums to create more and better seating to combat it.

Other practical concerns prohibit the widespread adoption of AR. Many visitors do not have unlimited data packages. Some are traveling overseas and do not want to use their data. Therefore, museums wishing to support and promote these experiences using visitor devices might have to increase their free WiFi offerings, especially in older buildings, over which structural and financial roadblocks loom. AR apps can be quite draining to phone batteries, so museums might wish to provide charging stations for visitors with abruptly dead phones. Location-based AR

experiences rely on GPS, which cannot penetrate through walls or distinguish between floors at the moment, so museums would need to use marker-based or recognition-based AR or deal with visitor frustration when location services fail to work.[37] Many smartphones are "limited by factors like processing power, memory and storage, preventing the full use and integration of AR."[38] Even if AR is proven to greatly improve educational initiatives, currently the many practical limitations of the technology will limit its potential and usage.

Continuing Questions about Using AR

The law is still quite vague about the lawful use of AR, which has allowed some unauthorized AR interventions. Who owns the virtual space? What can a museum do if an outside party "trespasses" on that space? There is currently litigation around Pokémon Go that might decide if it is legal for someone to place a virtual object on private property. This virtual violation of private space is already happening in museums. For instance, the unauthorized app MoMAR Gallery remixes Jackson Pollock's paintings at the Museum of Modern Art in New York beyond recognition or replaces them with "guerrilla artists' work."[39] To touch upon a complicated subject, such distortions of original works might violate aspects of copyright law, especially moral rights like the right to the integrity of the work, for objects not in the public domain. Both public and private museums will likely take issue with official curation being overlaid by unauthorized images. Such digital interventions do not harm the original paintings or physical exhibition design, but might affect the public's interaction with an object and the institution. While some might encourage such participation, museums will likely want to create boundaries in terms of explicit content or authorized partnerships in order to protect their brand and ensure coalignment with their mission.

Damjan Pita, the brains behind MoMAR alongside David Lobser, said if art defines our cultural values, then those values are defined by the elite part of society. Apple's AR kit and Google's ARCore have made it easier for developers beyond the elite to build and distribute AR apps. Loic Tallon, then Digital Chief at the Metropolitan Museum of Art, was wholly supportive of such "AR invasions," and said, "If someone is making an AR experience out of the collection, I see it as pure mission fulfillment."[40] The Met's statement of purpose is to collect, study, conserve, and present art in order to "connect people to creativity, knowledge, and ideas," and it can certainly be argued that AR helps achieve this.[41]

The true impact of AR on the experience and educational value of museum visits still needs to be researched. Studies show that AR can help people focus, as well as inspiring curiosity and deeper engagement.[42] However, it is unclear how much those effects are due to the novelty of the experience and new technology. In addition, studies have focused more on how people are entertained by AR instead of

examining AR's effect on how people learn. Impacts of technology on long-term memory need to be further investigated to determine whether learning through AR is persistent. For years schools have encouraged students to take notes by hand rather than on the computer because involving multiple senses and forcing the brain to synthesize material leads to more effective learning.[43]

However, it is true that AR presents a new frontier of technology as it can involve multiple senses – audio and visual most successfully. Additionally, by including games or quizzes in AR apps, visitors can play with the content to synthesize it in new ways. As with many technologies, the impacts of AR on cognition and learning will depend on how it is used, the nature of the content. This nuance can be seen with more familiar technology like television and video games. For example, watching "Dora the Explorer" or "Clifford the Big Red Dog" is associated with an increase in vocabulary and expressive language skills in two-year-old children, while exposure to "Teletubbies" is associated with a decrease in both measures.[44] Action video games can result in improvements in a number of basic attentional, motor, and visual skills including improved short-term memory and ability to switch between tasks.[45] "Gamification," or the adoption of game technology and game design methods outside of the games industry, could potentially be brought to AR to create the same positive effects.[46] The dynamics of gaming are founded on basic human desires involving rewards, status, achievements, self-expression, competitiveness, and altruism and thus are powerfully motivating factors.

Like any technology, museums must be thoughtful about what data they are collecting from the apps that host AR experiences, where they store that data, and what they do with it. At the Great Blacks Wax Museum in Baltimore and in the Tate Gallery in London, an early app let visitors bookmark their favorite exhibits. Based on that information, personalized merchandise – perhaps in the museum gift shop – was recommended.[47] Whether such a use is ethical is questionable.

AR can boost visitors' willingness to opt in or even pay for a digital guide when such technologies are new, but it is not certain that these effects are sustainable.[48] Studies have shown that people spend more time with objects when they have AR applications, but this finding may be due to a novelty effect.[49] Once the novelty effect wears off, AR might not be seen as such a uniquely engaging and helpful interactive. In one study examining how AR influenced students' understanding of the historical changes in an architectural structure, a participant's phone died and the guide had to show print-outs of past images to facilitate comparison with the present structure. This did not hinder the learners' enjoyment or identification of differences between past and present.[50] The lesson learned was as long as there is a guide and some learning resources, a low-tech version works just as well.

Lastly, whether AR is a useful technology for people to use in exhibitions or at home is another question. People already question whether phones are used too much in

museums, concerned that it ruins the experience.[51] ReBlink, mentioned earlier, was designed to engage rather than distract visitors by getting people to look up, rather than down at their phones. According to the AGO's Interpretive Planner Shiralee Hudson Hill, 84% of visitors to this exhibition reported feeling engaged with the art because of the app and 39% looked again at the images after using the app.[52] However, without knowing the baseline statistics, it is unclear if visitors spent more time with the art or if they got an experience that could not be accomplished on their computer at home.

In Conclusion

Although AR has been around since the 1990s, its potential and pitfalls for cultural institutions are only now starting to become visible. Technology should only be used if it is the best or only way to achieve a goal. If there is an alternative method that is just as effective, a low-tech, cheaper version should be used instead. In the end, technology has no positive or negative intrinsic value; it exists through the content it carries.[53] Yet while museums cannot afford to wait for technology to reach some imagined perfected state – since technology changes so much, so quickly, there is no such thing – they should be wary of investing considerable time and resources in new gadgets merely for the sake of novelty.

One fear is certainly unfounded, that technology like AR amounts to mere gimmickry and will turn the museum into an amusement park. People had similar fears about radio broadcast technology when it was introduced in 1952 to provide an alternative to docent-guided tours. Audio tours turned out to be one of the most transformative technologies for museums in the twentieth century, but one that is taken for granted today.[54] Over the past century, museums have dealt with the rise of new technologies by incorporating some of them in helpful and creative ways. Today, we live in a world dominated by digital technology. Smart systems control our homes, we depend on our phones for work, pleasure, health, and communication. Most institutions, from schools and businesses to hospitals and banks, have incorporated digital technology into the ways they are used by constituents. Paola Antonelli, a curator at MoMA said, "We live not in the digital, not in the physical, but in the kind of minestrone that our mind makes of the two." Museums have an important role in helping people explore and understand the emerging hybrid culture.[55] Yet even museums cannot predict what the future will bring. Museums must flexibly adapt to a constantly changing world. Part of that means teaching the public about new technologies, but another part involves keeping the public engaged with effective learning methods that generate participation, critical thinking skills, and unique experiences, whether low-tech or high-tech.

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IX

VR and the Role it Plays in Museums

Sydney Thatcher

Forms of virtual reality, or VR for short, have been around for centuries, from panoramic rooms to stereoscopes, [1] as people have tried to alter the world around them to create a new one. During the 1960s the first head-mounted displays were created attaching a user to a camera, eventually the headsets would be connected to computers. Typically, VR has been associated with video games to help create a more realistic gaming experience, but VR has also made appearances in movies such as the *Matrix* and *Ready Player One*. In 2016, VR headsets such as Oculus Rift became available on the market for consumers, making VR more popular and thus more accessible to museums and other users. Other tech companies such as Google, Samsung, Microsoft, and Sony have all become competitors in the VR field.[2] For many museums, VR technology is still a fad that that is not realistic to use; however, some museums with enough time and resources have been able to incorporate VR as a storytelling tool to enhance the museum's mission and the collections narratives, as well as to create more accessibility to museum content. This paper will imagine some of the possibilities of further incorporation of VR in museums.

What is VR?

Virtual Reality is an artificial environment which is experienced through sensory stimuli (such as sights and sounds) provided by a computer and in which one's actions partially determine what happens in the environment.[3] Basically, VR uses immersive technologies to create a new world using images and sounds. The most common ways of using VR is through headsets, which can also feature headphones

and gloves and/or controllers to control the virtual world, or through VR rooms or domes where screens are surrounding the user.[4] VR can also be viewed on smartphones, tablets, and computers; however, these experiences are not as immersive as when using a headset or in a VR room.

VR can be confused with Augmented Reality and Mixed Reality. All three are different combinations of technology and the real world. While Augmented Reality supplements the real world with technological images and features, Virtual Reality is meant to be experienced as a completely different world from the one a user is physically in. Mixed Reality is any combination of the real world and a Virtual Reality.[5] Meanings and taxonomy can often flow between the three realities based on the sources being used.[6] For the purposes of this paper I will only be looking at the use of VR in a few museums where the visitor was taken to a different reality from the one they are physically in.

Creating Accessibility

Some museums and companies are starting to use VR to create tours of museums for classrooms and people who are not able to physically visit the museum, theoretically making museums more accessible to audiences they normally would not be able to reach. One such company is CuratedxKai.[7] Kai has created several educational virtual reality tours that can be brought to students in the classroom. There are many schools that cannot afford to bring students to museums on field trips; thus, Kai brings the museum to the students. She creates 360 degree videos of such cultural icons as the Barack Obama Portrait at the National Portrait Gallery or snippets of Broadways shows such as Aladdin.[8] These videos can either be put on smart boards in classrooms; or Kai helps teachers write grants or find cheap ways to bring VR into the school.[9] Traditional field trip experiences can improve recall, critical thinking, historical empathy and tolerance, and now VR tours can do the same.[10] Not only does Kai make the technology accessible, she also makes the information accessible for students of different ages. She approaches topics such as the Holocaust, that can be unfathomable or foreign to student, by incorporating personal experiences that students might be familiar with.[11] VR tours such as those created by CuratedxKai and many others allow students from across the country to see things in museums they cannot otherwise access from their classrooms.

While CuratedxKai creates curated tours from different institutions, some museums have created their own VR tours. National Museum of Natural History, the Renwick Gallery, the Louvre, the Met, and the British Museum are just a few examples of museums that have created VR tours of either the whole museum or specific exhibitions.[12] These VR tours create opportunities for the museum to better serve visitors who might not normally be able to physically come to the museum. Elderly people, people who live across the country or world, and students are able to “visit”

the museum without physically attending. Although not everyone may have access to VR equipment there are still 360 degree videos that can be viewed online using phones or computers.

The National Museum of Natural History (NMNH) has a VR tour of the entire museum allowing visitors to see current exhibitions and previous ones that have been archived.[13] Creating and archiving tours like this offers an incredible educational tool not only for students learning about the world, but also for the museum profession. For instance, visiting an exhibition that has closed years ago can help create more enlightened discussion about the museum profession for museum studies students. Currently the NMNH VR tour only offers the option to walk around the museum, where labels and wall descriptions are not always readable. However, these VR tours are a great opportunity to supply other digital content such as providing animal noises in the mammal hall to make experiences more engaging, or curator or artist discussions. Another example of a VR tour is the British Museum, which currently offers a VR experience for the Egyptian section of their museum.[14] Although they do not offer a tour of the whole museum, they do have the curator of the Egyptian exhibition talk about the exhibition as visitors explore the different sections. This allows for a deeper understanding and engaging experience with the content.

VR as Storyteller

VR can be an important tool in helping curators, educators, and museums in general tell the museum's story and further its mission. Again, the British Museum is a great example of how virtual reality can enhance the collection and museum's story. In 2015, the museum held a VR Family Weekend as a pilot to incorporating VR into their programming. During a previous digital project, the museum took 3D scans of several objects specifically in their Bronze Age collection. The curator of the Bronze Age had been thoroughly involved with the 3D scans project and jumped at the opportunity of another digital project, especially one that utilized those 3D scans. A Bronze Sussex loop, a large dirk from Beanue, and a Woolaston Gold were the three objects chosen from the British Museum's Bronze Age collection to be incorporated into the VR experience. These three objects appeared in a blue outline within the VR experience, where visitors were able to interact with the object to learn more about it and how it would have been used during the Bronze Age. Three Bronze Age roundhouses created the setting for these objects. Visitors were able to walk around the roundhouses, see the architecture, and view other objects that would have been in a Bronze Age roundhouse.

The purpose of the VR Family Weekend was to have a family friendly activity that provided context for objects in the collection. The British Museum was still testing the best ways to get visitors involved, thus they used three different types of VR technology: headsets, tablets, and an immersive full dome. The individuals working

on the VR experience said that typically the Bronze Age was a hard time for visitors to fully comprehend because not a lot of information is known about it. Through the use of VR more visitors were able to engage with the content and have a deeper understanding of what the Bronze Age might have looked like. The museum also determined that the joint experience of VR and handling collections gave visitors a better comprehension of the Bronze Age collection.[15]

As a larger museum with a bigger budget, The British Museum may find it easier to experiment with new technologies within the museum. However, not every museum is going to have the resources needed to create such an experience. The British Museum's experience shows how well VR can be incorporated into programming and storytelling. Their focus in embarking on this project was to create family content and for visitors to better understand one of their harder collections. The museum also used this experience to evaluate visitors' interactions with the VR technology. By evaluating and testing the museum created a better understanding of how they could use VR in the future. Also, by publishing an article about their experience allows other museums to benefit from the knowledge they gained during the process. Both of these practices are very important in furthering the research of how best to use VR. The focus was not on finding a way to include VR, but rather finding a way to help visitors better understand an era and a collection. If more museums incorporated VR into their storytelling process like the British Museum, then maybe more people would better understand difficult areas of history.

Virtual Reality as an Emotion Maker

When VR became popular in 2015 there was a Ted talk by Chris Milk called "How Virtual Reality Can Create the Ultimate Empathy Machine."[16] In this talk, Milk makes the argument that VR can be used to create empathy and is a tool for people across the world to better understand each other. Some of these "empathy making experiences" include interacting with a girl named Sidra at a refugee camp or being a tree in a forest that eventually gets burnt down.[17] These experiences are meant for visitors to have emotional responses about a specific topic that the creators hope will cause a call to action or a change of heart.

Since then, there have been many articles about whether VR creates empathy, sympathy, or instead the feeling of alienation.[18] Michael Goldman from the Holocaust Museum has discussed two issues that have come from displaying VR in the Holocaust Museum. Either the visitor minimizes their own experiences, where they think they should not feel bad for themselves, say, because a friend died of cancer, because a Holocaust victim experienced something worse. Or, the visitor over-empathizes with a Holocaust survivor, where they think they know how it feels to be in the Holocaust. To combat these two scenarios Goldman treats visitors as "engaged witnesses" where they recognize the trauma of others without taking that trauma

upon themselves.[19] This is one way museums have been able to engage visitors - not necessarily to promote empathy, but rather to engage their emotions.

It is a common practice in exhibition planning, programming, and educational activities to create a more memorable experience by inviting visitors to use their heart, head, and hands. By having visitors think, feel, and interact physically with an exhibition, the memory of an experience, and the associated learning, can last longer. Although it is hard to generalize about the kinds of responses visitors might have from a VR experience in a museum, due to the broad range of possible experiences available, it is clear that virtual reality can prompt an emotional response in its audiences. Thus, VR could play a role in this model having visitors interact with a topic that touches them emotionally. Additionally, if Robert J. Stein is right that museums can help make better citizens through spaces that allow for understanding different perspectives[20], then VR could be an incredible resource in this endeavor.

VR as Art

Whether they decide to create their own VR experiences or not, museums, especially art museums, will likely have to address this technology as a medium as more artists use VR and related technologies as a part of their artwork. For instance, in *Unmoored*, artist Mel Chin created a VR experience where viewers could see what Time Square would look like in the future if climate change were to continue. Boats float about the user's head to signify rising sea levels over time.[21] Another example of VR as artwork is *Real Violence* by Jeff Wolfson. His art includes the whole visitor experience: waiting online, putting on the headset, viewing the VR, and taking off the headset to return to reality. The images in the VR experience include him violently beating another person on the sidewalk. He forces the audience to experience this brutal attack with nowhere else to look.[22] Such examples call on museums to consider the best methods of incorporating VR artworks within their own experiences; including how such pieces impact staffing and exhibit design. As more artists incorporate VR into their artistry, museums may have to accommodate this artwork with technology in their galleries, especially if they wish to show the work of those artists using VR. Museums who wish to exhibit such artwork will need plans to answer the emotional and sometimes physical responses in visitors. *Real Violence* has caused a stir in museums because of its violent nature, and the intense experience visitors can have. Museum staff need to be properly trained to handle such intense emotions in visitors. It may not even be clear how museums can respond to such emotions, and they may have to experiment in how they handle such situations. Museums might even need to consider creating discussion or processing spaces for people to work through their emotional experiences after participating in such a work.

Cons of VR

All new technologies require experimentation and evaluation to better understand how it can be utilized. One of the disadvantages of VR is that it can be costly.[23] The content, headsets, and employee time and training can swiftly add up for an institution establishing a VR experience. Often this work is contracted out to different companies who are creating VR content, which can be expensive depending on the content created.[24] Headsets can also come at a price. At the lower end of the market are Oculus headsets that cost $199[25] and at the higher end of the market is Viva Pro headsets that can cost $799.[26] There are some cheaper options such as Google Cardboard that costs $15[27] or Samsung Gear that can cost $20[28]; however, with these lower tech options a phone is needed to experience the VR. One route for museums to cut down on the price is to have visitors bring their own devices to use with VR. With repeated use on a daily basis, headsets used in museums have a higher propensity to break during an exhibition or program compared to headsets that are used at home. [29] If headsets are not functioning, visitors could have an unpleasant experience not only with VR, but also with the museum itself. Often several staff members are needed to facilitate the VR experience, including providing information and setting expectations, controlling lines and crowds, and even to putting headsets on visitors. During their VR Family Weekend, the British Museum had one employee for every headset, and an additional employee to charge batteries.[30] Because expenses can quickly add up over the life of a VR project, it is important for a museum to understand the financial burden they are taking on before going through with adding VR to programming.

Hygiene can also be an issue. Unlike gamers and people at home who could use their own VR headset repeatedly, the museums headsets may be used by multiple visitors throughout the day. To prevent oils, sweat, and other germs enveloping the museums headsets, and eventually spreading illnesses,[31] it is important for museums to continually sanitize headsets. This likely means that an employee has to wipe down the set after every use, which again has an impact on labor costs and headset downtime. This is an issue museums should keep in mind when investing in VR. They need to have a plan to create a sanitary way for every visitor to experience VR without the possibility of getting sick.

Because VR is still an emerging technology, some museum visitors may be experiencing it for the first time.[32] This can create its own set of challenges. The disconnect between reality and the virtual world of VR can sometimes be unsettling and occasionally nausea inducing. Simulation sickness, which has symptoms including headaches, eyestrain, disorientation, vertigo, and vomiting, can be an issue. Not only do museums have to be aware of how they present VR to new audiences, they also have to take into consideration the side effects that VR can create for users. Exhibit designers are therefore called upon to be thoughtful in the ways that they

introduce the experience in order to ensure a positive experience, either by managing expectations beforehand or creating reflection spaces after the VR experience.

Experiencing VR can be a very intimate and personal, which can be awkward in such a public setting as a museum. As a first-time user a visitor typically needs to be initiated into how the VR device works. Sometimes an employee has to place the headset on the visitor or has to ask permission to tighten a strap. An employee could even be the first person a visitor sees after getting simulation sickness.[33] It could also be uncomfortable for visitors to perform actions in VR and be looked upon by strangers that they cannot see. All of these experiences can be very personal and require a certain amount of sensitivity for the visitor. These experiences could also act as deterrents from visitors using the technology in the first place. Sensitivity training for employees could be helpful in aiding employees to anticipate how to handle such situations; however, such training could be costly. Visitors put a certain amount of trust into museums and it is important for these institutions to maintain this trust and use VR in a responsible, comforting way.

Although there are some disadvantages and hurdles for museums utilizing VR there can be some very beneficial reasons to use VR in museums. As the technology improves and the cost goes down more museums might be able to incorporate VR into their exhibitions and programming.

Conclusion

One thing of note is to make a successful VR experience the museum staff have to buy into incorporating VR into the museum. Without the support of the staff, the use of VR will not be successful and sometimes not even possible. Other technology initiatives have demonstrated that the museum's staff need to be committed to implementing, evaluating, and changing the technology to make it work within each museum.[34] One of the reasons the British Museum's use of VR at their Family Weekend was so effective was because the curator was on board with incorporating VR into the storytelling process.[35] Without the curator's hard work and collaboration with the digital team the Bronze Age VR experience might not have been as successful.

There can be many disadvantages to using VR in the museum world. It is a costly technology that requires a lot of time, money, and training. There are risks to health and safety from unsanitized headsets, and simulation sickness. It is also a new technology that can require lengthy introductions and cause uneasiness in first time users. However, the potentials of VR are vast. VR not only allows museum to be more accessible, but it can also enhance and compliment the collection and exhibitions in a museum. There are some concerns about whether VR will eventually replace

museums all together; however, VR can be used to create new audiences for a museum as well as enrich the experience of current visitors.[36] Even though VR can be expensive and time-consuming technology, large museums such as the Smithsonian, the Louvre, and the British Museum, institutions with the time and resources, should try to incorporate VR in ways that can enhance a visitor's experience. Hopefully in the future, when VR is more mainstream and cheaper smaller museums will be able to experiment with VR in their own institutions.

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X

Showing True Colors: Digitization and the Importance of Accurate Color Capture

Cynthia Kurtz

No experience will ever be able to match standing before a great masterpiece, soaking in every inch as your eyes scan the surface, moving from point to point, color receptors firing as each hue strikes the retina and elicits a response in the brain. Perhaps it is awe, or sadness, or confusion: whatever the artist intended the audience to see and feel as they viewed the work. Colors have a strong impact on emotion, and artists have long been carefully selecting their palettes to convey more than just a picture. However, natural deterioration can lead to the magnificence of an object fading over time, or a natural disaster can see it lost in a moment, gone in flames like the collection at Brazil's National Museum.

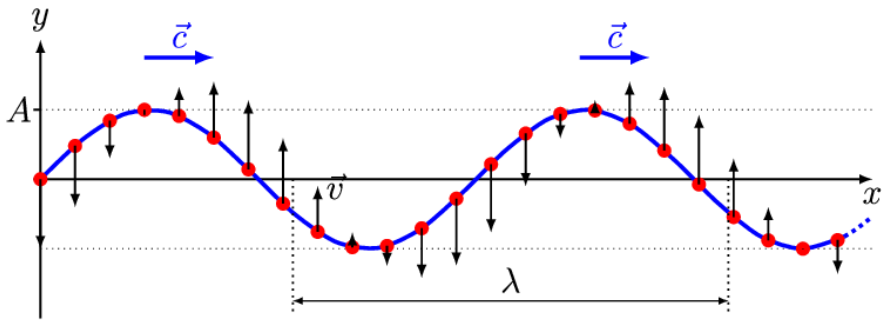
These are the situations in which digitization can be life-changing or -saving. Individuals who may not be able to travel to see a Van Gogh can comfortably view a digitized copy on their own computer; should anything ever happen to the physical piece of art, its ghost can live on in cyberspace. Considered in these regards, that digitized versions may be the closest many people now or in the future will ever be to a work of art, the need for exact color replication becomes abundantly clear. This paper will discuss methods that can be employed to increase color verity, from the act of capturing the image to the dissemination of the image to the greater public. Technological advances and variances, as well as the physical nature of light and color and the biology of human vision all play a part in accurately capturing the colors

present in an object. Scholarly sources and the author's own experience as an intern at the *National Sporting Museum and Library* under the guidance of George L. Ohrstrom, Jr. Head Curator Claudia Pfeiffer, as well as the author's previous background as a pre-med student at Tulane University, will provide the basis of these arguments and recommendations.

Physics: how color works

Color is a large and complex phenomenon, so much so that it has its own branch in the study of physics. Optics is the branch of science that studies light and its interactions with matter, including devices and apparatuses that use or detect it to accomplish a task. This could include observing the way light is distorted when travelling through air or water or studying the way the human eye or camera reacts to specific wavelengths. Color is caused by the reflection and perception of light moving in a highly specific manner.

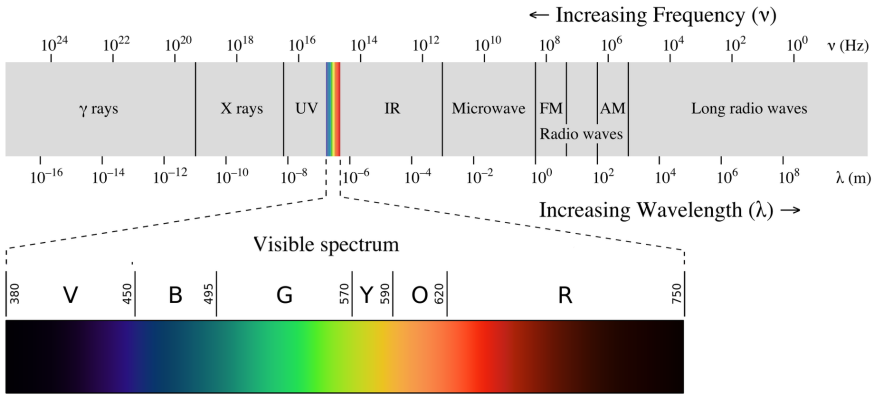
Light travels as a wave through space. The wave can be wide or narrow, tall or shallow, and can oscillate slowly or quickly. Each of these traits is measurable and dictates how the wave of light will interact with matter it encounters.



By And1mu, CC BY-SA 4.0, Link

Wavelength is a measure of the distance between two wave crests. This is the most important measurement when working with color, as each specific wavelength corresponds to a single color within the visible region of the spectrum. Wavelength can vary from less than 10^-12^ meters to over 1,000 meters; the visible region, or that which the typical human eye can perceive, is widely considered to be from 380–740 nanometers.[1] Within this range color progresses from violet to red as

wavelength increases.



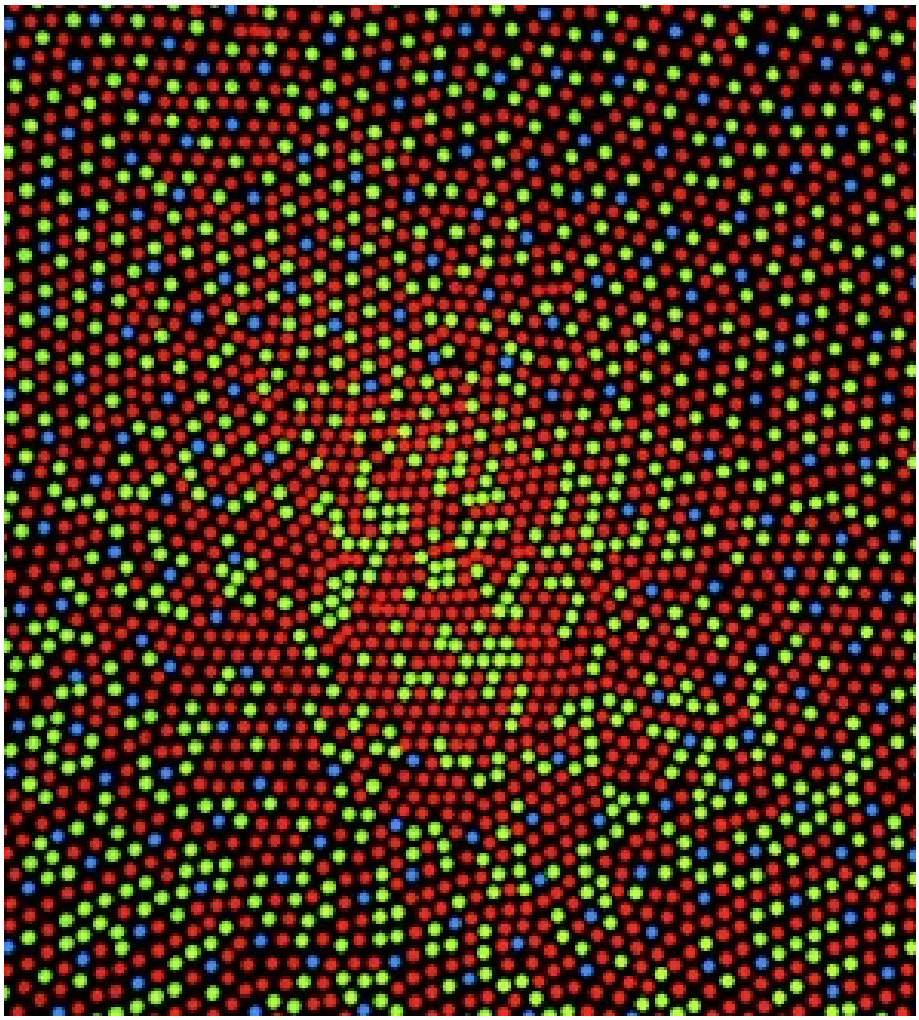
By Philip Ronan, Gringer - File:EM spectrum.svg and File:Linear visible spectrum.svg, CC BY-SA 3.0, Link

The opposite of wavelength is frequency, or the number of times a wave of light passes through a specific point in space within a specific time. The shorter the wavelength, the greater the frequency, and vice versa. Because these two traits are linked, frequency can also be said to dictate the color of a wave of light.

Of course, considering light as a single wave, while useful for demonstrating these concepts, is not a realistic model. Light is comprised of many thousands of waves travelling through space all at once, often colliding and mixing with each other. This introduces a third variable: saturation. The light striking and reflecting off any given object is likely to be comprised of waves of several differing wavelengths. Saturation is a measurement of the variability of wavelengths present in such a sample of light.[2] Saturated light consists of waves that have similar wavelengths. In the visible spectrum, this would cause the color to appear very vibrant. Less saturated light may contain waves with vastly different wavelengths, which can serve to cancel each other out and diminish the vibrancy of the color. Fully unsaturated light, an even mix of all wavelengths in the visible spectrum, would present as pure white. Saturated light in the red-to-yellow range is considered warm, while light more saturated in the blue and violet end of the spectrum is cool, a trait referred to as the color's *temperature*.[3]

Biology: how humans work

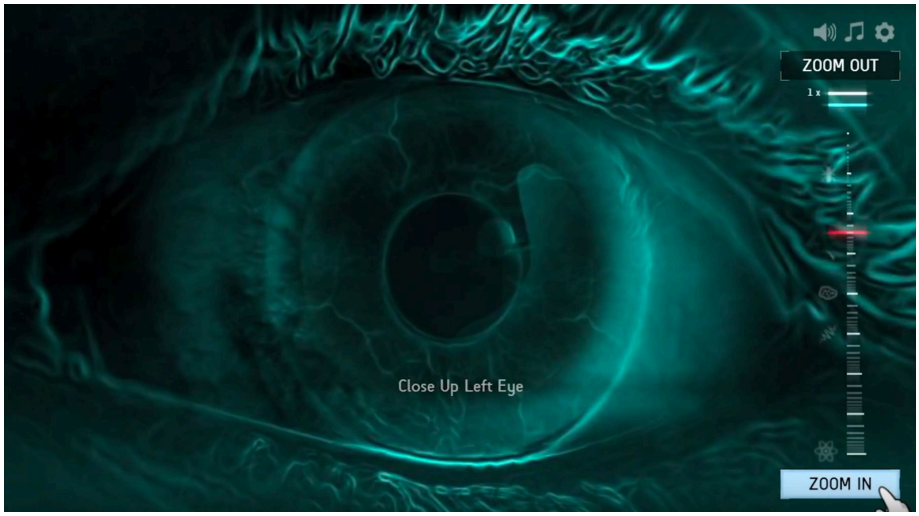
The average human being has nearly 14 million cells dedicated to interpreting color. These highly specialized "cone cells" are located across the retina at the back of each eye. Every object you see sets off a cascade of reactions, electrical signals darting through your nerves to the occipital lobe of the brain, forming an image for you to ponder, evaluate, and maybe even enjoy. The perception of color must be an important trait for the human body to devote so many resources to it; in comparison, humans only have 10,000 cells dedicated to the sense of taste, and each finger has merely 3,000 cells for interpreting touch. This allocation of resources reflects humans' deep reliance on color not just for survival but for communication and emotional satisfaction.



An artist's depiction of the distribution of cone cells in the human fovea, a small portion of the retina where color-detecting cells are most concentrated. Note the abundance of cone cells that detect the color red, and the lack of blue cone cells in the center. Original image by Mark Fairchild, CC BY-SA 3.0, Link

Each cone cell is specially configured to react to a specific range of light wavelengths. When this appropriate wavelength travels through the eye and hits the retina, the responsible cone cells "light up" and send a signal to the brain, communicating the intensity, relative location, and quality of the color perceived. Slight overlap between the wavelengths of light detected by each cone, and how strongly they react, allows the brain to pinpoint a more specific color.[4] The more cone cells a person has, the

more diverse a range of colors they can perceive, and the greater their ability to discern the difference between two very similar colors. Color-blindness occurs when a person fails to develop cone cells of one or more types, leading to an inability to receive stimulus from those wavelengths of light.[5]



https://youtu.be/Hrhb6-td1Co

The goal then, in order to give the viewer of a digitized work of art the most truthful experience, is to have the waves of light emitted from the digital projection, most likely on a computer screen or other similar device, exactly match those that would be reflecting off the original work of art into the viewer's eye.

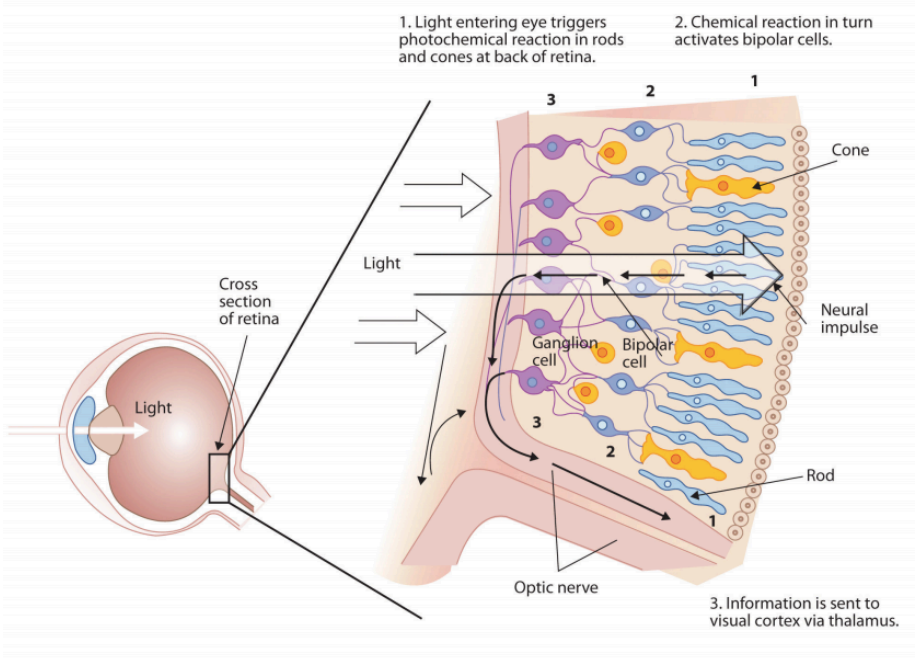


Illustration from *Beginning Psychology* (v. 1.0), CC BY-NC-SA 3.0. Link

Lights: how to improve color

If capturing colors in a photograph can be considered as capturing light, containing it for release elsewhere, what is the best way to maximize the chances of capturing the exact right light? Having a lot of it. A well-lit studio is essential, but this does not mean simply filling the area with lights of all shapes and sizes and hoping for the best. Sources must be carefully curated to match exactly, reducing interference and allowing accurate color capture of the entire object.

The light should be as unsaturated as possible to allow for the most truthful reflections of the pigments present in the artwork, as color temperature can affect how the camera, and thus the future viewer, will perceive the work of art.[6] Humans are able to adjust for differences in color temperature when viewing an object in person but cameras lack this problem-solving ability, making it imperative that light sources used in photography be as ideal as possible.

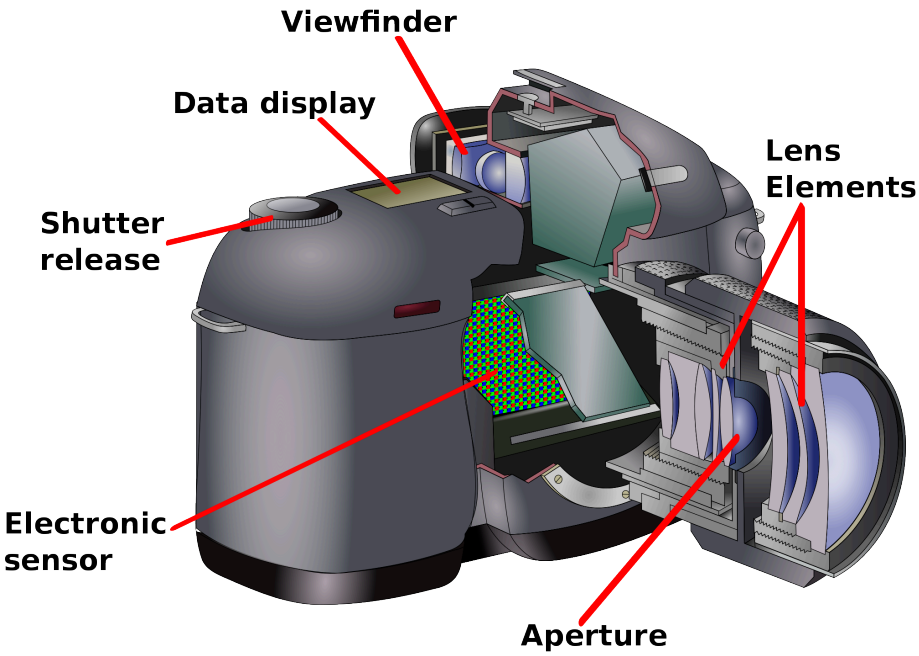
The same horse was photographed in three different light settings. From left: flourescent (cool), direct sun (cool-neutral), and halogen (warm). The color observed in each scenario varies widely.

The first consideration must be any sources of natural sunlight, which must be blocked wherever possible. The earth's atmosphere is most effective at filtering out longer wavelengths of visible light, such as reds and yellows. This causes sunlight to be more saturated in blue wavelengths, giving it a bluish tinge. Changes in atmospheric conditions due to weather or time of day can lead to fluctuations that can be hard to account for and counteract, especially in post-production editing.

Artificial light, then, should be the only source used. The object or work of art should be well illuminated by free-standing lights that remain lit for the duration of the shoot. Paired lights are best, as they can evenly light the object from two different directions, allowing even coverage and cancelling out interference that distorts color. Full spectrum bulbs, which in theory provide completely unsaturated light, will correct color temperature to a large extent. The flash on the camera should not be considered a viable light source, as it is a high-intensity beam of light that is nearly impossible to control and to correct for should variations in temperature occur.

Camera: how to capture color

While there is a large range of camera models and types available on the market, the basic apparatus for capturing a photograph is largely consistent.



By Astrocog - Own work, CC BY-SA 3.0, Link

Most importantly, light must have a way to enter the camera. It does so through the lens, the curved glass piece at the front of the camera. The shape of the lens focuses the light coming into the camera and aims it at the sensors that will be responsible for taking the picture. The lens plays a large role in the sharpness of an image—or how clear it is—and in the magnification. These are important considerations when digitizing a work of art, but do not have much impact on color accuracy.

After passing through the lens, light must pass through the camera's aperture. This is a small opening that opens and closes to control when light is hitting the image sensors. It is also possible to control the size of this opening. The size of the aperture is measured in f-stops: the lower the number, the larger the aperture. A large aperture will allow in a lot more light than a smaller aperture, but at the expense of depth of field, or the range of distances at which objects in an image will be in focus.[7] Because works of art are always three-dimensional objects—even paintings—a large depth of field is incredibly important in order to capture every detail. This is achieved by using the highest aperture setting where the camera is still able to capture a sharp image of the entire object: Pfeiffer typically uses f/11 or f/16 depending on the type of artwork. A watercolor painting, for instance, can be shot at a lower aperture setting than a bronze sculpture since the object itself is not as deep.[8]

This animation shows how enlarging the aperture correlates to less depth of field. By Tiyr, CC BY-SA 3.0, Link

It is also possible to control the shutter speed, or how long the aperture is open. The longer it is open, the more light is allowed to pass through to the sensors. The exact right amount of light must reach the sensors in order to capture a color-accurate picture. When using a high, or small, aperture, shutter speed must be increased in turn in order to make up for the reduced amount of light passing through the aperture. Unfortunately, slow shutter speed makes the camera much more sensitive to any movement and cause blurring.[9] This is typically not an issue, since artwork does not tend to move much, but the camera itself could. It is important to use a tripod or a stand to eliminate motion from a human hand holding it in place. It is also helpful to use remote shutter control, either on a computer or a handheld device, to prevent the slight movement that can occur when pressing the shutter button on the camera itself. If the shutter is open long enough, even these minute movements can cause serious blurring of the image.

Finally, the light reflecting off of the subject will hit the sensors inside the camera and trigger a chain reaction that creates the photo. The sensitivity of a camera's sensor is called the ISO, and, like aperture and shutter speed, is adjustable. A high ISO setting means the sensor will be more sensitive to any light that hits it, improving ability of the camera to capture images in low-light scenarios, while a low ISO means decreased sensitivity.[10] It may seem counter-intuitive, but a *lower* ISO setting is

actually ideal in most instances.[11] The heightened sensitivity at higher ISO settings introduces a phenomenon known as "noise," or a grainy appearance. This is caused by the sensor picking up not only the light waves reflected directly off the object, but also waves of light that have collided and interfered with each other on their path to the camera causing color distortion. As previously discussed, digitization is almost exclusively being done in environments with more than sufficient lighting, so a low ISO is preferred in order to reduce noise and distortion.

These three settings—aperture, speed, and ISO—together affect what is known as the "exposure" of a photograph. Exposure can be roughly defined as the amount and quality of light that was used to create an image. An exact amount of light is needed to capture a color-accurate image: too much light causes a picture to be *over*-exposed, or too bright, and too little light causes *under*-exposure, or an image that is too dark. Most cameras will allow the photographer to adjust each of these settings individually to tailor to the exact lighting conditions, but Pfeiffer argues this is unnecessary and the camera should be relied upon to make some of the decisions for you.[12] By using the camera's automatic aperture-priority mode, the photographer can specify what size aperture the camera should use and at what ISO setting, and the camera will automatically calculate the appropriate shutter-speed based on the light levels it detects to get the best exposure. This gives the photographer great control over how detailed and clear the photo will be but does not require manual measurements or extensive testing to achieve adequate exposure.

This image shows a range of exposures for a single photograph. The top portion has been underexposed, while the bottom portion is overexposed.

Post-production: how to adjust and store color

Despite this level of control over the light environment and the photography equipment, it is inevitable that further image processing will be needed in order to completely correct distortions caused by photography equipment. Calibrating the computer and camera to the light environment can be quite useful, and a myriad of products on the market can help identify the light levels present when a photograph is taken. One such device utilized at the *National Sporting Museum and Library* is the SpyderCube. Each side is painted with a specific pattern of white and gray shades, and a hole in one side creates a "true black" shadow. When the SpyderCube is photographed in specific light settings, the accompanying software, when installed on the computer, can read the gray portion of the cube in the resulting image and make the calculations needed to correct that section of color to its true hue. It can then apply those color corrections to every color in the image.

Images generated by the camera should be transmitted to the computer as RAW files. This file type is massive, due to the copious amount of information it contains. Every single pixel carries with it its own metadata encoding its color and appearance. The computer used to view and edit the RAW files must be equipped with software capable of reading and editing the file type; Adobe Photoshop and GIMP are common options. Photoshop is the most commonly used photo-editing platform and is an incredibly powerful program with a price-tag to match.[13] GIMP is available as a free and open-source program and has many of the same capabilities as Photoshop. It is not as robust, however, and more limited in the types of files it can process and how many channels of color it can handle, but it is free and does not have any restrictions on commercial use making it a good option for museums with limited budgets to dip their toes in the water.[14]

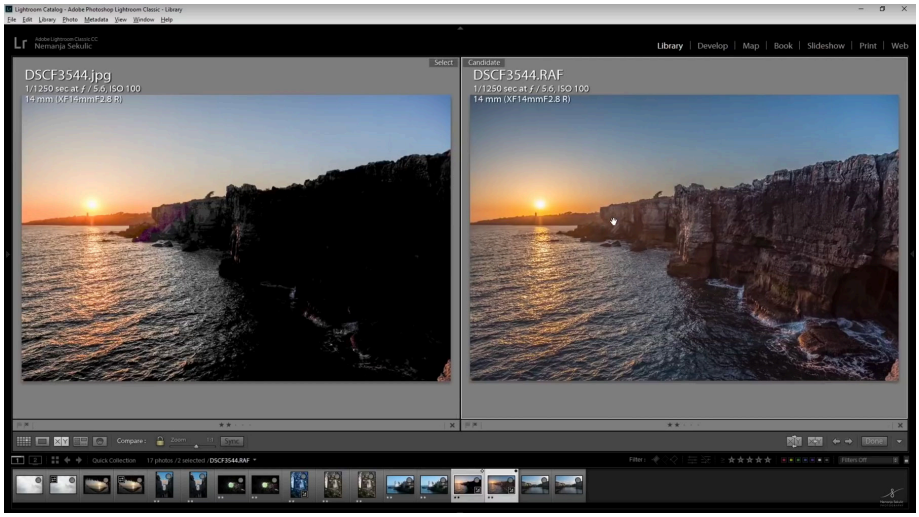
The RAW file is the best place to perform corrections to the color of the digitized image, as this is the only format in which the metadata is readily accessible for editing. As well as color corrections, this is a good stage in which to perform other edits that may be needed. If the camera was not exactly parallel to the artwork when the photograph was taken, slight adjustments in perspective can be made to the RAW file. Silhouettes can be made of the object, especially of sculptures, for graphic design or marketing purposes, by removing any background pixels present in the RAW file and replacing them with a transparent frame.

The RAW file, because of the way each individual pixel is encoded independently, is the most color realistic of any file type. Unfortunately, it is far to massive and specialized for dissemination to the general public, and in some instances storing such large files is prohibitive for museums with limited means. Digital storage, though massive in scope and availability, is still a finite resource. Off-line storage solutions, owned and operated by the museum, are constrained by disk space. A

single computer or storage device can only hold so much data before it is full. Online/off-site storage of files can eliminate this constraint, but with significant cost, as the museum must pay a third-party contractor to manage their storage for them.[15] In addition, the movement of files this large is time- and resource-consuming for both the museum and the recipient. Images on websites that are in RAW format take much longer to load due to their size, making the entire website slow and frustrating to use. Users with low bandwidth or internet speed, such as someone in a rural area relying on satellite internet, may not even be able load such pages.

These scenarios are where JPEGs come in. The JPEG file type is a highly compressed image format compared to RAW, making it much smaller in size and therefore less of a strain on storage and sharing capabilities. It uses an algorithm to remove the metadata of pixels that are closely related; these pixels are consequently expressed relative to a single set of metadata to which the algorithm can make minor changes. The algorithm can be manipulated to control how similar pixels are allowed to be before they are grouped together. The less variation that is allowed between two pixels being grouped, the closer the JPEG file will appear to the original RAW file. Consequently, it will also be larger in size as it is forced to carry more metadata. Still, any image saved in JPEG format will be smaller than the RAW version, so it is best to try and facilitate as high a quality conversion as possible. After the image has been converted it can still be adjusted for color balance or background removal, but it becomes more difficult to apply fine-tuned corrections as the pixels are grouped together inseparably.

Any camera capable of shooting in RAW format can also shoot in JPEG instead. While this may seem like an ideal solution to the storage problems usage of RAW files presents, it comes at a great cost to color accuracy and the ability to fine-tune images. When a camera creates a JPEG file, it makes its own decisions regarding which pixels to keep and which to associate with other pixels. It also accepts the lighting and color conditions of the captured image as fact, removing any extraneous data that don't fit what the camera has decided were the actual conditions.[16] This means that a computer tasked with making color adjustments has a lot less information to work with and has to make more "guesses," which introduces opportunity for error. For these reasons, it is imperative that the RAW file is transmitted from the camera to the computer and *then* converted to a JPEG in order to preserve as much information about the true colors of the image as possible. It is also important to save the RAW file as well, in case later adjustments or corrections must be made or if the compressed file becomes corrupted.[17]



https://youtu.be/wrckVlY5vwU

Viewing: how to share color

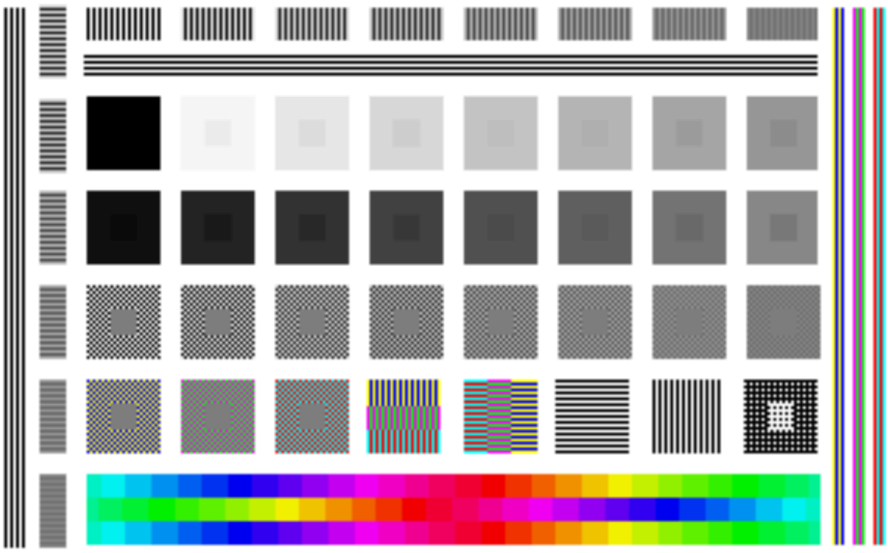
Every step of taking and saving the image is vitally important when capturing color in an accurate manner. Unfortunately, in the end, an image is only as good as the medium it's viewed on. Monitors and other devices for displaying images have huge potential for variation, from constraints presented by the physical technology to settings made in the software running it. Depending on who is viewing the image, and for what purpose, only some of these constraints can be mitigated.

Within the museum's walls and on institutional equipment, a uniform viewing experience isn't too difficult to achieve. Computer screens can be calibrated using special equipment related to the SpyderCube. A sensor observes the monitor as it runs through a series of colors and detects whether the screen is displaying the exact colors the software program is telling it to. It can then trigger the system to adjust the screen's light levels and color intensities to match the calibration software's intentions. This not only serves to force multiple machines to match but ensures that each one is displaying the correct information.

It may also be possible for museums to share this calibration information with each other. In this day and age, objects on loan from one museum to another are often accompanied by digital reproductions for use in documentation, research, or even marketing. The providing institution frequently includes directions as to how those images are allowed to be used according to copyright or licensing, but, if they so desire, they can also provide instruction on how those images should be viewed, even

within the organization.

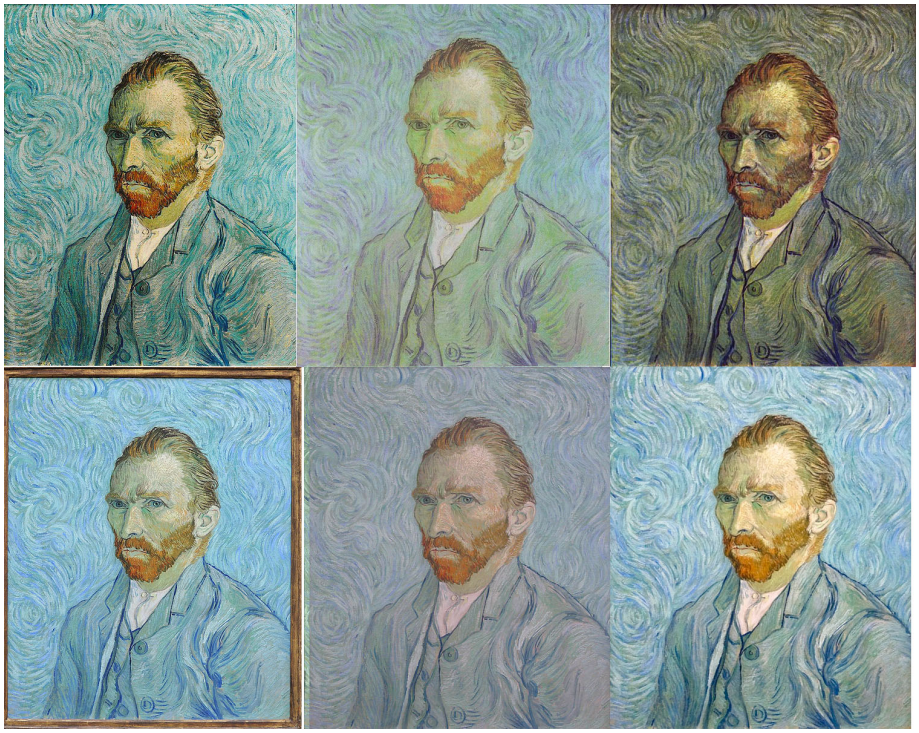
Calibrating visual equipment in-house and among partner institutions is a strong method to prevent discrepancies when viewing digitized work for museum purposes, such as condition reporting or archiving, but it would be unreasonable to expect every member of the public viewing an image on-line to have the knowledge, expertise, equipment, or resources to perform such exact calibrations on their own devices. Most modern computers come with a default color calibration module that relies on the user's color perception and a series of sliders to adjust the appearance of the screen. These modules are better than nothing, and their use on a device has far-reaching benefits that extend beyond viewing works of art. If possible, museums should explain and encourage the use of these built-in calibration tools to viewers of digital collections. The casual user may not want to put so much effort into what they see as simple observation of a work of art, but providing the guidance in case they do wish to enhance their viewing experience is a relatively easy step for the museum to take.



This basic image can help guide screen adjustments to improve color accuracy, but is no substitute for calibration tools. Still, it can improve the viewer's experience and is easy to use. The first two rows of squares have a smaller square within them; brightness and contrast on the monitor should be adjusted until every small square is visible. The second two rows of squares are for gamma, which should be adjusted until the smaller squares appear to be the same relative brightness as the larger squares. The series of lines on the outside are for checking resolution, and do not affect color calibration. Image by Nevit Dilmen, CC BY-SA 3.0, Link

The reality, however, is that a large portion of audience members viewing digitized versions of artwork in museum collections will be doing so on a tablet or mobile phone. At time of publication, there are no viable color calibration tools or software widely available to the public for use on these devices. Some newer phones may allow for a selection between a handful of color profiles—for instance, Google's Pixel 2 XL allows users to choose between "boosted," "natural," or "saturated" color settings—but these adjustments are intended for comfort and preference, not authenticity, and do not allow further customization or calibration.[18]

Why



Six Versions of "Self Portrait" by Van Gogh. From Europeana

If the museum is not taking the necessary steps to create and then provide access to color-accurate digital versions of their collections, then they are giving up control of how those works of art will be viewed and interpreted by a truly global public. In addition, if the images the museum itself is providing are not accurate to the original work, they are betraying the trust their community has in them to provide an

authentic experience and diminishing their own authority on the piece in question. When these images are used on the web, it can distort viewers' perceptions of what the work is really like. In one example, the Rijksmuseum in Amsterdam, Netherlands, found that visitors did not think the postcards depicting Vermeer's *The Yellow Milkmaid* were accurate because they did not match the versions they had seen online.[19] This phenomenon, when multiple digital versions exist but look completely different, is now known as *The Yellow Milkmaid Syndrome*.[20]

Inaccurate digital versions of real-life works of art can have lasting consequences. Museums have authority over the objects in their care, an authority that comes with great responsibility. If an institution is going to seek to control the way its objects will be interpreted by its visitors, it has a moral duty to make those interactions as life-like and authentic as possible. Nothing can ever compare to viewing a great masterpiece with one's own eyes, but with the appropriate techniques and right equipment, a museum's digital reproduction can get pretty close.

Notes

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XI

Digitizing Cultural Heritage Sites: Historical Context, Current Realities and Future Possibilities

Laura Dickson

Why preserve cultural heritage sites? There have been many stories in the news in recent years about tragedy, natural or otherwise, destroying or severely damaging places of historical value. In response, there have been enormous efforts to preserve these sites in some way. In some cases, that means physically restoring the structures of the site, while for others, the sites have been so irrevocably destroyed that some preservative means other than physical restoration are needed. In both scenarios, some accounting of the original site is needed. The answer to this problem has been, in many cases, site digitization projects, where photographs, laser scans and other forms of digital data are used to create a digital representation of the space. Undertaking this act of digital recreation, though, begs the question – once the data has been created and processed, how will it be used in the future? By recreating it digitally, the project declares the site to have intrinsic value that makes it a vital piece of cultural heritage, but by that very action has removed it from its traditional physical context. This can reinforce the impacts of colonialism, by removing these important places from the control of the people who created them, denying them access to their own cultural heritage. In order to best care for these digital objects and the cultural heritage they carry, it is vital to be mindful of the realities of digital objects, and recognize that they are not the same as those of physical ones. To do this, it is critical to devise new means to ensure that these digital creations are used in a way to benefit their source communities.

What Is a Cultural Heritage Site and Why Are They Important?

The first question to ask when considering how these sites are treated is how sites become recognized as part of a culture's heritage. According to Article 1 of United Nations Education, Scientific and Cultural Organization (UNESCO)'s *Convention Concerning the Protection of the World, Cultural and Natural Heritage*, a cultural heritage site is a manmade place (fully or in significant proportion) that has either historical, aesthetic, ethnological or anthropological value. Though UNESCO only extends this definition to sites of "outstanding universal value,"[1] in this paper I expand it to include sites of intrinsic value to their source communities, in order to better explore the intersection between neo-colonial attitudes of worth and the creation and implementation of site digitization projects.

Who, then, are the source communities for these sites? Most times, the source communities are the people who originally created and have used these sites, or direct descendants thereof. However, some cultural heritage is ancient enough to predate the culture or nation whose territory currently encompasses it, such as Palmyra (built in the 2nd century BCE[2], but resides in Syria, which became a country in 1946[3]). Therefore, a more useful definition of a source community for this subject is the most recent community to consider it a vital part of their cultural heritage, or to commit to caring for the site.

Heritage is instrumental to community identity-making. For displaced communities, it allows members to maintain links to their homeland, while building a meaningful future in their new home. For oppressed communities, it allows them to maintain their sense of identity in the face of external societal pressures.[4] These physical sites of heritage and the land they stand on are not only active parts of the everyday lives of many communities, but are the basis for much of their tangible and intangible cultural heritage. Indigenous communities, for example, often express their cultural heritage through their relationship to the land around them, with the landscape itself taking a vital, necessary role in passing down their culture to the next generation. Conversely, immigrant communities find meaning in their own stories by embracing the dominant narrative of the culture to which they have migrated, finding a way to weave in the heritage they bring with them into that narrative, making themselves a part of the source community.[5] Since cultural heritage sites play such a critical role in how their source communities perceive themselves, these projects have the ability to greatly impact how they construct their identity and interact with their heritage for years to come.

What Challenges Do These Sites Face That Put Them at Risk?

Considering the significant role these sites play in communities' lives and identities,

many provisions for monitoring and protecting them have been put into place, such as Article 11 of UNESCO's convention on world heritage.[6] But, as mentioned previously, this convention only provides guidelines for the protection of sites perceived to have universal value. This means that for cultural heritage sites which have not received this designation, individuals and organizations which seek to digitally preserve them will need to be aware of the factors which can endanger them and keep watch on those at greatest risk, since there is no outside organization monitoring their status.

There are many factors which can put a site at risk that need to be accounted for when considering a digitization project; some can be remedied, others are foreseeable, and still others can happen before any measures can be taken.

Natural disasters, such as the earthquake which decimated Kathmandu in Nepal,[7] and the ongoing threat of climate change will impact both the physical needs of cultural heritage sites as well as the community around them.[8] Such events can cause damage that may be repaired or restored using the data generated by these projects. This data can also be used in preventative restoration work in anticipation of damage done by such factors, such as the work being done at the Thomas Jefferson Memorial. Though the site is not in immediate danger of destruction, its managers brought in CyArk, a non-profit organization dedicated to digitally recording cultural heritage, to document the site to provide a baseline against which they can measure future restorative efforts. This allows them to better understand how to care for the site, as well as improve their documentation of changes the structure experiences over time.[9]

Similarly, societal factors can play a somewhat predictable role in the increasing risks some sites face. For instance, social upheaval like the civil war in Syria,[10] conflicting business interests like those that resulted in the destruction of a Mayan pyramid in Belize,[11] and governmental neglect or deprioritization such as what occurred to the National Museum of Brazil[12] and the current land sales approved by the government in the Southwest United States[13] can all factor into heightened risk for sites. Finally, there is the ever-present risk for unforeseeable accidents, such as the fire which consumed Notre Dame Cathedral in 2018.[14]

While some of these factors can put cultural heritage sites at greater and more immediate risk than others, all must be taken into consideration when choosing what to digitize. Such a decision can determine the site's fate in the long term; whether the project will be preservative, protecting the site for the future, or restorative, recreating the site following significant damage or complete destruction.

How Does a Site Become Digitized?

There are two main methods by which site digitization projects create their digital

models: photogrammetry and LiDAR. Photogrammetry uses photos taken of the site or structure from a variety of angles to generate a 3D digital model. These photos can be taken from a variety of sources (from a smartphone to a high-end camera attached to a drone), but in order to create a rendering of the site, the program needs many photographs from dozens of angles. The highest-quality renderings need 360° coverage of the site or structure, which can take hundreds to thousands to millions of photos to create, depending on the size of the site.[15] LiDAR, in contrast, uses laser scanning to calculate the distance between a central machine and anywhere from millions to billions of locations throughout the structure, which can then be turned into a digital representation of that structure.[16] While they can be used separately, if combined, these two techniques can create a 3D model of the site accurate enough to measure the cracks in the bricks of a structure.[17] These digital objects can then be used in a variety of ways, from digital display to 3D printing to structural analysis; the limit is not the data, but rather how people can conceive of using it. The fact that it is digital data, though, means that it requires an interface in order to experience or interact with it in a meaningful way; the gatekeepers stop being those who control access to the physical site, and become those which control access to the digital one.

Who Chooses What Gets Saved?

With so many sites in danger of destruction around the world and such limited resources available to preserve them, the managers of these site digitization projects must make judgement calls on where to spend their time. UNESCO provides the means for identifying threats to cultural heritage sites, as well as the procedures for combating them in Article 4 of its convention on world heritage.[18] However, this convention leaves little guidance for sites which have not been declared world heritage sites. In the absence of this monitoring, each site digitization organization has created their own criteria to determine where they should focus their efforts next, which has led to two distinct kinds of project foci – preventative and restorative.

Preventative Work Vs. Restorative Work

Site digitization projects tend to come about due to one of two instigating factors; either a request for assistance from the organization in charge of the site, or a surge of public support, usually due to media coverage of a tragedy that has befallen the site. The purposes of these projects then fall into two categories: preventative, where the work is done in order to prevent or repair damage likely to befall the site from foreseeable forces, and restorative, where the work is done to restore or recreate a site that has been damaged or destroyed suddenly. Each type of project has its advantages, as well as its restrictions.

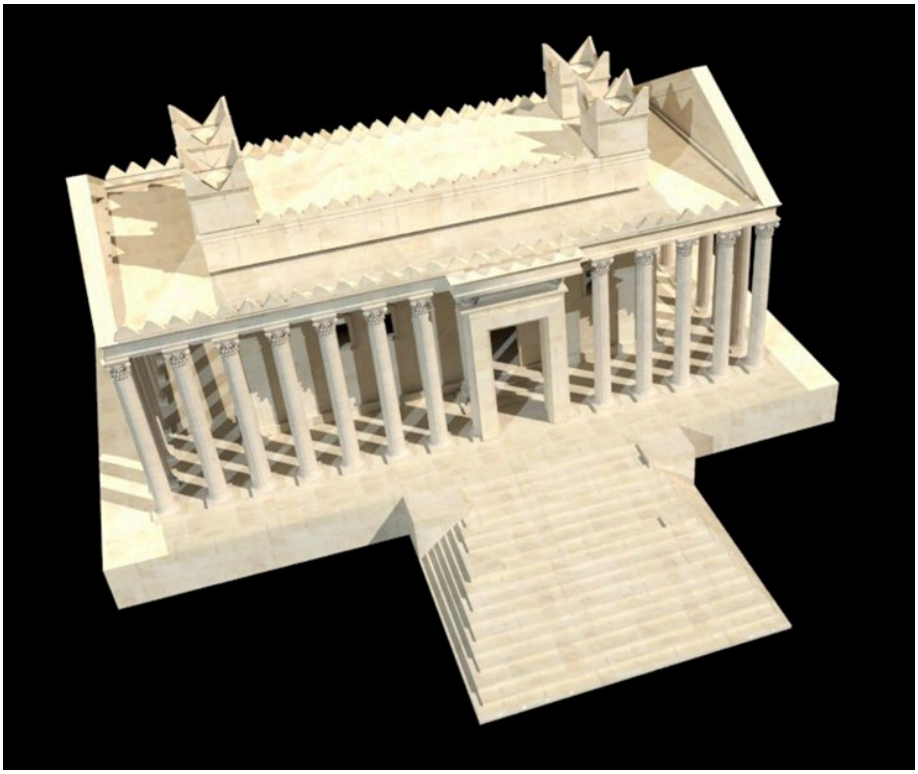
Preventative projects have the widest range of possibilities in terms of what they can produce. Often these projects start at the request of the organization that controls the cultural heritage site. This means that the project staff is given access to the site before a destructive event occurs, and the time to take the in-depth measurements to create models of significant quality to aide with restoration work, or be used as a scientific reference.[19] However, these priorities are set by the site managers, who might not necessarily be members of the source community. For instance, when Bears Ears National Monument was created, there was a conscious effort to include the source community of the cultural heritage within the monuments' bounds in decision making about how the site would be used. A year later, though, the federal government, who is legally in charge of the monument, began the process to reduce the protections on the site over the objections of the indigenous communities whose ancestors had created the cultural heritage sites there.[20] While this situation may not be the case for every cultural heritage site, it shines a light on how easy it can be to reinforce oppressive power structures when source communities do not have the power to control how their sites are used.

Restorative projects are usually restricted to very specific site reproductions. Since these projects tend to be initiated once a site is destroyed (or at least made unsafe or impossible for the public to access), the project scale is limited to what has already been documented at the site. Due to the limits of crowdsourcing, it is also limited to what images people are willing to donate and the quality and quantity of what is donated.[21] In order to increase the quality of what they produce, then, these projects need to focus on the effectiveness of their outreach to attract more contributors, and hopefully acquire the information they need. However, these projects are not limited by what they have current official access to; so long as people are willing to donate images of the site, the reconstruction can continue. Like preservative projects, though, control over these projects may not rest with the source community; anyone can start such a project with a website, data storage, and the right software.

A weakness of both types of projects is their need for vast amounts of data. The raw data collected from the Thomas Jefferson Memorial project undertaken by CyArk, for example, takes nearly 284 GB to store.[22] In order to control and process this data in a meaningful way, those seeking to use it must have the technological capacity to maintain the data in the long term, manipulate it into a meaningful format (such as a 3D model) and create an interface for their target audience to interact with the data or end product (such as a website). This means that these projects are generally limited to sites with either significant tourist traffic (as likely only a portion of which will end up donating their photographs or donating to the cause), or the institutional resources to bring in the equipment necessary to undertake this sort of project.

State of the Field

In order to understand the impact site digitization projects can have, it is helpful to examine some existing cases to see how they get their data, how have they used it and how are they managing it. This paper will therefore explore four case studies, including projects which seek to create digital objects from multiple sites in order to preserve cultural heritage en masse, and those which focus on preserving only a single site, to better understand the state of the field. Like the digitization projects that museums use to digitally record their own collections,[23] these projects create digital representations of the objects in their care. Through that lens, it is possible to gain insight into how these digital objects might also be treated.



https://sketchfab.com/models/123ac87bfb1441ae9cc8c8cdd3ca169c/embed

Restorative Projects

Restorative projects seek to recreate and, in some way, restore cultural heritage that

has been destroyed. While on rare occasion there may have been some preventative digitization done at the site before the precipitating event, in most cases organizations which seek to create digital models of destroyed sites must gather the data they need from crowdsourcing projects.

The #NEWPALMYRA project was originally started by activist Bassel Khartabil to create 3D digital reproductions using photogrammetry of the structures of the ancient city of Palmyra in Syria. While this started in 2005 as a personal project, it grew into an effort that crowdsourced photographs from around the world as many of these sites were occupied or destroyed by ISIS in 2015.[24] Though Bassel Khartabil was imprisoned and executed by the Syrian regime, the online community which contributed to his work continues to do so to bring greater awareness to the struggles of the Syrian people.[25] In response to the fire at Notre Dame, the project has expanded to make the software they use to create their models available to other cultural heritage preservation projects.[26] Similarly to the #NEWPALMYRA project, what was originally known as Project Mosul began as a response from Matthew Vincent and Chance Coughenour to the destruction of the Mosul Museum in Iraq as they sought to recreate a gallery of cultural heritage objects that ISIS destroyed. Like #NEWPALMYRA, another tragedy affecting a heritage site (in this case, the 2015 earthquake in Nepal) transitioned Project Mosul into Rekrei at the request of its contributors, expanding its scope to include other at-risk cultural sites around the world.[27]

The strength and the weakness of these crowdsourced efforts is community input. So long as their community is willing to donate photographs, time and money, the scope appears endless; and since they both profess to be open-source, what they create is available for everyone to use. This means, though, that there is no oversight in how the data is used, nor any mechanism by which source communities can hold them accountable. For now, current projects which use these models appear focused on creating sympathy for their source communities and inspiring action on their behalf,[28] but there is nothing in place to safeguard this digital heritage from misuse, however unintended.[29]

Preventative Projects

There are a number of current digitization projects around the world seeking to document and preserve cultural heritage, not just in case of disaster, but to actively prevent its destruction. Many of the organizations carrying out this work are non-profits, but which often work in concert with for-profit and government agencies to complete their projects.

CyArk was created in 2003 by Ben and Barbara Kacyra in response to the destruction of the Bamiyan Buddhas in Afghanistan. This company works to “digitally record,

archive and share the world's most significant cultural heritage". They also work to train members of the source community to document their own heritage, particularly when it is threatened by forces such as social upheaval like in the case of Project Anqa, where Syrian professionals were trained by CyArk so that they could document cultural heritage sites at risk of being damaged by the ongoing civil war.[30] Unlike the previously mentioned projects, they use both photogrammetry and LiDAR to produce high-resolution imagery that can be combined into a single model, and also collaborate directly with the organizations managing the sites to gain the access they need for their work.[31] Those projects produced in conjunction with other agencies tend to have restricted public access due to security or privacy concerns.[32] To better disseminate the projects without such restrictions, they have created OpenHeritage 3D with Google Arts and Culture, a website dedicated to sharing some of their datasets "for education, research and other non-commercial uses".[33]

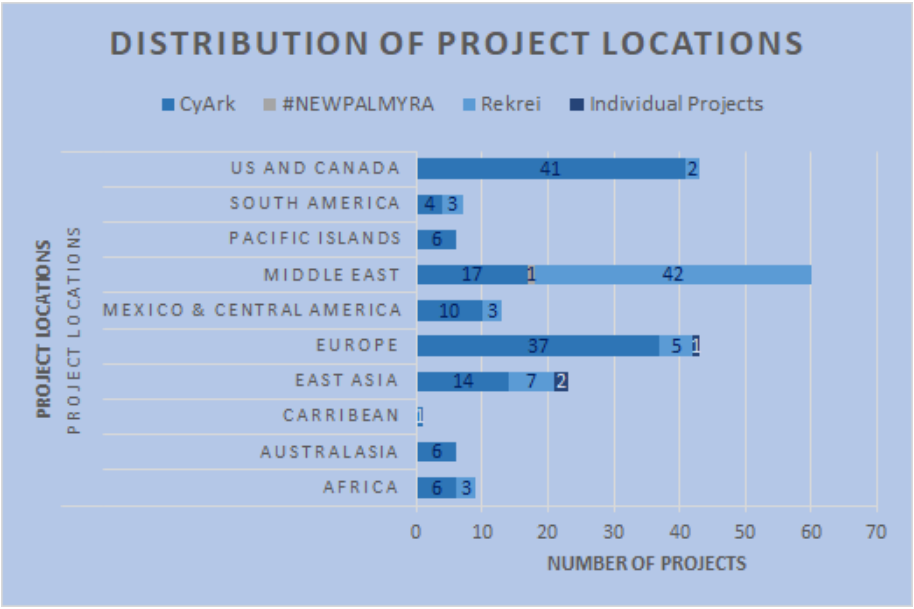
These partnerships give these organizations greater oversight than their crowdsourced counterparts, but this accountability is limited; once again, it is not the source community deciding what is best for the site, but an outside agency with their own priorities.

Individual Site Projects

While the above projects focus on recording as many cultural heritage sites as they can, there are projects which focus on preserving a single place. Months before Notre Dame Cathedral caught fire in April 2019, Andrew Tallon, a medieval architectural historian, used LiDAR technology to create a detailed model of the building; following the accident, his data could be crucial in the rebuilding effort.[34] Conversely, the Đình Tiền Lệ monument in Vietnam[35] and the Donuimun Gate project in Seoul, Korea[36] primarily seek to create digital spaces to provide new experiences to the public, rather than act solely as a reference to preserve an existing site. What they and projects like them share, though, is their goal; to understand a single place, its history, and its deeper meaning to the community around it. How this is accomplished and why, though, can vary widely depending on who is in charge of the project.

Analysis of Sites Being Preserved by Current Projects

When looking at what sites are being preserved, it's important to look at where these sites are located, to see if certain cultures' heritage are being prioritized. This chart shows the geographic distribution of the sites declared on each of the case study projects' websites, split into geographical regions.



In sum, it appears that most sites are either where there is easy access for the (predominantly American or European) initial creators of these projects to do their work, or where public outrage over particularly egregious site destructions has encouraged people to participate in these projects. Access is particularly key in creating a 3D object of at least artistic value, let alone one of historic or scientific value; the only way to create a good rendering of the space is through vast amounts of photographs and data points, after all, and those require time to be taken accurately. As such, projects like Rekrei and #NEWPALMYRA are limited in what they can create; because they produce models after a site has been destroyed, they are limited by what photographs they can crowdsource – if photography of the site was limited in some way prior to its destruction, then they can only produce a digital object defined by those parameters (such as being placed against a wall).[37] Conversely, preservative projects tend to coordinate with the site managers to get the data they need, which means the end result is shaped by those managers' priorities instead.[38] In either case, the sites that these projects are preserving appear to have a significant bias towards Middle Eastern, European and modern American cultural heritage. While there is not an explicitly stated reason behind this bias, it still represents a significant discrepancy between these projects' stated purpose of preserving as much of the world's cultural heritage as possible, and the realities of what they're actually preserving.[39]

How Are the End Results Distributed?

The means and circumstances under which these digital objects are created by may vary widely, but the purpose of every project is to distribute the digital objects they create in some way. While each of these sites is a vital piece of cultural heritage for at least one community, the institutional biases and other factors which lead to them being chosen in the first place may play a more significant role in how the digital representation of the site is used.

Challenges in Making Models Available to the Public

The first challenge in bringing these digital sites to the public is the restriction of the medium itself; if someone does not have access to sufficiently advanced digitally-enabled devices, they will be unable to view or interact with the site. For example, when the archives at the Sirindhorn Anthropology Center received donated anthropological materials about the Tai Lue community, they tried to consult with the source community to determine how to respectfully preserve and disseminate their cultural property. Before they could even comprehend the decision they were being asked to make, though, the SAC found that the community members they were working with needed the means to access the materials in the first place.[40] Similarly, any site digitization project will be defined primarily by who has the means to access the materials they create.

To that end, the next challenge in ensuring access is to make them as widely available as possible, a goal which is often pursued by making sure the digital objects are accessible online to the public. When digitizing collections, museums have often withheld the data created from their collections and the 3D objects they created with it from the public. The hoax regarding the scans of the bust of Nefertiti at the Neues Museum, for instance, highlights how restricting public access to digital data can lead to legal and ethical issues as the public searches for ways to connect with cultural heritage.[41] Though the institutions which host the data consider limited, controlled access to be in their best interest, the source communities which created the artifacts, as well as the wider public, want to interact with this heritage, and the institution's attempts to maintain control over the digital object may adversely affect how they choose to go about doing so.[42] In this respect, several of the site digitization projects have gone further in making their digital objects available to the public than those institutions; for instance, #NEWPALMYRA and Rekrei both openly and clearly license their data under a BY-NC-SA Creative Commons copyright, encouraging the public to use and interact with what they have created.[43] This is not the universal stance taken by these organizations, though, as many have to deal with restrictions imposed by the site's caretakers.

The inherent restrictions of digital restrictions play into how effective this policy of

openness can be. As mentioned before, the size of the data gathered by a single project is staggering, often well outside of the resources of the average citizen to store, let alone analyze. To work around this, many of these organizations have entered into partnerships in order to disseminate their data; CyArk has partnered with Google Arts and Culture to create OpenHeritage 3D, and the Million Image Database works with partners as wide ranging as UNESCO and the Dubai Future Foundation.[44] While the sites posted on Open Heritage are covered under a Creative Commons license, these licenses do not include all of the sites which CyArk has digitized, or all of the data hosted on the Million Image Database. In particular, those produced in conjunction with other agencies or other third parties tend to have restricted public access due to security or privacy concerns.[45]

The final challenge is making the digital objects sustainable for future generations. A few of the projects are collaborating with outside partners to gain access to resources they otherwise wouldn't have, such as CyArk partnering with Google Arts and Culture to create online exhibits for some of their sites.[46] Conversely, #NEWPALMYRA is partnering with a cryptocurrency organization to provide incentives to contributors for creating something using their data.[47] However, there are few efforts which seek to give control of this data and its storage to source communities, and these outside organizations have their own priorities that could change over time. Considering how critical these sites can be to their source communities, it is another layer of stakeholders which can complicate the project's priorities and continued existence going forward.

The Impact of Colonization on Communities' Ability to Tell and Access Their Own Cultural Heritage

While these site digitization projects can be vital in preserving physical cultural heritage, those managing them must be mindful that they are not being run in a way that supports and sustains the impact of colonialism. Colonialism has a long legacy of disenfranchising source communities when institutions assume a position of authority to tell the story of a given object or place;[48] as such, these projects must be conscious of how they are using and presenting the digital representations of these spaces. For example, even the way Western culture conceives of land ownership may run counter to how a source community conceives of their relationship to their physical cultural heritage.[49] By presenting these sites as something that can be recorded, duplicated and still retain the necessary characteristics to be identified as the site itself, the projects make value judgments as to what aspects of their cultural heritage are valuable and deserve preservation.

What measures can be taken ensure that these projects are conducted in a way that respects the autonomy of these communities? The best way is to integrate their input throughout the entire process; to hold them as valuable stakeholders to consult with

throughout the process.[50] This can mean anything from providing training on current digitization techniques and technology, to embedding cultural protocols into the distribution process of the digital objects to ensure that the way the sites are used is in keeping with the source community's traditions.[51] Project Anqa, as mentioned before, trained Syrian professionals to give them the tools they needed to preserve their own cultural heritage in response to the ongoing civil war in their country.[52] Similarly, Washington State University has partnered with Indigenous Australian communities to create Murkutu[53] and with Indigenous American ones to create the Plateau Peoples' Web Portal[54] to increase their access to items of cultural heritage the university and other institutions had in their collections.

The most effective practices can vary from case to case; therefore, it's important to make sure that source communities are consulted whenever possible. Like the sites these projects seek to preserve, time will change their needs and their priorities, and each project should be in line with the community's most current circumstances. Several of these communities have already begun creating places where they can control their cultural heritage,[55] but it is the responsibility of those who control the digital space to reach out and bring them into the space they have created.[56] Since site digitization projects are usually done in collaboration with organizations from outside the source community (or even the digitization project itself) in order to gain access to more resources than they themselves can provide, there is a power imbalance built into the arrangement. To address this, the projects must actively work to provide the means for source communities to take ownership of their own heritage, and ensure that the goals of other organizations they partner with align with their own.

Ramifications of These Projects, Museum Culture and Community Rights

As these sites face increased danger as time passes, it is vital to consider the risks, possibilities and responsibilities that these projects carry. The work that they do has been and can continue to be incredibly vital to their ongoing preservation, and indeed the very existence of many cultural heritage sites around the world. However, this work does not exist in a vacuum, and there needs to be a greater awareness of the influence such projects can have on how source communities interact with their own cultural heritage.

Possibilities

By digitizing these sites, visitors and researchers alike can gain increased access to them, both for fragile sites that would be endangered by the demand of visitors,[57] Ministry of Culture[58] and for displaced populations looking to connect with their

heritage as they are displaced from or face oppression on their homeland. This increased access also allows individuals to feel a greater connection to each others' heritage and sympathy for the source communities which created these sites.[59] For instance, digital sites can be utilized by events like the Irregular Journeys exhibition, which used 3D objects created by the #NEWPALMYRA project to foster greater understanding of the hardships the Syrian people face.[60] They can also empower people to interact with these sites in unpredictable ways but which encourage greater participation with cultural heritage.[61] These digital objects also give these sites' caregivers better tools to preserve these sites in-situ, preventing their loss in the first place and protecting their relationship with their source community. Finally, they can be used to either digitally repatriate structures to their homeland,[62] or be used to create replicas or supplemental materials for the museums which are repatriating related artifacts.

Risks

When determining how these digital sites will be used for the future, it's also important to be mindful of who are making those decisions. For instance, Rekrei, which originally sought to preserve Middle Eastern cultural heritage, was founded by two European men.[63] Projects like CyArk which frequently collaborate with governmental agencies to work with these sites, administration changes can mean that governments no longer consider the cultural heritage of certain source communities as important, or may use these digital heritage sites for purposes counter to the original creators' intent. The aforementioned situation with Bears Ears National Monument[64] puts this issue in sharp contrast, where even well-intentioned institutions can inadvertently end up reinforcing oppressive power structures. That situation makes clear the risks caused by not ensuring that source communities are placed in direct control of their own heritage; when that heritage is digital and can be exported wirelessly anywhere in the world, that risk is compounded significantly.

To that end, while these digital sites can be vital tools in preserving cultural heritage, they should not be considered an equal replacement for the physical site itself.[65] Each site contains within it a multiplicity of history and meaning, and in choosing what parts of the site get saved and passed on to future generations, each project is passing judgement as to what part of that history is valuable. The ruins at Palmyra are being recorded; the remains of the people who had lived in those ruins for centuries who were displaced by colonial powers are not.[66] In order to ensure that these projects are conducted ethically, their managers must consult directly with source communities. This ensures that they will not only record a more diverse sampling of human history, but to also ensure that what is being preserved is what the community wants to pass on as part of their heritage.

Responsibilities

In summary, throughout the process of digitizing a cultural heritage site, each step (from choosing the site to digitizing it to distributing it) should be a conscious act, cognizant of the fact that each step is a choice. Those choices inform the public what to consider valuable about that culture's heritage, and may even come to define all future interactions with these sites. Ensuring that members of the source community are involved in all of the processes (including whether to even digitize the site in the first place) is vital to creating an ethical and sustainable digitization project. While there is no current standard consensus on how this should be done, in the absence of concrete guidance it is the responsibility of the organization that undertakes such a digitization project to reach out and include them in all stages of the process, to take steps to make sure that the ramifications of their actions are fully understood, and their actions are in keeping with the highest ethical standards possible.

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XII

Examining Biases in GLAM Data and Metadata

Cristin Guinan-Wiley

I owe an incredible debt of gratitude to Patrick Bond for assisting me with the technical aspects of this paper. Additionally, I believe it is important to situate my own perspective and background as a cis-het white woman from a fair amount of privilege as it is only by acknowledging our own biases that we can begin to look beyond them.

Within the world of Galleries, Libraries, Archives, and Museums there are seemingly endless individual objects and each of these objects need to be classified, categorized, and tagged. Constructing these classifications, categories, and tags creates order out of what would otherwise be chaos, gives objects physical and temporal context, and allows for relationships between objects to be seen. However, creating the standards that govern these classifications, categories, and tags is highly subjective and can reflect the biases of the people or culture that is creating them.[1] Many GLAM institutions have made their collections and the data associated with their collections open access so it is possible for external personnel to evaluate what biases may exist within the metadata themselves and also what biases may exist in individual institutions and across the GLAM community by looking at data across institutions. The purpose of this paper is to examine how bias can be revealed in GLAM data and metadata.

The inspiration for this paper came from a distillation of many sources with the following four forming the primary impetus; First being the writings of Michell

Caswell[2] and her presentation at the 2019 iPRES[3]conference in Amsterdam, in which she discusses using feminist standpoint epistemologies[4] to evaluate archival appraisal along with the importance of acknowledging internal bias. The second being the work done to decolonize collections data for indigenous collections.[5] The third source is the work of Fiona Cameron, specifically her paper with Helena Robinson on "Digital Knowledgescapes".[6] The final piece solidifying this subject came from one of the proposed topics listed for the upcoming 2020 Gender and Sexuality in Information Studies Colloquium[7]: "How do search algorithms, metadata standards, and user interfaces challenge or reinforce white supremacy, heteronormative patriarchy, and ableism?" To fully answer that question would be beyond the scope of this format; thus, it was decided to focus on language usage in metadata to breach the surface of the topic.

What is Metadata?

Prior to exploring the impact of metadata, the first step is to lay out a general definition for the subject, and then identify the types of metadata that are typically used in GLAM institutions. The concept of Metadata was not created with the advent of the digital age. The purest definition of the word is "data about data" and at essence, is used to 'tag' one piece of information (or object, or person) with identifying information. The usage of metadata dates to the library of Alexandria (ca. 3rd century BCE- 48 CE), where the librarians would physically place tags on the scrolls with author, title, and subject.[8] That format developed into the card catalogue. Names, dates, and locations written on the back of photo prints constitute metadata. With the rise of computers, standards of digital metadata began to take shape.[9] In the age of the internet, metadata are produced by most every action on the internet automatically. For instance, every email sent contains a variety of data that are not seen in standard user interfaces and are added at different points along its journey to the recipient.[10] Therefore, it can be said that digital metadata can be basically broken down into two types-those which are algorithmically (human by proxy) created, and those which are created by a user (human).

Museum metadata are almost entirely created by human activity, though there are current projects that are working towards an automated process.[11] There are also an array of metadata standards and of controlled vocabularies used in GLAM institutions some of which are specialized for certain collections.[12] However, within museums, metadata can be broadly divided up into five basic groups:

Type	Function
Administrative	Acquisition number, location, rights tracking, legal issues with access.
Descriptive	Author/creator, dates, materials, relationships with other collection

Type	Function
	objects, curatorial notes and essays.
Preservation	Physical condition of the object and if it has changed over time, any actions that have been performed to extend the life of the object both in its physical and digital form (eg. data migration)
Technical	Digitization information (formats, compression, scaling), required hardware and software, digital security measures
Use	Exhibition data, user use of the object, rights and reproduction information, reuse of the object and versioning data.

Table 1. Adapted from "Introduction to Metadata" Edited by Murtha Baca[13]

How metadata can contain and show bias

The most easily seen way that metadata can perpetuate bias is through a use of language (controlled vocabulary) that is biased, especially in subject headings and tagging. One example of this is a project at the University of Alberta whose purpose is " To investigate, define and propose a plan of action for how the University of Alberta Libraries can more accurately, appropriately, and respectfully represent Indigenous peoples and contexts through our descriptive metadata practices."[14] A project that they are using to look at their own metadata is the Manitoba Archival Information Network's (MAIN) project to change Library of Congress Subject Headings (LCSH) in cases where the current subject headings (tags) are insensitive to the Indigenous Peoples in Manitoba and add additional subject headings that are more specific and reflective of the Indigenous culture.[15] The vast majority of the changes consisted of taking every instance of 'Indian' and replacing it with "Indigenous":

Current LCSH	Change to... OR delete
Indians of North America--Treaties	Indigenous peoples--North America--Treaties
Indians of North America--Tribal citizenship	DELETE
Indians of North America--Urban residence	Indigenous peoples--Urban residence--North America
Indians of North America--Utah	Indigenous peoples--Utah
Indians of North America--Utah--Antiquities	Indigenous peoples--Utah--Antiquities
Indians of North America--Virginia	Indigenous peoples--Virginia
Indians of North America--Vocational education	Indigenous peoples--North America--Vocational education
Indians of North America--Warfare	Indigenous peoples--Warfare--North America
Indians of North America--Wars	Indigenous peoples--Wars--North America
Indians of North America--Wars--1600-1750	Indigenous peoples--Wars--North America--1600-1750
Indians of North America--Wars--1750-1815	Indigenous peoples--Wars--North America--1750-1815
Indians of North America--Wars--1775-1783	Indigenous peoples--Wars--North America--1775-1783
Indians of North America--Wars--1790-1794	Indigenous peoples--Wars--North America--1790-1794
Indians of North America--Wars--1812-1815	Indigenous peoples--Wars--North America--1812-1815
Indians of North America--Wars--1815-1875	Indigenous peoples--Wars--North America--1815-1875
Indians of North America--Wars--1862-1865	Indigenous peoples--Wars--North America--1862-1865
Indians of North America--Wars--1866-1895	Indigenous peoples--Wars--North America--1866-1895
Indians of North America--Wars--Alberta	Indigenous peoples--Wars--Alberta
Indians of North America--Wars--Arizona	Indigenous peoples--Wars--Arizona

Screen shot of the changes tab in the MAIN spreadsheet.

The subject heading issues surrounding Indigenous collections are fairly blatant however, there are other situations where the issue is not as cut and dry as changing the language but instead about how to give the desired weight to different objects that have the same tag. One such circumstance is another project out of the University of Manitoba, The Digital Archives and Marginalized Communities Project (DAMC)[16] which is a project that is developing three different but interrelated archives. One of these archives in development is the Sex Work Database (SWD). In their paper "Tagging for activist ends and strategic ephemerality: creating the Sex Work Database as an activist digital archive" Shawna Ferris and Danielle Allard discuss the community-produced controlled vocabulary and how they "are developing a tagging system that is designed to draw records into conversation with one another in ways that privilege sex worker activist messaging".[17] The example they discuss is for the tag "prostitute" which when searched or clicked on would bring results not only from the mainstream media, which tends to dehumanize sex workers[18], but also give equal or higher weight to works from the point of view of sex workers.[19]

What all of these projects call into focus is the need for community involvement when creating controlled vocabularies especially when creating a new collection or housing a collection that was obtained unethically in the past. I believe that especially now that collections data are becoming more open access with increased public interaction with those data, GLAM institutions must shed the concept of being the 'ultimate authority' and understand that objects are polysemic.[20]

Examination of Digital GLAM data

Metadata can also show bias at an individual institutional or even at the broader GLAM community level when looked at in the aggregate and as part of my research

for this paper I wanted to do a comparative study of descriptive data across several museums to see if any bias was detectable. However, due to time constraints and the steep learning curve a project such as this would require it was not feasible. Instead, I performed a study of the Tate object file to look for the trends in the acquisition of art by women. Prior to getting to that result I am going to introduce and describe a few of the other data sets I looked at and their file formats.

There are two excellent sources I am aware of for locating open access data from museums; one is the "Survey of GLAM open access policy" Google spreadsheet by Douglas McCarthy and Dr. Andrea Wallace CC BY 4.0, 2018-present[21] and another is the Museum APIs page on the Museums and the machine-processable world wiki maintained by Mia Ridge.[22] The data I looked at primarily consisted of two formats; CSV (comma separated values) and JSON (JAVA Script Object Notation). While CSV files can be used with several applications, they are primarily used with spreadsheets. When imported into an application like Microsoft Excel, they typically result in simple spreadsheets. In the case of GLAM data, these files are normally bounded to one set of subjects such as artists, artworks, authors, documents, etc...The columns are the metadata shared by all the objects.

An example would be the SherlockNet data set developed by Luda Zhao, Brian Do, and Karen Wang for their project for the British Library Labs Competition: "Using Convolutional Neural Networks to Explore Over 400 Years of Book Illustrations".[23] In the most simple of terms they trained a machine in the tags they wanted it to use and then had it tag and caption the 1 million images in the British Library 1M Collection which consists of scans of book illustrations from 1500 to 1900. The CSV file (sherlocknet_tags_verbose) that came out of this project has the following columns of data: image_idx; flickr_id; tag; size; scannnumber; imageorder; title; author; vol; pubplace; sysnum; date; filename. An example of one of the image's data set in an inverted format for ease of reading is:

Field	Data
image_idx	28
flickr_id	11219063183
tag	people
size	m
scannumber	46
imageorder	1
title	Songes and Sonettes

Field	Data
author	HOWARD, Henry Earl of Surrey
vol	0
sysnum	1746417
date	1567
filename	001746417_0_0000461

Table 2. Example of the data from the SherlockNet CSV file

For this format to be efficient the metadata tends to be limited to attributes that all the objects in the data file share. Metadata elements which only a belong to a subset of the objects under consideration result in lots of empty cells and cumbersome spreadsheets. Consequently, the simple structure can be limiting. However, spreadsheets tend to be well understood and for most non-technical people, these data are easy to work with. In the case of this object all of the tags generated by sherlocknet can be seen on its flicker page.[24]

JSON files have a richer and more complex structure. The objects are described in JAVA Script which allows each object to have attributes (metadata) not shared by similar objects while avoiding the inefficiencies of the spreadsheet's many blank cells. However, while this format is human readable, the entries tend to be very lengthy and are only easily interpreted through the use of a customized application. For example, consider the spreadsheet style data (CSV) for a given artwork. For this example, I am using the Tate object file as it was the one I spent the most time with.

Field	Data
id	1037
accession_number	A00003
artist	Blake, Robert
artistRole	artist
artistId	38
title	The Preaching of Warning. Verso: An Old Man Enthroned Between Two Groups of Figures, by ?William Blake
dateText	?c.1785

Field	Data
medium	Graphite on paper. Verso: graphite on paper
creditLine	Presented by Mrs John Richmond 1922
year	1785
acquisitionYear	1922
dimensions	support: 343 x 467 mm
width	343
height	467
depth	
units	mm
inscription	
thumbnailCopyright	
thumbnailUrl	http://www.tate.org.uk/art/images/work/A/A00/A00003_8.jpg
url	http://www.tate.org.uk/art/artworks/blake-the-preaching-of-warning-verso-an-old-man-enthroned-between-two-groups-of-figures-by-a00003

Table 3. Example of the data from the Tate CSV object file

Now consider the corresponding JSON entry:


```
{

"acno": "A00003",
"acquisitionYear": 1922,
"all_artists": "Robert Blake",
"catalogueGroup": {},
"classification": "on paper, unique",
"contributorCount": 1,
"contributors": [
 {
  "birthYear": 1762,
  "date": "1762\u20131787",
  "displayOrder": 1,
  "fc": "Robert Blake",
```

```
  "gender": "Male",
  "id": 38,
  "mda": "Blake, Robert",
  "role": "artist",
  "startLetter": "B"
 }
],
 "creditLine": "Presented by Mrs John Richmond    1922",
 "dateRange": {
 "endYear": 1785,
 "startYear": 1785,
 "text": "?c.1785"
},
 "dateText": "?c.1785",
 "depth": "",
 "dimensions": "support: 343 x 467 mm",
 "foreignTitle": null,
 "groupTitle": null,
 "height": "467",
 "id": 1037,
 "inscription": null,
 "medium": "Graphite on paper. Verso: graphite on paper",
 "movementCount": 0,
 "subjectCount": 5,
 "subjects": {
 "children": [
  {
   "children": [
    {
     "children": [
      {
       "id": 1050,
       "name": "arm/arms raised"
      },
     {
      "id": 270,
      "name": "standing"
     }
    ],
    "id": 92,
    "name": "actions: postures and motions"
   },
   {
    "children": [
```

```
     {
      "id": 799,
      "name": "group"
     }
    ],
    "id": 97,
    "name": "groups"
    },
    {
     "children": [
      {
       "id": 195,
       "name": "man"
      }
     ],
     "id": 95,
     "name": "adults"
     }
    ],
    "id": 91,
    "name": "people"
   },
   {
    "children": [
     {
      "children": [
       {
        "id": 12297,
        "name": "preaching"
       }
      ],
      "id": 120,
      "name": "religious"
     }
    ],
    "id": 116,
    "name": "work and occupations"
   }
  ],
  "id": 1,
  "name": "subject"
 },
 "thumbnailCopyright": null,
 "thumbnailUrl": "http://www.tate.org.uk/art/images/work/A/A00/
```

```
A00003_8.jpg",
 "title": "The Preaching of Warning. Verso: An Old Man Enthroned
between Two Groups of Figures, by ?William Blake",
 "title": "The Preaching of Warning. Verso: An Old Man Enthroned
Between Two Groups of Figures, by ?William Blake",
 "units": "mm",
 "url": "http://www.tate.org.uk/art/artworks/blake-the-preaching-of-
warning-verso-an-old-man-enthroned-between-two-groups-of-figures-by-
a00003",
 "width": "343"
}
```


As you can see, this is far more difficult to read and not as easily understood. However, while it contains the same metadata elements that appear in the columns of the CSV spreadsheets, it also contains additional "descriptive" elements. In this case there are also fields that describe actions associated with the artwork with values such as: "actions: postures and motions"; "hand/hands raised"; "standing"; "looking / watching".

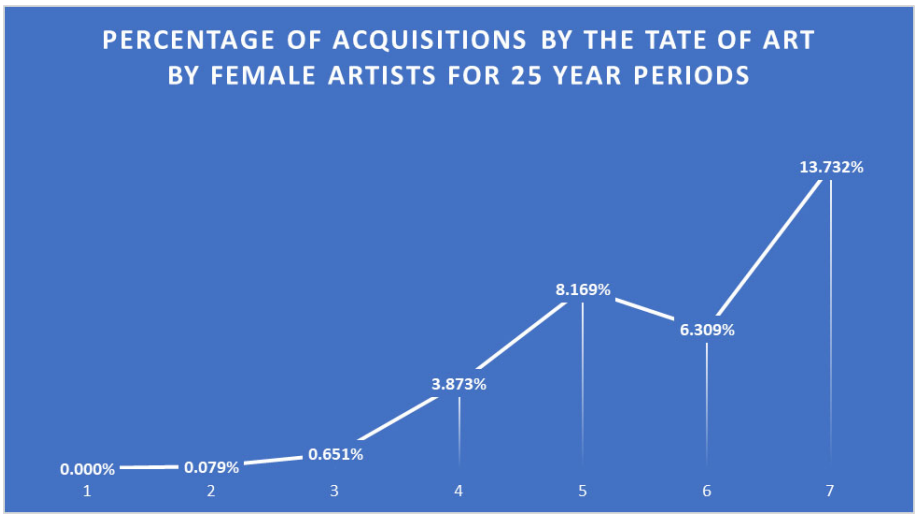
Maintenance of JSON files can be incredibly time consuming. For example, the Tate JSON files had 64,819 changed files with 253,856 additions and 54,402 deletions.

Research Project based in the Tate's data

As I stated above, rather than do a comparative study of metadata over several institutions I made an examination of the acquisition trends at the Tate in terms of Gender. This required the combining of the two CSV data sets available from the Tate on GitHub.[25] The object file has the columns as described in Table 3 and thus does not have a column for Artist gender so I inserted a column for gender and used the Tate's Artist file to assign gender to the artists in the object file. I did not attempt to confirm any of the data nor did I attempt to clean any of it, thus any artist that did not have a gender assigned in the Tate's file did not have one assigned in the object file. I did find it interesting to note that while all the artists in the object file were present in the artist file a very few of the artists listed in the artist file were not in the object file. All this does is remind one of how messy data can be. It should also be noted that none of the files in the Tate GitHub have been updated since October of 2014.

Some basic statistical notes on the Tate collection according to this file are; the total number of artworks listed is 69,201; that only 1.1% of the collection does not have an artist with a gender assigned (very few of these were individuals and most were a variation on "British School"); 95% of the collection is by male artists; and only 3.9% of the collection is by women artists. However, I am not the first person to examine this object file and it was noted by Florian Kräutli in his Doctoral thesis "Exploring

Digital Collections Through Timeline Visualizations"[26] that art by Joseph Mallord William Turner constitutes 57% (56.9%) of the works at the Tate.[27] Removing his data leaves the collection at 88.5% male, 9.5% female, and 2% without assigned gender. While either way these data are examined shows that works by female artists do not make up even 10% of the collection, what I thought would be more interesting consider is if there had been an increase in the acquisitions of art by women. I hypothesized that though the data here show a bias at the collection level toward males, presumably white males, there would be an observable historical trend toward increasing the number of women artists. Once I ran the numbers, I was able to confirm this hypothesis as you can see in Graph 1 below.



Percentage of Acquisitions by the Tate of art by female artists for 25 year periods

Period	Date Range	Total Acquisitions	by male artists	by female artists	% by female artists
1[28]	1823-1864	38111[29]	38111	0	0.000%
2	1864-1888	1257	1256	1	0.079%
3	1889-1913	916	910	6	0.651%
4	1914-1938	1787	1715	72	3.873%
5	1939-1963	1540	1403	137	8.169%

Period	Date Range	Total Acquisitions	by male artists	by female artists	% by female artists
6	1964-1988	11019	10277	742	6.309%
7	1989-2013	11101	9334	1767	13.732%

Table 4. Data in Graph 1

According to the data in the object file, the year of the Tate's first acquisition was 1823. The first object created by a female artist in the file is listed as being acquisitioned in 1868[30], and the second not until 1890. However, the data and graphic above does show a marked increase in the percentage of objects created by female artists especially in the last 25 years. From the original acquisitions to the last 25 year period, the percentage of objects created by female artist increase from 0.000% to 13.732%.[31]

Conclusions

The finding from the Tate is not at all surprising. In April 2019 a study was released based on the collections data of 18 major art museums in the United States. It found that over all of those institutions "85% of the artists are white and 87% of them are men".[32] This study is part of the larger recent discussion surrounding gender bias in art institutions[33]; The Baltimore Museum of Art recently announced that it will only buy art from female artists for their permanent collection in 2020[34]; and there is software in development by Mujeres en las Artes Visuales, a Spanish Advocacy group, that will allow Museums to examine and quantify gender and racial bias within their collections.[35] However, all of these efforts are looking at the world through the lens of heteronormativity. If the Tate's nomenclature only includes the binary male/female or else leaving the field blank, that nomenclature is biased, as is any institution that includes gender as a metadata field and does not include an expanded vocabulary.[36]

Looking at heteronormative bias brings up a fairly large set of issues associated with finding bias in collections data. The data that would allow for determining bias against artists who are non-binary, or are not heterosexual, or even are ethically non-monogamous (which is also part of heteronormative patriarchal bias)[37] is not data that was recorded in artist files in the past and is not always information that people are willing to share with a broad audience. So, then the first question is: should GLAM institutions collect this information from living creators and make it part of the data record? And if they do, how should that data be stored? Should that data be open access, or should it only be for institutional use and shared as statistical information? And really, if the bias doesn't already show in the data, should the data be made to

show it? As Frances Lloyd-Baynes says in her article "Documenting Diversity: How should museums identify art and artists?":

> *"Isn't pinning down someone's gender/ race/ ethnicity/ sexual orientation playing to the same old biases we're trying to divest from our practice? Yes, quite possibly. But as we collectively make the transition from unconsciously biased to an open, non-racist/-sexist/-genderist society, it does help us identify the problem and work to balance the scales."* [38]

Notes

1. This statement is based on a project for a previous class on Digitization and Digital asset management. My paper for that project can be read here: Guinan-Wiley, Cristin "Taxonomies and Card Sorts" *Google Drive*, April 2019 http://bit.ly/37PtJDN
2. Michelle Caswell, "Dusting for Fingerprints: Introducing Feminist Stanpoint Appraisal." *Journal of Critical Library and Information Studies* 3 (2020 Pre-Print)(2019) https://journals.litwinbooks.com/index.php/jclis/article/view/113.
3. Trienka Rohrbach (Owner), "iPres 2019 Collaborative Notes for Keynote 2 Michelle Caswell 'Whose Digital Preservation? Locating our Standpoints to Reallocate Resources_._'" *Google Docs*, September 18, 2019 http://bit.ly/2kQroFb.
4. As Michelle Caswell states in her paper "Dusting for Fingerprints: Introducing Feminist Stanpoint Appraisal." (endnote 4), "feminist standpoint epistemology unmasks "neutrality" for the masculinist and white supremacist positions it obfuscates." So, while it may not highlight all issues in descriptive metadata it opens the door for viewing them.
5. Sharon Farnel and Sheila Laroque, "Decolonizing Description at the University of Alberta Libraries" _ERA: Education and Research Archive,i_April 24, 2018. https://doi.org/10.7939/R3FQ9QM1S
6. Fiona Cameron and Helena Robinson, "Digital Knowledgescapes: Cultural, Theoretical, Political, and Usage Issues Facing Museum Collection Databases in a Digital Epoch," in *Theorizing Digital Cultural Heritage: A Critical Discourse*, ed.s Fiona Cameron and Sarah Kenderdine, 165–92. (Boston, Massachusets and London, England: The MIT Press, 2007).
7. GSISC 2020 Organizing Committee, "GSISC 2020: Technologies and Race, Gender, Sexuality, and the Body in Information Studies". *Litwin Books & Library Juice Press* https://litwinbooks.com/colloquia/gsisc-2020/
8. Kieth D Foote, "A Brief History of Metadata." *DATAVERSITY*. February 28, 2019. https://www.dataversity.net/a-brief-history-of-metadata/#.
9. David Griffel and Stuart Mcintosh, *ADMINS-A Progress Report* (Center for International Studies, Massachusetts Institute of Technology 1967) http://hdl.handle.net/1721.1/82974
10. To view this metadata in Google mail services, click on the three vertical dots next to the reply button in an open email and select "Show Original". There is a large body of writing in the legal realm based around the ethics of the usage of this metadata.
11. Carter, Todd, Josh Wiggans and Sally Hubbard "Automated Metadata," *Digital Asset Symposium* June 26, 2017 http://www.digitalassetsymposium.com/2017/06/26/automated-metadata/
12. For an excellent list of current metadata standards and standardized vocabularies please see

the online appendices for Marcia Lei Zeng and Jian Qin, *Metadata,* 2nd Ed. (Chicago, Neal-Schuman, 2016). http://www.metadataetc.org/book-website2nd/index.html

13. Murtha Baca ed., *Introduction to Metadata* 2nd ed. (Los Angeles: Getty Research Institute, 2008) Also available in an online version at https://www.getty.edu/publications/intrometadata/
14. Sharon Farnel and Sheila Laroque, "Decolonizing Description at the University of Alberta Libraries" *ERA: Education and Research Archive,* April 24, 2018. https://doi.org/10.7939/R3FQ9QM1S
15. MAIN-LCSH Working Group, "Indigenous Knowledge Management: Indigenous Subject Headings, *University of Manitoba Libraries*, Last Update August 15, 2017 https://libguides.lib.umanitoba.ca/c.php?g=45556
16. "Research", *University of Manitoba Libraries* https://umanitoba.ca/centres/mamawipawin/research/1182.html
17. Shawna Ferris and Danielle Allard, "Tagging for activist ends and strategic ephemerality: creating the Sex Work Database as an activist digital archive" *Feminist Media Studies* 2016 16:2 (2016):p194 https://doi.org/10.1080/14680777.2015.1118396
18. Lizzie Smith, "Dehumanising sex workers: what's 'prostitute' got to do with it" *The Conversation,* July 29, 2013 http://theconversation.com/dehumanising-sex-workers-whats-prostitute-got-to-do-with-it-16444
19. Ferris and Allard, "Tagging for activist ends and strategic ephemerality: creating the Sex Work Database as an activist digital archive", p195.
20. Fiona Cameron and Helena Robinson, "Digital Knowledgescapes: Cultural, Theoretical, Political, and Usage Issues Facing Museum Collection Databases in a Digital Epoch," in *Theorizing Digital Cultural Heritage: A Critical Discourse*, ed.s Fiona Cameron and Sarah Kenderdine, 165–92. (Boston, Massachusets and London, England: The MIT Press, 2007). P172
21. Douglas McCarthy and Dr. Andrea Wallace, "Survey of GLAM open access policy and practice" *Google Sheets* 2018 to present, https://docs.google.com/spreadsheets/d/1WPS-KJptUJ-o8SXtg00llcxq0IKJu8eO6Ege_GrLaNc/edit?usp=sharing.
22. Mia Ridge ed., "Museum APIs" *Museums and the machine-processable web*, Last edit September 13, 2018, http://museum-api.pbworks.com/w/page/21933420/Museum%C2%A0APIs
23. Luda Zhao, Brian Do, and Karen Wang, "SherlockNet data" *British Library Research Repository BETA,* 2017 https://bl.iro.bl.uk/work/3205f8c5-f7dd-46fa-8bf4-9ac72f6fbb55
24. British Library, "Image taken from page 46 of 'Songes and Sonettes' *Flickr* December 5, 2013. https://flic.kr/p/i6oCBR
25. Tate Gallery, "tategallery/collection" *GitHub* data set last updated October 2014 https://github.com/tategallery/collection
26. Florian Kräutli, *Visualising Cultural Data: Exploring Digital Collections Through Timeline Visualisations.* PhD Thesis. London: Royal College of Art http://researchonline.rca.ac.uk/1774
27. Florian Kräutli, "The Tate Collection on GitHub" *YYYY-MM-DD Time/Data/Visualisation* November 2013 http://research.kraeutli.com/index.php/2013/11/the-tate-collection-on-github/
28. The Tate did not open until 1897 and the first works that were in it's collection were the 65 works that Henry Tate gave to the museum in 1897. It appears that all works whose acquisition predate 1894 were transferred to the Tate at a later time. It is interesting that the acquisition date did not change with the transfer. The Tate, "History of Tate", *Tate* no date https://www.tate.org.uk/about-us/history-tate
29. The vast majority of these acquisitions were "Accepted by the nation as part of the Turner

Bequest 1856" as stated in the credit line column of the object file.

30. This work was actually presented to the National Gallery in 1868 and transferred to the Tate in the 1920s. Ronald Alley, *Catalogue of the Tate Gallery's Collection of Modern Art other than Works by British Artists*, Tate Gallery and Sotheby Parke-Bernet, London 1981, pp.84-5, reproduced p.84 http://bit.ly/33y3z5g
31. What the previous three footnotes highlight is that data is awesome but may require additional context depending upon what you are looking for.
32. Chad Topaz, Bernhard Klingenberg, Daniel Turek, Brianna Heggeseth, Pamela Harris, Julie Blackwood , et al., (2019) "Diversity of artists in major U.S. museums". *PLOS ONE* 14(3) March 20, 2019 https://doi.org/10.1371/journal.pone.0212852
33. It is interesting to note that this is not just a conversation happening surrounding art museums but also in Natural History Collections : Graham Gower, et al, "Widespread male sex bias in mammal fossil and museum collections" *Proceedings of the National Academy of Sciences* Sep 2019, 116 (38) 19019-19024; https://doi.org/10.1073/pnas.1903275116 AND Natalie Cooper, et al, "Sex biases in bird and mammal natural history collections" *Proceedings of the Royal Society B: Biological Sciences* October 16, 2019, 286 (1913); https://doi.org/10.1098/rspb.2019.2025
34. Mary Carol McCauley, "Baltimore Museum of Art will only acquire works from women next year: 'You have to do something radical'" *The Baltimore Sun*, November 15, 2019 https://www.baltimoresun.com/entertainment/arts/bs-fe-bma-female-artists-2020-20191115-33s5hjjnqfghzhmwkt7dqbargq-story.html
35. Artforum Staff, "New Software Tracks Gender Gap in Museum Collections" *Artforum*, November 15, 2019. https://www.artforum.com/news/new-software-tracks-gender-gap-in-museum-collections-81308
36. Of great help to any GLAM institution if they wish to move away from the heteronormative bias is the Homosaurus. Which was created to be used in conjunction with other subject term vocabularies. Homosaurus Editorial Board, "The Homosaurus v2" *Homosaurus* May 2019 http://homosaurus.org/
37. Gayle S. Rubin, "Thinking Sex: Notes for a Radical Theory of the Politics of Sexuality" in *Culture, Society and Sexuality A Reader*, eds. Richard Parker and Peter Aggleton (London, Routlidge, 2007) http://sites.middlebury.edu/sexandsociety/files/2015/01/Rubin-Thinking-Sex.pdf
38. Frances Lloyd-Baynes, "Documenting Diversity How should museums identify art and artists?" *Medium: Minneapolis Institute of Art* March 27, 2019. https://medium.com/minneapolis-institute-of-art/documenting-diversity-17f55a4118da

XIII

Digital Collections and Indigenous Communities

Rebecca Brockette

In recent years, there has been a shift in museums where they are reexamining how they handle Indigenous collections and digital heritage. Technological developments over the last several years have offered new ways for museums and Indigenous communities to work together around Indigenous collections, increasing their agency and control over their digital heritage. This paper will explore three separate case studies, which span Australia, New Zealand and the United States, to consider how museums and other cultural institutions might better support Indigenous communities and their needs around digital heritage. It will then touch on related concepts, such as shared authority and some of the challenges of open access to cultural collections. There is no one-size-fits-all approach to working with Indigenous communities since each will have different needs and wishes, but there are lessons that can be applied by museums that wish to better support Indigenous knowledge and agency in relation to their collections. The first takeaway is that museums need to invite Indigenous communities to have conversations about what to do with Indigenous collections. The second takeaway from these case studies is that Indigenous collections have their own protocols for online collections that are separate protocols from traditional practices. The final takeaway is that Indigenous communities need to define what they need, it is not up to the museum to determine what Indigenous communities need.

For centuries, Indigenous communities been unable to control their objects, their knowledge, and their history in museums. Objects that were stolen from Indigenous

communities have been kept in the museum's collection with the museum deciding how these objects were presented and defining the associated narrative.[1] This narrative was one that typically portrayed Indigenous culture as an exotic and primitive spectacle for visitors to marvel at.[2] It is important that Indigenous communities gain control over their collections because they need to control their heritage and the narrative around it. Their knowledge protocols need to be followed when handling Indigenous collections. After centuries of not being able to control their cultural heritage or the narratives around it, it is time for Indigenous communities to regain that control, and museums have a role to play in helping Indigenous communities regain control.

Case Studies

As mentioned above, there is no single way for museums to work with Indigenous communities. The following case studies demonstrate the variety of possibilities of what can be created when museums and Indigenous communities come together. They are excellent examples of how to handle Indigenous collections. Museums can use these case studies to learn how to deal with their own Indigenous collections.

Mukurtu

Mukurtu (pronounced MOOK-oo-too) is an open-source content management software created in 2007 that allows Indigenous communities to create an online digital archive of their cultural heritage. Mukurtu is a community archive that puts the needs of Indigenous communities first.[3] Since the platform is open-source, it is broadly accessible, allowing any Indigenous community to create their own digital archive so long as they are able to host a website. The Mukurtu CMS enables Indigenous communities to define the terms of access to their cultural materials, so the community has control what information is available to members of the community and those outside of it. Each archive is maintained by the community that created it, and they are able to add in community narratives to the institutional data. For example, the Plateau People's Web Portal, puts "narratives, histories, and tribal knowledge from each tribe with the standard metadata from the institutional sources."[4] Mukurtu allows these tribes to add on to the institutional information about an object giving them a place for their voices to be heard.

The project originates from a collaboration between the Warumungu tribe of Central Australia and Kim Christen, a professor at Washington State University. Mukurtu was created after discovering that commercially available content management systems were unable to fit the needs of the Warumungu people because they did not enable Indigenous communities to customize access based on their own cultural parameters.[5] The name Mukurtu comes from a Warumungu word that means "dilly

bag" which is supposed to be a safe place to store things. The name was chosen by a Warumungu elder because he wanted "to remind users that the archive, to is a safe keeping place where Warumungu people can share stories, knowledge, and cultural materials properly using their own protocols." [6]

Indigenous knowledge do not always fit within existing models for accessing collections. Many Indigenous communities have knowledge protocols that determine who is able to access parts of their cultural heritage. These protocols are done because it might be more practical or appropriate to restrict knowledge within and outside the community.[7] Instead of having all information be available to everyone, many Indigenous tribes have restrictions in place on knowledge. These restrictions can be based on the time of year, gender, age, family, and whether someone is or isn't a part of the community.[8] For example, in Washington State University's collection there is a set of religious song recordings that are not meant to be heard by outsiders. Upon learning this information, the tapes were removed from circulation, digitized, and digital copies were given to women visiting from the Confederated Tribes of the Warm Springs Reservation.[9] Mukurtu was developed with knowledge protocols in mind, and the software is adaptable to any form of knowledge protocols. It allows Indigenous communities to establish their own protocols for viewing and circulation of materials within the software to ensure these protocols are adhered to.

Another important aspect of Mukurtu is protecting Indigenous knowledge. Since current copyright law and Creative Commons licenses do not currently account for Indigenous protocols around access and community ownership, The Local Contexts Project created the Traditional Knowledge (TK) Label platform as a way to help Indigenous communities protect their knowledge. Creative Commons Licenses were created to help define terms of reuse and circulation of different works. However there is still a need for "a set of licenses that recognize the varied types of stewardship over and re-uses of Indigenous cultural material, as well as the legitimacy of already existing Indigenous knowledge management strategies."[10] This is why TK Labels were developed. TK Labels offer a way for those outside the community to understand the importance of Indigenous heritage. It lets outsiders to the community know who has access to and object and how it is used.[11] TK Labels are an addition to current copyright law, and they allow Indigenous copyright holders to protect their material by addressing cultural concerns about how materials should be used and circulated.[12]

Since Mukurtu was created, it has been used by numerous Indigenous communities in order to create their own digital archive. Examples of these include the Plateau Peoples' Web Portal, Passamaquoddy People, Huna Heritage Foundation Digital Archives, and many more.[13] Mukurtu has resulted in the needs of Indigenous communities being prioritized above all else by enabling them to curate their own archive that adheres to their own knowledge protocols.

Passamaquoddy

One of the communities that has utilized the Mukurtu platform is the Passamaquoddy tribe, a Native American tribe in Calais, Maine. The Passamaquoddy were studied by scholars for generations, with no say in how the information about them was then used. In 1890, Jesse Fewkes made phonographic recordings of Passamaquoddy stories, songs, and even a funeral ceremony. The recordings were held in the Harvard Peabody Museum where they were made available to the public without the consent of the tribe.[14] By 1980, the Library of Congress had obtained the recordings made by Fewkes. They decided to send cassette tapes with the recordings on them to the Passamaquoddy tribe, but they were poor quality and hard to understand. This was the first attempt to return these recordings to the Passamaquoddy tribe, and it was the first time any members of the tribe had ever heard the recordings.

In 2013, Donald Soctomah, a Passamaquoddy tribal historic preservation officer, met with the Library of Congress where he laid out his idea to develop a website curated by the Passamaquoddy people where the tribe has complete control over all information on the site. Soctomah wanted a place for Passamaquoddy stories, language, and history to be completely free from outside influence.[15] The Library of Congress agreed to begin restoring the recordings to create high quality digital versions of them. What happened after that was entirely up to the Passamaquoddy people. Since then, Dwayne Tomah, the youngest fluent Passamaquoddy speaker, has worked translating the recordings from the cylinders for the other tribe members. Some of the recordings have been made available online to the public while others are only accessible by Passamaquoddy members. To do this, the Passamaquoddy Tribe use Mukurtu content management software.[16] The Tribe maintains the website where this information is kept, they own the recordings and any data about them, and they have complete control over what is and is not made available to the public. In this instance, the Library of Congress gave up some of their own power in order to give it back to the Passamaquoddy people.

There are clear benefits to returning these recordings to the Passamaquoddy people. It has helped with revitalizing and preserving Passamaquoddy culture for future generations. Soctomah and Tomah have played some of the songs from the cylinder recordings at annual tribe celebrations and at schools for children of the tribe in an attempt to ensure the Passamaquoddy language is passed on to the younger generation. The children have since learned the songs and began singing the songs themselves.[17] This is important because it helps ensure that Passamaquoddy language, culture, and traditions are going to be passed on to the next generation. This collaboration between the Passamaquoddy people and the Library of Congress has worked well because this project gave the Tribe access to high quality version of recordings that they have not previously had access to. The recordings contain

priceless information about Passamaquoddy culture from 130 years ago. In a time where many Indigenous communities are struggling to keep their traditions alive, this project has enabled the Passamaquoddy people to connect with their past in a way they were previously unable to do so.

Te Ataakura

The Te Ataakura project in New Zealand was put together by members of a Māori tribal group known as Te Aitanga a Hauiti. Members of the Te Aitanga a Hauiti have formed an organization called Toi Hauiti whose goal is to revitalize their cultural heritage.[18] The Toi Hauiti organization has made multiple efforts in collaborating with museums over the years in an effort to regain access over their cultural heritage.

The first digital collaboration Toi Hautiti worked on was in 2005 when work began on a project called Te Whatakōrero. The initial plan for this project was to create an online archive for the Tribe's artifacts stored in five museums across New Zealand, however, it became clear this was too ambitious for them to take on due to the financial resources and technological resources available to them.[19] The project then transformed into a CD-ROM that would store the information of Te Aitanga a Hauiti artifacts in an interactive format for the tribe. While the Te Aitanga a Hauiti were able to regain access to their culture through digital means, there was no transfer of ownership from the New Zealand museums. The CD was considered to be a success by Toi Hauiti and the institution it collaborated with because it raised awareness of Te Aitanga a Hauiti and their cultural heritage. The Toi Hauiti group used the success of the CD to begin building relationships with other institutions in order for them to continue rediscovering their artifacts in institutions all over the world. [20]

The next step Toi Hauiti took towards regaining access to their cultural heritage was in 2010 with two projects. One of these projects was called *Artefacts of Encounter* and the other was called Te Ataakura. *Artefacts of Encounter* was a three-year project at the Museum of Archaeology and Anthropology (MAA) at the University of Cambridge which aimed to examine artifacts from 40 voyages to Polynesia that took place from 1765 to 1840. Toi Hauiti was brought in to collaborate on the project in order to help trace the history of the artifacts. The project allowed for some members of Toi Hauiti to receive funding in order for them to visit the institutions holding their objects, so that tribe members have the opportunity to reconnect with these objects. The goal of this project was to look at the interactions between Europeans and communities that are Indigenous to Polynesia.[21] After collaborating on this project with the Museum of Archaeology and Anthropology, Toi Hautiti embarked on another project with the museum called Te Ataakura. This was a two-year project that lasted from 2010-2012, and it received funding from New Zealand's Māori Centre for Research excellence. The aim was to discover ways to present Māori artifacts in a digital form, and it sought to repatriate the knowledge associated with these artifacts. It was discovered

that the best way to present their objects would be by creating two separate yet linked hubs, one for Toi Hauiti and one for the MAA. This resulted in the KIWA hub being created for the MAA while Toi Hauiti created Te Rauata.[22] This was the result because it created an autonomous space for each group instead of one group "inviting" the other to their space. For Toi Hauiti, this project served to further strengthen community identity.[23]

After gathering an online collective for their digital heritage, Toi Hauiti created a separate digital platform which they named Te Rauata. Te Rauata differs from KIWA in that it is owned and created by Toi Hauiti. It is not simply a research platform to help bring together objects and research, but it is a digital repository that incorporates all of the objects gathered by the Te Ataakura project.[24] It incorporates the objects, relationships, and knowledge of the Te Aitanga a Hauiti tribe. Te Rauata was not made to create something that does not already exist, but it serves to be a digital resource for tribal knowledge that is completely controlled by the tribe.[25] Since then everything about Te Rauata is owned and maintained by Toi Hauiti including the servers, they have complete control and ownership of everything involved in the project. Toi Hauiti has been embracing the abilities of technology to reconnect their tribe with their cultural heritage. They continue to experiment in uses of technology, and they are currently looking at using holographic technology to recreate a full-scale model of a meeting house. Currently the only things that are able to limit the endeavors of Toi Hauiti are cost and the current limits of technology.[26]

For Toi Hauiti, the value of an object is not whether or not it is in a physical or digital format, but the value is in a person's relationship to the artifact. For someone who has a relationship to an object, the object serves as a representation of that connection and of the history behind it. This means the digital object is not inferior to the physical one for Toi Hauiti.[27] Toi Hauiti has been working to reclaim their heritage through collaborations with museums for over a decade. Now they own all digital content they create, and it is stored on their servers. Their many collaborations over the years has helped them build relationships with museums, so that the museums are able to provide support when they can.

Importance of Shared Authority

A useful concept in understanding the importance of each of the above projects is shared authority. While museums have long grounded their authority in expert knowledge, shared authority looks for expertise from non-experts and source communities to provide information about their objects and their culture.[28] Shared authority acknowledges that "both scholarly authority and the authority of 'culture and experience'" are equally valid sources of knowledge and authority.[29]

For shared authority to work, it requires museums to be able to admit they do not

know everything and that there are people out there who are more knowledgeable about a topic than a museum professional.[30] While Indigenous communities may not be able to change the official museum record, there is value in making their narrative visible alongside the museum's narrative. It places the two sources of information on next to one another allowing there to be different versions from the official museum record.. This is also beneficial because it shows the museum record can be questioned, and it is not an absolute truth. Mukurtu allows Indigenous communities to add their community narratives to be seen alongside the institutional record of that object. It gives the Indigenous communities the opportunity to add to the official record and to be presented on an equal footing.

There is still a huge power imbalance between museums and Indigenous communities. The museum cannot be the one to have complete control over the narrative and interpretation because that puts the academic perspective above a person's lived experience. It is not typical for lived experience to be considered as valuable as academic experience. This can be attributed to the subjectivity of lived experience. The variation that can be within lived experience is exactly why it is so important. Academic knowledge about a culture may not be entirely reflective of the culture itself. Lived experience can give the realities of a Native American culture, and it can provide multiple perspectives of what a culture may look like in reality. Both the subjective and more objective sources of information are important to have complete understanding of a culture.Going forward, the two parties need to work together as equals or else shared authority cannot truly happen. For lived experience to be regarded as being as valuable as academic knowledge, then it must be given recognition and compensation equal to that of academic knowledge. It is not commendable for museums to have members of Indigenous communities come share their knowledge, and then not give any credit or compensation to them. Not giving members of an Indigenous community the proper recognition and compensation for their knowledge just exploits Indigenous communities even further as they are not being recognized for their contributions.

Giving Back Control

A key part of these collaborations is that Indigenous communities are given curatorial control over the digitized objects and information around them. This means Indigenous communities must control who objects and information are made available to, including within the community and the general public. For museums to handle Indigenous collections correctly, the Indigenous communities must be consulted about access, and they need to have their wants and needs respected. They must have complete sovereignty over the collection and its associated data and cannot be pushed into making it open access.[31] While today there is a big push for open access to online collections, the idea that one has a right to information is a

very Western idea. The idea of a public domain for information does not align with Indigenous systems of knowledge production.[32] In Western societies, any form of information restriction or censorship can cause negative reactions. The idea that information should be available to everyone can be traced back to Thomas Jefferson, but the twenty-first century movement for information freedom goes hand in hand with the idea of creating a digital revolution.[33] This had led to the push for open access as it pushes the idea that making all information available will be a social and political benefit to everyone. [34]

However, there are Indigenous communities across the world do not share this belief, and they have their own protocols for information that restrict what is made available to people outside the community and to those within it. For some Indigenous communities, it is more practical and appropriate to have protocols about who may know what. For example, the Warumungu tribe in Northern Australia spreads their knowledge throughout the community, so that there is no one group that holds all the knowledge. This ensures that different groups within the community come together to share what the know in order to keep the information alive.[35] Knowledge protocols are not just limited to Warumungu people, and this idea is common among Indigenous communities. Indigenous epistemologies and ontologies must be taken into consideration which is why Indigenous communities need to have curatorial control over these objects.

Indigenous knowledge protocols can clash with protocols in Western societies for a number of reasons. It is not just about who is able to have access to information, but it also involves different takes on public domain. A lot of Indigenous materials and knowledge have fallen into the public domain despite Indigenous communities losing control of that knowledge.[36] The public domain allows for "'culturally appropriate conditions for access' [to] continue to be erased".[37] Further issues come from staff who wish to digitize Indigenous collections, but they are hesitant because they do not know who to obtain permission from or if permission is needed.[38] The disregard and uncertainties surrounding Indigenous knowledge protocols is not a problem that can be solved overnight. It will require institutions to be respectful towards Indigenous communities' ontologies and customs. It will require consulting Indigenous communities, letting them make the choices regarding their digitized materials, and ensuring their contributions are heard and abided by.[39] If museums can be willing to try to take these steps and be okay with not always getting it right, then they can take vital steps in learning how to handle their Indigenous collections and how to give control back to Indigenous communities.

It is not enough to merely enable Indigenous communities' access to their cultural heritage. They need to have access and control over it. It is imperative that control be given back to Indigenous communities. This is important because it is not just about giving communities access to a digital object, but it is about enabling community control about what information about their culture is made public, how it is

presented to others, how its preserved, and how it will be remembered.[40] After centuries of not being able to control what happens to their objects, their culture, and their history, it is imperative that museums and other institutions give this control back to the Indigenous communities, so they can ensure their cultural heritage is treated respectfully and according to their own standards. This may mean that the knowledge is no longer available to those outside the source community due to tribal customs.

Conclusion

It is important for museums to look at these case studies to learn what is possible when handling Indigenous collections. These projects have shown how today's technology can be utilized to give Indigenous communities access and control over how and what elements of their culture are presented to the people outside and within the community. It is not necessary for museums to replicate these case studies, but instead they should examine and follow them to learn what they can do. From these case studies, museums can learn that they need to invite Indigenous communities in to have these discussions about their own collections. The second takeaway is that Indigenous communities need to define what they need, the museum does not get to decide that. The final takeaway is that Indigenous collections require their own protocols to be applied in online collections that differ from traditional collecting practices. Projects such as these case studies are not the only efforts museums should be making to support Indigenous communities, it is simply one thing they are able to do.

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Jonathan Edelman is a masters student at The George Washington University, pursuing a degree in Museum Studies with a focus on exhibition development. Born and raised in Kansas City, Edelman moved to Washington D.C. in 2016 after completing his undergraduate degree at Clark University. For two years, Edelman served as the Curatorial Assistant for the Film, Oral History, and Record Sound Branch at the U.S. Holocaust Memorial Museum. He currently serves as a researcher for the Eleanor Roosevelt Papers Project and the Capital Jewish Museum. Connect on Twitter and Instagram.

Melissa Garcia

Melissa Garcia is a first-generation Cuban-American, born and raised in Miami, Florida. She received an undergraduate degree in art history from Florida International University. After graduating, she took a year off to work in a museum as a guest services associate at The Bass in Miami Beach where she quickly recognized the need for a better representation of her community. She is now pursuing a Masters in Museum Studies at George Washington University and is completing an internship in the directors and development office at The Phillips Collection. Her recent experiences have sparked an interest in museum DEAI, governance, and fundraising. Melissa hopes to continue her research on multilingualism in museums and to be able to put it to practice herself in a museum someday. Connect on Twitter.

Cristin Guinan-Wiley

Cristin Guinan-Wiley is a second year Museum Studies Masters Student concentrating in Collection Management at The George Washington University where she also earned her Bachelor's degree in Theatre and Dramatic Literature. Currently, she is employed full time also at GWU as an Academic Department Administrator. In what free time she doesn't really have she is the lead actor in a Shakespeare troupe. Many thanks to her family and friends for all their support. Connect on Twitter.

Caitlin Hepner

Caitlin Hepner is an emerging museum professional with five years' experience working with historical and archaeological collections and historic sites. She currently resides in Washington, D.C. where she is working towards her M.A. in Museum Studies with a concentration in Collections Management at The George Washington University. She holds a dual undergraduate degree in Anthropology and Archaeology from the University of Virginia. Caitlin has worked in both the Archaeology and Curatorial departments at Thomas Jefferson's Monticello in Charlottesville, Virginia, and now holds part-time positions at a number of D.C. area institutions, including the Smithsonian National Museum of Natural History, National Park Service, and Dumbarton House. She is passionate about preserving museum collections and historic sites and finding new ways to share them with the public-especially through social media and digital technology. Email: caitlinehepner@gmail.com Instagram: @caitlin.hepner Twitter: @MuseumCait

Cynthia Kurtz

Cynthia Kurtz is in her final semester of the Master of Arts in Museums Studies at George Washington University, having previously earned her Bachelor's degree at Tulane University in New Orleans, LA. She has a strong focus on fine arts and the digital preservation thereof, but also enjoys developing thoughtful and impactful exhibitions on a variety of topics. She has previously interned at the National Sporting Museum and Library in Middleburg, VA, under the tutelage of George L. Orhstrom Jr., Head Curator Claudia Pfeiffer. When she isn't studying or working in a museum, Cynthia enjoys riding her beloved horse Saint and building websites for nonprofit organizations. Connect on Twitter.

Mary McCulla

Mary McCulla is a Masters candidate at George Washington University's Museum Studies program focusing in Exhibitions and Visitor Engagement. A Virginia native, Mary graduated from the College of William & Mary with a degree in Classical Archaeology. Currently, she is a project assistant with the Smithsonian Institution Traveling Exhibition Service (SITES), and she has previously worked at George Washington's Mount Vernon, Grey Towers National Historic Site, and the Virginia Museum of Fine Art, among others. Prioritizing diverse storytelling, intentional engagement, and universal accessibility, Mary strives to create exhibitions that will fascinate and inspire audiences. Connect on Twitter or via email.

Amy Pollard

Amy Pollard is a Museum Studies graduate student at George Washington University, concentrating in Exhibitions and Visitor Engagement. Amy completed her Bachelor of Arts in History at Baylor University in Waco, Texas. She currently works as a Visitor Services Assistant at Tudor Place Historic House and Garden in Georgetown, DC. Her interests lie in enhancing the visitor experience and inspiring audiences through education programming. Connect on Twitter.

Rachel Rosenfeld

Rachel Rosenfeld is a Masters candidate at The George Washington University's Museum Studies program focusing in Exhibitions and Visitor Engagement. She is originally from Roanoke, Virginia and earned her Bachelor of Arts in History and Film & Media Studies at the College of William & Mary. She has previously worked at the National Portrait Gallery, National Museum of American History, the National Archives & Records Administration, and the Colonial Williamsburg Foundation. Rachel is passionate about inclusive exhibition development, sparking dialogue between museums and their visitors, and spotlighting the history of American popular culture in museums. Connect on Twitter.

Sheridan Small

Sheridan Small focuses on exhibitions and visitor engagement as a Master's student in George Washington University's Museum Studies program. She is originally from Chicago and has a BA in Anthropology from the University of Pennsylvania. She has worked at the National Museum of American Jewish History and the Penn Museum in Philadelphia, the National Museum of American History in DC, and the Lee-Fendall House Museum in Alexandria. She is currently Education Manager at Dumbarton House, where she strives to increase representation of diverse perspectives through interactive, hands-on programming and design. You can connect with her on Twitter @SheridanSmall14.

Sydney Thatcher

Sydney Thatcher has a BA in Archaeology and Classical Studies from GWU and is pursuing a Master's in Museum Studies at GWU with a concentration in exhibitions and visitor engagement. Sydney has grown up visiting and loving museums and uses this passion to make memorable moments for visitors in exhibitions, public programs, and informal classrooms. Email Sydney Twitter @museumophile

Museum Studies at GWU

The *Master of Arts in Museum Studies* program at The George Washington University responds to the evolving museum profession by combining hands-on training with future-focused theoretical engagement. Students gain foundational knowledge about the state of museum work today, practical skills and the ability to critically engage with developments in the field. Our location in the nation's museum capital offers a unique opportunity to connect to national and global conversations at the cutting edge of museum practice.

Coursework offers both breadth and depth in *Collections Management*, *Museum Management*, *Exhibitions and Visitor Experience*, and *Public Engagement*. Our students come from a range of academic disciplines, from history and anthropology to art history and the natural sciences.

The MA program of study is flexible so students can personalize their academic experience to help accomplish their own goals. Our 36-credit program can be completed by full-time students in two academic years. Part-time study is also permitted, but the program must be completed in a maximum of four years

PROGRAM REQUIREMENTS

All students complete:

- one core course entitled Museum Ethics & Values
- one internship
- five (5) courses as required in the selected concentration
- five (5) electives, which may be drawn from within Museum Studies (including a second internship) or from outside the program. Up to four (4) non-museum

studies courses are permitted.

- a Museum Studies comprehensive exam in their concentration
- the graduate writing requirement
- an oral presentation related to their internship

Throughout the program, students work with an advisor to ensure that they will meet program requirements and their own career and educational goals.