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WONDERFUL WORTH & WORTHY WONDER:
The revival of a forgotten concept to strike a
balance in technological exhibition design

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ACKNOWLEDGMENTS

NAN O’SULLIVAN

MUSEUM OF NEW
ZEALAND, TE PAPA
TONGAREWA

FRIENDS & FAMILY
*For keeping me
motivated.*

ABSTRACT

As museums develop their roles as social and political forces, the role of the exhibition designer has evolved and become more complex. The new role demands increased consideration as new technologies impact the demand for recreational learning experiences (Lake-Hammond & White, 2015). Nearly thirty years ago Pulitzer Prize-winning author Stephen Greenblatt introduced the terms ‘resonance and wonder’ to describe the viewer’s experience and connection to the exhibits. Greenblatt asserted both ‘resonance and wonder’ as essential to an exhibition experience but stressed the need for a balance between the two (1991). The significance of Greenblatt’s perspective has become more prominent with the current shift in museum exhibitions that engage technological forms of representation. This study asserts that Greenblatt’s argument continues to be relevant today, as museum professionals arbitrate the balances and imbalances posed between resonance, now interpreted as worth, and wonder. The terms were first defined through thematic analysis to identify consistent elements that produce the concepts and further applied to the narrative analysis on perspectives of technological integration in museums. Using the broader contemporary definitions of ‘wonder and worth’ this research then applied what was learned from the literature to a physical context by analysing use of wonder and worth in two current exhibitions; Te Papa’s 2015 “Gallipoli: Scale of Our War” and Cooper-Hewitt Design Museum’s 2014 interactive pen design. In doing so the main finding suggested that the balance of wonder and worth can be achieved through encouraging a human connection and empathy which can be extended with the use of new technologies that are appropriate for the intent of the exhibit. These findings were delivered in the form of a manifesto to facilitate the exhibition design process, encourage consideration for the balance between wonder and worth and lessen the stigma around technological representation in museums.

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MOTIVATION

My under-graduate degree is a combination of design and psychology, therefore, I am naturally interested in how design impacts people cognitively, behaviourally and socially. My main interest in this investigation is to understand how design can impact people's experiences, and thus learn how to design a better one for them. I am applying this interest to a museum context as museums are a designed space, created to give people meaningful experiences, there is also a need for this kind of research as new technologies transform exhibition design and representation.

At the core of my beliefs as a designer is the balance of function and aesthetic, "beauty and utility", and I am inspired by the works and beliefs of the design reform; William Morris and John Ruskin, the Bauhaus; Marcel Breuer and Walter Gropius, along with the psychology and design perspective of Donald Norman. While this balance of function and beauty has impacted my perspective of good design, it was not until later in the progression of my thesis that I realised I was arguing the same thing, but rather talking about this in terms of furniture or ornamentation, I had applied this to the bigger context of exhibition trends; the balance of wonder and worth, where wonder is a similar concept to aesthetic and worth to function. This further has made me realise that design and design thinking applies to more complicated and wider contexts that I had realised.

Thus this thesis has opened my eyes to how these concepts relate to further wider contexts and the versatility of the core ideas of design.

Another main influence to my approach to this thesis relates to how there are numerous studies and articles that highlight issues, and even suggest solutions, but they never apply these within a real context. This was something which I had come across during my psychology studies, but also when researching museology for this thesis. I wanted to connect the literature and physical context to highlight the importance of bringing together processes. As stated in one of the articles that contributes to this thesis (Lake-Hammond & White, 2010), there is a gap between research and design I wanted to further bridge this gap and show the importance of physical application.

By reading through my investigation you will find that it is full of contrasts; traditional and contemporary, wonder and worth, simple and complex, and object and audience. The goal for this investigation is to start a conversation amongst exhibition designers and curators about the contrasts in representation and experiences at the museum and how we can bring them together as to not over-entertain or under-represent in the future and how much design impacts people's experiences.

INTRODUCTION

Until recently museums were defined by their relationship to artifacts. Today they are defined by their relationship to their visitors, the visitor's experience is now fundamental to the museums survival and at the forefront of their goals (Kirshenblatt-Gimblett, 1994 p.45, Chang, 2006). With this shift, exhibition design has become less object orientated and more entertainment based to fulfill the visitor's expectations (Chang, 2006). What has further endorsed this shift is the demand and opportunities produced by new technology. Interactive, communicative technology has never before progressed at the rate it is currently, which has allowed exhibition designers to experiment with new levels of communication and interactivity (Lake-Hammond & White, 2010). Entertainment in the form of the "wow factor" created by new technologies is what attracts audiences, and because visitor satisfaction is now paramount, their expectations are one of the driving forces behind the increased integration of technology in exhibits (Balloffet et al., 2014). While this can have positive implications for visitor numbers and tourism, many museum professionals have expressed concerns about technology presiding over cultural representation, consequently, the museum may eventually develop to resemble an amusement park rather than a cultural institution (Kirshenblatt-Gimblett, 1994, Balloffet et al., 2010). Adding another layer to the paradox is the fact that technology trends are ephemeral and exhibitions are permanent. Soon after conception, exhibitions are at risk of becoming outdated and losing visitors because they expect "cutting edge" entertainment (Lake-Hammond & White, 2010). Therefore, too much or too little integration can have multiple negative implications for museums.

This dilemma has started a decade-long conversation, not only about how the technology should be used in museums, but what it means for the dynamic role of the museum in society, and as long as technology continues to progress, this conversation becomes infinitely more

"These days, museums seem less like temples of culture and science and more like multimedia amusement parks, with Imax screens, exhibits designed to mimic carnivals and high-end toy stores scattered throughout."

- Debra Galant, The New York Times in Designing exhibitions , 2006 p.22

While interactive technological gadgets are currently the talking point, under all the "glitz and glam" the importance of representing the value of cultural heritage still remains as it always has, although, with the production of new technology there are increasingly new and better methods of representation then there have been in the past. Despite recent international occurrences, there has never been a better time to celebrate the New Zealand culture, as we consult the past and future of our multicultural nation and become in harmony with each other in our communities. It is the museum's role to promote the nation's values and progress through the stories of the people who created and fought for the country we know today. Predominantly, the outlook of the technological progression of cultural representation is a positive one, but underneath the excitement there needs to be the consideration of the who, what, why and hows to avoid the negative implications of the misguided use of technology, which design can both implement and prevent.

Cognitive psychologist, turned design critic, Don Norman states in his 1988 book “The Design of Everyday things”, that good design is often harder to see than bad design as it works so well it becomes invisible (p. ix). For exhibition design to be successful it should complement the stories being told, and not be the main focus. It is, however, in a museum’s best interest to promote that exhibitions include virtual experiences and interactive technology because the anticipation about new technology attracts audiences. The risk of this is that viewers then come with the assumption of a technological experience rather than a cultural one, which furthermore makes culture a second priority. Currently, the old and new are perceived much like oil and water. Where technology is the oil that sits upon and distorts the water of culture below. The way museums represent things is how they will be viewed by the audience (Alpers, 1991), if museums present technology and culture as competing focus points they will be received that way. The over-emphasis of entertainment and the “spectacular” in exhibition design threatens the communication of national values and culture, therefore technology should be represented only as a tool in order for museums to communicate culture. For this to be achieved, considerations and revisions of exhibition and user experience design need to be realised.

“The mode of installation, subtle messages communicated through design, arrangement, and assemblage, can either aid or impede our appreciation and understanding of the visual, cultural, social, and political interest of the objects and stories exhibited in museums.”

- Ivan Karp 1991, p.13

Both culture and technology are dynamic, however culture, unlike technology, is appreciated even when it is not in fashion because of its ability to induce nostalgia and a sense of identity. This effect is known as resonance or worth and is a fundamental aspect of an exhibition’s success, not only in visitor experience but also communicating the importance of culture (Greenblatt, 1991, Kratz & Karp, 1993). The “wow factor” is what

is referred to as wonder and is also an essential aspect of a visitor’s experience as it produces excitement, interest and has the ability to entertain (Greenblatt, 1991, Kratz & Karp, 1993). As explored in this investigation, wonder today is produced by technology, but has changed vigorously over the past depending on what was fashionable and what communicates power and prominence of a collector or nation at the time. This investigation revisits the resonance and wonder concept, first recognised by Harvard University Professor, Stephen W, in 1991, and further seeks to apprehend how it has evolved and become relevant to visitor experience of cultural heritage through technology today. As suggested by Greenblatt in 1991, balancing resonance and wonder is an important measure to create both an exciting and insightful experience, this investigation pursues to uncover how this balance can be created through design methods and how technology is involved within this balance.

Today the designer plays an important role in the collaboration of creating not only the physical exhibit but the visitor’s experience (Lake-Hammond & White, 2010). One major concept to remember is that all exhibits are designed according to the goals and objectives that the exhibition aims to achieve (Bitgood, 2011). If the goal is to stimulate curiosity and excitement, then the exhibit will most likely be bold, interactive and novel, today this effect is usually produced by new technologies such as interactive screens, virtual experiences and special effects (Bitgood, 2011; Schwarz Frey, 2006). Exhibits like these are just as much of a display of the technologies as they are of the topic they are presenting. It is the designers responsibility to ensure that technology allows the representation of both wonder and worth simultaneously throughout the experience. This investigation seeks to further understand the current day manifestation of the concept of wonder and worth through applying what is known in the literature to a physical context. This will further result in uncovering how to re-balance wonder and worth communicated through an exhibit experience. While the contribution of technology is a positive attribute to the museum experience, the consideration

of how it is used and represented needs revising in order to create a balanced experience in exhibitions. Unless it is resolved, museums will further struggle to define their role as educators, entertainers, and conservators of culture and history. Museums are at risk of being overrun by entertainment orientated spectacles because of the influence of the visitor orientated shift.

This investigation will first begin in chapter three by defining elements that are the main contributors to wonder and worth, as well as the relationship between the two concepts. The fourth chapter will include an in-depth investigation to the current integration of technology in museums to understand general opinions, concerns and suggestions relating to balancing wonder and worth. Thirdly, the insights gained from the previous analyses will be applied to a physical context by identifying wonder and worth characteristics in current technological exhibits. The thesis will conclude with a summary of findings that will contribute to a manifesto to advise designers and curators of how to create a wonderful, worthy experience.

This investigation is a broad introduction and reinvigoration of forgotten concepts to further aid museum professionals in a time of development and change in exhibition design. The main question that is asked in this investigation is; What are the current-day manifestations of wonder and worth in exhibition design and how do they contribute to a balanced museum experience?

This thesis hopes to unite museology and design through applying insights from literature in a physical context, to demonstrate how concepts translate through different mediums. This seeks to further highlight the importance of translating what is discussed and learned in literature within a physical context. Too many articles and studies are concluded with only facts presented, this thesis provides information from different mediums to connect the literature with physical representation, and therefore, covers the full expression of wonder and worth from concept to manifestation.



GENERAL DEFINITIONS

Before we begin, I would like to explain the important definitions that are constantly referred to throughout the thesis. Technology and culture are very broad terms and are referenced throughout. Both technology and culture are dynamic and also intertwined, but can be very difficult to define as they have different meanings depending on the context in which they are placed in. Worth will also be defined as there are multiple terms across texts which refer to the same concept.

Technology

According to the Oxford dictionary technology is “the application of scientific knowledge for practical purposes, especially in industry”. Technically technology can be as simple as a pen and a piece of paper, but today it is common to perceive the word in reference to new technologies such as electronic devices. In this thesis, I will be talking about technology in general terms, predominantly in relation to new technologies but I also want to acknowledge that technology is a dynamic commodity that is always developing and influencing our everyday lives. Due to this the thesis takes a general perspective to the term.

It is important to mention, however, some of the technologies currently used in museums to give a background to what kind of technology I am referencing when I refer to the term. Museums use a variety of different technology which can include the simple forms such as Wifi, lighting, photography and film, however some museums are now investing in more complicated newer forms such as virtual reality, 3D printing and

augmented reality. This thesis is mainly interested in these newer forms of immersive technology as they have a bigger “wow factor” but I will also reference these smaller technologies as they play a role in the current development.

Culture

According to the Oxford dictionary culture can be defined as; “the ideas, customs, and social behaviour of a particular people or society”, Or “the arts and other manifestations of human intellectual achievement regarded collectively.” This thesis will be referring to culture as a combination of the both definitions, particularly material culture of societies and how this relates to people. Culture is hard to define since there are many forms from traditional and ethnic cultures to popular culture, all of which are relevant to what people associate and identity with. Similarly to the way the technology term is addressed, this thesis refers to culture in a general way that relates to how people connect to each other and identify themselves.

Worth/Resonance

This thesis refers to Greenblatt’s “resonance” as worth, simply to combine common terms from other papers (Kratz & Karp, 1993) and keep the term simple. “Resonance” is “the quality in a sound of being deep, full, and reverberating”, the closer term to Greenblatt’s definition to is; “the power to evoke enduring images, memories, and emotions” (Oxford Dictionary, 2010). Worth was the term used by Kratz and Karp (1993), this term a clearer term to describe what Greenblatt means by resonance, those unfamiliar of the term will instantly understand the meaning when it is referred to as worth, therefore worth is the chosen term to explain this concept for this thesis.

The Concept

This term is used throughout the thesis referring to wonder and worth, “the concept” is an alternative term to avoid repetition and enable more clear reading.

01 | LITERATURE REVIEW

1.1 Introduction

One of the main things that connects us as people is our past, therefore there needs to be a good way of representing it in order for us to be connected to others as well as ourselves (Hopper-Greenhill, 2000). As the museum moves into a new era of representation through technological means, curators and designers need to be sure that they are using this medium in the right way to communicate the past. Wonder and worth are terms that describe the reaction to an experience, where having a combination of both is what makes up the museum experience (Greenblatt, 1991). Technology before now has been utilised to entertain and communicate, while these things are important elements of the museum experience, it is yet to be known how technology can produce the important elements of worth. Many museum professionals are concerned about this fact as the museum has a duty that goes far beyond entertainment; it's about communicating ideas, experiences and perspectives that represent cultures as a whole (Hopper-Greenhill, 2000; Kirshenblatt-Gimblett, 1994). Therefore, it is important to understand how wonder and worth are produced today, thus this literature review will begin to address this through analysing the wider perspective of different texts.

Greenblatt's "Resonance and Wonder" is defined, dissected and contrasted with other opinions of key aspects of the argument, namely; cultural representation, entertainment and education, exhibition design and visitor experience (1991).

The purpose of this literature review is to define and clarify terms as well as uncover the main issues around the topic and identify key people who contribute to the overall body of research on wonder and worth. This investigation will further allow understanding of how design approaches create certain effects and what implications these have for the future of cultural exhibition and visitor experience. By the end of this literature review a broader understanding of the topic and the importance of balancing wonder and worth will be uncovered and will further produce gaps in the research for exploration. The following texts were critical in the initiation of my research and interest in the topic. The main goals for this literature review are to define wonder and worth through various different examples and identify its significance in exhibition design. This will be achieved by investigating different representations of the concept, highlighting the implications of its imbalance and further connecting it to exhibition design. This literature review will be restricted to a historical overview, implications and connections to a wider medium. This will narrow the scope to achieve the wider goal of defining the topic in a contemporary context. Allowing a better understanding of the concept will further lead to the next steps in defining the contemporary production of wonder and worth, and ultimately, the to understanding how and why this wonder and worth should be balanced.

1.2 Wonder and Worth

In this section Greenblatt's resonance and wonder will be explored, defined, and contrasted

with other authors' opinions and experiences with the topic. The combination of worth and wonder is the ambiance that is central to the museum experience and sets it apart from libraries, amusement parks and the like. Greenblatt, in Karp and Lavine's 1991 book, *Exhibiting Cultures*, discusses the terms resonance and wonder in his well-known essay. While Karp focuses on the experience of the art museum, this investigation will further determine its significance in a cultural exhibition context. Resonance (or worth) describes the power an object has to evoke memories and emotions, the object becomes the viewer's connection to another time, place or people. On the contrary, wonder describes a feeling produced from novelty which has the "ability to stop the viewer in his or her tracks" (Greenblatt, 1991). Something that provokes excitement, demands attention and has the ability to entertain. Put simply by Kartz & Karp (1993); worth is produced by the extrinsic nature and wonder by the intrinsic or aesthetic nature of an object. This section will clarify Greenblatt's definitions and uncover themes which will further lead the investigation in the definition stage of the research.

Greenblatt's Wonder

In early years, collections focused on wonder through exhibiting exotic curiosities; from the early private collections of the 16th and 17th centuries, to the human zoos which were at large up until the 1950s (Karp, 1991; Greenblatt, 1991). Wonder in those times was about seeing something new and unusual, to capture imaginations about the mysterious and exotic world beyond (Greenblatt 1991, Kartz & Karp, 1993). According to Greenblatt wonder aids the impression of power with an element of exclusivity. This was first utilised through the private "curiosity-cabinet" collections of the Renaissance, which were just as much about the possession as they were about the display. It was not uncommon for aristocrats to have their own collections; those who viewed these collections were other important people. This added another layer the experience of wonder: exclusivity - Initiating a further desire to view. Greenblatt suggests that this kind of wonder evolved from worth; not the meaning of lives and cultures, but rather what it meant to be

wealthy and powerful enough to possess a myriad amount of precious things (1991, p.50). One of the earliest examples of the consideration for display and exhibition design occurred in the late sixteenth century when the emperor of Austria, Rudolf II, ordered a reconstruction of his palace. The purpose of this reconstruction was to cater for the display of his vast prestigious collection of what was described as his "mastery of the world" (Greenblatt, pg. 51, 1991). The displays' purpose was to enhance the emperor's prestige, to show his power and wealth. And thus, the museum, while it is accessible to all in today's society, started out being about mastery and exclusivity, which in turn produces another layer of wonder as acknowledged by Greenblatt.

Greenblatt's Worth

Objects were first displayed because people believed they had some value worthy of showing to the public, thus if an object is displayed in a museum, it is automatically understood by the audience as having some worth. Worth as defined by Greenblatt (1991) refers to the feeling one gets when viewing a particular object connects the viewer to the broader concept; its value is defined by an external connection not the materiality of the object. Greenblatt suggests that an exhibit that focuses on worth is defined by implied, half-visible relationships and questions (1991, p.45). These include the object's place in the museum; why it is being displayed and the viewer's relationship. He describes in his article exhibits that resonated with him the most: the objects displayed were not necessarily the most outstanding objects in terms of visual appearance, but showed evidence of use or connection to a larger concept. One such museum he describes is the State Jewish Museum that displays a series of drawings by Jewish children from concentration camps, ritual items, textiles and the like. Greenblatt states that, while some of these objects are beautiful visually, it was impossible to view them as art, as one might view a pyx or ciborium, because of what they represented; a snippet of a person's life and struggle (1991, p. 46-47). He states; "This resonance depends not upon visual stimulation but upon a felt intensity of names, and behind the names, as the very term resonance suggests of voices: the voices of those who chanted,

studied, muttered their prayers, wept, and then were forever silenced.” (Greenblatt, 1991, p.47). Resonance or worth is a crucial part of the museum experience as it is what unites and connects the audience to a greater meaning and further justifies the purpose of the museum.

While Greenblatt determines early on in his text that his discussion of wonder and worth is in relation to art museums, the examples he gives throughout are predominantly associated with the display of cultural objects. Art museums and national museums are innately intertwined due to their shared beginnings, history and function. However, wonder and worth are greatly more impact in the context of national material culture as determined in his text. Without dismissing the concepts significant function in art museums, the investigation of wonder and worth in regards to a national museum is more crucial because of this impact for people. Greenblatt's concluding statement validates his particular interest in the topic as he considers the importance of having both concepts present in an exhibition; “Is a triumph of one over the other necessary?...For both the poetics and politics of representation are most completely fulfilled in the experience of wonderful resonance and resonant wonder” (Greenblatt, 1991, p.54). Wonder is needed to entice the viewer, to attract their attention and gain their interest, whereas worth leads the viewer to understand the greater implications and existence of what they have experienced. Greenblatt also states that wonder must lead to worth, though sometimes does not, and this is the underlying issue with meaning making in museums.

“Is a triumph of one over the other necessary?...For both the poetics and politics of representation are most completely fulfilled in the experience of wonderful resonance and resonant wonder.”

- Greenblatt, 1991, p.54

Wonder and Worth and New Zealand Cultural Representation

Gentry's 2015 article; Entangled objects: Tourism and the Exhibition of Maori Culture, is a perfect

example of how wonder was used in early New Zealand as promotion through entertainment. While this article does not directly acknowledge the terms wonder and worth, its underlying themes argue why it is important and consequently offers a strong modern perspective on the imbalance of wonder and worth in New Zealand history of entertainment and culture. Gentry describes the traveling New Zealand cultural exhibitions from the late 1800s to mid 1900s. Maori materialism, people and their culture were presented by the European curators to boost tourism and immigration, to preserve a “dying culture” and lastly to show the advancement of colonisation. Gentry identified this as a quintessential paradox, as Maori culture was central to the tourism industry and the construction of New Zealand's identity, at the same time “preservation” and colonisation was also diminishing the culture as a whole. While this early practice emerged egocentrically, today it is increasingly egalitarian. The culture is now presented with respect to the Maori, with their involvement continuously intertwining further with museums methods of representation and preservation and thus restoring integrity and authenticity (McCarthy, 2016). Although this is an example of the impact of wonder in a cultural context, as Gentry presents the negatives, which involved exploitation and commodification of the Maori people, all of which was to entertain and create an attraction.

While this is a negative experience of exhibiting culture, there has been a long standing positive impact from the 1984 Te Maori exhibit in the United States for New Zealand and Maori (McCarthy, 2011). During this time in the 1980s there was a shift in bi-cultural thinking, where the developments the Te Maori exhibit coincided with the bi-culturalism of systems such as schooling, where previously it was expected that Maori adapted to Pakeha ways (McCarthy, 2011). The Te Maori exhibition aided the revitalization of the Maori culture in particular reaching out to young Maori city dwellers who had become disconnected, as well allowing Maori political leverage in the liberal Pakeha government of the time (McCarthy, 2011). Because of the high-profile media centered around the exhibit that allowed the exhibition to be aired in New Zealand from the United

States, it had a profound effect for New Zealand and Maori pride, as well as initiating curiosity (McCarthy, 2011). Senior curator, Rhonda Paku, from the Te Papa Museum states that seeing the exhibition on television when she was young made her “intensely proud” of being Maori and realise the value of taonga in the eyes of people all around the world. “It was an awakening to how we ourselves perceive the taonga as real treasures and not just things to be left in museums without a voice - we need to provide that voice” (McCarthy, 2011, p. 63). When they returned back to New Zealand, Te Hokinga Mai or the Return Exhibit was opened around the country 1986-1987. This had lasting effects on the museum's practice such as including Maori practices and ceremonies to respect taonga. Te Maori was one of first and best known examples of international of community collaboration.

In the Maori perspective, wonder and worth is felt similarly while in the presence of taonga because of their connection; “In the Maori view we are not just dealing with inanimate objects but living treasure...Maori do not look at the beauty of art because of its harmony of form, colour or excellence of craftsmanship. Rather it is beautiful because it has mana (power), ihi (awe) wehi (fear), wana (authority)” (Irihapeti Walters, the museum Education association of NZ conference, 1992 as cited in Kirshenblatt-Gimblett, Stafford, & Jones, 1994). In Kuia Aunty Bessie (Irihapeti Walters) perspective wonder is experienced through the worth and the wider meaning of taonga. However, in the Te Maori exhibit as there was some “ambiguity” about the separation of the taonga and art which “also fused in an unseen way” (McCarthy, 2011, p. 62), this could be related to how the taonga was displayed which was much like art. Despite this, the majesty of the taonga was represented and those who entered the exhibit understood the taonga's worth by the way they were respected and presented (McCarthy, 2011). In contrast, Gentry's negative perspective on the representation of Maori culture in the 1800s is justified because of the circumstance in which wonder was created through exploitation and exaggeration to entertain, which further had a negative impact on Maori culture. It was worth that was missing from the traveling exhibitions

which resulted in an unauthentic, objectified cultural representation. While the Te Maori exhibition may have been ambiguous, the communication of worth was ubiquitous and had lasting positive effects.

1.3 The Ramification of Imbalance

In this section, previous literature is consulted to understand and explore the implications of the imbalance of wonder and worth. There are two such effects that are predominantly consistent throughout the literature and are interconnected with the concepts; these effects are known as Disneylandisation and the Museum Effect. The effects are two opposite ramifications which occur when there is a lack of context or an exaggeration of it in an exhibit. They have been used by museum professionals over the years to describe the negative implications induced by current trends and styles of exhibition.

The Museum Effect

The museum effect as referred by Alpers is “a way of seeing” (1991, p.27), where cultural objects are turned into works of art by the way they are displayed. The displays that Alpers refers to is the modern display, where objects are placed on pedestals, lit up with boutique-like lighting and sometimes placed behind glass (Alpers, 1991; Greenblatt, 1991). This display is similar to that of art galleries and are designed to enable optimal viewing for the audience, however in a museum context, cultural artifacts lose meaning and ability to represent their culture when they are displayed this way. It is only the extrinsic features of the object that are presented as being important and not the context in which they came. Therefore, with recognising the museum effect, Alpers identifies how exhibition design can affect the way that cultural objects are seen and appreciated. Trying to extend their worth and wonder factor through displaying cultural objects in such a way that transforms them into art, they are eliminating their true value and ability to produce resonance.

The Author's perspective

While some peoples, groups or nations believe they are only recognised as a culture when they are represented in a museum, Alpers believes that

museums are not the best places to represent culture, as culture is not fully defined through its materiality; “What the museum registers is visual distinction, not necessarily cultural significance” (1991, p.30). The modern displays objective is to allow attentive looking, consequently, this technique causes a loss of cultural significance as artifacts are perceived as art due to being displayed similarly (Hooper-Greenhill, 2000; Alpers, 1991). According to Alpers, books or films offer better representation of culture, as artifacts are presented within the context they belong, and therefore do not lose meaning. The museum effect is created by the style of the exhibit causes this loss of context and therefore no view beyond the extrinsic features can be established (Alpers, 1991, p.30). The way people view things, as Alpers describes, goes deeper than just the physical act of viewing, but the implications and meanings created from that kind of viewing. From her perspective, artifacts are displayed, placed and lit like art, encourages the object to be viewed only for its features and qualities without further referencing to the people, places and time it represents. This consequently means that the exhibition designer must be circumspect when designing exhibits to enable to viewer to form a perspective that goes beyond the extrinsic features, but also must produce wonder to capture the visitor’s’ attention.

Similarly as Greenblatt’s Resonance and Wonder, Alpers discussion was also published in Karp and Lavine’s 1991 Exhibiting Cultures book, therefore the ideas stated by Alpers are as aged as Greenblatt’s. The degree to which Alpers perspective is antiquated can be justified by her suggestion that films are better representatives of culture and should be used in museums, as today most museums utilize multimedia in their exhibits including films (Schwarz, Berton, & Frey, 2006). However, this fact does not debase her argument and recognition of the museum effect, as this is a valid observation about how representation and exhibition design can affect the way cultural objects are perceived by its audience. As mentioned in the beginning, while Greenblatt’s resonance and wonder is based off the display of art, it is clarified in Alpers’ discussion that it can be also applied to a museum context, as well as demonstrating its unequivocal relationship to

the museum effect. Greenblatt even talks about the museum effect without referencing it in his text, namely when he gives the example of how ritual objects, such as the pyx and ciborium, are transformed into artworks by the way they were displayed. “We have become so use to the display of such objects, so accustomed to considering them works of art....(that we) do not necessarily feel disconcerted by their transformation from ritual function to aesthetic exhibition” (1991, p.46). From this Greenblatt goes on to describe how other objects cannot be seen as art because they have closer ties to the human experience, such as the children’s’ drawings (see 1.2; Greenblatt’s Worth). Therefore one could conclude that the a connection to an outer context, including the human experience, is what creates resonance and an absence of this creates the museum effect. The role of exhibition design is also an important one, as the production the museum effect is directly related to the display techniques. This further supports Greenblatt’s recommendation to balance wonder and worth as there are real implications for focusing on one rather than the other.

Disneylandisation

As discussed above attempting to extend the perception of wonder and worth through a lack of conceptual representation results in the museum effect, when the opposite is pursued by over-exaggeration and specularisation, disneylandisation is the ramification.

“Disneylandisation” is a negatively charged term first coined by Brunel in 2006 that references Disneyland, the first amusement park in 1955, California (Balloffet et al., 2014). In recent years it has been adopted by museum professionals to describe when museums transition to a “hybridisation” between museum and amusement park as they incorporate more recreational entertainment features (Balloffet et al., 2014). Some museum professionals have described this concept as absurd and undesirable as they believe that there should be a differentiation between the establishments (Balloffet et al., 2014). The main concern is the differentiation between fact and fiction, Disneyland is the quintessence of fantasy and entertainment, where as museums are defined by their scientific and anthropological

authenticity. Categorising museums and amusement parks as the same institution is considered the “worst case scenario” to the museum, as what they strive to represent is the complete opposite to that of an amusement park. Below Balloffet et al. describes how “edutainment”, a new museum trend, is associated with disneylandisation and how technology is a factor in how it transpires.

Technological integration and Disneylandisation

In response to the risk of disneylandisaiton, a study was conducted by Ballofett, Courvoisier and Lagier in 2014 which focused on museum professionals opinions on the risks and opportunities of “edutainment”, an portmanteau term describing a new trend that is a combination of entertainment and education in museums and is considered to be affiliated with disneylandisation. Their investigation was conducted through a series of interviews on topics relating to the concept including; impact of new technologies, the links between amusement park and museum, and the concept of the spectacle event. The findings were varied as professionals from institutions of different backgrounds had opposing perspectives on the topic. Some were accepting and positive, others were more reluctant. However all acknowledged the inevitability of edutainments global presence and development, as well as the need for extreme caution. Their main concerns were relating to the ephemerality of such entertainment based exhibits, as technology develops, new advancements do not stay novel and stimulating for long. Another concern was the possibility of the “spectacular” overshadowing the main focus and the need for balance between technology and the displayed was expressed (Ballofett et al., 2014, p.13). The primary conclusion to the research states that perspectives on whether edutainment affords more opportunities or risks depends on museum preferences in representation; those that are already entertainment and technology based are more receptive of the idea than those which emphasises object based exhibits and representation. The need for more research in general on topic was suggested due to the trends advancement, a special need for visitor’s perspective is also suggested.

Today, while disneylandisation increasing the over exaggeration of culture, the museum effect shows that the opposite way through under-contextualising is not a proficient solution either, this furthermore justifies Greenblatt’s argument for the need of balance between wonder and worth in exhibits. Both the museum effect and disneylandisation concentrates on the materiality of culture, the commodifying and objectification which causes a loss of meaning to produce wonder and entertain. Disneylandisation, however, is a new phenomenon where the integration of technology contributes to its occurrence as described by Balloffet et al. (2014). While many museum professionals recognise the term, it is a vague term which rather describes a movement than a style. Greenblatt’s article is before it’s time and predominantly describes wonder in relation to older styles of exhibits, therefore this is technological version of wonder is an unexplored concept. Technology has changed the dynamic of wonder and in turn has caused a new kind of ramification. As discussed earlier showing the human factors through exhibition design can inhibit the museum effect, however from analysing the literature, there is still some questions about what can inhibit over-wonderisation. Despite this, the term can be associated with Gentry’s article about how the Maori culture was commodified for entertainment, the entertainment and attraction factor is what connects this effect to wonder and furthermore reflects how this new trend is within the same realm as the traveling exhibits of the late 1800’s. Much like Alpers states, the way museums display things forms the impression of what viewers perceive the artifact to be, and therefore Maori performances for entertainment received no further appreciation but for entertainment. The two effects, disneylandisation and the museum effect are primarily formed by a lack of resonance or worth, and while balancing the concepts may be difficult the literature further justifies why it is so important.

1.4 The Evolving Role of Design in relation to Museology

In this section the relationship between museology and design will be discussed as well as a main method of design research

introduced and critiqued. This section aims to further understand the relationship as well as identifying gaps in both design and museology research critical to the approach of the current thesis on wonder and worth. The purpose of the short summary below of literature findings from the two disciplines is to demonstrate designs significance in museology as well as the importance of including the design process in museology research to further expand both disciplines efficiency and application.

Exhibition Design

In their article “Exhibition Design: Bridging the Knowledge Gap” Lake-Hammond & White (2010) have outlined the recent developments of museology and design, how they each are dynamic disciplines which have further intertwined as the both disciplines move towards a user orientated perspective. According to Lake-Hammond & White design, while being a large part of museology since the 1851 Industrial Exhibition, has had little appreciation or attention in museology. Design has evolved through several stages over the last century, beginning with architecture, industrial design and graphic design, and further evolving to more complex orders including systems and experiences (Buchanan, 2004). First beginning in the 1990’s there was a push for more user oriented, culturally considerate representation as stated by the American Association of Museums; “museums can no longer confine themselves simply to preservation, scholarship, and exhibition independent of the social context in which they exist” (1992, as cited in Chang, 2006). Consequently museums had to revise their collection and exhibition processes in order to satisfy the needs of their audiences, first beginning with understanding who their audience was. Design also went through a similar realisation resulting in the current stage of the development which is orientated around the user, not just who they are and what they want, but their experiences of design (Buchanan, 2004; Norman, 1998). Due to these recent developments, design found a respected place within museology, as a collaborative partner rather than obedient craftsmen to the curator as they have been in the past. However, Lake-Hammond & White debates that there is still little in the development and consideration of

design theory and research in museology; “While developments in museum theory, policy and curatorial practice have been subject to much critical analysis, correspondingly little attention has been given to the significance of design, not simply in terms of communication but as part of the wider creative research process necessary to produce challenging new museum exhibitions.” (Lake-Hammond & White, 2010, p.81).

“While developments in museum theory, policy and curatorial practice have been subject to much critical analysis, correspondingly little attention has been given to the significance of design, not simply in terms of communication but as part of the wider creative research process necessary to produce challenging new museum exhibitions.”

- Lake-Hammond & White, 2010, p.81

Multiple sources comment on the late and little consideration of design in museology (Lake-Hammond & White, 2010; McLean, 1999, 2006) however, Lake-Hammond & White’s text appears to be the most informative on designs relationship with museology. Additionally, it is from a New Zealand perspective as in their article they discuss the design features of Te Papa Tongarewa, Museum of New Zealand. While they do argue that design theory and practice has had little attention relating to museology, their analysis of Te Papa Museum was predominantly in relation to architecture rather than exhibition design, which furthermore highlights the scarceness of investigations of design in museology. Now that design has moved from an output oriented discipline to one that is orientated around interactions, processes and inquires, there are increasingly more opportunities for the extension of museology through design methods and thinking. There is a myriad amount of research on museums visitors, from demographic and psychographic information and how different categories of people interact, but little of how this information is demonstrated in context, especially within exhibition design. Therefore there seems to be many gaps in relation to how museology combines with design, this could be because of the different processes and techniques

used by museums today, despite this, there is still no clear representation of designs significance in museology. Even though design has a prominent position in museology there is little in terms of research to signify their union and interconnectedness.

Design Thinking

Design thinking is a solution based method which is particularly used for defining and solving ill-defined problems (Mitroff Silvers, Wilson, & Rogers, 2013). There have been many adaptations of the method, however these methods are all based on Herbert Simons 1969 seven stage method (Dam & Siang, 2017). Commonly, the method refers to the process of design through defining, iterating and executing, however it has been adapted for solving complex problems throughout different disciplines outside of design and is increasingly being applied to business models (Mitroff Silvers et al., 2013; Badke-Schaub, Roozenburg, & Cardoso, 2010). Design thinking has further been adapted to consider human-factors in the process, companies such as IDEO who follow a 5-step model that concentrates on empathy, a key word in recognising the human-element involved in solving design issues (see methodology p.) (Mitroff Silvers et al., 2013; Badke-Schaub et al., 2010). Because of it’s ability to solve ill-defined issues and consider a human-centered approach Mitroff Silvers et al. (2013) applied design thinking to solve a design issue in a museum context. They believe that, while museums have shifted to more visitor-centered approach, they have not adopted suitable processes which enable them to satisfy the requirements of being visitor-centered. Using design thinking will enable them to better respond to their visitors needs and expectations, further enabling the museum to move forward in their developing role in society (Mitroff et al., 2013).

There have been multiple criticisms of design thinking, namely in relation to its universal adaptation and classification as a valid style of research (Badke-Schaub et al., 2010). Design thinking while considered as a research method, it is a process, a way of organising and considering sections of a research question or issue. As considered in this thesis, it should be

supplemented with other methods (see methodologies p.26), such as human-centered design seen in the example above (Badke-Schaub et al., 2010; Mitroff Silvers et al., 2013). This process is successful due to the in depth investigation and solution based approach to solve the issue, rather than just identifying it, as other approaches are satisfied concluding with. Mitroff Silvers et al. mentions that museums have not adopted research approaches that reflect their new structure and instead concentrate on the expertise of staff, visitor focus groups and surveys which “rarely challenge established ideas” (Zaccai, 2012, as cited in Mitroff Silvers et al., 2013). The investigation in preparation for this literature review coincides with Mitroff Silvers et al.’s observation, as much of the research found on museology. While it was visitor-centered, concentrated on categorisation of their identities, there was no further consideration of how this would further help implement in an exhibition context. Identifying the user is the first step, the next is vague and more complicated for museums as visitor expectations evolve. Design thinking is just one of many design methods that could be utilized by museums to further consider the integration of design research and also contribute to solving challenging issues which museums are yet to take on with the shift from object to user. As design is both user and object oriented, it is the perfect medium and method to tackle issues from a solution and iterative perspective.



1.5 Conclusion

Worth can be just as bad as wonder, it can cause wonder in fact, thus our salvation does not lie within worth itself. For example, the traveling exhibitions of culture of the 1800s were indeed focused on wonder but the underlying cause was worth relating to power (Greenblatt, 1991). Even though worth may represent more than the mere appearance and performance of an object, it is the base of what then can be extended and over exaggerated, as seen in the times of 'curiosity cabinets'. It was exaggerated truth to extend wonder and thus the mastery of the collector. As Aplers states about the subject-matter approach; "The products of other cultures are made into something we can look at. It is ourselves, then, that we are representing in museums" (p. 27, 1991). The same thing can occur when it comes to representing objects using only wonder, we are then creating something not as basic as something to look at but rather something to awe at and entertain us. And thus, overshadowing the main point of what is being displayed. Museums then become more similar to theme parks rather than the cultural safe-keepers; they become "disneylandised". It is not necessarily wonder as a whole that is bad but rather what produces the wonder and as soon as that is separate from what is being represented, it is that which causes the purpose is missed. This further supports the need for a balance between wonder and worth of a well-rounded experience. In recent developments of museum technology this is what all designers and curators should be wary of.

This literature review has highlighted key aspects of wonder and worth, its significance, ramifications of imbalance, and, on a different but connected note, it has also highlighted the importance of design in museology. Greenblatt's wonder and worth was compared and contrasted with other contexts to define the term and illustrate its importance in of the representation culture. From these examples themes that relate to wonder include attraction and entertainment, which coincides with the traveling exhibitions of the 1800's, materialism and novelty that relate to 17th century curiosity cabinets. The intangible aspects that are associated with the representation of culture make up including

meaningful and extrinsic experiences, that are inclusive of others and personal. These examples enable a broader understanding of wonder and worth, however, Greenblatt's definition is unclear when trying to define the contemporary representation of wonder and worth, and it is becoming more important to understand this concept as museums are in the midst of a change to technological entertainment based representation. This literature review illustrates the importance of having a balanced experience, as an over-entertained experience leads to disneylandisation, while a minimal representation is unable to represent the cultural value. Therefore, there are risks in created the wrong balance of wonder and worth, and as technology is becoming a more prominent part in exhibition design these risks are amplified (Balloffet et al., 2014; Lake-Hammond & White, 2010). There is an increased importance to understanding how wonder and worth can be balanced, beginning with the consistent elements that are fundamental to producing the effects and defining the current representation of the concept. How technology affects the production of wonder and worth will also need to be investigated to further understand how it is used in current exhibitions. This will allow a more contemporary definition of the concept and a guide for designers to understand how wonder and worth can affect a visitor's experience. As Lake-Hammond & White (2010) states, there needs to be more collaboration between museology and design in order to create an experience that is suitable for today's society and the technological tools now used, this literature review also supports this as there was little connecting the physical representation and literature. This thesis will thus connect the literature on wonder and worth to its current day manifestations in exhibition design to understand how to balance the concept through theory and execution.

This issue is a complex one, it has many positive and negative implications and crosses a variety of fields, therefore an in depth approach needs to be taken to this research. This will be achieved with consideration to the design thinking method, as this process allows problem solving through theoretical and physical means that explores the problem from a solution oriented

perspective (Mitroff et al., 2013). Along with this, connecting the physical design representation with theory and texts is important to close the gap between the physical and literal, therefore textual analysis will dissect the texts to uncover themes that will then be applied to a case study to explore the physical context of these themes. The main concentration will be on how wonder leads to worth in modern-day representation, particularly technological exhibitions as the literature review suggests technology is the new "wow factor". Along with this, connecting the physical design representation with theory and texts is important to close the gap between the physical and literal, therefore textual analysis will dissect the texts to uncover themes that can be applied to a case study which explores the physical context of these themes. Much of the information on new technologies in museums are from online museum magazines, blogs and web pages, therefore analysis will be conducted on these online articles to gain the information. The research that will be conducted is broad and multidisciplinary, it will produce an outline of the wider concept that can be used in various applications. This thesis therefore, is the beginning of an understanding between museology and design and therefore needs a research approach that addresses the broad application of this research such as the basic design research approach (Frankel and Racine, 2010).

Chapter 2 will highlight the research approaches, strategies and analyses, further explaining the methods mentioned above. Chapter 3 to 5 will demonstrate the investigation, while chapter four will outline the main findings and present them in the form of a manifesto. Chapter 3 will look into the evolution of wonder and worth to further define the concept as well as identify the consistent elements the produce the effects. This chapter will concentrate on the themes and information discovered in the literature review to act as a segue and guide into the rest of the investigation. In chapter 4 an in depth analysis will be conducted on the online magazines and website articles to understand common concerns, enthusiasms and suggestions on the integration of technology in museums. This will allow a better understanding of the overall view of the integration of technology

in museums as well as highlight aspects that relate to the production of wonder and worth. Lastly the insights from chapters 3 and 4 will be used to analyse two case studies of current exhibitions; Cooper Hewitt exhibition (2014) and The Scale of Our War exhibit (2015). This will bring together all the information uncovered from the variety of textual mediums in a physical context, allowing further apprehension of how wonder and worth is produced currently through exhibition design approaches. This will result in a renewal of the wonder and worth concept from a contemporary perspective that will guide designers and curators in balancing wonder and worth to create an experience that is both exciting and insightful.

02 | METHODOLOGY

“Design has become a form of inquiry: a way of interacting with the world to investigate the environment in which human beings are directly involved and the surroundings in which they are indirectly involved.” Buchanan, (2004). Design as Inquiry: The Common, Future and Current Ground of Design. P.5

2.1 Introduction

This section describes the different methods I have used to implement the current research as well as why and how they are used to achieve the aims and objectives. Detailed explanations of the methods are presented in order to convey their significance and influence throughout this investigation. The main method used in this research was design thinking and overall the thesis can be defined as basic research (Frankel and Racine, 2010; Mitroff Silvers, Wilson, & Rogers, 2013). Based off the double diamond (2015) design thinking method, I have separated my investigation into two stages; research and definition, and development and deliver. Stage one, research and development, is the largest and most important segment of this investigation which will additionally inform stage two; the development and deliver stage that will result in a manifesto output. The aim for the second stage is to bring together all of the information from the first stage to form conclusions about the topic. The research strategy research about design will be implemented in conjunction with textual analyses and mini case studies to discover

more about wonder and worth through textual and physical information.

My research is both qualitative and quantitative based because of the variety of information collected from past observations, arguments and studies within and out of the disciplines of design and museology. In contrast to the vast information available on museology research that discusses the execution of museology findings and theories, design and physical analysis of exhibits is not prioritized or apparently available, therefore this information was gained through my analyses and a combination of primary and secondary research methods. The access and amount of information available directly influenced the research approach and strategy stated below. This in turn enabled me to achieve my aims and objectives which were to understand the current-day manifestations of wonder and worth in exhibition design and how they contribute to a balanced museum experience.

2.2 Research Questions and Aims & Objectives

1. Define and understand current day manifestations of Greenblatt's Wonder and Worth in exhibition design
 - (a) Define and contrast current and past definitions of wonder and worth
 - (b) Identify consistent elements that are crucial for the production of wonder and worth
 - (c) Understand technology's role in producing wonder and worth and perspectives on its integration in exhibition design.
 - (d) Investigate modern examples of wonder and worth in exhibition design
2. Develop and deliver how to balance wonder and worth using modern technology in exhibition design.
 - (a) Develop and formulate conclusions based off the above investigation focusing on how wonder and worth can be considered in exhibition design and better balanced
 - (b) Deliver these conclusions in the form of a manifesto

2.3 Research Approach and Strategy

This section illustrates how and why particular methods are used, including the research approach; Basic research, and strategy; research about design.

Research Approach: Basic Research

This approach was informed by Frankel and Racine's 2010 article "The Complex Field of Research: for Design, through Design and about Design". In this article a summary of various well known design research approaches and strategies are compared, contrasted and explained to cohere different design research methods together and how they can be used. Frankel and Racine assure the most appropriate approach for this investigation comes under the "Basic Research" category first undertaken by Buchanan in 2001. According Frankel and Racine, Buchanan describes basic research as primarily considering fundamental concepts of design and further aims to extend these concepts to develop theories which contribute to the evolution and expansion of the design discipline (2010, p.4). Archer and Cross also suggest that this type of research is often a combination of two disciplines and concentrates on the application of design

within the other discipline (Archer, 2002, Cross, 2007, as cited in Frankel and Racine, 2010, p.4).

Building on this, the thesis considers the application of design in museology and aims to allow appreciation of how design decisions affect museum experiences. Thus this research can be characterized as basic research as it is both an extension of design and an exploration of two disciplines. This means that the research will contribute to the understanding of how design influences experience and further seeks to communicate how it can also be used to solve the ill-defined issue of balancing wonder and worth. Basic research is not only a categorisation but allows a focus on an end goal and understand how this research will contribute to the overall body of work on exhibition design.

Research Strategy: Research About Design

In their article, Frankel and Racine proceed to pair research approaches with research strategies which were informed by past literature (2010). The research strategy that pairs with basic research is called "research about design" as opposed to research through and for design. Research about design is multidisciplinary and was described by Buchanan as being a "design inquiry" of the experiences of designers and users (2001, as cited in Frankel and Racine, 2010).

The strategy is about discovering how design creativity, thinking and knowing works to further find solutions to design problems (Frankel and Racine, 2010). Research about design is largely based on literature and explores what has already been investigated to reapply or reiterate knowledge and theory.

This thesis endeavors to identify practice that enables a balance of wonder and worth, as well as an explanation of the concepts increased importance and design's role in the topic. This method will be used in the research and definition stage, and further informs the main framework output. The appropriateness of this method is apparent as this investigation is problem based and theory based. Much of the resources available on the topic were found in past literature which is also endorsed through the basic research method.

Because of my background in psychology and experience with psychology research methods I was drawn to the research for design strategy, as this systematic, clinical approach is what I am most familiar with. However, this research strategy was unsuitable for my investigation because of the large body of work already available on museology and the abstract nature of the concept of wonder and worth which is hard to measure clinically. Thus, the most appropriate strategy was research about design, as I could then take advantage of the literature that is already available and allow this to influence the direction of my work. Once I had made this decision, the research process became much more clear and allowed me to progress further.

2.4 Design Research & Structure

While this research is research about design, a research structure is also required to achieve the aims and objectives which need to include the definition and exploration of the issue under investigation and also a problem-solving element to conclude the research. The two stage structure mentioned earlier will be informed by the design thinking process defined and explained in this section.

Design Thinking

Design thinking is a solution based methodology that was first outlined by Herbert Simon in 1969,

the method describes the thinking process of a designer which is usually intangible as the product is often the only result of the design process (Cross, 2001; Dam & Siang, 2017; Badke-Schaub, Roozenburg, & Cardoso, 2010). Because of its ability to solve ill-defined and complex problems this method has been applied to many different contexts including business models (Dam & Siang, 2017; Mitroff Silvers, Wilson, & Rogers, 2013; Badke-Schaub et al., 2010). While there a variety of different adaptations, the methods that I researched had at least two defined sections; one that concentrates on research and understanding the task, and the other on the creation of a product or solution based off the insights from the investigation. One model that repeatedly emerged throughout my research was the "Double Diamond model" (Mitroff Silvers et al., 2013). I decided to concentrate on this model as my research suggests that it is widely used and well known, and therefore reliable (Mitroff Silvers, et al., 2013). This model is also able to accommodate what is required to satisfy my aims and objectives which includes consideration for the defining and theoretical elements as well as the physical application of my research.

Figure 1. Double Diamond model (The Design Council, 2015)

The Double Diamond

The Double Diamond model is a versatile process that could be applied generally to different topics and research. In the first section the steps are "discover" and "define" to gain insight into the problem, and in the second section the "develop" and "deliver" steps use the information from the first section to solve the problem through producing solutions. The diamonds' purpose is to show the scope of research which broadens then narrows at each new step and where the diamond corners meet is the result or reflection from the previous section (Dam & Siang, 2017).

This model, while general in some respects, offers more information in terms of how each step interacts with one another as well as showing the flow and journey of the research. The design thinking process is an important method in this research as it not only creates a structure but allows a full exploration of the theoretical and physical manifestations of the wonder and worth concept and related implications. The double diamond method is what I followed throughout the investigation as each chapter coincides with each step (see Figure 1.). The design

thinking process satisfies what is needed to achieve the aims and objectives as it is a solution based process that defines and solves ill-defined issues, which is what the wonder and worth argument is. The sections on discovering and defining provides a better understanding of wonder and worth which allows me to infer how to solve the issue of how and why they should be balanced. The definitions will later be further applied to a physical context to understand how to balance the concepts. Thus, this process basically satisfies the aims and objectives, however particular methods of analysis are required to completely satisfy the aims and objectives (see Analysis section).



2.5 Procedure

In this section the structure and procedure of the investigation will be explained and connected to the aims and objectives. I have chosen to show these processes through diagrams which were inspired by the double diamond . These diagrams show the relationship each stage has with the aims and objectives and the research approach and strategies, as well as which chapters they can be found.

Structure of the research:

This diagram describes the structure of the current research which is based off the Double Diamond model. The literature review discovers the issue through investigating the concept, ramifications and gaps. Chapters 3 to 5 defines the issue by clarifying current-day definitions, understanding technology's role and investigating the concept in current exhibitions. The next stage is the develop and deliver stage, its purpose is to segue into further investigation for future research as well as acting as a guide for curators and exhibition designers. The develop step will bring together the results to formulate conclusions on how to address the issue, while the deliver step will implement these findings into a manifesto, this to encourage consideration of balancing the concept in further research and application in exhibition design and curation.

Procedure

This diagram shows how each stage will be implemented throughout the thesis. Beginning with the literature review, main themes and gaps were identified that determined the rest of the investigation. To further investigate what was learned in the literature review, in chapter 3 a thematic analysis will be conducted to unite themes from the literature review and historical overview (Evolution p.). This will allow a more in depth definition of the wonder and worth concept by identifying consistent main elements that are fundamental to the concepts production. Using the findings from the previous chapter, chapter 4 will investigate technology's role in current productions of wonder and worth along with opinions of technology's integration in museums through a narrative analysis

will allow a more in depth definition of the wonder and worth concept by identifying consistent main elements that are fundamental to the concepts production. Using the findings from the previous chapter, chapter 4 will investigate technology's role in current productions of wonder and worth along with opinions of technology's integration in museums through a narrative analysis. Chapter 5 will investigate these findings further by applying them to current case studies and exhibition design approaches. Once the define stage is complete, the findings will be accumulated to develop summaries based from what was discovered throughout the investigation as well as determining how this information can aid in the balancing of wonder and worth. To deliver these findings in the final stage, they will be presented in the form of a manifesto which combines the findings from the investigation and the personal design perspective of the researcher to aid curation and design of wonder and worth in the future. Lastly, the investigation will be concluded and assessed by discussing the findings future applications and implications.

2.6 Analyses

A note on the texts used: This thesis includes a combination of scholarly sources and online sources which are particularly used in the 5th and 6th chapters. While these sources are not scholarly they provide credible information that are directed for museum professionals and designer's consolidation. Therefore overlooking these sources would neglect potential important insights as these sources provide including professional opinions, information about new technologies used in museums and possible solutions to design problems. This information was exceedingly difficult to find using scholarly sources, and therefore the online texts provide the most informative and up to date information on new technologies in museums.

Textual Analyses

The textual analysis method is used to analyse and interpret texts to further understand the author's perspective and key points from the structure, the words used and narrative of the text (Frey, Botan, & Kreps, 1999).

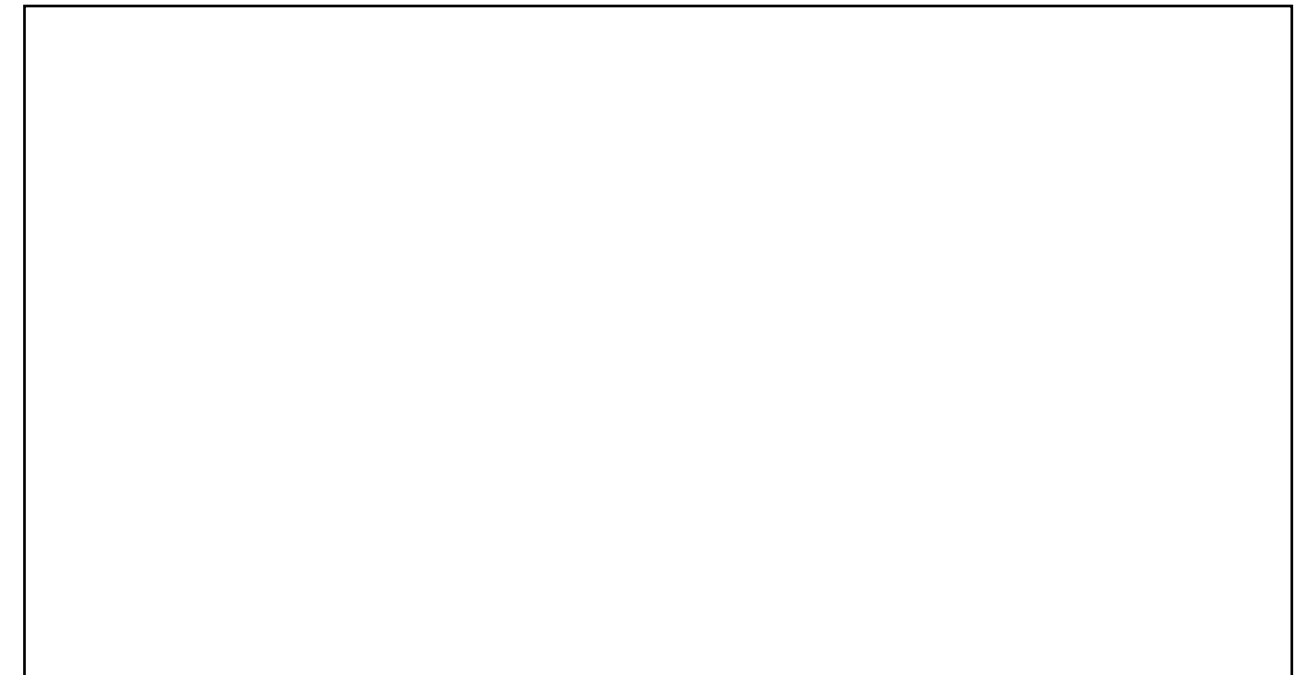


Figure 2. Current Research structure inspired by the Double Diamond model (By Author)

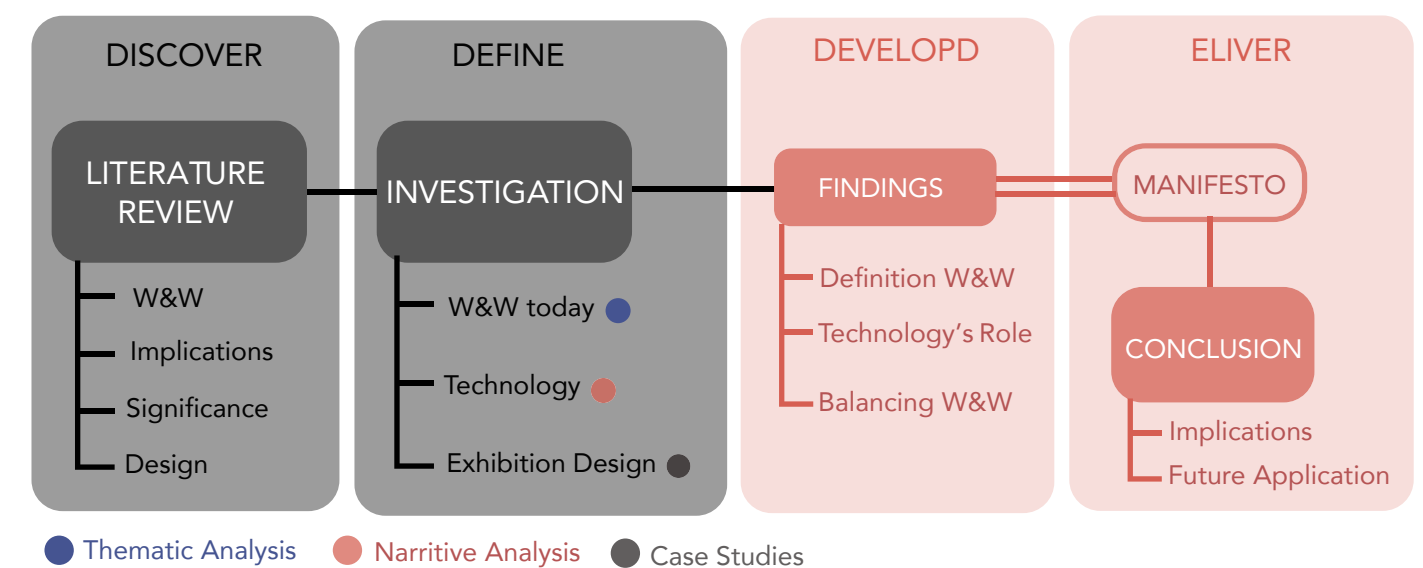


Figure 3. Current Research procedure (By Author)

Textual analysis enables me to break down and compare texts as well as find common themes that are significant in defining wonder and worth as well as understanding perspectives on the topic. The analyses in this thesis are used in two different ways; to compare and connect themes together; and to compare negative and positive connotations to understand significance and varying perspectives.

Thematic analysis

Thematic analysis is a qualitative approach used to interpret the most important themes through identifying them within statements in the text (Schwandt, 2007). This method was chosen as the main method of analysis because of the variety of different sources and mediums the information came from in the discovery and definition stage of the process. The method is used to analyse the themes from the literature to further to define wonder and worth and identify its main elements. The themes definitions are also important in order to understand what significance each theme has. A visual representation of the themes is created to observe the relationships between themes and unite common terms (Figure 6,7.).

Content Analyses

Content analysis is a quantitative form of textual analysis which organises different elements in a text systematically to measure the significance of particular meanings or statements presented by the author (Chandler & Munday, 2011). This method is used to understand the author's perspective and what they believed to be important on the topic of technological integration. This method is particularly used for the analysis of the magazine and blog articles, as the purpose of the investigation is to understand and contrast authors views which can lead to my further understanding of the impact of technology in museums and its relation to wonder and worth. This will result in a quantitative visualisation of the themes and tones that will bring together diverse and copious information (Figure 8,9,10.).

Mini Physical Case study

A mini case study will be conducted on two exhibits; Te Papa Tongarewa's "Gallipoli: The Scale of Our War" and Cooper-Hewitt Smithsonian

Museum of Design's "collection pen". This mini case study is based off Fusch, Fusch & Ness's (2017) guide to ethnographic case studies, in particular the mini ethnographic case study which was produced for students who are limited on resources. The mini ethnographic case study is a focused study that seeks to understand, define and interpret phenomena qualitatively, within a small scale (Fusch et. al, 2017). The case study concentrates on the physical exhibition environment rather than an ethnographic one, therefore appropriate elements from Fusch's et al.'s description that best achieve the aims and objectives will be included in the study (Fusch et. al, 2017). These elements include using the direct observation method and field notes which are fundamental to the study. Direct observation involves the observer, in this case myself, acting as "the research instrument and becomes the data collection instrument" (Fusch et. al, 2017). The research will be collected and analysed by my interpretation and perception. This will be achieved through a combination of personal experience and online information from the museum's websites, where "in-person" experience is not possible (i.e. the Cooper-Hewitt exhibit), online videos and text will act the main source of information. As stated by Fusch et al., there are some limitations of this approach as there is no separation of the observer's personal perspective and data collected. The definitions produced from the literature on the elements of wonder and worth is informed by multiple different sources and therefore can act as a mitigator. This will separate my personal opinion and keep the investigation focused on answering the aims and objectives. The second method is orientated around physical representation and documentation. This will be achieved through photography and personal notes, more on photography will be explained in the next section. This case study will act as a bridge between the literature, online information and physical context, to not only answer the aims and objectives but also unite different mediums of information as this thesis aims to achieve. This method is the best approach because it can be used to answer the "how, what or why questions" and allows an in depth investigation through a physical, qualitative perspective that further achieves the unification of the literal

and physical as stated previously (Fusch et. al, 2017).

Photography

A key part in connecting the literature and physical concepts is photography, as stated by Blanchot (1999, as cited by Makela & Routarinne, 2006, p. 145), "photography allows the thinking to go beyond its emphasis on literature". Photography in this investigation will be used in the case study to provide context and allow a visual apprehension of the topics as well enable visual identification of different exhibition design methods (Blanchot, 1999, as cited by Makela & Routarinne, 2006). While photography plays a small role in the analysis, it creates a new dimension to the text and concepts investigated.

The Design Manifesto

A manifesto will be the product of the investigation following the accumulation of the main findings. This is an important element to the purpose of the thesis as it informs future research and combines both personal perspective and the main findings from the investigation. A manifesto is described by Forster (2005) as "a public declaration of principles or beliefs, and its often aggressive presentation can bear on politics, religion, philosophy or the arts." While this is a broad definition to describe the term, a design manifesto is more specific that are used "to define designs role in practice, theory and education" and "creates awareness to prompt designers to reflect on their approaches to design process and practice" (Park, 2006, p. iv). This definition is more representative of the manifesto that will be produced at the end of this thesis as it will communicate the findings that place design within theory and prompts designers to reflect upon process in exhibition design. Overall, the manifesto will act as a guide for museum professionals and exhibition designers consider the implications new technologies could have on a visitors' experience. The manifesto is an accumulation of the literary research, observations and analysis conducted in the thesis and it will unite museology and perspective that further achieves the unification of technology in exhibits.

2.7 Conclusion

Design research produces in depth investigations into complex problems which enables comprehensive framing of the issue and takes a solution based approach to solving it. An important part of this research is to define the issue in a contemporary context and relate the theory to physical design. The literature review demonstrated the possible implications of imbalancing the concepts as with the current shift it is becoming more important to understand the concept in order to create a balance. If this is not achieved this can implicate negatively on the communication of cultural values and ideas. The wonder and worth term is a theory that describes experience, but it can also be linked to physical aspects, therefore it is important to define the concept in both physical and literal contexts. The basic design research approach and the research about design strategy facilitates this as they concentrate on multidisciplinary exploration of literature and further directs towards application in the physical design. While the approach and strategy categories and guides the research, other analyses are needed in order to implement it. Therefore a combination of textual analyses and miniature case studies will allow definition of the concepts within both theoretical and physical contexts. From this approach, different mediums will allow a broad understanding of current-day wonder and worth. This will result in a manifesto aimed at curators and designers to create awareness about the effects of wonder and worth and facilitate future technological exhibition design.

03 | EVOLUTION

To fully define wonder and worth, firstly this chapter will compare and contrast how the definitions of wonder and worth have changed over time. The current shift of museum practices and how it has influenced design will also be described to acknowledge its role in the evolution of wonder and worth. A textual analysis of the literature review will identify factors that contribute to past and current understandings of wonder and worth to further define the concept. Principally, this section will apply wonder and worth to specific exhibition design styles to analyse how they are produced. With this knowledge greater appreciation of wonder and worth's contribution to exhibition design will be revealed. This will provide a platform to further discuss the concept in current technological applications in exhibition design.

3.1 Evolution and Development

In this section, the evolution and development of wonder and worth is explored. The understanding and application of the concept has changed over time but there are consistent factors that contribute to its influence in exhibition design. By framing an overview of wonder and worth's contributions to museum history, this chapter will begin to bring together the contemporary and historical understandings of wonder and worth to ratify their importance. The evolution of wonder is directly linked to the shift of the museum from object to visitor orientated, and as visitors want to experience more wonder, museum professionals are struggling to provide a balanced experience. Worth is very hard to define and produce since it is felt differently depending on an individuals

perception. Greenblatt proposes that exhibitions begin with an "appeal to wonder, a wonder that then leads to the desire for resonance" (1991, p.52) in some cases however, wonder does not lead to worth, and this is the underlying issue for museum professionals today (Greenblatt, 1991).

The Private Collection: Mastery, Prestige and the Collector - Mystical Exhibit ("cabinets of curiosity") (17th century)

In his article Greenblatt references the beginnings of the constructed exhibit; namely the private collections of the late Renaissance. He defines this early example of wonder and worth in reference to prestigiousness. Inducing the visitor to experience wonder was a tactic to endorse mastery and magistracy of the collector (Greenblatt, 1991). These collections made the collector seem powerful and knowledgeable which furthermore influenced the viewer's impression of the collector. There was also an element of exclusiveness about these collections as visitors of this time were mainly dignitaries and ambassadors. Some of the exhibits were known as curiosity cabinets and consisted of items from unknown lands which were scientific and anthropological in nature (Schwarz, Berton, & Frey, 2006; Smithsonian Institution Libraries, n.d.). While they were owned by kings or aristocrats, some belonged to high-class educators like Ole Worm. Worm was a doctor and professor of natural philosophy in Copenhagen in the mid 17th century, his collection is a classic example of the curiosity cabinet (see Figure 5.) (Smithsonian Institution Libraries, n.d). In these early times of exhibiting,

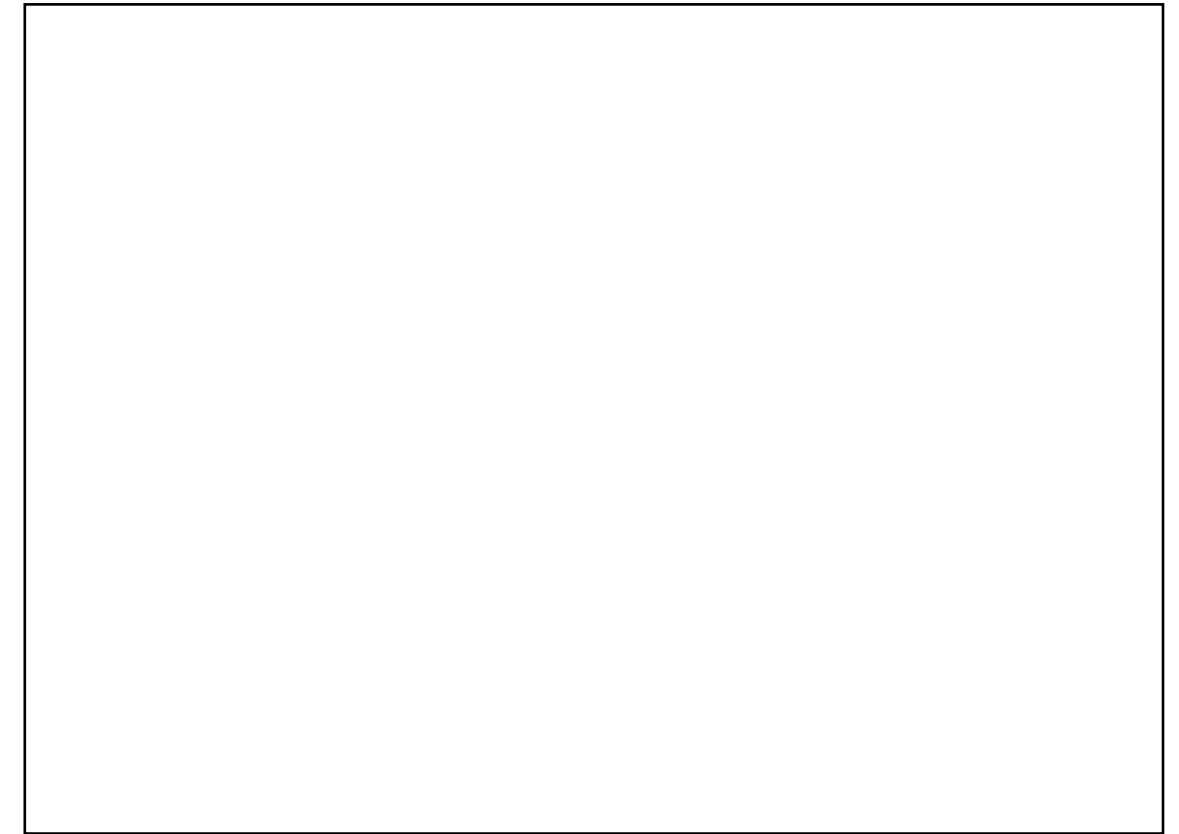


Figure 4. Ole Worm, Natural Philosophy collection (1588-1654) (Smithsonian Institution Libraries, n.d.)

mastery and exclusivity had a large effect as the exhibits were as much about showing items they were about possessing them (Greenblatt 1991, p50). One could conclude that wonder was also only meant for those worthy of impressing, as wonder was used to boost the collectors' prestige, mastery and magistracy. Therefore the worth produced from these exhibits were associated with how the viewer felt about the collector. Today this concept is still expressed in some form, as Greenblatt identifies, in modern art museums, where collectors are both praised and renowned for their collections (1991). In the 17th century some of the wonders were fabricated; creatures that were sewn together to give the effect of an exotic monster. While today modern art collectors endorse "uniqueness, authenticity and the visual power of the masterpiece" (Greenblatt, 1991, p51) in their collections. Therefore the mastery of the private collector has evolved from one that was oriented around wonder to one that concentrates on authenticity.

The Public Collection: The Modern Museum - Systematic Exhibit (mid 18th to mid 20th century)

This is another version of wonder that Greenblatt acknowledges as induced by the physical representation of the objects and how they are displayed. In contrast to the earlier example, this kind of display exists mainly to be viewed rather than possessed, thus changing how and why wonder is used (Greenblatt, 1991). The Modern Museum formed these public exhibits, which were primarily based off the European model, and therefore largely informed by a Westernised perspective (Hooper-Greenhill, 2000). Hooper-Greenhill (2000) defines the Modern Museum as the common stereotypical idea of a museum, one that is encyclopedic and anthropological, full of "dusty" cabinets and monolithic perspectives (Hooper-Greenhill, 2000). While this style of museum is now considered predominantly as outdated, in the 19th century, at the height of their existence, these museums were seen as influential (Hooper-Greenhill, 2000). Greenblatt (1991) refers to one of the display methods of



Figure 5. Example of display, Gallipoli (By Author, Te Papa, 2017)

the modern museum as the 'boutique lighting' display. In these displays the object is spotlighted by a pool of light that creates a 'surreal' effect in which the light seems to be emitting from within the object itself (Greenblatt, 1991, p.49). This style correlates with the systematic display style predominantly used in the Modern Museum of the 19th century in which artifacts were organised and were often encased in glass and placed on pedestals (Schwarz, Berton, & Frey, 2006). Greenblatt (1991) suggests that this kind of display was used to extend wonder and further influences the desire for acquisition and possession by the viewer. This is a similar technique to what is used in stores windows (Greenblatt, 1991). This produces another form of worth, one that is orientated around the larger meaning of acquiring such an object of value. The way that these objects were displayed makes them intangible as they were meant for the eyes only, this further induces the want to interact and possess the object (Greenblatt, 1991). The pool of light, the glass case and pedestal transfers the majesty, once acquired by the collector, onto the object itself. And thus, wonder and worth becomes not of that relating to a person, but of the qualities, craftsmanship and materials of the object. (Kratz & Karp, 1993). Without further context the object no longer represents the culture it originated from but the Westernised view of it as a commodity, a trophy of or tourist attraction. This relates to Alpers' (1991) and Gentry's (2015) grim perspectives

on the past representation of culture, who who emphasised the need for the viewers' voice to be heard for true worth to be recognised.

The Public Collection: The Post-Museum - (mid 20th century to today)

The Post-Museum era is considered to be the current period museums are in today. While there are still remnants of the modern museum in many exhibitions, the post-museum era is one of experimentation and exploration (Hooper-Greenhill, 2000). As described by Hooper-Greenhill (2000) the post-museum was established in reaction to the Modern Museum not accommodating the needs of the viewers due to the monolithic, authoritative and westernised perspectives. Hooper-Greenhill expresses her hopes for the developing style as one that will encourage diverse perspectives, the involvement of the community and representative of people behind the stories (2000). To achieve this the Post-Museum uses many different mediums to communicate ideas and intern seeks to allow the viewers to construct their own perspective and opinion (Hooper-Greenhill, 2000). Hooper-Greenhill stated that "the great collecting phase of museums is over" (2000, p.152). Because of the intangible nature of the content, multi-media technologies such as film and photography have been employed to create the additional visual components of the exhibits. Interactive technologies such as iPads have also been incorporated to enable a more

interactive experience which is what lacked in the modern systematic style exhibit (Hooper-Greenhill, 2000). Unfortunately, Greenblatt's argument about wonder and worth does not go beyond the modern exhibit, therefore this investigation must look further into the literature and observe wonder in context to understand how it is now represented in current exhibitions. Based on Hooper-Greenhill's explanation of the Post-Museum there may be many different forms of wonder and worth due to the variety of exhibit mediums. Some of these versions will be of that relating to the modern exhibit still seen in museums today, however other new forms relating to technology are not considered by Greenblatt's explanation.

The comparison of all three types of museums makes it apparent that the way wonder has been produced and the style of the exhibit are interdependent, as wonder influences the perception of worth. With the shift of focus from the tangible to the intangible, wonder has not been orientated around the object, but the representation of intangible stories and experiences. Technologies such as film, sound effects and photography are most successful in communicating these 'intangible collections' (Hooper-Greenhill, 2000). To further understand wonder and worth today, it is important to understand how and why the museum exhibit has developed and further understand the role of technology. The next section will further explain the shift that from the Modern Museum and the Post-Museum which, with the integration of technology, is still evolving today. The role of design in this shift will be described.

3.2 Wonder & Worth and the Shift

'The shift' refers to the phase when museums shifted from being object-orientated to visitor orientated. It was the birth of the new, people orientated Post-Museum (Hooper-Greenhill, 2000). In particular for New Zealand, this process first began to progress with the 1986 Te Maori exhibit encouraging new systems behind exhibitions such as community and iwi collaboration (McCarthy, 2011, p. 63). As stated by the American Association of Museums in 1992; "Museums can no longer confine themselves simply to

preservation, scholarship, and exhibition independent of the social context in which they exist" (AMM report, p.8 as cited in Chang, 2006). This request pushed for more consideration and appreciation of the social, cultural, economic, gender and ethnic diversities of their visitors. This further complicated the exhibition design process but was necessary for the museum to coincide with the prevailing developments and progress of society in order to stay relevant to their visitors. (Chang, 2006; Skramstad, 2007). As museums began responding to their visitor's requests, the museum-visitor relationship had positive impacts for the museums 'revival' and consequently led museums to concentrate on mass education and entertainment (Chang, 2006; Hooper-Greenhill, 2000; Mitroff Silvers, Wilson, & Rogers, 2013).

As with any change, some museums were sceptical and were reluctant to change the traditional Modern-Museum ways to this day there is still some resistance (Hooper-Greenhill, 2000). As with this change comes a re-definition of the museum's place in society, along with the museum's beliefs, message and goals (Skramstad, 2007). It is important to adapt to these changes as the museum risks becoming obsolete if they do not prioritise their visitors' experiences. This shift has also prompted a change in exhibition style, from the Modern Museum systematic display to the Post-Museum multi-media display. The current phase into the Post-Museum display is a significant one because of the change in medium to technology, resulting in shifting the focus away from materialism to intangible experiences (Hooper-Greenhill, 2000; Skramstad, 2007). Objects are becoming a secondary focus because of the use of technology, where stories and memories are now more important.

Now that there is an emphasis on the intangible, 'experience design' has become an important factor in the exhibition process, where experience is key to the exhibition rather than viewing (Skramstad, 2007). As Lake-Hammond & White (2010) suggest, this is why design is becoming more important, as it is not about how things look, but how people interact and feel that contributes to the communication of a display. Because of this new found reliance on design, it is required that exhibition design and museology

become more intertwined and collaborate (Lake-Hammond & White, 2010). Technology has been a large part of this change as it allows new ways of representation in exhibition design. However, there are many arguments about the use of technology museums, because of the risks such as seen “disneylandisation” (Balloffet et al., 2014). As the shift has caused a change in exhibition design and display, it has also caused wonder and worth to evolve. In the Post-Museum, wonder is a major focus. However, there is still want for the communication of worth as the cultural values of the Post-Museum is an important factor that informs the intent of an exhibit (Hooper-Greenhill, 2000; Bitgood, 2011). While the production of worth is the main goal in many exhibitions, it can sometimes be lost or overshadowed, and as wonder has become a more crucial aspect of an exhibit. The shift initiates the new versions of wonder and worth, the next section seeks to identify key elements that produce different kinds of wonder and worth.

3.3 Literature Theme Analysis

This section will analyse the themes produced by the literature review and the previous section to understand the different elements of wonder and worth. This will reveal how wonder and worth are related which will allow a better understanding of how to lead to worth from wonder as to create a balance as suggested by Greenblatt. Analysing the themes will also uncover consistent elements that make up the concepts, further allowing more definition and understanding. This information will be used to define wonder and worth as well as discovering and understanding the different versions of the concepts.

Below are the themes which were uncovered in the literature review, each main theme coincides with sub themes and with either wonder or worth. The themes will be described, defined will and contrasted in a visual textual analysis (See Figure 6. p44).

Worth

Worth has fewer themes than wonder but more sub-themes that make up the main theme. These include; Meaningful/Extrinsic, Inclusive and personal. As suggested by the themes worth is

internal, meaning it occurs within once prompted. It is a personal realisation which makes it hard to define as it is different for everyone.

Meaningful/Extrinsic

This theme relates to what worth is; including value and significance; the outer meanings and extrinsic associations with the experience. Understanding is the result of realising the greater context and meaning,

Inclusive

Inclusive refers to how people associate the meanings to others and their understanding of others. Bi-cultural thinking refers to some kinds of exhibits, where the other sub themes (Human experience, Respect, Perspectives and Recognition) are more general associations that people realise.

Personal

This refers to personal realisations and implications of worth, how something could be related to the viewer personally which further induces feelings of resonance and worth. This theme is static as people interpret things personally, however, this also complicates worth as people interpret and connect to things differently, so while it may not change for one person, it is dynamic inter-personally.

Wonder

Wonder has five main themes; Attraction, Entertainment, Materiality, Exclusivity and Novelty, all of which are associated with the types of wonder explored in the literature review, but also represent the different elements associated with wonder. Each of these themes includes smaller sub-themes that contribute to the overall nature of the main theme. One main observation from these themes indicates that wonder is externally produced, therefore it is formed by an external stimulus or source.

Attraction:

Attraction is associated with the spectacle, excitement and further entices and attracts people’s attention. This element could also be referred to as the wow factor and is a crucial part of wonder.

Entertainment:

Entertainment is to do with engaging the audience, and there are different ways that this can be done. The sub-themes that show this include; fun, recreation, fantasy and

Figure 6. Literature Review Themes

WONDER:
External

Attraction

Spectacle
Exciting
Enticising

Entertainment

Fiction
Fantasy
Recreational
Promotion
Fun

Novel

New
Exotic
Dynamic/Ephemeral

Materiality

Commodity
Possession
Intrinsic Features
Objectification

Exclusivity

Desire
Private
Prestige
Mastery
Power and wealth

WORTH:
Internal

Meaningful/Extrinsic

Value
Greater meanings
Understanding
Significance
Outer context

Inclusive

Bicultural thinking
Human experience
Respect
Perspectives
Recognition

Personal

Meaning
Proud
Knowing
Relationship
Connection
Internal
Identity

fiction. The promotion sub-theme refers to what it can be used for. Entertainment is closely linked with attraction, but is the next phase of interaction as it is a product of the first initial engagement.

Materiality:

This theme is related to how wonder is produced and relates to one particular type of wonder that is associated with objects. Intrinsic features refers to the “what” that attracts and engages the audience, while commodity and objectification is a result of the concentration of materiality. Possession relates to the viewer, as this is the product of the wonder.

Exclusivity:

Like materiality, exclusivity relates to how wonder is produced and is a different type of wonder. It is also related to attraction as desire to view enhances the want to be involved and influences the want to view. Mastery, prestige and, power and money, are more associations with the type of wonder, they are the perceived inferences about the collector.

Novelty:

This theme also relates to attraction and entertainment, while it could be a version of wonder alone, it is still a main element of wonder as a whole. This refers to something new, or exotic, that draws people’s curiosity and leads them to want to know more. However, as the theme suggests, this curiosity is short lived when there is no novelty or newness about the attraction anymore, therefore it is ephemeral.

Themes from Evolution Section

The themes below represent the themes and keywords which relate to the Evolution section, where themes are bold and keywords are in a light font.

The Private Collection: Mastery, Prestige and the Collector - (17th century)

possession, presentation, **mastery**, **majesty**, **exclusivity**, **private**, public, **prestige**, collector, **power**, **knowledge**, **education**, **authenticity**, **fame**.

The Public Collection: The Modern Museum - Systematic Exhibit (mid 18th to mid 20th century)
possession, presentation, **mastery**, **majesty**, **exclusivity**, **private**, public, **prestige**, collector, **power**, **knowledge**, **education**, **authenticity**, **fame**.

The Public Collection: The Post-Museum - (mid 20th century to today)
public, **power**, **knowledge**, **education**, display, **viewing**, **intangible**, **technology**, **stories**, **songs and memories**, **multi-media**, **visual components**, **interaction**.

Some of these themes correlate with the sub-themes presented from the literature review, while others are new. Analysing the themes from this section allows interpretation of how wonder and worth is placed within a context, especially how they relate to the physical features that are associated with the types of museums. The next section will visually analyse these themes to further understand how they relate to each other; this will allow recognition of different versions of wonder and worth as well as the consistent factors that make up the concepts.

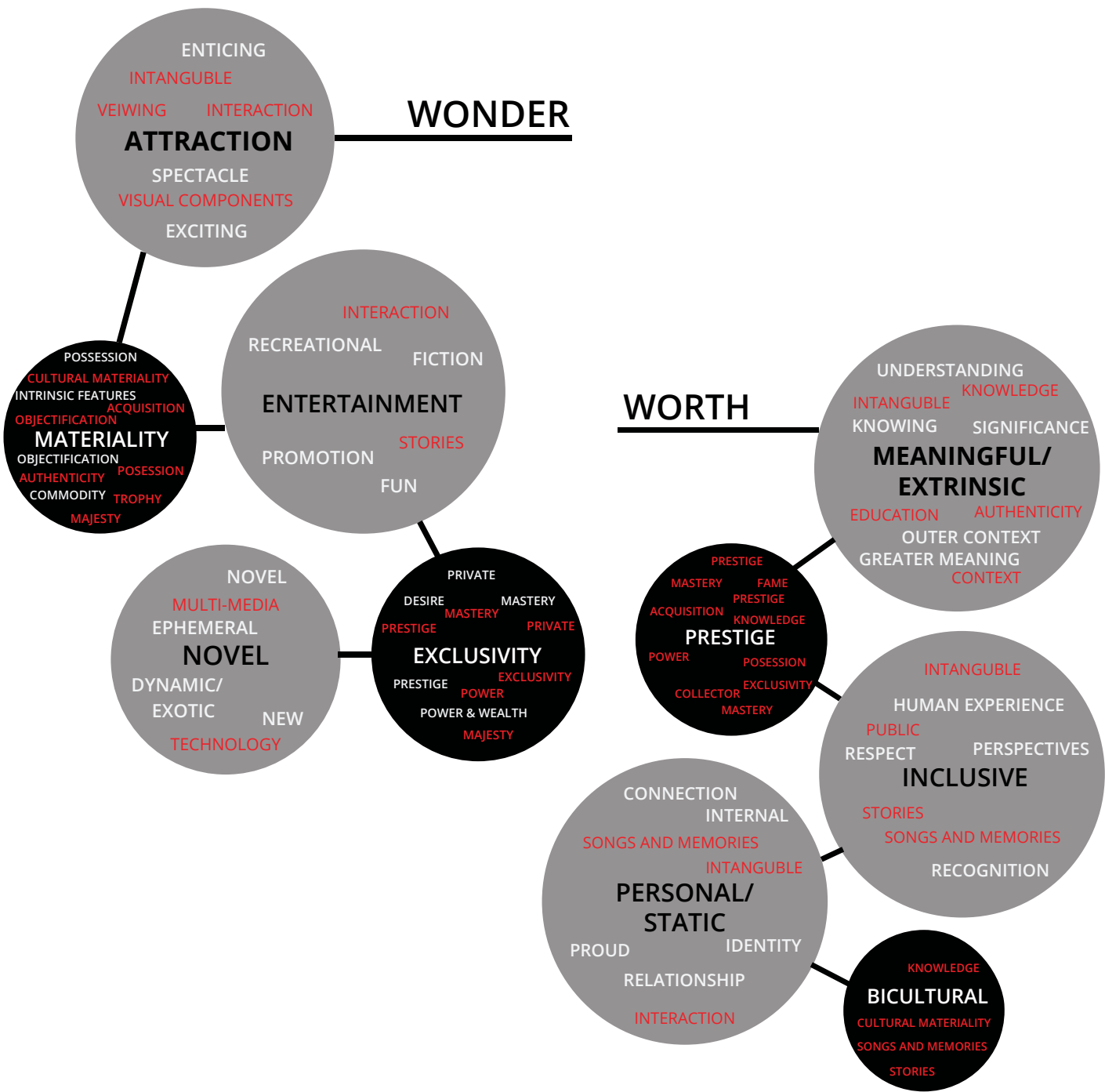


FIGURE 7. THEMATIC ANALYSIS ILLUSTRATION

This analysis is a visual representation of how the themes from texts (Greenblatt, 1991; Hooper-Greenhill, 2000; Schwarz et al., 2006) relate to one and other, as well as displaying the elements that make up wonder and worth. Within the circles, there is one main theme, which is in a larger font, and smaller sub-themes. The sub-themes were ordered depending on which main theme they related to most. The white text represents the themes identified in the literature review (refer to Figure 6.), and the red sub-themes are from the evolution section (3.1). These are repeated if they related to multiple main themes. The circles indicate whether the theme is a consistent element or a version of wonder and worth. The large outlined circles represent the consistent elements, which are themes that were identified as being common and consistent throughout the different exhibitions styles. The black circles are the versions of wonder and worth which are more specific certain types of display which can occur independently from each other but still relate to the consistent factors.

Wonder

From this analysis, the most prominent themes that related to wonder are attraction, entertainment and novelty. These themes are consistent, despite the style of display, unlike the materiality and exclusivity themes which came from the production of wonder described in relation to the curiosity cabinets and modern display. Therefore, attraction, entertainment and novelty can be identified as the main elements that produce wonder, as they are consistent throughout the examples. Exclusivity and Materiality relate to one type of exhibit, therefore they are single versions of wonder. All of the themes relate to the different designs of a display, thus wonder is produced by physical characteristics such as the 'boutique lighting'. The physical display is the main influencer in the production of wonder.

Worth

The most prominent themes relating to worth were the meaningful, inclusive and personal themes. These themes are associated with the general interpretations of the production of worth. Greenblatt describes worth in reference to the understanding of the wider meanings surrounding an experience (1991). Therefore meaningfulness is innately a contributor to the production of worth. The personal and inclusive themes extend this understanding as empathy was shown to prompt reflection of the wider meanings. The Prestige and Bi-cultural themes are also versions of worth as they are directly related to the content produced from types of exhibits. Overall there is one constant element of worth that unites the themes, which is human connection, the ability to think about the wider meaning in reference to themselves and others. Therefore worth is produced when the visitor is able with empathise and connect to others' experiences.

With observing the versions of wonder there is an unmistakable link to worth; the version of worth that is related to prestige. Prestige refers to how wonder makes the viewer feel about the collector or item 'on display'.

Therefore, the worth is produced is a version that is orientated around the wider meanings of acquisition that is attributed to the collector. This

shows that wonder influences the kind of worth that is produced. Therefore wonder can prompt certain meanings when it is highlighted and promoted through using wonder.

From this analysis, it is clear how different wonder and worth are, however, this does not mean that they are not related. They are two different steps within a larger process of understanding, therefore, they are both important to have within a exhibit. Overall, the findings indicate that:

1. Wonder is produced from the physical stimulus of the display
2. Worth forms from wonder
3. Worth is an internal process and is influenced by understanding the human experience through connecting people and prompting empathy.

3.4 Chapter 3 Conclusion

To conclude, this section first begun investigating how wonder and worth have evolved from the private and prestigious collection to the post museum and the inclusive exhibit. The private collection used wonder as a way of making the collector seem more powerful, and therefore produced another form of worth (Greenblatt, 1991). The modern exhibit used wonder in a different way through 'boutique-style lighting' which transformed cultural objects into art (Alpers, 1991). While this led to worth, it was intertwined with the want for possession. Therefore it did not lead to a worth representative of the cultural meanings but the objects' characteristics. From this overview of the history, the thematic analysis uncovered a link between wonder and the physical exhibit and worth with human connection.

As Greenblatt stated, exhibitions should begin with an "appeal to wonder, a wonder that then leads to the desire for resonance" (1991, p.52). This investigation not only defined wonder and worth further but showed how they were connected and how wonder can lead to worth (*Figure 8.*).

Worth is the most complicated term of the concept as it is produced internally and based on

personal perspective. However, understanding that it is related to human connection allows more definition and explains how it can be produced. Wonder is different, it can be materialised because it is produced externally. This investigation has shown that while the curator and designer cannot control worth, they can wonder. Therefore, they can use wonder as a doorway to forming worth through the connecting the visitor to peoples' experiences. Now that consistent factors of both wonder and worth have been identified and related to a physical context, the next stage must determine how wonder is produced today through technology. As illustrated by the section on the shift and the post-museum, Greenblatt does not talk about how wonder is produced digitally, therefore, how technology influences wonder and worth is unexplored. With the shift, wonder has moved from being connected with the tangible object to the intangible, such as songs and memories created through the use of technology. These intangible aspects usually relate to worth as they are associated with peoples experiences. Therefore, worth and wonder are becoming united with the use of technology.

In the next chapter, the information uncovered in this section will be used in conjunction with an analysis of new technology in museums. This will define further the new version of wonder and worth produced by technology and what the implications are for this new experience.

4 | TECHNOLOGY

In this section, technology will be explored to understand how it is related to wonder and worth. The evolution of technology has always intertwined with the evolution of exhibition design such as the Great Exhibition at the Crystal Palace 1851 (Lake-Hammond & White, 2010). The way that people communicate has drastically changed now that new technology has developed into a strong communicative media. Because of this, people expect this technology to be integrated into everyday interactions which include their experiences at the museum (Nolan, 2013; Schuster, 2013). While this offers new opportunities for exhibition designers, there are risks in forming a dependence on technology as it can overshadow the main purpose of the exhibit (Lake-Hammond & White, 2010; Chang, 2006; Schuster, 2013). This section will illustrate these concerns, along with the opportunities new technology is providing museums and their designers. The literature review suggests this is an unexplored aspect of wonder and worth, therefore an in-depth investigation into this relationship is needed to validate this connection. The analysis from the previous chapter will be used as a framework to connect what was learned in this section to wonder and worth.

4.1 Technology in Museums Opinion

In this section, six articles from online museum magazines and blogs were analysed through content analysis to get a broader understanding of the general opinions about the integration of technology in museums. The content analysis will first begin with the general opinions on

the integration of technology in museums and determine the main positive and negative themes associated with its integration. This information will provide a broader understanding of the implications and applications of technology in museums and will further uncover its connections with wonder and worth through comparison of themes. In conjunction with the findings from the previous chapter, this analysis will contribute to defining how wonder and worth have evolved today as well as their impact on the new museum experience.

The Articles

The articles selected for this analysis are not scholarly sources but were chosen according to their understanding of design and museum knowledge. Each article has informed opinions on the integration of new technology in museums, some include quotes and opinions of museum professionals to support their claims or were from websites created for museum professionals. The graph on the below (Figure 9.) demonstrates the variation of overall positive and negative opinions associated with the integration of new technology in museums from each text. To produce the data, opinions and statements were ordered into positive and negative categories then added up and divided to find the percentage of positive and negative comments in each text (see appendix B. p.87). It is important in to represent all sides of the argument as equally as possible to get a general understanding on different opinions of particular themes. The summaries of these articles can be found in the appendix (Appendix A. p.84) for more information.

CONTENT ANALYSIS DATA VISUALISATIONS

TEXT OPINIONS

Main sources: D. and E. Source E. is more negative than positive, however source F. includes more positive opinions than negative. Overall there is a 3.23 percent difference between positive (30.10%) and negative (33.33%) opinions and neutral/suggestive opinions are the majority at 36.5 percent.

FIGURE 8. GRAPH OF TEXT OPINIONS

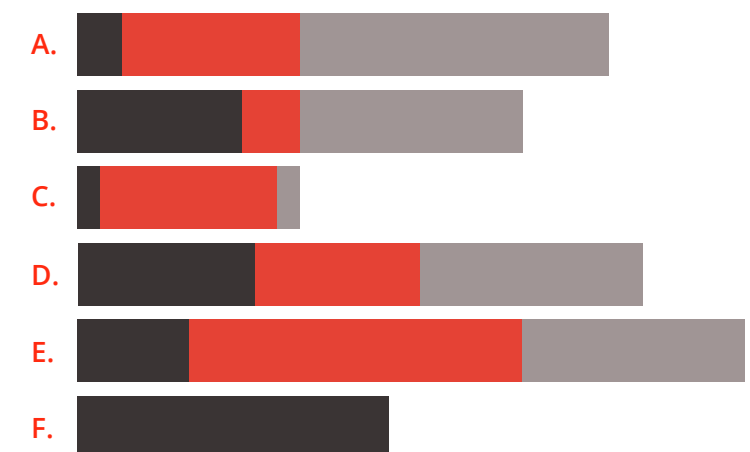
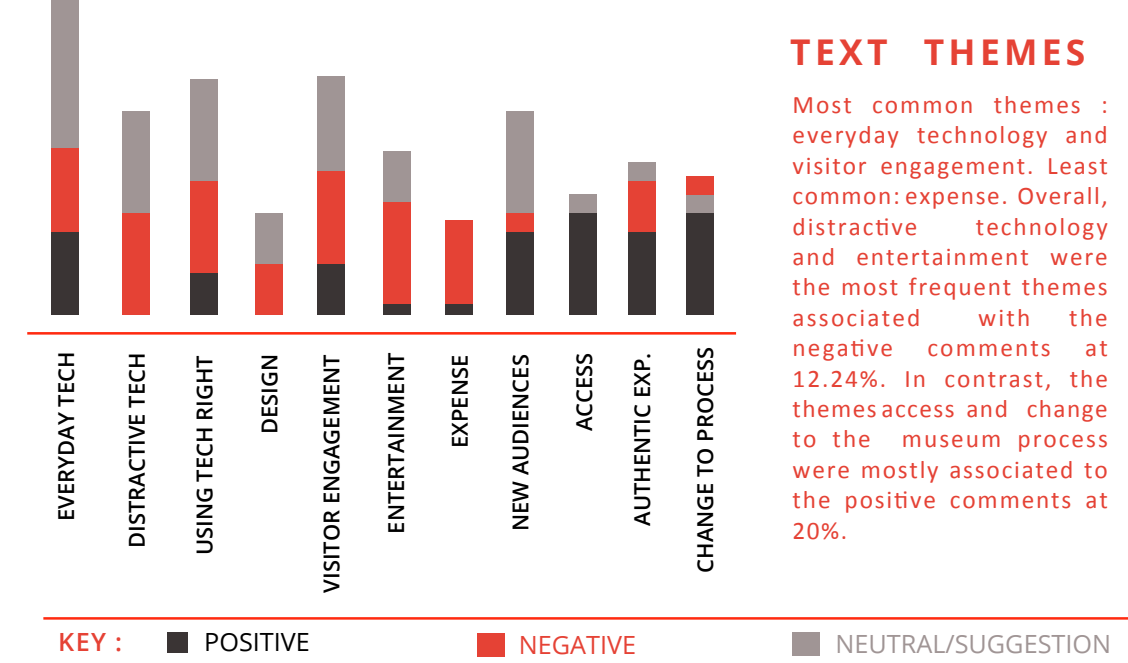


FIGURE 9. GRAPH OF TEXT THEMES



TEXT THEMES

Most common themes : everyday technology and visitor engagement. Least common: expense. Overall, distractive technology and entertainment were the most frequent themes associated with the negative comments at 12.24%. In contrast, the themes access and change to the museum process were mostly associated to the positive comments at 20%.

Figure 9. suggests that there is a slight sway towards negative opinions of the integration of new technology, but overall, the opinions were more wary and suggestive. According to the general analysis of the articles, the predominantly suggestive opinions and sway towards a more negative outlook are related to the indifference associated with the developing shift towards technological integration. One of the articles supports this as it is stated that many professionals are still "resisting" to the initial trend, but there is an increasing acceptance of the integration (Murphy, 2015). This explains why there is a

greater negative outlook and suggestions implying cautious attitudes about integrating technology correctly. Despite this, the differences between the tone of the opinion are small, each representing between 30 - 36% of the overall argument.

After comparing and contrasting the texts, eleven recurring themes were found throughout, each associated with either negative or positive opinions. The graph to the left (Figure 10.) is a visual representation of the most common themes and the perspectives associated with

them. The data was produced by ordering the positive and negative comments into the themes, some comments were counted multiple times according to how many themes they were associated with. The next section will summarize the themes found in the text and pair them with overall the findings and implications they attribute to. This will allow further apprehension of how the opinions relate to aspects of the museum experience and the impact technological integration has had thus far.

4.2 Technology in Museums Opinion

The integration of technology is mostly seen negatively

The negativity associated with this topic is primarily oriented around these four themes; distractive technology, entertainment, an authentic experience and change to the museum process. The themes outline specific concerns, comprehensively they are concerned about the museum changing into a recreational entertainment and losing its place as a cultural and social institution.

Below the themes connected to this topic are outlined.

Distractive Technology

The distractive technology theme refers to how technology is changing the museum environment by distracting the visitor away from moments of reflection which is crucial for allowing personal exploration and discovery (Nolan, 2013; Schuster, 2013; Museums vs. Modernity, 2013). Technology as a distraction is a large concern presented in almost every text, predominantly centred around technology taking away from important realisations or overshadowing cultural objects, therefore visitors may miss the main point of an exhibit. Because of this, it was advised that designers should ensure that technology supports the museum experience and not overshadow it (Shuster, 2013).

Entertainment

This theme is predominantly associated with negative comments, some of which are connected to the other themes such as technology as a distraction and visitor engagement.

However, the main issue that arose was in relation to museums now having to compete with entertainment such as games and apps (Murphy, 2015). It was stated that if museums do not “bridge the gap” between entertainment and the museum experience they will become obsolete and find it difficult to attract and engage visitors (Museums vs. Modernity, 2013; Earle, 2013). This also relates to museums finding their place in the digital age, while entertainment will attract visitors, there need to be meaning behind wow factors in order for museums to serve their purpose as cultural and social institutions (Museums vs. Modernity, 2013).

Change to the museum process

This theme was mostly positive as technology is allowing the museums to evolve and ‘propel museums into the 21st century’ (Nolan, 2013). There was some concern about museums changing from “collecting, preserving and interpreting” (Nolan, 2013). It was enthused that museums should not change these processes, however, the way that ideas are communicated is changing because the integration of technology, allowing more access and a more personalised experience (Parker, 2015). The theme was associated positively as this change is needed for museums to correspond with current social beliefs and expectations, technology is allowing this change (Museums vs. Modernity, 2013; Parker, 2015; Murphy, 2015).

It was enthused throughout that the right technology was needed, particularly that it should be incorporated with purposeful intent. While design was not referenced frequently throughout the texts it is a crucial part of achieving this. If it is done incorrectly this can have negative effects on visitor engagement and the museums budget.

Using Technology Right

This theme was a significant theme throughout the analysis, where there was an emphasis on using the right technology in the right way in order to communicate the museums message and the exhibitions meaning. This theme was associated with mostly negative and suggestive comments, as it was stated that it is important to use technology that is appropriate for

communication and not to incorporate new technology just for the purpose of having it (Nolan, 2013; Schuster, 2013; Museums vs. Modernity, 2013). While this has negative connotations the suggestions encouraged the use of new technologies but stated that the incorporation needed to have a purposeful place and add to the meaning and experience (Nolan, 2013; Schuster, 2013; Murphy, 2015).

Design

While this was not one of the main themes, there was an emphasis on the connection between good design and successful technological integration (Nolan, 2013; Schuster, 2013; Museums vs. Modernity, 2013). The text suggested that there is more pressure on exhibition designers to create designs that accommodate technology without influences the negative effects it can have on the audience (Museums vs. Modernity, 2013). Therefore new ideas and processes are needed in collaboration with curators to ensure that the design of an exhibit is satisfying its purpose and incorporating technology in the most appropriate way (Museums vs. Modernity, 2013).

Expense

This theme was also not common but is an important consideration as there are risks in investing in technological exhibits because of the ephemeral nature of technology (Nolan, 2013). Integrating the right technology with seamless design is key, as a good investment can benefit the budget and allow opportunities for cost-effective promotion. This theme was predominantly negative in terms of the risks but investing in visitor engagement and accessibility was seen positively (Murphy, 2015).

Technology attracts new audiences and creates more accessibility

This is one of the most positively associated implications for the integration of new technology in museums as technology is expanding the reach of knowledge to wider groups and those who may not have otherwise had access. Therefore the public nature of the post museum is evolving further.

New Audiences

This theme was highly intertwined with the integration of new technology and had a predominantly positive association. The new generation of museum-goers have grown up with technology around them, therefore they will expect it to be apart of their experience and museum professionals are keen to encourage younger audiences to engage (Earle, 2013; Museums vs. Modernity, 2013; Murphy, 2015). The main concern associated with this theme was to do with visitor engagement; specifically social interaction, as museums, want to connect people rather than isolate (Museums vs. Modernity, 2013). Overall, technology is encouraging more attendance and is reaching out to millennial which is having positive effects on visitor numbers (Parker, 2015).

Access

Access was associated with the most positive connotations, all comments were positive as technology is allowing people to connect to the museums like never before (Nolan, 2013; Parker, 2015). Access is closely tied with the digitalisation of museum exhibits and archives, which is taking the public museum to another level. This is also the most accepted form of use of technology which was unanimous throughout the texts.



Technology can create a more personal museum experience

Another positive implication is how technology is allowing a more personalised experience that is expanding the possibilities for visitor engagement. However, there are some risks in integrating these kinds of technologies as they can isolate people from one and other and not offer new interactions that extend the experience. This topic further relates to the need for good design that connects people and offers something new to the museum experience.

Everyday Technology

This theme refers to the everyday technology commonly used by museum visitors such as mobile devices, photography, WiFi and applications. Traditionally museums have discouraged the use of these technologies as they can be distracting, but they are increasingly being incorporated in museums to increase audience engagement and create a “seamless” experience to their everyday interactions (Murphy, 2015; Earle, 2013). The main concern was the possibility of offering an experience that is too similar to what could be offered from home, therefore it was suggested that museums need to consider if these technologies add to the museum experience (Nolan, 2013; Schuster, 2013; Museums vs. Modernity, 2013).

Visitor Engagement

Visitor engagement refers to how the visitors are affected by the integration of technology in museums. The main concern is visitors becoming anti-social and disconnected as personal human interaction was emphasised as being an important part of the museum experience (Nolan, 2013; Museums vs. Modernity, 2013). While others suggest that technology could allow visitors to have a deeper experience and encourages visitor engagement (Schuster, 2013; Murphy, 2015). There were mostly negative connotations associated with this theme, and further, the balance between an “unplugged” and “plugged-in” experience was suggested (Nolan, 2013).

As seen from this analysis there are many positive and negative implications for the integration of new technologies in museums, and while the

outlook is overly negative, the opportunities that new technology offers to museums are diverse and could exponentially change the museum experience for the better. The information from this section will further contribute to the apprehension of how wonder and worth can be balanced. How technology relates to wonder and worth will further be investigated in the next section.

4.3 Relating Technology to Wonder and Worth

At the beginning of this investigation, I argue that technology is a new form of wonder, this analysis supports this but suggests that technology is contributing to worth also. Below is a graph which represents statements from the previous section that relate to the main themes of concept. This visualisation brings together the main elements that produce wonder and worth from Chapter 3. To produce worth an experience must be; meaningful, inclusive and personal, and connects allows the visitor to empathise. In contrast, the elements of wonder include; attraction, entertaining and novelty, which can be created by the physical display.

WONDER & WORTH



FIGURE 10. GRAPH TECHNOLOGY AND WONDER & WORTH

WONDER: Attraction and entertainment were equally associated with 21 statements, however, entertainment was associated with the most negative comments at 47.62%, while attraction was 42.85% positive and 38% negative. Novelty was the most negative overall at 72.72%.

WORTH: While the inclusive theme has the smallest amount of statements associated with it, it had the highest positive relation with technology at 50% out of the worth themes. Meaningfulness was the most negative at 69.20%.

KEY : ■ POSITIVE ■ NEGATIVE ■ NEUTRAL/SUGGESTION

From this visualisation, there is a clear relationship between the opinions on technology and the elements of wonder. This suggests that the production of wonder and the use of technology are connected. There are still associations with the production of worth, however, the tone is more negative than positive suggesting that technology is seen to have a negative effect on the production of worth. More specific descriptions of the relationship between technology and wonder and worth are described on page 56.

Worth

The majority of the comments relating to worth were negative, this is because of the predominant negative tone associated with the meaningfulness element. The main concern was technology distracting from the visitors ‘moment of exploration and discovery’, that distracts from the wider meanings and worth of the exhibit (Nolan, 2013; Earle, 2013). The most positive comments were associated with the inclusive theme, this was because of its relation to access. As the internet is allowing access to people who would not otherwise be involved and therefore adding to the inclusive nature of worth to connect people together. The personal theme was also mainly associated with positive comments as technology allows a more personal experience that is driven by the visitor, allowing them to create the own perception of worth. However, concerns were expressed about

technology disconnecting people from others and this would, therefore, have a negative impact on worth.

Wonder

Overall wonder was not associated with as many negative connotations as worth proportionality, however, it had the highest association with the content. Entertainment was the most negatively related theme, predominantly because entertainment distracts from the visitor’s museum experience, but also distracts the designers and curators, as they should concentrate on communicating ideas rather than entertaining (Nolan, 2013). Nonetheless, there were some positive associations relating to visitor engagement where technological entertainment can attract new audiences and influence their curiosity. For this to continue to engage the audience there must be an element of novelty (Murphy, 2015). However, technology can be an unsustainable investment as it develops at a fast rate and becomes uninteresting when the technology is out of date (Nolan, 2013). In dispute to this, any exhibition has the ability to lose novelty, technological exhibits, unlike permanent physical exhibits, can change depending on the technology used, and therefore could be more beneficial. When comparing and contrasting the themes, it is clear that there is an overlap between wonder and new technology; it has

become the attraction, it is able to entertain and in some cases can be novel and entertaining. From this insight, one could conclude that as a creator of wonder, technology could be determined as a new version of wonder.

From this comparison, the elements of wonder and worth have strong connections with the integration of new technology, they are related both to the positive and negative implications of its integration in museums, and are sometimes the cause of the concern or enthusiasm. Overall, the content from the articles indicates that worth is still highly sought for, however, there are more concerns about wonder overshadowing worth. The ‘wow factor’ is wanted by new audiences but threatens their drive to find further meaning in what they experience. As further support for how new technology is intertwined with wonder and worth there are clear associations with the main elements of the concepts; technology as the physical attraction and as human connection. This also highlights the importance of the opinions from the articles, as they provide insight into what a designer and curator should be wary of in order of this could be achieved.

4.4 Chapter Conclusion

To conclude this chapter, these analyses have provided many diverse opinions and suggestions to how new technology affects the museum experience as well as how technology relates to wonder and worth. The most informative findings from the analysis were the multiple positive and negative implications of the integration of technology in exhibits. While wonder and worth are connected to the topics discussed on technology in museums, it did not provide many new insights. The main finding produced from this was how wonder was more related to the opinions and that overall, there was a predominant negative connotation towards its relationship. Overall, The opinions portrayed in these texts are reminders to designers that “technology is not a magic wand” (Nolan, 2013), losing the purpose of the integration of new technology not only distracts but changes what the exhibition intends to communicate. This analysis represents an important discussion that both designers and curators must have to

create a successful technological experience but also highlights the exciting revelations and opportunities that technology enables. The next section will further tie technology to wonder and worth from a physical contextual perspective, keeping with the theme of this thesis. Current exhibitions will be analysed to assess how technology was used within the exhibit and further how it produced wonder and worth. This investigation will tie together the insights from the Chapters 3 and 4 to a physical context which will further inform the solution to a balanced experience.

5 | EXHIBITION DESIGN

This chapter will apply what was learned from the previous two chapters to a physical context, therefore uniting the literature and physical elements of wonder and worth. The chapter will first begin defining different types of exhibits and identifying which ones are most relevant for the physical expression of wonder and worth in a contemporary context. The next stage will analyse small case studies of current exhibits including Te Papa's "Scale of our War" exhibit and the Smithsonian Cooper-Hewitt exhibit to understand how wonder and worth are produced within a context.

5.1 Contemporary styles of exhibits

This section will begin with summarising the definitions of different exhibition styles and approaches to relate them back to wonder and worth. While there have been many different styles of exhibits as mentioned throughout, this section will concentrate on the post-museum exhibit as this is unexplored in Greenblatt's explanation. These insights will draw together the literature on exhibition design approaches with the elements of wonder and worth to understand the application of these approaches and how they impact the production of wonder and worth. This will lead to the case studies and further provide a basis to analyse how the current exhibits produces wonder to understand how this further leads to worth.

The variation of display techniques in conjunction with a design approach are the building blocks to create different types of experiences for the visitor (Bitgood, 2011). The display is the end product after identifying the appropriate space

and approach of the exhibit. The space of the exhibit determines whether it is an entertaining space, a story or exploitative space. This is followed by the approach which then informs the kinds of displays that will be used to communicate the context and create the experience (Bitgood, 2011; Skramstad, 2007).

Postmodern exhibition styles

Didactic - 1980s

The didactic display is a combination of text, images and graphics used to communicate information. The graphic design on the display must capture the viewers attention and encourage engagement. This method is a good way of providing more information to those who want to know more (Schwarz, Berton & Frey, 2006).

Scenographic 3D images - 1990s

Sceneography is used to create a scene in an almost theatrical way using lighting, sound effects and images to produce a certain mood or a dramatic effect. This method uses different mediums such as images, film and props to immerse the visitor into an environment or story (Schwarz et al., 2006).

Multimedia-based interactive displays - 2000s

Interactive displays vary in size, type, orientation and interactivity depending on the technology used. The display is somewhat a combination of both the scenographic 3D image and the didactic display where information is communicated through graphics, sound and video and engages the visitor through enabling them to interact with the display (Schwarz et al., 2006).

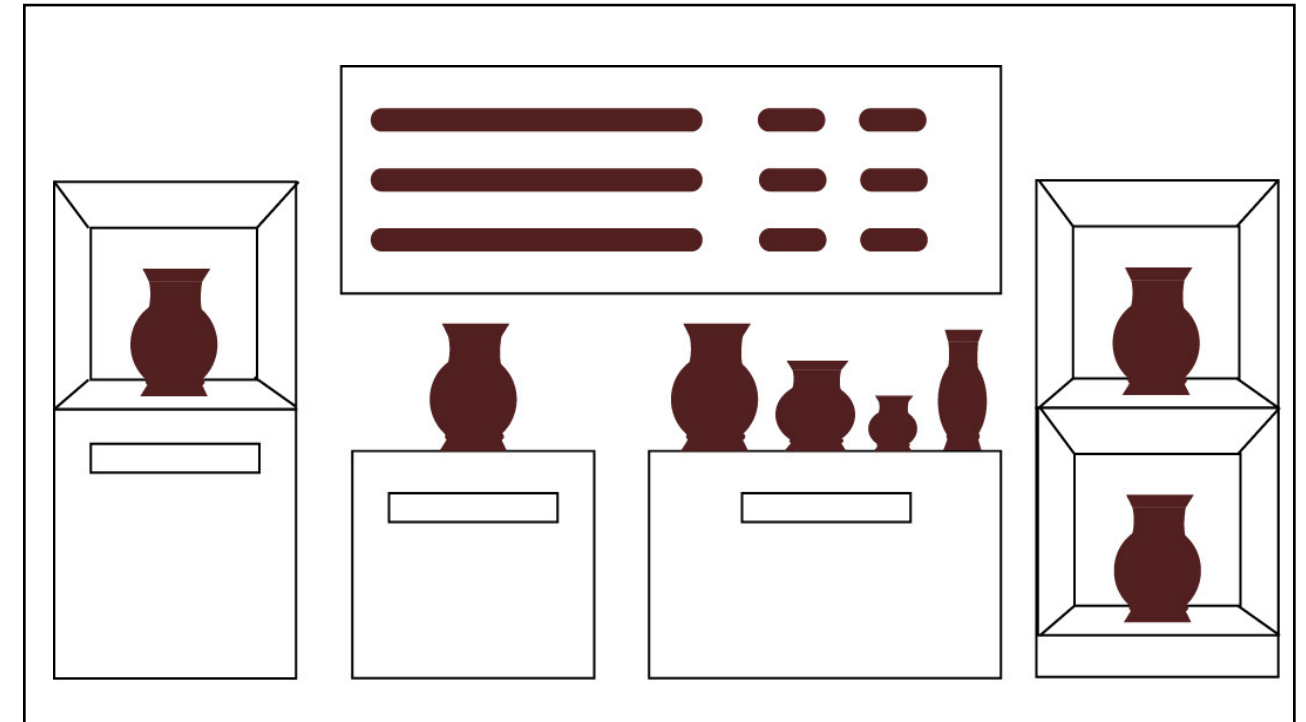


Figure 11. Illustration of the modern display style in an exhibition

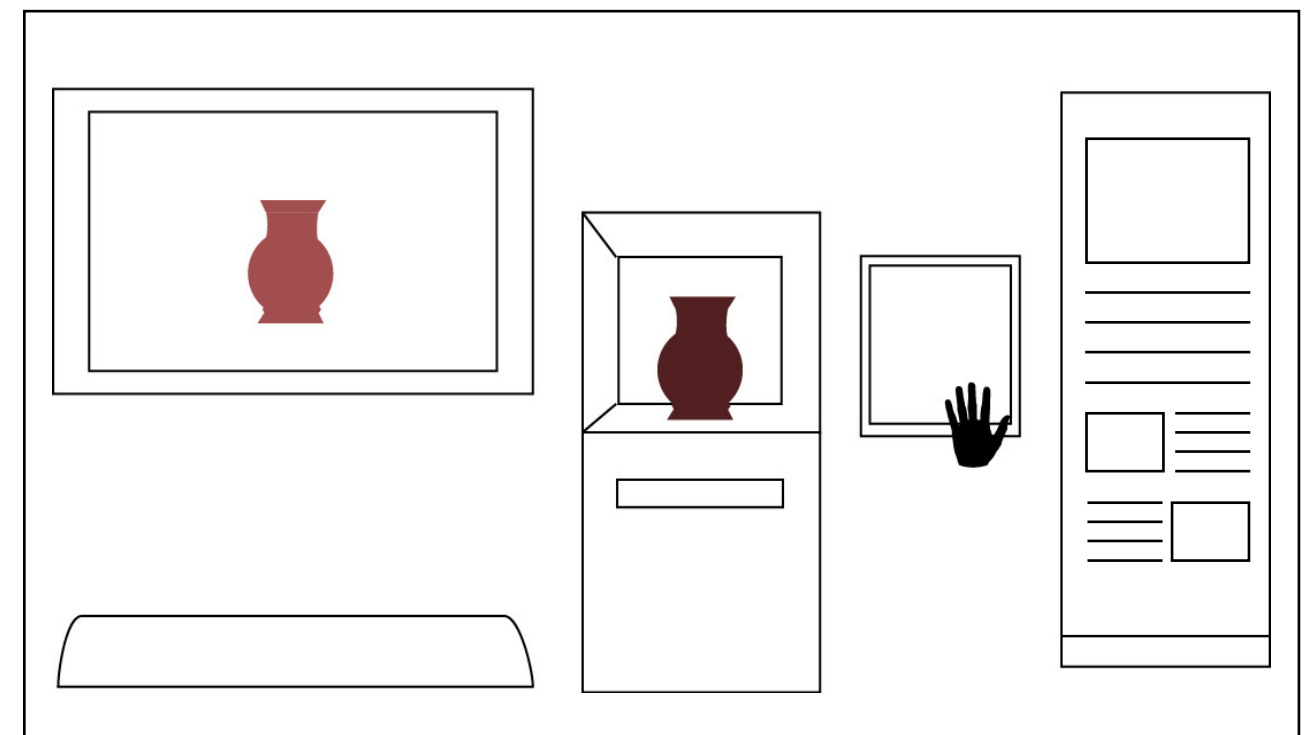


Figure 12. Illustration of the post-museum display style in an exhibition

Above compares the two different types of exhibits ; the modern exhibit and post-museum exhibit. The modern exhibit is has a limited variation in displays which are predominantly systematic in organisation, the post-museum display is a combination of the three different types of display therefore providing a variety of modes of communication.

Design Approaches

Exhibition designers use design approaches to ensure that they achieve the aims and objectives of the exhibit used to create certain experiences (Bitgood, 2011). These design approaches are usually combined to cater to the audience's needs. Choosing the right approach for the goal of the exhibit is important as the approaches produce varied experiences (Bitgood, 2011). Below are some approaches that relate to the elements of wonder and worth which are identified to gain a better understanding of intentions of exhibits:

- *The aesthetic approach* as defined by Bitgood (2011) is orientated around the “aesthetic appeal of the presentation. Aesthetics take precedence over the message or the impact on audiences other than the artistic community” (p.138). This approach coincides with the modern exhibit, where the object is presented in a way that highlights its aesthetic appearance.
- *The hedonistic approach* focuses on the hedonist; the person who wants to be entertained and enjoy the experience, therefore this approach is connected to the entertainment (Bitgood, 2011).
- *The realistic approach* involves simulating an environment, one that produces a realistic experience, and could be combined with the aesthetic approach or hedonistic approach which will determine the design of the exhibit.
- *The hands on approach* concentrates on activities that involves the visitor and are “designed with the assumption that hands-on activities are inherently more effective than exhibits that require passive viewing” (p.138-137).

Design Spaces

There are three different design spaces that, when combined with the above approaches, produce different types of experiences. These include: the narrative space, performative space, and simulated experience (Darnie, 2006, as cited

by Skramstad, 2007). The narrative space is designed based around a storyline which communicates information through an experience allowing contextual representation and avoiding the “potential chaos of the encyclopedic display” (Skramstad, 2007, p. 607). The realistic approach coincides with this space, where this approach could be used to reinforce the storyline and immerse the visitor in the environment (Bitgood, 2011). The second space is the performative space which is a combination of with the hands on approach and hedonistic approach (Darnie, 2006, as cited by Skramstad, 2007). This space encourages “exploratory” and intends to get the visitor involved in what is usually an interactive, high-tech and entertaining space (Darnie, 2006, as cited by Skramstad, 2007). The a last space is the simulated experience which is more orientated around high-tech experiences and the use of media techniques to create an immersive experience (Darnie, 2006, as cited by Skramstad, 2007).

Wonder and Worth

As determined by the previous analysis a wonderful experience should attract the audience, entertain and produce curiosity through novelty. The approaches determined by Bitgood (2011) that coincides with wonder includes the aesthetic approach, the hedonistic approach, the realistic approach and hands on approach. All of which coincide with the physical aspect of wonder, that is interactive, entertaining and aesthetically pleasing. The approaches that are more compatible with worth include; the social facilitation approach and the individual approach. These approaches are oriented about connecting people and communicating information and therefore have the ability to produce worth.

5.2 Case studies

This section will provide more context of the process of wonder and worth on how it translates within current museum exhibits today. The cases explored are Te Papa Tongarewa's Gallipoli: The Scale of Our War exhibit and the Smithsonian Museum of Design Cooper-Hewitt exhibit, each use different methods that transition wonder into worth. The purpose and overview of the exhibit will first be outlined which will then lead onto the physical features of the exhibits that are of interest, lastly this will allow identification of which features correlate with the elements of wonder and worth and further produce them.



THE SCALE OF OUR WAR

TE PAPA TONGAREWA 2015



Figure 13. Nurse Lottie, Gallipoli, (Michael Hall, Te Papa, 2015)



Figure 14. Cecil Malthus, Gallipoli, (Michael Hall, Te Papa, 2015)

The 2015 Te Papa, National Museum of New Zealand's exhibit, Gallipoli: The Scale of Our War, is a large exhibit that reflects on the personal experiences of WWI, the Battle of Gallipoli, to commemorate the 100th anniversary of the battle. This war was significant as it was the first time that a large amount of New Zealanders were sent to war, including the first Maori contingent. The exhibition was created with the collaboration of the Te Papa Museum and Weta Workshop, a design and effects studio responsible for creating the effects for movies such as "The Lord of the Rings" and "The Hobbit", among other creative industries from Wellington, New Zealand. While this exhibit's main purpose was to commemorate, it is also a fundamental educational experience for the younger generations to gain a perspective of the WWI (Te Papa, n.d.).

"Like all good stories you need the personal to understand the wider significance, and this exhibition does that." Dr Christopher Pugsley, Building Gallipoli, Episode 2

The main concentration for this exhibit were personalities, where the visitor follows different characters stories throughout the exhibit (Te Papa, n.d.). Much of the information collected to produce these stories were from diary entries, photographs and objects. The exhibition consists of many different mediums from interactive screens, miniature models, film and photography, but the main focus is the incredibly life-like models of the characters, 2.5 times the size of a real person (Te Papa, n.d.). Within the spaces models are displayed within a frozen moment in time, enhanced by lighting, props and scenographic techniques, placing the viewer within a scene that makes them feel as though they are "a fly on the wall". The exhibition then progresses onto an "information room" where the information, miniature models, photos and objects are configured for the viewer to gain more information on the person and the scene in which they just experienced (Te Papa, n.d.). Within the final scene, the model depicts a soldier trudging through a pool of poppies which were placed around him by the visitors. The visitors are invited to write a message and place a poppy to commemorate and reflect on the experience.

Exhibition Design

Based upon the research in section 2, this exhibition uses a combination of the hedonistic, aesthetic and realistic approaches which creates a realistic and narrative space (Bitgood, 2011). All three different types of display; didactic, scenographic 3D images and multimedia-based interactive displays are used to communicate and also create the scene (Schwarz et al., 2006). The exhibit communicates the content in several different ways using a combination of physical and technological mediums that are primarily visual. The physical displays include the models and presentation of objects, while the technological display includes film, photography, interactive screens as well as creating scenographic feel within the scenes. The technologies used to create the scene and mood include audio effects of hymns, voices, battle sounds, among others, as well as lighting. To enhance this further there were also projections on the walls of scenes and text in contrast to a painted landscape backdrop.



Figure 15. Modern style systematic display of items, Gallipoli, (By Author, Te Papa, 2017)



Figure 17. Graphic didactic display, Gallipoli (By Author, Te Papa, 2017)



Figure 16. Scenographic mural with gun displayed in modern style, Gallipoli (By Author, Te Papa, 2017)

The above image shows how the exhibit uses a combination of scenographic styles and object displays to provide context and add drama. The gun on its own would not communicate the story but in conjunction with the mural the visitor can visualise how the gun was used and adds to the significance it represents.



Figure 18. Interactive display 1 Gallipoli (By Author, Te Papa, 2017)

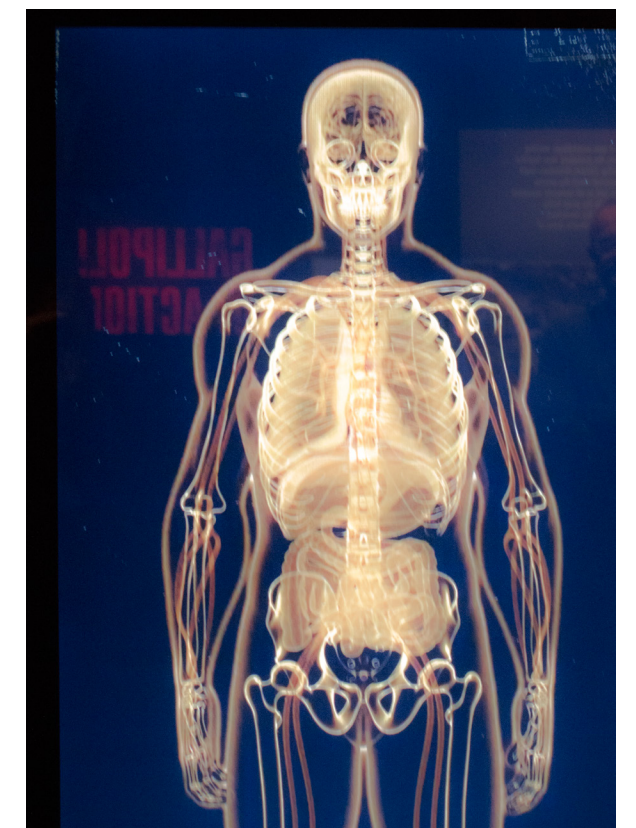


Figure 19. Interactive display 2 Gallipoli (By Author, Te Papa, 2017)

These images show two interactive displays from the exhibit, the display on the left is at waist height, while the display on the right is full length body size, therefore they encourage different types of interactions informing the viewer in a different perspective. These displays act as interactive extensions of the didactic displays but do not distract from them as they blend in with the style.



Figure 20. Field Notes Emotional Expressions sketch, Gallipoli (By Author, Te Papa, 2017)

The above sketches depict the emotional expressions of the large models within the main scenographic area of the exhibit. The emotions range from sorrow and compassion to anger and remorselessness, all of which can be seen on a large scale meaning that tiny details such as sweat, tears and hair is seen up close. The details are so accurate as the characters were based off real people who were scanned and casted (Te Papa, n.d.). There is a sense of 'uncanny valley' when in their presence, a feeling of eeriness as you expect them to come to life (Wang, Lilienfeld & Rochat, 2015).

Wonder and Worth

The source of wonder in this exhibit is produced by the large model soldiers and the scene in which the visitor experiences them in. The “wow factor” is clearly communicated, but also makes the viewer feel small and overwhelmed to find themselves in the middle of a battle scene, which further enables them to understand the perspective of that character within the frozen moment. The three elements of wonder; attraction, entertainment and novelty, are all expressed in the moment of viewing the scene, creating a powerful source of wonder. While the scale and the scenographic effects capture the audiences' attention and curiosity, the main element that they are seeing is expression of emotion on a large scale; the sweat, tears, wrinkles, and associated scars and blood. While wonder is the first impression, worth is then closely followed and impossible to overlook when emotion is expressed in the face of a giant.

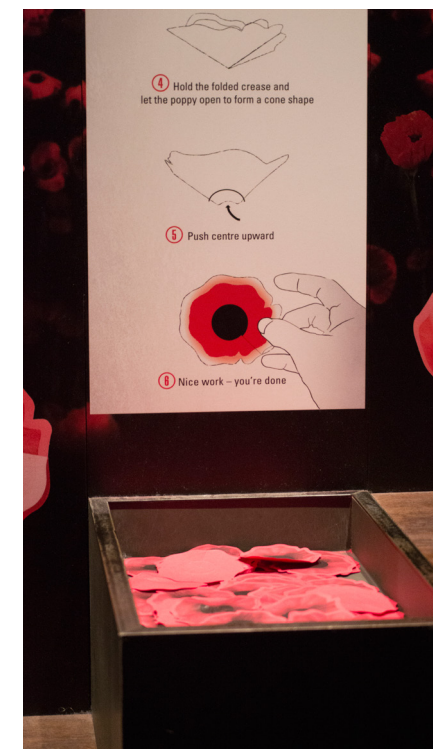


Figure 21. Poppy messages, Gallipoli (By Author, Te Papa, 2017)

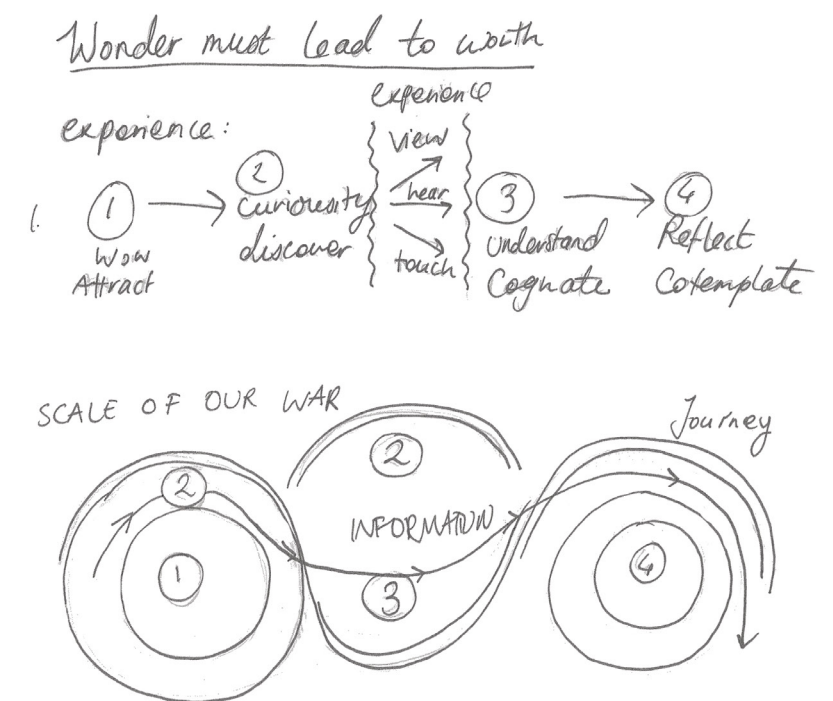


Figure 22. Field Notes Scale of Our War Flow From Wonder to Worth, Gallipoli (By Author, Te Papa, 2017)

Overall there are eight scenes in which the characters reside, but as each scene produces its own combination of wonder and worth, the exhibit as a whole also produces a flow from wonder to worth. This begins with viewing the wonders which are the model soldiers within the scenes. This then leads the visitor, fueled by curiosity, to the information section where the objects, stories, and general information connected to the character is placed. From here the visitor moves on seven times until they reach the last scene of the soldier in the pool of poppies. This scene is a place of reflection, where the significance of what the viewer experienced can be reflected on, and they can further contribute by leaving a message. This flow produces wonder throughout, but at this moment of reflection the design primes and prompts the visitor to engage in reflection.

THE NEW EXPERIENCE PEN

COOPER-HEWITT MUSEUM 2014



Figure 23. Table River, (2014) Cooper Hewitt

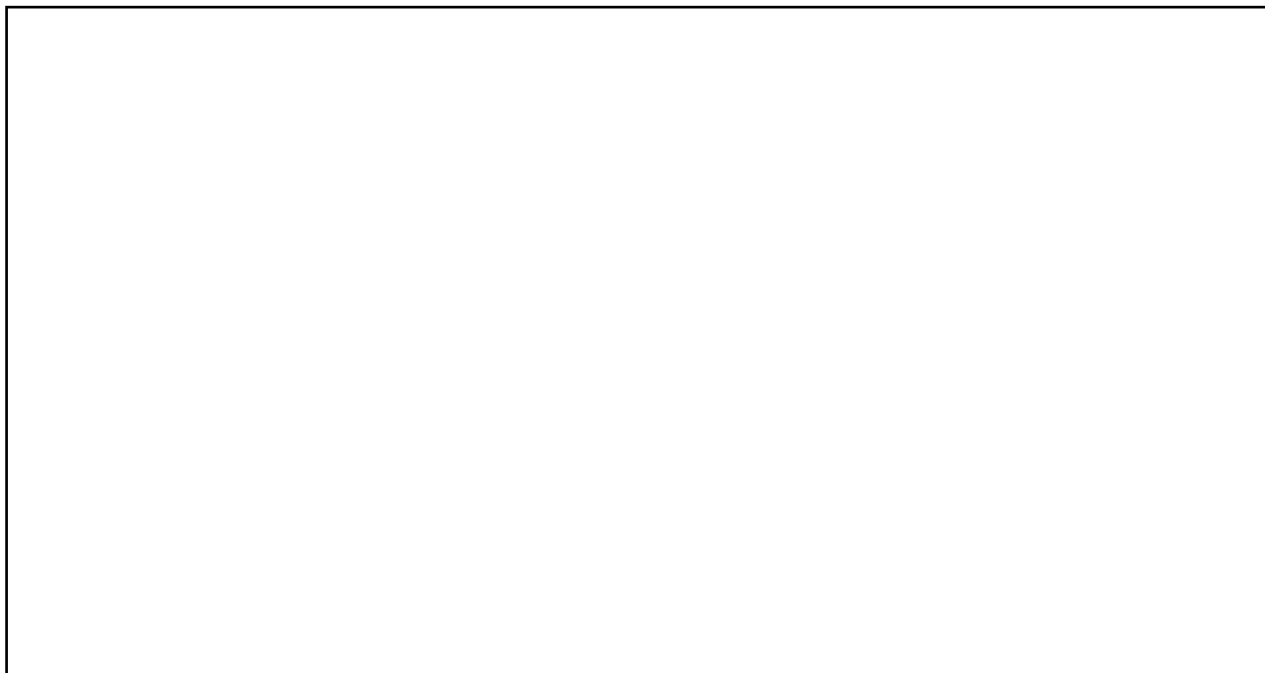


Figure 24. Cooper Hewitt Pen, (2014) Cooper Hewitt

Overview

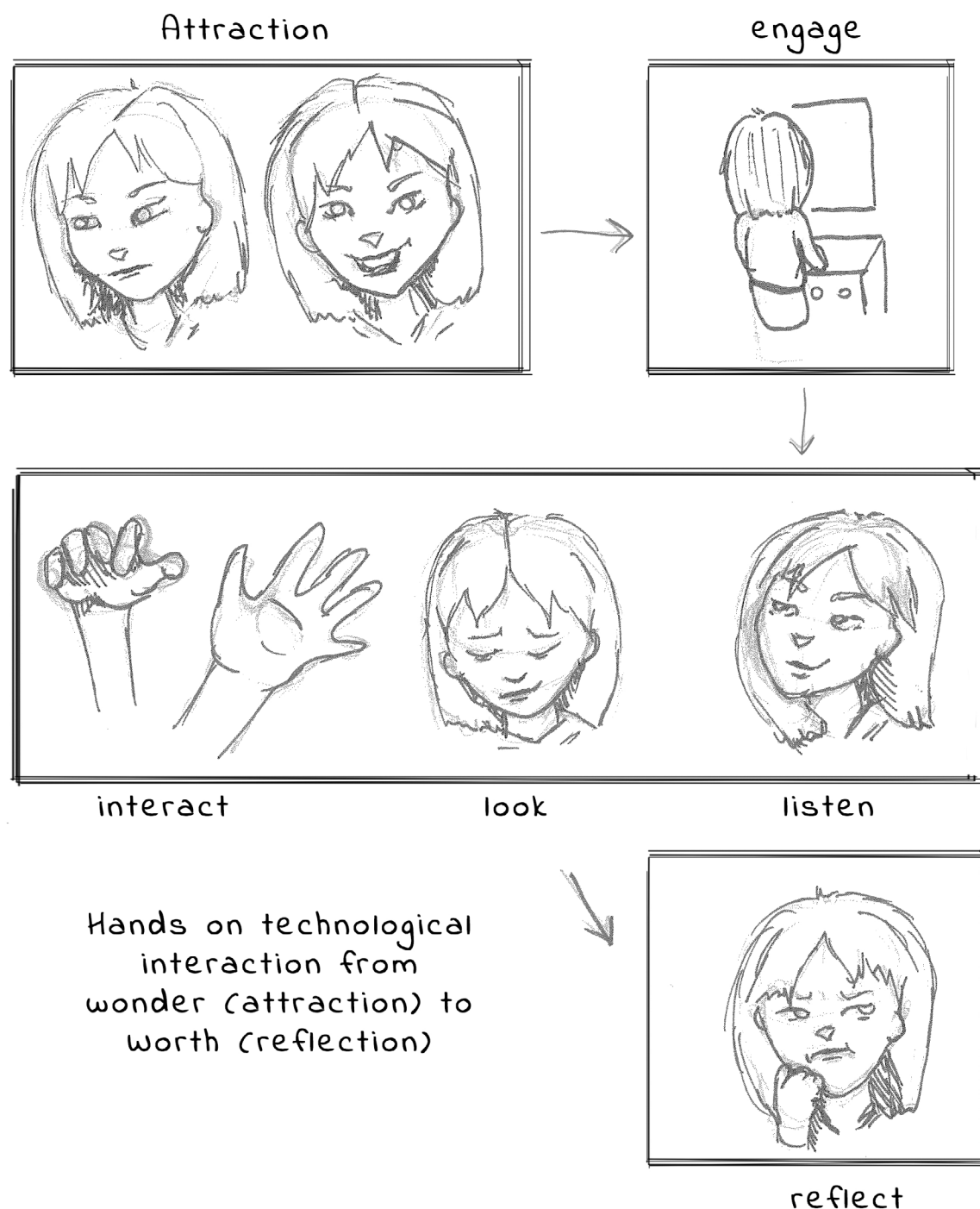
The 2014 Cooper-Hewitt Smithsonian Design Museum's new experience was created through a rigorous renovation of the original exhibits to advance the museum into the 21st century (Cooper-Hewitt, n.d). The new additions to the museum were created with the collaboration with Local Projects, a design company, who were mainly responsible for “the pen” that transforms the experience from one of observation to one of interaction, collection and design (Cooper-Hewitt, n.d). This reinvigorates the traditional museum experience, allowing the visitors to not only be more involved in the collection process but input their own creations inspired by their experience.

Throughout the exhibit the visitor can “collect” items and designs by touching the descriptive label with the end of the pen on the traditional exhibits (Cooper-Hewitt, n.d). The information is then saved for later use, where they have the opportunity to view the designs they collected as well as design their own using interactive tables (Cooper-Hewitt, n.d). The pen is issued to the visitors on entry as well as a ticket with a unique code that allows them to later access the information that they collected and created through their website from home (Cooper-Hewitt, n.d). There are also two other spaces that further immerses the visitors into the experience of a designer, including the Project Lab and Immersion Room. The Project Lab allows the visitors to solve complex design problems using interactive, hands on digital activities which show the visitors how design is a way of thinking and problem solving (Cooper-Hewitt, n.d). The Immersion Room allows the visitor to see wallpaper designs they collected throughout the exhibit in context. The walls of the room are projected with the designs, immersing the visitor within. They are also able to create their own wallpaper design while it is projected on the walls around them (Cooper-Hewitt, n.d).

Exhibition Design

This exhibit is a combination of the old and new, where the traditional, modern style exhibit is combined with the didactic and multimedia based display. The design approaches that are used for this exhibit include the aesthetic, hedonistic, and hands on approaches that creates an immersive and performative space. The main subject matter of the exhibit is the design objects collection which are presented within the modern display. The interactive element of the collection commences through the collecting and design activities with the use of the interactive tables and pen (Cooper-Hewitt, n.d). The pen is the most important addition as it is what connects the exhibits with the interactive activities and allows the visitor to be their own designer and curator. The pen is made up of a combination of sensors that are able to pick up the other sensors from the labels and stores this information using an on-board memory (Cooper-Hewitt, n.d). The interactive tables were created using “ultra-high-definition” screens similar to what is used for tablets and touch-screen phones (Cooper-Hewitt, n.d). This allows the visitor to see incredibly high definition images of the designs to further interact with (Cooper-Hewitt, n.d). The tables cater for up to six people where they can select items from the 'object river' to manipulate and learn more about. They also have the option to design their own objects or draw shapes to see which designs they match (Cooper-Hewitt, n.d).

Figure 25. Field Notes Hands on Interaction From Wonder to Worth, Cooper Hewitt (By Author, 2017)



Wonder and Worth

Wonder is produced through the novel interactive technology which also attracts the visitor and entertains. The modern exhibit produces an older version of wonder as discussed in chapter 3, where want for possession is a major influence of that wonder. The new technology incorporated within this exhibit uses this desire for interaction and possession positively by allowing the visitor to do just that; they can manipulate the objects in ways they could not before to create something completely new and theirs. This is a more satisfying journey of wonder as the visitor gains possession and access to their designs which further inspires more creation and additions to their personal collection. The worth expressed through this exhibit is not prominent or obvious, however it is connected to the interactions that new technology brings. It allows the visitor to become the curator and designer. Because they become the designer, they learn the value of design, the effort, creativity and inspiration involved in designing. They also they learn the satisfaction of collecting and presenting interesting objects associated with curation. The visitor is 'put into the shoes' of the curator and designer which allows them to be connected to the process and therefore leads them to understanding the worth of the objects through the eyes of a designer and curator.

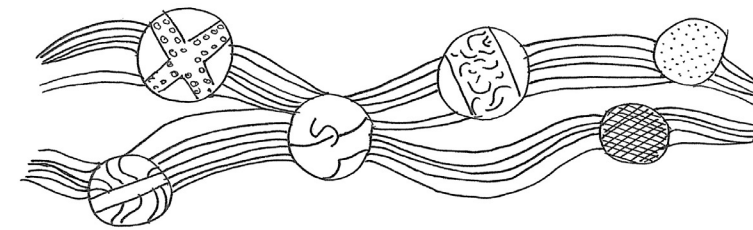


Figure 26. Field Notes River From Table , Cooper Hewitt (By Author, 2017)

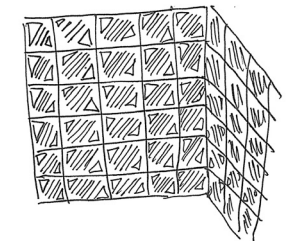


Figure 27. Field Notes The Immersion Room , Cooper Hewitt (By Author, 2017)

Through this exhibit the visitor becomes in charge of their own experience and develop a personal connection as they are included within the collection and design process.

Conclusion

Comparing the two exhibits, it is clear that wonder and worth are produced and felt in different ways, there are also many different mediums through which this can be achieved. The Scale of Our War produces wonder through the 'wow factor' and worth through emotion. In contrast, the Cooper Hewitt exhibit produces wonder through traditional methods and technology, worth is produced by connecting the visitor to the process. While predominantly different, one consistent factor unites both methods; they each produce worth that is connected to the goal of the exhibit; communicating individuals experiences and communicating the value of design. While these are two different implications from different physical representation, the human connection is still consistent throughout which prompts the visitor to empathise. Interestingly, both exhibits were a combination of old and new techniques, where the older, more traditional physical displays were enhanced by the technology. As found in the previous chapter, technology needs be used in a way that aids the experience and adds another dimension. Both exhibitions achieve this uniquely and with consideration to the intent of the exhibit. To demonstrate this, if you were to swap the techniques utilised in the exhibits, for example: creating a cinematographic design objects exhibit and an interactive war display, the worth produced is completely opposite. The design objects become even more objectified and intangible, while the interactive the war display produces less emotion and connection. This shows how important the relationship between technology, approaches and spaces are, but also how well these exhibits incorporated technology that adds to the wonder and worth appropriate for the exhibit. This further shows how technology produces the wonder, if the technology is used correctly it can also aid the production of worth.

5.3 Chapter 5 Conclusion

This chapter unites the literature and analysis from the previous stages and applies them to a contemporary context. The chapter began investigating different types of displays, exhibition design approaches and spaces created from these elements. This allowed me to understand the processes behind exhibition design which were applied to the case studies and revealed the nature of their design. The case studies were the most informative investigation in this chapter as they applied wonder and worth within a contemporary context as well as a technological one. This showed the relationship between design, technology, experience and the production of wonder and worth. Consequently these findings emphasised the validity of the suggestions from the previous chapter that states how design plays an important role in utilising the right technology and how technology can create a personal experience. The most prominent finding from the case studies is that technology can make up for the shortfalls of other types of display if used in a way that is appropriate to the purpose of the exhibit. This furthermore shows that with good design a good technological experience, capable of leading from wonder to worth, will follow. Concluding the investigation part of the thesis, the next chapter will include the manifesto; the manifestation of the findings from the analyses and case studies, bringing together the literal and physical to further promote the relevance and consideration of the balance of wonder and worth in exhibition design.

6 | FINDINGS

6.1 CHAPTER 3: EVOLUTION

1 *Wonder and physical representation are interdependent - wonder is external*
This finding was uncovered when comparing the different types and museums and corresponding exhibition style. Wonder was found to be inherently related to the physical attributes of the exhibit, while the subject matter had some influence, the mode of exhibition design impacted its production the most. One example of this is the modern exhibit, where wonder was produced through the lighting and glass-cased pedestals, this made the object seem desirable and majestic, further producing the “wow factor” which we know as wonder. The thematic analysis confirmed this relationship as the themes relating to wonder were physically orientated. This further lead to the discovery of wonders main constituent elements; Attraction, Entertainment and Novelty. And therefore wonder is produced by an external stimulus.

2 *Worth and the expression of the human experience are interdependent - worth is internal*
Worth’s association to human connection was uncovered from the thematic analysis when the relationship between the main themes was their association with human connection. This includes understanding the experience, how it relates to others and further relating it to oneself. While this was not confirmed until chapter 3, there were hints of this connection in the literature review when Greenblatt talks about the names and voices of those represented in the State Jewish Museum. Worth is internal, as it is influenced by a moment of reflection, and as everyone has different backgrounds and beliefs, worth is felt uniquely by different people. Although worth must first be prompted, this can be achieved through emotion and personal connection, as clarified in chapter 5.

3 *Wonder influences worth*
There is a process in the production of wonder and worth, where wonder leads to worth, but also influences the outcome of the type of worth produced. This was discovered when looking at the different versions of wonder and worth, most prominently the version of wonder and worth relating to the curiosity cabinets. The worth that was produced was applied to the collector, the wonder made the collector seem powerful and prestigious. Therefore, it was determined that wonder can influence the worth produced, thus wonder can be manipulated by designers and curators to create a positive kind of worth.

4 *With the influence of the shift and the integration of technology wonder can now be produced from the intangible*
When analysing the post-museum and the shift, it was discovered that technology can be used to communicate the intangible such as emotion, songs and memories. The shift is an important addition to the new museum style as it influences what kind of wonder is being produced and why. As wonder is physical, worth is intangible, and therefore technology is acting as a bind between the two concepts as technology can represent non-material things.

6.2 CHAPTER 4: TECHNOLOGY

5 *Technology can create a more personal experience and attracts new audiences*
The museum is beginning to utilise common technology that is a part of their visitors’ everyday interactions including basic technologies such as mobile devices and the internet. There was a large emphasis on this topic in the analysis conducted on the opinions of new technology in museums, this is because technology is becoming integrated into the everyday lives of their visitors and it is requested by some to also be a part of their experience. This mainly speaks to the younger audiences which technology attracts but also allows a more personal experience as technology can product interactions that cannot be produced by traditional exhibits. The museum experience is becoming a more individual experience one in which that can be accessed and shared, further influences new audiences to visit the museum.

6 *The integration of technology is mostly seen negatively due to the concern that it will change the museum experience.*
Overall the online texts suggest that there is a prominent negative opinion on the integration of new technology in museums, this is because there is much caution around the negative implications that new technology can produce which is the opposite of the museum’s goals. This is mainly connected to the museum representing something different, changing to experience and not lead to more than entertainment and thus becoming much like a theme park. Looking further into the investigation, it was found that while this is a risk, there are ways to create more meaning through entertainment, and while the change is inevitable, it is a positive change to progress the museum as society progresses.

7 *Design plays an important role in making sure the right technology is used*
Good design is crucial to making the right choices when using technology, this was found directly and indirectly through the content analysis. Using the right technology was found to be key in creating the intended experience. Therefore it is up to the designers to understand how and why to integrate certain technologies to create certain experiences. While this was uncovered in chapter 4, it was explained and clarified in chapter 5, how designers can make these decisions.

8 *Technology is connected to the production of both Wonder and Worth, but is more associated with Wonder*
When attributing the statements from the articles in Chapter 4, there was a clear relationship between the elements that produce wonder and the topics discussed in the texts. This suggests that technology and the production of wonder are intertwined. The elements that produce worth was also discussed but this was not as prominent as the relationship with wonder.

6.3 CHAPTER 5: EXHIBITION DESIGN

9 *Technology should be used to amplify the intention of the exhibit*
Using the right technology is linked to understanding the intent of the exhibit and what the desired outcome of the experience should be. When designers can consider this, the technology can amplify the meaning and intent of the exhibit. This was shown through the case studies; The Scale of Our War and The Cooper-Hewitt exhibitions, both very different exhibits with different purposes, however, the integration of technology and the “wow factor” was linked to the purpose of the exhibit and communicated the worth of the experience. This showed the importance of understanding how different technology related to different experiences but also clarified the significance of the designer’s role in knowing the worth of an exhibit and further how it could be communicated.

10 *Technology can make up for elements other exhibition styles lack*
The two case studies were both a combination of traditional exhibition styles; models and the modern exhibit, and a technological experience. Technology can make up for elements other exhibition styles lack, this was shown by the way technology amplified the exhibit’s meaning. This was found when understanding the intention of the exhibit, understanding the effect of the type of exhibit has and how technology was integrated to improve the experience. One example relates to how the modern exhibit creates a desire for ownership and interaction. The technology in the Cooper-Hewitt exhibit allowed both interaction and ownership of the objects as the visitors could collect and manipulate the designs that inspired them throughout the exhibit. This created a new meaning to the modern style as it was extended through the use technology, allowing an appreciation for the creation of the objects and further produced worth that is connected to the role of the designer. This finding brings together all elements from the findings to show how the combination of good design and the integration of technology aid the creation of a worthy and wonderful exhibit.

6.4 Conclusions From Results

The case studies show that the pitfalls of traditional representation can be countered using technology. Technology is able to produce the intangible that allows the visitor to connect and interact in way that cannot be offered through other mediums. While there were concerns about technology distracting from and overshadowing worth, it was found that this occurs when technology is not integrated correctly. This can be achieved by ensuring that the technology amplifies the intent which encompasses the meaning of the exhibit. This begins with understanding the visitors needs; what experience do they want? Then understanding what best represents the story or intent of the exhibit; what should the visitor experience? And lastly; how can this intent be amplified? If the exhibition is meant to be emotional, then technology should amplify this, if it is meant to be inspirational, mystifying, exciting, and overall, perpetually, worthy and wonderful, technology can allow this when used purposefully. Before technological integration, it was solely up to the visitor to discover the worth of the exhibit. New technology provides designers and curators a platform to create the intangible through the influence of wonder, therefore, every experience can be worthy in a personal way. There were concerns that the “guiding hand” of the curator implies what meaning the visitor should comprehend, but as shown, worth is internally produced and therefore is still unique to that visitor. Technology is inherently wonderful; it is entertaining, novel and attractive, therefore the production of wonder is inevitable, it is the production of worth which should be concentrated on and, as this thesis shows, this can be created through encouraging the human connection to the visitor.

To balance wonder and worth

Wonder is produced by the physical environment that is entertaining, novel and attractive, worth is produced by human connection, one that is overall meaningful, inclusive of others and relates to the self. To balance wonder and worth an exhibition needs to be a combination of both of these things, which may come in different forms as discovered in chapter 3 and 5. The Scale of Our War exhibit produced wonder

through immersion into the experience, it also had a prominent wow factor that attracted attention, while worth was produced through emotion and understanding personal, individual experiences. In contrast, the Cooper-Hewitt exhibition produced wonder through a combination of modern and contemporary techniques through want for acquisition and interaction and the novel entertainment of the technology. Worth was produced through the implications of that interaction, including accomplishment, ownership and personal connection to the process. These exhibitions show that technology, while mostly wonderful, can aid the transition to worth which with other techniques may not achieve as successfully.

As discovered in chapter 5, the most important factor is to understand what version of wonder and worth should be produced to suit the goal and the intent of the exhibition. The right version of wonder is determined by its ability to produce worth that further connects the visitor to the wider meaning and encourages them to learn more through engagement. To the right are some scenarios of the thinking process when deciding types of wonder and worth (p.67).

Therefore wonder and worth can be balanced by:

1. Understanding the intent of the exhibit and have this influence the medium that will produce wonder and worth
2. The attraction needs to lead to human connection; the visitor needs to feel connected to the exhibit
3. A form of reflection, either subtle or obvious, instant or delayed, where the visitor can make these connections and solidify the meaning of the worth produced.
4. Technology can be used as a tool to inform worth from wonder.

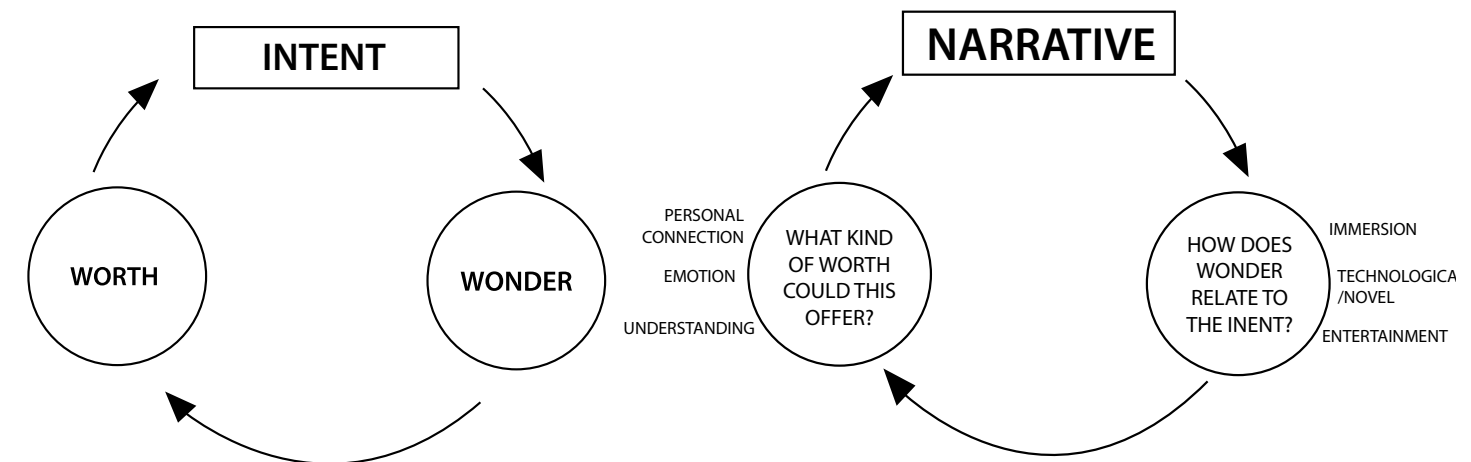


Figure 28. Diagram Balancing Through Intent

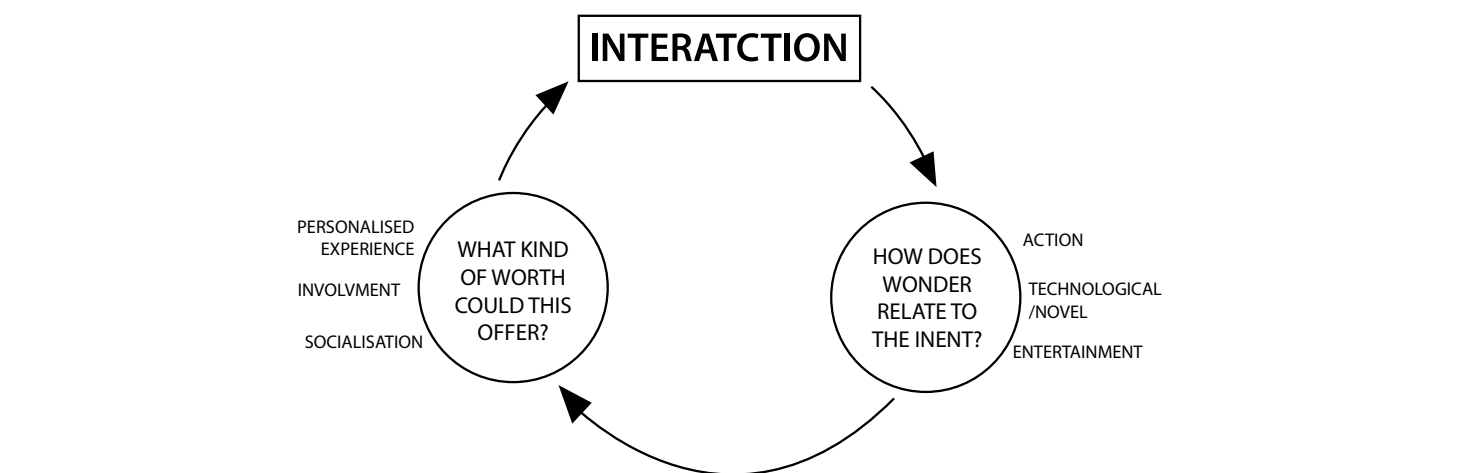


Figure 29. Diagram Balancing with Interaction

Figure 30. Diagram Balancing with Narrative

6.5 Wonder and Worth Manifesto

The next section is a graphic representation of the conclusions presented in the design manifesto "Balance". The manifesto's purpose is to prompt designers and curators to reflect on the use of technology in the production of Wonder and Worth. The manifesto begins defining the terms and further explains why they are important for the visitors' experience. How Wonder and Worth can be balanced is also described which then leads to the concluding statement that encourages designers and curators to embrace the current shift in exhibition design. This manifesto aims to motivate museum professionals to consider both the positive and negative implications new technologies could have on a visitors' experience. The manifesto is a unification of museology and design literature, observations and analysis will inform future the application of technology in exhibits and conclude this thesis.

BALANCE.

A MANIFESTO.

WHAT. Wonder and Worth are two key elements consistent throughout the museum experience, it is what separates the experience from others in the recreational entertainment industry. Wonder is the feeling of excitement and intrigue caused by an external stimulus that attracts attention and is entertaining and novel. Worth is produced internally, it is what makes the experience meaningful by prompting the visitor to understand the wider meaning of the experience, and connects them with others and themselves.

WHY. Balancing these concepts within a experience is essential for a successful design; imbalancing them can decrease the effectiveness of the exhibit to communicate its purpose and worth, or its ability to engage and create curiosity. One main concern today is that museums are becoming less like cultural institutions and more like amusement parks, as they compete with other entertainment industries and try to keep up with visitors' demands. As a result of this, wonder is weighted more heavily in today's exhibitions, and visitors keep asking for more, especially in relation to technological experiences which are innately wonderful. It is the curators and exhibition designers responsibility to sustain this balance to fulfill the museum's obligation to society and culture as a whole.

HOW. As stated by Greenblatt (1991), wonder should lead to worth. It is the spark that ignites the fire of curiosity that leads to understanding and appreciation. For this to occur in an exhibit, the intention of the exhibit needs to be known, this should influence production of wonder and ultimately the production of worth. As stated earlier, wonder is novel, entertaining and attractive, worth is orientated around human connection, therefore wonder needs to build on the human connection. One way to do this is using new technologies, as the right technology can act as a bridge from wonder to worth. Technology is inherently linked to wonder, therefore there are risks in causing an imbalance when it is used. However, when it is used correctly it can aid the production of worth and further intertwine it with wonder.

Technology has largely been the blame for the current imbalances seen in exhibition design. However, technology isn't the problem, and rather, it is the solution if it is used as a tool to extend worth through wonder, creating a balance. It is up to the designer to allow an experience that extends human the connection rather than take away from it. Lets use technology as a tool to connect, enlighten and heighten our experiences. Technological representation is the future of exhibition design, embrace it, but always consider the balance to create a worthy and wonderful experience. **FIN.**

CONCLUSION

This thesis aimed to revive the forgotten concept of wonder and worth which got lost through its many forms and definitions over time. This thesis shows how the simplified definition of the concept can guide exhibition design and curation in order to create the balanced experience which is fundamental to an exhibition's purpose and the role of a museum.

Museums were once the embodiment of the artifacts in which they possessed; with the development and integration of new technologies these artifacts became static and uninteresting. The audience demanded for more interaction and entertainment resulting in the previously prioritised demonstration of artifacts to be succeeded by the importance of the visitor's wants and needs, as well as the drive to produce profit (Balloffet et al., 2014). With this change a new reliance on technological displays was formed, causing a precarious imbalance between the expression of wonder and worth; where a wonderful experience was preferred over a worthy one (Balloffet et al., 2014). However, this new means of representation produced some positive consequences too. Visitors were able to determine how they wanted culture to be depicted and experienced; leading museums to evolve into the embodiment of people and their cultures rather than systematic scientific collections they were in the past (Hooper-Greenhill, 2000).

Greenblatt's concept resonance and wonder began the discussion about the transition from object to visitor and highlighted the importance of a balanced experience (1991, Kirshenblatt-Gimblett, 1994). This thesis pursued further developing the concept to find possible solutions

for the imbalance with the integration of new technologies while promoting its positive affects.

To re-iterate: Greenblatt's resonance or worth is the feeling one gets when the wider understanding of an experience is apprehended, while wonder refers to the feeling of excitement and intrigue that further leads to worth (1991). As demonstrated in this thesis, balancing these concepts are essential to a visitor's experience as too much wonder will lead to misinterpretation of culture, producing a perception of worth that does not communicate the exhibition's intention. In contrast, a lack of wonder fails to engage the visitor and further impacts the production of worth as there is nothing to encourage it. The concepts meaning has been dispersed into different forms over the years, as it is a complicated, diverse term due to the many variations of its expression and production. While this term is seemingly complex and ambiguous, when understanding it through application, it becomes a simple way to describe a variety of experiences that designers and curators aim to produce. Through reviving this concept in this thesis, it has highlighted the importance of simple goals and reinvigorated the basic ethos that all museums have in common; educating through story-telling. Their main goal is not to simply entertain but to educate those on stories of the past; taking entertainment beyond sheer pleasure to produce value, a sense of belonging and understanding in our everyday lives. This is what separates museums from other recreational entertainment institutions and defines their place in society. Thus the technology they use needs to reflect and endorse these values which is what this thesis aimed to explore.

The main question asked in this thesis was; what are the current-day manifestations of wonder and worth in exhibition design and how do they contribute to a balanced museum experience? To answer this question, the thesis utilised the basic design research approach and research about design strategy to produce an in depth understanding of the contemporary wonder and worth applications in exhibition design. Design thinking was also employed to produce an extended explanation of the issue and find a way to create a balance through solution-based research.

The investigation began by defining the main elements that contribute to the production of wonder and worth. This was achieved through a thematic analysis that compared and contrasted different past examples of wonderful and worthy museum experiences. This revealed that there are different versions of wonder and worth depending on the exhibition design and subject matter. Throughout the versions there were consistent themes that were identified included fundamental elements which produce wonder and worth. The elements that make up wonder include attraction, entertainment and novelty; these elements are associated with a physical stimulus and is externally produced. Meaningfulness, inclusiveness and personal connection produces worth and is overall related to the human connection that is internally produced. With this understanding of the basic elements the concept could then be applied in context in the final exploratory chapter (chp 5).

The next chapter investigated the impact technology has had in museums, there was a need for this research to be conducted as there was little in the literature that described this. This was achieved by analysing current perspectives on the matter including stigmatisations and solutions to the imbalance technology is causing. A content analysis was conducted on six articles from online museum blogs and magazines to consult various professional opinions on technology's role and the overall perspective of its integration from different sources. The analysis showed that there were many varied opinions, but there were overall negative connotations

associated with technology's integration due to concerns about the distractive nature of technology and its ability to overshadow the intent of the exhibit and therefore the intent of the museum. By comparing the concerns with wonder and worth many could be related back to the imbalance showing that these concerns reflected the issues produced by an imbalance of wonder and worth. Suggestions from the texts resulted from this analysis provided potential ways to overcome these concerns. One of the prominent solutions was that the right type of technology for the message of the exhibit was essential to ensure that it was communicating that message. It was stated that, if achieved correctly, technologies could produce many positive implications such as allowing more access, creating personal experiences and attracting new audiences.

This understanding was built upon in the next chapter which analysed two case studies from current exhibits and exhibition design approaches. This allowed a broader understanding of the relationship between wonder, worth and technology within a physical context. These cases showed successful incorporations of technology and demonstrated how technology can act as a bridge between wonder and worth, to make up for what other exhibition styles lack. This section provides the solution-based elements to the research as the examples showed successful integrations of technology, further highlighting the best approaches to different exhibition intentions.

These findings were delivered in the form of a manifesto which suggests that the balance of wonder and worth depends upon the physical, wonderful attraction, leading the visitor to empathise and make connections to themselves and others. The manifesto also enthused that the use of technology can aid in the relationship between wonder and worth, but must reflect the intention of the exhibit as this determines the type of wonder and worth produced. The manifesto further encourages museum professionals to integrate technology that extends wonder and worth through human connection as this is how worth can be produced.

The physical context added another layer to the investigation that the literature could not provide, however, further research should explore different physical contexts relating to wonder and worth to expand the connection of the literature and physical representation. This thesis provides a basis of research that could lead to more specific research on the details of this topic. This could include, as mentioned earlier, finding other physical forms of wonder and worth to expand the term and clarify the different versions that can be produced through exhibition design. More specifically, additional research on which technology produces the best connection between wonder and worth could also be explored. Another major gap that was not explored is how the visitor experiences wonder and worth, which could be improved upon through a series of interviews or case studies. While this thesis has provided a foundation, there are many other ways to expand this topic that could extend the understanding of the balance of wonder and worth and furthermore inform future application. The positive implications of this research is that it encourages a forward-looking approach to exhibition design that will help to propel museums into further contemporary representation that lessens the stigma around the integration of new technologies in museums. This does propose that there is more exploration to be conducted that understands how best to use technology to balance wonder and worth, and as these are experienced differently for everyone, there is some ambiguity of how best to approach this. Thus the path to perfect harmony in technological exhibition design is still a treacherous one, however I can be sure that this research makes that path clearer for future endeavors.

I began this thesis with the idea similar to many others, with the perspective that technology was taking away from our experiences and important realisations that connect us with the truths of reality. But with further investigation, I began to realise that technology not only provides an added layer to the experience of designed spaces but has the ability to create new meaning that has not been created before. Investigating the

curiosity cabinets and the modern museum showed that there was only one medium which they could use to communicate ideas, through materiality and objects, and therefore the worth that was produced could only be centered around materiality. New technologies including visual and interactive media allow for more exploration into the intangible, which carries the meaning. Therefore technology has the ability to extend the production of worth as it is produced by intangible aspects that make the human experience meaningful. This is significant as the level of human connection that technology is able to provide has not been achieved before in previous forms of exhibition design. This gives me hope that with time designers will perfect the application of technology as an aid of the human experience rather than a distraction away from it. The stigma about technology is related to how we are using it today, it has been a way to escape our busy lives and fill in the time so that we can never be bored, or attentive. However, it is already creating positive implications within the museum experience such as accessibility and social connection. With the revival of wonder and worth, designer's and curators can be reassured that the future of exhibition experience can both be a wonderful and worthy one. As technology can lead the way to better representation and engagement through the collaboration of both designers and curators.

APPENDICES

Appendix A. Article Summaries for Chapter 4

Source A.

How much is too much technology in a science center or museum, or is the sky the limit? Does it engage or distract? *Emily Schuster 2013 Association of science - technology centers.*

In this 2013 article by Schuster, museum professionals opinions on the integration of technology in science centers and museums were presented, Schuster’s perspective was not included however. The opinions stated were those from ten individuals from different science and cultural institutions across the UK and USA, predominantly, the suggestions were orientated about how best to integrate new technologies into museums. The tone was mainly negative and precautionary, which could have been influenced by the negative nature of the question asked; “How much is too much technology in a science center or museum, or is the sky the limit? Does it engage or distract?”. Some of the information presented was not relevant in a cultural museum context, but many of the opinions that could be applied universally including the importance of using the right technologies according to the museum’s audience and message. This article offers different reliable insights of the impact of new technologies in museums as well as further possible solutions that could be implemented through design. While the tone was negatively swayed, this text is predominantly a more neutral contribution to the overall collection of texts analysed.

Source B.

Technology and museums: making the latest advances work for our cultural institutions.
Adrian Murphy 2015, Editor of Museum and Heritage Advisor website.

In this article, like Schuster, Murphy describes varying opinions of museum professionals but does, however, in put more into the article than Schuster. The article is forward looking and mostly positive, as the author reports on the progress of integrating new technologies into exhibits. The emphasis is on the integration and exploitation of everyday technologies in museums, as visitors often come with mobile phones and expect a more interactive experience. Murphy also describes some of the challenges that museums face because of the integration of new technologies in our everyday lives which “have shifted the balance of power from the museum to the visitor.” The implications of this is the need for museums to integrate more basic technologies and become more accessible, as Murphy implies that museums are now competing with news apps and games that are accessible “at the tap of a finger”. This text also offers advice and suggestions based off new technology that is already implemented in museums and further presents an opinion that encourages more use of new technologies in museums from the simplest forms such as social media use and providing WiFi.

Source C.

Technology in Museums - less is more!
Wendy Earle 2013, Impacts and Knowledge Exchange manager at Birkbeck, University of London, and Convenor of Institute of Ideas Arts and Society Forum, Current Affairs Mag, Spiked

In Earle’s article she asserts a strong, negative and personal opinion on the integration of technology in museums. According to Earle, technology is tempting, “glistening” hands guided by the

curators to fill in information rather than allowing the viewer to determine their own opinion. She refers back to times when there was little to distract her from the artifacts on display, with only minimal labels to guide her, this allowed her to experience “wonderful things” without technology “forcing” information on her. She does, however, comment on one positive implication of technology in relation to its ability to allow access to people who would not otherwise have access to exhibitions. Predominantly, she believes that integrating technology into museums is just a way to “grab the young, before they know any better [to] create future audiences.” She further states; “Museums should allow those who want to enjoy the sheer pleasure of seeing the wonderful things that people have created and discovered in the past get on with it, without the distractions of modern gadgets. When it comes to technology in museums, less really is more.” This quote sums up her perspective and displays her resistance towards the shift museums are currently facing. This text offers the most extreme negative perspective as well as a more personal opinion compared to the other texts which investigate both positive and negative opinions from professionals as well as their own.

Source D.

The Role of Technology in Museums
Christine Nolan 2013, Current, Exhibitions, Philosophizing; Art, Management & Technology labs article writer.

Nolan presents a wary perspective where both the positive and negative influences of new technology in museums were discussed. The concerns were centered around the implications of the changing museum environment and mission, caused by an over-reliance on technology. Nolan states that technology distracts from “reflective experiences” which further moves the museum away from a sanctuary of cultural and social connection, to a place of escapism and anti-socialism. In addition to this, the integration of new technology may prove to be counterproductive, as technology progresses so rapidly there is a high risk of out-dating permanent exhibits. The positive consequences refer to attracting younger audiences and connecting the audience and museum through everyday interactions such as social media and the internet. Accessibility was also discussed as Nolan states that allowing access to exhibitions online is a “taster” for the real thing and may encourage more people to come and visit. The article concludes with a call for a balance between the physical and digital experience, as there are both positive and negative implications for the integration of technology in museums. Nolan states that museums need to think strategically about integrating technology to optimise on the benefits and minimise the risks. This article provided a well-rounded perspective, presenting a combination of professional opinion and the author’s opinion. This allowed a balancing of the different perspectives from the other articles as well as connected the opinions together.

Source E.

Museums vs. Modernity: Why Exhibition designers have a Tightrope to Walk.
Sasha 2013, the Entertainment Designer blog

While this article was presented with a negative tone; the author’s position was to encourage museums to get involved with the shifting times - or become obsolete. Sasha states that designing a museum exhibit is becoming more and more similar to what is required to design for a theme park. However, compares theme parks to candy and museums to chocolate coated almonds; as museums have a “healthy almond center, or the underlying mission to educate and inform the public” which theme parks do not have. This article consults opinions from several different professionals from both exhibition design companies and museums who comment on certain projects such as Local Projects 9/11 memorial museum. What is mainly discussed is the implications of the shift and how the audience now plays a crucial role in the driving force of this shift. Sasha goes on to comment; “It seems that museums face a tough balancing act: fall behind in technology and entertainment and lose

audience appeal; overcompensate and lose integrity. In the end, it’s about finding new relevance and longevity.” While the perspective is negative, it is motivational, and again touches upon the topics of technology enabling individual experiences, accessibility, and the audience being “number one” in the digital age. This article enthuses that not ‘keeping up with the times’ has larger negative consequences as cultural values and visitors expectations shift. This article allowed a broader understanding of technologies relationship with the shift from object to user and further tied consistent themes together. Despite offering a predominantly negative perspective, this text was the largest and most relevant contributor to this analysis which unites professional opinions within current contexts with recurring implications.

Source F.
Life at the museums
Jo Ellen Parker 2015, President and CEO of Carnegie Museums of Pittsburgh, TribeLive (Online Tribune, Pennsylvania)

In this article, Jo Ellen Parker, president and CEO of Carnegie Museums of Pittsburgh, reacts to a recent tribune review about the “death of the art museum” because of the integration of technology in museums. In opposition, Parker asserts that technology kills the museum similarly to the way “metamorphosis kills caterpillars”; it develops into something better. This article is a very positive personal perspective on the integration of technology in museums but also asserts professional opinions and knowledge. Parker argues that while new technology will be disruptive in museums, the opportunities and benefits outweigh the risks. These include accessibility of information to children as well as the opportunities that 3D printing could offer to visually impaired visitors to experience tactile “images”. Parker asserts that while the digital experience is not real, this will only encourage people to come and see the real thing, rather than discourage people away. Parkers main point is to argue that the integration of new technologies in museums will change museum processes, infrastructure and curatorship, but it does not “kill” the museum, and rather this shift is the beginning of the new museum era which “invigorates” and “enlightens” as shown by museums who already have begun with the developments.

Appendix B. Data from Chapter 4 - Content analysis

	Positive	Negative	Neutral/Sug.	Total
A.	2	8	14	
B.	7	3	10	
C.	1	8	1	
D.	8	7	10	
E.	5	15	10	
F.	14	0	0	

	Positive	Negative	Neutral/sug.	% pos	%neg
Everyday Tech	4	4	9	23.35%	23%
Distractive Tech	0	6	6	0	41.67%
Using Tech Right	2	5	6	15.38%	38.46%
Design	0	3	3	50.00%	50.00%
Visitor Engagement	3	5	7	20.00%	33.33%
Entertainment	1	6	3	10%	60.00%
Expense	1	4	0	0	100%
New audiences	4	1	6	36.36%	9%
Access	6	0	1	66.67%	0
Authentic exp	4	3	1	50.00%	33%
Change to process	6	1	1	62.50%	12%

	Positive	Negative	Neutral/sug.	% pos	%neg
meaningful	0	9	4	0	69.2
Inclusive	3	1	2	50	16.67%
Personal	2	1	4	22.22%	33.33
Attraction	9	8	4	42.85	38%
Entertainment	4	10	7	19.05	47.62%
Novelty	1	8	2	9	72.72%

Figure	pg. no.	Details	Permission
4	29	Image of Ole Worm, Natural Philosophy collection (1588-1654) Retrieved from http://www.sil.si.edu/Exhibitions/wonderbound/	According to the Smithsonian Terms of Use for images: “Smithsonian Content is identified as having “no known copyright restrictions”” and “the Smithsonian allows personal, educational, and other non-commercial uses of the Content” As long as the user complies with the terms which I have. To see more: https://www.si.edu/Termsfuse
5, 15-19, 21	41, 64, 65, 67	Images photographed by the author of different exhibition display types within Te Papa Museum.	Requested on 20/06/17, Granted on the 28/06/17. The photography session took place on the 06/07/17 accompanied by Te Papa’s Media Sales and Licensing Advisor
13-14	62	Advertising images of Te Papa Exhibit (2015) “Scale of Our War” sourced from their official website: https://www.tepapa.govt.nz/visit/whats-on/exhibitions/gallipoli-scale-our-war	Requested on 20/06/17, Granted on the 28/06/17 by Te Papa’s Media Sales and Licensing Advisor. Te Papa required to be acknowledged through a reference. The people featured in the images have given Te Papa permission for full use for the images, which covers the current use images in this thesis.
23-24	68	Images showing the Cooper-Hewitt interactive table and pen from their official website: https://www.cooperhewitt.org/ “In support of its mission for the “increase and diffusion of knowledge” The Smithsonian invites visitors to use its online content for personal, educational and other non-commercial purposes.” Copyright information: https://www.cooperhewitt.org/copyright/	As stated on the Cooper-Hewitt website: You may quote, describe, or include a copy of Smithsonian Content in your research paper so long as you: Identify the author and source of the Content as you would material from any printed work; Identify the relevant SI Website as the source of the Content; Do not remove any copyright, trademark, or other proprietary notices including attribution information, credits, or notices that are placed in or near the text, images, or data that you use; and Comply with any other terms or restrictions that may be applicable to the Content.

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Created by the Author

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WONDERFUL WORTH & WORTHY WONDER:

The revival of a forgotten concept to strike a
balance in technological exhibition design

CHARLOTTE LANGIRDGE