EXHIBITING DIGITAL HERITAGE

The Curation of Un-Mediated Experiences in Museums

HANNAH RUSHTON\textsuperscript{1} and MARC AUREL SCHNABEL\textsuperscript{2}
\textsuperscript{1,2}Victoria University of Wellington
\textsuperscript{1,2}\{hannah.rushton|marcaurel.schnabel\}@vuw.ac.nz

Abstract. The aim of this paper is to examine how a museum exhibition can allow barrier-free access and engagement of visitors. This paper will discuss Immersive Legacies, an exhibition that presented the digital documentation and virtual representations of a significant heritage building, both physically and in virtual reality. Through the examination of the exhibition, Immersive Legacies and its broader museological context, this paper will discuss the emergence of these technologies in museums and its relation to the Anthropocene epoch. In an age of rapid advancement and destruction, it becomes essential to preserve heritage sites, architecture and cultural objects. Furthermore, connection and communication were, and continue to be facilitated by the technologies that began in the Anthropocene epoch. As a result of this era, heritage can be experienced anytime and anywhere, although it remains vital for citizens to have the opportunity to experience it in museums. In turn, this paper will examine how these technologies can be to help citizens understand and engage with heritage and the past in museums - now and in the future.

Keywords. Digital Heritage; Museums; Digital Technology; Un-Mediated heritage; Virtual Reality.

1. Introduction

Heritage is a legacy from the past that must be remembered and passed onto future generations. Digital heritage changes how these legacies are preserved; heritage architecture can be reconstructed with a range of digital technologies to record and remember buildings and sites. In the age of the Anthropocene, when the number of cultural sites at risk of damage or loss continues to rise, the importance of digital heritage increases alongside this statistic. As a field that continues to grow in prominence, digital heritage offers alternative opportunities to conserve, preserve and experience heritage. When a physical building becomes a virtual one, it is no longer constrained by the boundaries of reality and can enrich heritage sites that exist in reality. Digital heritage means that we no longer need only the physical building to visit, understand and communicate heritage.

In virtual reality, experiences are un-mediated because objects can be interacted with anywhere, at any time and with barrier-free access (Aydin and...
Schnabel 2016). As a result, interpretation is open-ended - there is a dialogue between the technology and the user (Thornton 2007). These technologies can widely disseminate heritage content and, as a result, increase public engagement (Affleck and Kvan 2005; Kenderdine 2016). Consequently, visitors can interact with virtual environments in ways that interest them, which makes these experiences more meaningful (Murray 1998). In contrast, the heritage objects and sites of reality are controlled by galleries, libraries, archives or museums (GLAMS) that mediate these experiences. This paper examines how the digital age is changing, not only the methods for the preservation of cultural heritage but how, when and where it is experienced. It will be argued that these organisations will continue to play a significant role in the preservation and communication of knowledge, to discuss how the contemporary museum must transform into a more appropriate and flexible environment (Christensen-Scheel 2018).

1.1. CASE STUDY

In many cases of digital heritage, for the heritage to be preserved digitally, there is, first of all, a call for digitisation. If the heritage is at risk, a virtual reconstruction means the site can be visited by future generations (Champion 2008; Schnabel & Aydin 2015). Because of this, digitisation prioritises the creation of authentic digital representations of the heritage in question - later comes the question of how it will be presented to the public.

In 2017, the digitisation of the Gordon Wilson Flats, an uninhabited modernist social housing building in Wellington, New Zealand, began. In 2019, the research was completed, and the resulting virtual reality experiences were exhibited in the exhibition *Immersive Legacies: The Making of Digital Heritage*. The aim of the Gordon Wilson Flats digital heritage project was to present the public with experience capable of informing them about the history of the building. Although the building is heritage listed, the significance was - and continues to be - heavily debated by the public despite little being understood about the architectural and social history.

Since the construction of the Gordon Wilson Flats in the 1950s, the building has been subject to a range of social and cultural influences, which has resulted in the deterioration of the building into its current state of decay. In the virtual reality experiences of the Gordon Wilson Flats, users can experience this living heritage from the collection of the building’s tangible and intangible characteristics. The combination of tangible and intangible information that was collected to span across the building’s lifetime results in a multidimensional experience. It means that users can experience the building over time, and hence construct an understanding based on a wide range of information that covers decades (Rushton 2018b).

Two systems disseminate the virtual representations of the Gordon Wilson Flats (Figure 1). The first of these is individual immersion, which uses the HTC Vive headset for a singular interactive and narrative experience. Secondly, social immersion is facilitated via a concave screen that immerses a group of users within non-narrative content.
From here, the question is asked: how can the digital heritage of the Gordon Wilson Flats be exhibited in a museum context and remain un-mediated? This paper will present the exhibition, Immersive Legacies, as a case study for curating digital heritage. Following a brief background to the problem presented by modern museums and current examples, the work completed for Immersive Legacies will be contextualised by recent examples of cultural heritage disseminated by museums using different technologies with different results. This research proposes a hierarchy and theory behind a method for presenting digital heritage in museums.

2. Museums Today

Since the origin of the modern museum in the nineteenth century, an intention has been education (Noordegraaf 2004). Museums display cultural heritage in a range of forms: from art to architecture, they illustrate the tangible or intangible, which exhibit the remains and evidence of humans and their place over time. Surviving relics from the past are preserved and fragments, images or objects are placed in museums. Established by modern museum practice, the viewing of these is restricted and controlled by curators and museum staff. Information is presented in a highly planned sequence, as the selection of objects in an exhibition is devised, and thus, mediated by the conditions of the museum (Muller 2002). Such a rigid display usually assumes some knowledge from the viewer, to inform their interpretations - as guided by the curatorial influences. Museums, therefore, exhibited, not only limited insights into history but histories that were perceived to privilege social and cultural hierarchies (Huhtamo 2010). Furthermore, with the addition of barriers and restrictions, the function of the museum becomes paradoxical - for cultural heritage to become visible, museum practice imposes a distance between the object and the observer (Noordegraaf 2004).

In recent decades, museums have set about responding to the challenges set by the past. As a result, the function of museums has changed - changing the focus from objects to the experience of visitors. Museums now acknowledge that visitors enter museums with different motivations and past experiences that will influence their understanding and interpretation of exhibitions. Integrating digital technology into museums facilitates this, as exhibitions can be more interactive and engaging. Moreover, as something that is an integral part of contemporary life, digital technology is something that visitors are beginning to expect in their museum experience (Parry 2008).

These change the way that heritage is experienced, understood and appreciated,
the effect that computing has had on how exhibition content is made visible is undeniable (Parry 2010). Digital technologies and cultural heritage can be curated to be experienced by a variety of users in many different ways. As a result, these emerging technologies democratise heritage and change how culture is consumed (Gansallo 2002). In turn, the significance and narrative of histories can be understood and explored in novel ways that engage broader audiences. In order to understand how these mediate or do not influence the public’s interpretation of heritage, and the role that the technology plays in the experience, this section will survey examples of different types of cultural heritage dissemination in New Zealand. These methods illustrate how technology redefines user experience. The concept of “the digital layer” (Devine and Tarr 2019), becomes an essential idea in explaining how digital technology is integrated into exhibitions. Here, digital tools work to extend the museum experience. Visitors do not only interact with digital technology in the exhibition but also before and after. In the digital age, everyone has access to computers and digital devices, with which they can visit the museum website and view the accompanying media.

In New Zealand, many museums have published their collections online. These include The National Museum, Te Papa Tongarewa; and The Alexander Turnbull Library, which is part of the National Library. These are ongoing digitisation projects that embrace emerging digital technologies and make cultural objects available to a broader audience (Giannini and Bowen 2019). On both websites, users can explore collections. Objects can be selected or searched, then viewed in detail with further information provided. Te Papa’s digital collection offers short interpretive text - and, thus, more mediation - within their digital collection. With tools such as these, visitors can look at the collection before they visit the museum, or explore the collection after they attend an exhibition - they can understand the full range of the museum’s collection or engage with a body of work through the digitised collection online at any time and from anywhere. Although the images are usually available in high resolution and can be observed in great detail, they are two-dimensional. Therefore, they can be analysed, but the material qualities and scale of the real object are lost.

Another way to digitise cultural heritage objects is to create digital models that can be disseminated in Virtual Reality. The world’s first gamified city (Wellington becomes the world’s first gamified city 2019), Welltown VR offers a virtual experience of Wellington City. The experience aims to showcase the culture of Wellington City, and Te Papa and the National Library have been recorded to be part of the virtual experiences. The user navigates through 360° videos with interactive objects. Unlike the digital collection that features on each website, these preserve the three-dimensional qualities and scale of objects and spaces. Digital objects can be experienced in the same material qualities and scale as reality - if the creator chooses to do so (Rushton 2018a). Furthermore, this is an example of preserving the culture of a particular place or moment, which is essential in the age of the Anthropocene.

In the rise of new values within museology, ideas of social impact have changed exhibitions and their message (Scott 2003). An example of this is Te Papa’s recent permanent exhibition, Te Taiao Nature. Produced by one of
the largest museums in the world, this exhibition uses technology to immerse people amongst the natural world. It makes visitors more aware of the human impact upon nature and hopes to inspire people to change in the Anthropocene age. As a result, the exhibition explores three ideas: the unique qualities of New Zealand’s nature, how it is under threat, and raise the need for action (Te Taiao| Nature 2019). Objects from Te Papa’s physical collection feature alongside immersive technologies that facilitate engagement with these artefacts. These support the creators’ aim for the exhibition: to feel an emotional connection with New Zealand’s wildlife.

In contrast to the last two case studies discussed, Te Taiao Nature presents real objects alongside digital technologies - including interactive screens and immersive projections. The immersive experiences within Te Taiao Nature allow the audience to explore the idea of living cultural heritage, and how things change over time. In contrast to the last two case studies discussed, Te Taiao Nature presents real objects alongside digital technologies - including interactive screens and immersive projections.

Although each of these examples navigates a different topic, digital tools are utilised in similar ways. Museums have not fully embraced the possibilities for unlimited display space and communication (Muller 2002); as digital heritage projects continue and data is archived, it becomes essential to consider how these will be presented to the public. From these examples, it is clear that the museum and technology are separate mediums. Each has been developed to work together seamlessly. However, one is in aid of the other. Figure 2 illustrates the hierarchy of these concerning the curator, visitor and exhibition concept. These examples show that there are many ways to arrange and disseminate heritage to the public and although New Zealand’s histories are well represented and explored across novel digital spaces, their experience is still mediated. Here, digital technologies assist the curation of physical objects. Technology as a medium only serves as a tool that supports the physical, or real, exhibition objects and curatorial idea. From here, it becomes clear that, despite being unmediated in nature, digital and interactive technologies can still be mediated by museums (Aydin and Schnabel 2016).

![Figure 2. Curation of digital technology within the museum (Adapted from Parry 2008).](image_url)

### 3. Digital Heritage in the Museum

Although today’s museum cannot curate both cultural products, the intended outcomes of digital heritage. In contrast to these, digital heritage is recorded for preserving a place, time or object. In this case, the hierarchy with the museum is
different. First of all, there is the experience, then comes the question of how to work with the space. A curator completes it, but with the intention of retaining the unmediated qualities of the heritage - not placing a curatorial influence on the audience interpretation. Figure 3 illustrates that the function of the space is to provide a medium for people to experience the digital in museums, which, in turn, allows these institutions to remain relevant and develop towards digital content.

4. Immersive Legacies

Immersive Legacies was held in the capital city of Wellington, New Zealand, in the Wellington Museum. The exhibition was open for two weeks and was featured as part of ‘Wellington Heritage Week’ - a significant, annual week-long event that features a range of heritage in Wellington. The exhibition hosted a broad audience, including international, national and local visitors, and a broad range of ages.

Along with bridging the physical and digital, the exhibition focused, not only on the final result but the digital process. It is as, in the making of digital heritage, it is the methodology - documentation, representation, and dissemination - that generates meaningful experiences. The different techniques throughout the documentation and representation stages, along with the different of skillsets required produced a range of virtual depictions of the building. These allow visitors to compare and interpret a variety of representations, and hence build an individual understanding based on their experiences in both individual immersion and social immersion (Figure 4). As a result, the exhibition aimed to celebrate the emerging technologies that made this digital heritage possible - not comment on the contested status of the Gordon Wilson Flats. Visitors were invited to reflect
on the role these technologies will play for digital recording heritage in the future based on their introduction to it in the exhibition. Figure 5 shows the floorplan of the exhibition and the intended sequence for viewing the exhibition. The sequence of the exhibition shows the making of digital heritage, following the methodology from documentation, representation and dissemination.

As visitors moved through the exhibition, physical experiences changed to digital ones. The final stage of dissemination was accompanied by text but presented and focused on virtual experiences and representations. Immersive Legacies includes the two forms of dissemination that were used during the Gordon Wilson Flats digital heritage project. Additionally, a hologram displayed the digital models, to illustrate the contrast between each representation generated with the use of different digital techniques - changes in the architecture that was experienced by users in the virtual reality experiences. It corresponded to the models that are experienced in 1:1 immersion within virtual reality, again giving context - from their creation to dissemination. Finally, aural recordings play throughout the space; interviews with the creators of the Gordon Wilson Flats project about how they made digital heritage. These do not only detail the techniques and technologies used throughout the work, but also their experience inside the building as it is today. Sound added a further layer of information and combined with interpretative text, physical models, objects and virtual experiences, these components of the exhibition give a wide range of choice to visitors to engage with what was of interest to them - and construct their own experience and interpretation.

It seems as though an intended sequence should contradict the purpose of digital heritage, however, the physical objects and interpretive media that are part of the exhibition serve to contextualise and replicate the digital objects in each of the virtual reality experiences Referring back to Figure 3, Immersive Legacies used physical objects to assist the digital objects and virtual experiences. This
sequence of information, accompanied by sound playing throughout the space, shows that even in the mediated space of the museum, the curation has attempted to replicate the conditions of digital heritage. These different forms of media, which are represented across realms, are there to support the construction of interpretation - a range of interpretations for a wide array of visitors while moving throughout the path (Figure 6).

The experience of the Immersive Legacies extended and continues to extend beyond the exhibition. From the website, visitors could engage with some content before visiting, or after. Furthermore, the virtual reality experiences, particularly singular immersion - which is played on ‘steamVR’ - only need an ‘HTC Vive’-headset and computer to run, thus can easily be experienced anywhere in the world. Social immersion, which requires a spherical screen becomes harder to replicate without the correct system. However, the 360° videos that play on it can be accessed and interacted in several different ways. Finally, for visitors to engage with the exhibition content, further brochures were given that included details of the published work from this digital heritage research. Included on these were QR codes that directed readers to their publication of interest, to tell them more about the building and the details about the digital heritage work completed about that aspect of the building.

Figure 6. Stages throughout the Immersive Legacies Exhibition (left to right, top to bottom): physical and interactive media, holographic display, social immersion (spherical projection), individual immersion (HTC Vive headset).
5. Outcome

Visitors to the museum became more engaged and interested in the social and individual immersion experiences. Due to the draw of virtual reality, it was found that people went straight to these experiences, missing the interpretative media. However, exhibition staff found that visitors spent a significant amount of time in both immersive experiences, investigating the content and interacting with different forms of media included within them. Therefore, on their own, these experiences provided adequate information for interpretation to be formed. However, visitors could go back through the exhibition to look at the physical media; or investigate the website, social channels or brochures and publications before or after visiting. What the visitors’ path and experience in the exhibition space shows is that although the exhibition fosters an alternative space to digital heritage, the unmediated experience of digital heritage is enhanced by the museum context. Visitors did not use the physical media in the space as intended, but the Social and Individual Immersive experiences engaged them. These led them to interact with the media inside these spaces, and from what they learned within these realities further engage with the physical content in the exhibition or discuss the building and its history with the exhibition’s volunteers. Ultimately, the exhibition enriches how digital heritage offers interpretation and engagement.

6. Conclusion

In conclusion, curating digital heritage and virtual content changes the hierarchy within museum spaces. It is as cultural consumption changes museums must continue to integrate digital technology into their exhibits to meet visitor expectation. This paper has argued that despite the shifts to digital media and virtual experiences - which can be experienced anywhere and at any time - the role of the museum remains as crucial as ever. In an age when heritage, and thus the experience of heritage is at risk, the importance of digital heritage increases - however, its un-mediated nature comes into question when it is part of museums or the wider GLAM’s network. The Immersive Legacies Exhibition has shown how the museum can enrich the experience of digital heritage without mediating it. While these experiences are meaningful on their own, placing them in their broader context bridges the physical and virtual, which creates more opportunity for engagement and interpretation. Hence, although digital heritage is accessible anywhere, the museum plays a crucial role in enriching the experience in ways that are not possible elsewhere.

References

