Introduction

Emerging Technologies, Museums and Difficult Heritage

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Theopisti Stylianou-Lambert, Alexandra Bounia
and Antigone Heraclidou

Emerging technologies such as virtual reality, augmented reality, holograms, haptics, gamification and more have, for some years now, become a significant part of museums, galleries and cultural sites worldwide. While the integration of emerging technologies in museum spaces – their effect, appeal, shortcomings or implications – remains a topic of debate among museum professionals, technology has already become a standard that visitors expect (Shehade and Stylianou-Lambert 2019). Technology in museums has already been shown to present content in a more interactive and engaging manner, provide an entry point to visitors who do not usually engage with museums and introduce items and experiences that would not otherwise be possible to introduce. This edited volume explores the potential of a specific function of emerging technologies: that of mediating difficult heritage. It examines theoretical approaches and case studies that demonstrate how emerging technologies can display, reveal and negotiate difficult, dissonant, negative or undesirable heritage. The focus is on how emerging technologies in museums can reveal unheard or silenced stories, challenge preconceptions, encourage emotional and empathetic responses, create a sense of presence, immersion or embodiment, and ultimately provide unique experiences. This introduction investigates the relationship between museums and difficult heritage, as well as the role that emerging technologies can play in contributing to narratives of difficult heritage. It also presents the chapters that follow.

Difficult Heritage and Museums as Mediators

Museums are considered to be trustworthy institutions that accumulate, preserve, interpret and exhibit objects, knowledge and stories. However, when dealing with difficult heritage, these basic museum functions can be complicated and contested. The concept of difficult heritage – even though it was not always titled as such – has been a topic of discussion over the last thirty-five years or so in various fields such as history, anthropology, archaeology, geography and tourism (Silverman 2011). However, it was the 1990s that saw a

> paradigm shift towards a socially engaged, politically aware study of the past that regards heritage as contested, recognizes the role of power in the construction of history, focuses on the production of identity, emphasizes representation and performance, and preferably analyses formerly colonial states and societies and their subaltern populations. (Silverman 2011: 5)

This paradigm shift forced museums to acknowledge that heritage is by its nature constructed by people, groups and nations who are constantly engaged in power struggles. With this came the realisation that museums *themselves* play a substantial role in heritage construction. What followed is a conscious – at least in theory – repositioning of the role of museums as active social actors that are willing to negotiate issues of social justice, human rights, global equality and planetary wellbeing, in addition to their traditional roles of educating, studying and entertaining (see the new definition of museums proposed by the International Council of Museums [ICOM], ICOM 2019). Actual museum practices can range from merely acknowledging injustice and power imbalances to creating museums that actively engage in activism and explicitly address issues of inequalities, injustices and environmental challenges (Janes and Sandell 2019). The more socially engaged and politically aware museum professionals are, the more conscious they become of their responsibility to deal with contested but urgent issues. Indeed, more and more exhibitions about difficult heritage are being produced each year, more relevant books and articles are being published, and more museum-related conferences are choosing to dedicate sessions to difficult heritage.

Over the years, researchers and theoreticians have used different terms to describe more or less the same thing, 'namely the challenge of what to do with the material remains of an historical period, site, or event that is today generally perceived as problematic for one reason or another' (Samuels 2015: 113). Some of the terms that have been used are: dissonant heritage (Tunbridge and Ashworth 1996), negative heritage (Meskell 2002), undesirable heritage (Macdonald 2006), difficult heritage (Macdonald 2009), ambivalent heritage (Breglia 2006; Chadha 2006) and contested heritage (Silverman 2011). For the purpose of this volume, we chose to use the term 'difficult heritage', which was first introduced

by Sharon Macdonald as 'a past that is recognized as meaningful in the present but that is also contested and awkward for public reconciliation with a positive, self-affirming contemporary identity' (2009: 1). The reason for choosing this term over others is because it places an emphasis on the *process* of dealing with the past in the present time. That is, the difficulty lies not in the object, site or event per se but with the 'practice of heritage-making' (Samuels 2015: 114) – the processes of interpreting and presenting 'loaded' objects and sites, stories of underrepresented minorities, sensitive issues or traumatic events. The emphasis is also on *today*. As Gross and Terra (2018: 55) mention: 'What makes difficult history difficult is not how it confirms or complicates a particular student's prior historical understanding but the degree to which it challenges or undermines the dominant societal narratives'. The authors might be referring to difficult history, but their argument can easily apply to difficult heritage: the difficulty lies in the fact that parts of our heritage challenge dominant societal narratives today. This might not have been true in the past or might not present a challenge in the future.

Difficult heritage has for some years now puzzled museums. The International Council of Museums (ICOM) recognises that there is still difficulty in addressing issues such as who has the right to decide what is remembered (and what is forgotten) and how to do so (Altayli and Viau Courville 2018). The past is not always virtuous, and museums are called to narrate traumatic events that might still have an effect on people, such as histories of genocide, slavery, war, disease, racism and sexism. These histories of oppression, violence and trauma are defined by Rose (2016) as 'difficult history'.

But history and heritage are not synonymous. It is important to untangle the tension between 'difficult history' and 'difficult heritage', two terms that are sometimes used interchangeably. While history and heritage are both connected with the past and can be constantly reinterpreted, they are also different. History is our attempt to reconstruct and understand the events, lives and experiences of those who came before us. But whose histories will be preserved, heard and discussed depends on choices made in the present. History often aims to communicate a shared understanding of the past and has been extensively used to create national stories and provide narratives that bring people together, often by excluding those that are not considered welcome or important for these stories (Gross and Terra 2018). On the other hand, heritage is what has survived from the past – tangible or intangible. Objects, buildings, customs and beliefs survive the passage of time and are branded as heritage only when people value them enough to pass them on to future generations. After all, heritage is something that is inherited, passed down from previous generations, and usually has positive connotations. But as MacNamara (2019) aptly points out, the monuments we have inherited from our past were never intended to be neutral. Positive and glorified stories aside, what happens with objects, buildings and customs associ-

ated with shame, violence, abuse and overall unethical behaviour? How about collections and sites that are not part of a positive narrative of a shared past? Are these collected and interpreted in a way that will shed light to these behaviours, or will they be silenced, erased or even destroyed? There are, in fact, many examples of heritage that have been appropriated, misused, obliterated or excluded to serve the needs of the present (Silverman 2011).

Museums are, by their nature, implicated in all these power struggles and imbalances. Their collections, archives and practices are shaped by these struggles: they are the venues where history is made public, they are the places that hold the evidence that history will use in order to create narratives about the past. Museums select not only which stories will be presented but also which evidence will survive as building material for future stories. Museum collections (at their core, a selection process) and their documentation are often considered 'neutral' and 'academic', but they can also support silences, half-truths or even misrepresentations.

As a result, museums are at the heart of both 'difficult history' *and* 'difficult heritage'. They provide the evidence necessary for history to offer understandings of the past. They are the places where the history of contentious or shameful pasts – that may challenge and undermine social narratives – are presented (or not). They choose to collect and safeguard tangible and intangible heritage that enables the interpretation and communication of difficult history (or not). They can offer voice to silenced and misrepresented groups by opening up their collections' management and curatorial strategies, and by bringing to the surface missing or underrepresented voices (or not). However, regardless of their choices, museums are places where people across generations can get involved in a robust engagement with the past, revise their historical understandings, and co-create a shared, inclusive, constantly developing knowledge of the past. Affect and empathy, as well as immersion and embodiment, can facilitate this engagement. As we will see in the chapters that follow, immersive and interactive technologies have the potential to help museums address these challenges.

However, interpreting and narrating difficult histories is, well, difficult and unavoidably involves certain risks. As several groups and people with often conflicting points of view are involved, ethical, emotional and political issues tend to arise. There is a very real risk of alienating audiences and hurting their sensibilities (Rose 2016). Furthermore, if stories of minorities or victims are not treated ethically and with sensitivity, there is a risk of revictimisation. As Pabst (2018: 86) argues: 'Working with sensitive, contested histories involves weighing many considerations and balancing many different needs'. However, the risks are well worth the effort as engaging with difficult heritage comes with important potential benefits: creating forums and advocating for social justice, remembering marginalised communities and revealing silenced voices, advocating for human rights, cultivating critical thinking, warning against future violence, and

supporting reconciliation, community engagement and healing (Rose 2016). All roles that 'new' and 'aware' museums are willing to adopt.

Balancing diverse needs in a considerate and professional way and communicating with different parties is often the role of mediators. We argue that museums can use emerging technologies to help them take on exactly such a role – i.e. as go-betweens – that would allow visitors to engage with difficult heritage and histories 'without reinforcing ethnic, religious, and cultural divisions on the one hand, or undermining social cohesion on the other' (Gross and Terra 2018: 56). Emerging technologies have certain characteristics that make them well suited to represent difficult heritage: they can bring to the surface missing or underrepresented voices, elicit affective and empathetic responses, and cultivate a sense of presence, immersion and embodiment.

Emerging Technologies as Mediation Tools

Parry (2007) sees the museum as a medium that contains multiple other media (glass cases, text panels, interactives, etc.). He also argues that

> a medium can send its own messages, the medium is part of the message, and that, moreover, the reciprocity between medium and content is compounded in the use of modern media (such as digital media) where the act of communication is so instantaneous. (Parry 2007: 11)

This is especially true when it comes to emerging technologies. As there are usually no glass cases with objects and texts, the technology becomes part of the message; it is simultaneously the medium and the content, and it is difficult to separate one from the other.

A growing body of literature is focused on the investigation of the possibilities of different technologies and their advantages for museums (see, for example, Freeman et al. 2016; Loumos et al. 2018; Shah and Ghazali 2018; Stogner 2011). The research, however, tends to focus on the technical considerations of projects (Cameron and Kenderdine 2010) or how these technologies have changed audience engagement, whereas the actual evaluation of the effects of these technologies or their possible implications and limitations remains an understudied area (Kidd 2014; Shehade and Stylianou-Lambert 2019). For example, some of the themes discussed in the literature include: changes in audience accessibility through social or other digital media, new tools to visualise heritage and art, education through technological tools, new methods for managing collections, and new forms of curatorship and co-creation or communication. This volume aims to move away from the discussion of technical tools, collection management systems, education, communication or exhibition design, and how

technologies have changed them. Instead, the work aims to contribute to the existing discussion by going one step further, i.e. by focusing on a very specific category of heritage and the transformational role emerging technologies might play in how museums present and discuss narratives that are often traumatic, difficult to present, sensitive or controversial.

By emerging technologies, we refer to contemporary advances and innovations in technology that can be used in museums, such as virtual reality, augmented reality, mixed reality, holograms, artificial intelligence, smart systems, etc. Several examples from museums around the world provide insights on how these technologies operate and add value to exhibits by enhancing visitors' experience (Pop and Borza 2016; Ross et al. 2005). For instance, some of the more interesting attempts include: *Mona Lisa: Beyond the Glass* (the first virtual reality experience offered by the Louvre Museum); *Dalí Lives* (a video installation featuring an interactive deepfake recreation of Salvador Dalí at the Dalí Museum in St Petersburg, Florida, see Kidd and Rees in this book), 'Walking among Dinosaurs' (an AR installation at the Smithsonian Museum of Natural History); the MR 'Kennin-Ji Temple' exhibition (Kyoto National Museum); the digital 'Lifeline Table' (Churchill War Rooms in England); 'Dimensions in History' (at the Illinois Holocaust Museum and Education Center, which presents stories of the Holocaust through holograms of its survivors; see Stylianou in this book), and many more.

Emerging technologies are usually associated with new technologies that are still under development and are expected to change the status quo. The advances in technology are so fast that the list of what is considered an emerging technology changes year upon year. According to Kidd (2014), all media were new at some point, and newness is always being reinvented and redefined. For this reason, our emphasis is not on specific technologies or their 'newness' but on new potentials that they bring to the foreground.

We focus on emerging technologies instead of more traditional museum media (such as audio guides, videos and touchscreen interactives), because the former are still developing and museum professionals should ideally be aware of their advantages and limitations so they can influence their future development and uses in museums. But most importantly, emerging technologies have certain characteristics that can be valuable when dealing with difficult heritage: they can be more affective, immersive and 'clever' than traditional museum media. According to Stogner (2011: 117): 'Twenty-first century media technologies have excellent potential to create immersive storytelling for cultural exhibitions by heightening sensory engagement and by forging deeper cognitive and emotional contextual connections with artifacts and objects'. This emphasis on immersive storytelling, sensory engagement and cognitive and emotional contextual connections can be found again and again across the case studies discussed in this volume.

This volume asks how immersive technologies can become mediation tools for museums dealing with difficult heritage. How can museums, with the help of technology, bring to surface omitted narratives and stories of underprivileged groups of people (such as minorities, women, and LGBTQI+), allow for the reinterpretation of their collections and thus support the creation of histories that were not previously available? How can museums narrate stories that allow for multiperspectivity, inclusiveness, tolerance and social cohesion? How and to what extent does the use of technology in museums facilitate an understanding of issues around difficult history and allow for self-reflection and problematisation of the way we understand the self and the other? How can we use emerging technologies not only to provide cognitive experiences but also to elicit emotional and empathetic responses? How can we use technology to create a sense of presence, immersion and embodiment that enables an understanding of the past that is both evolving and robust?

Introduction of Chapters

The chapters that follow explore a number of subjects that fall under the broad category of difficult heritage due to their sensitive or contested character. They include, but are not limited to, erased African American heritage (chapter 1), LGBTQI+ rights (chapter 2), women's hidden histories (chapter 3), war and genocide (chapter 4), the Holocaust (chapter 5), child sexual abuse (chapter 6), climate change and global warming (chapter 7), built difficult heritage such as prisons (chapter 8), marginalised experiences centred on the body (chapter 9) and deepfakes as a form of difficult heritage (chapter 10). The chapters examine how museums can use the latest technology to more effectively treat these awkward, contested and rarely discussed subjects and stories. The technologies discussed range from GIS systems (chapter 1), interactive and immersive installations (chapters 2, 8 and 9), artificial intelligence and deepfakes (chapters 3 and 10) and holograms (chapters 6 and 8) to virtual or augmented reality (chapters 4, 5 and 9).

Some chapters focus on the theory and approaches used to treat issues of difficult history in museums and make reference to certain examples. Others go deep with case studies that demonstrate the ways emerging technologies are already being used in museums to deal with issues of difficult heritage. It is worth mentioning that the authors come from different countries, backgrounds and fields of study. Among them are academics in the fields of digital humanities, film and cyberspace, museum studies, art theory and history and cultural technology; artists, media artists, architects and museum professionals; and researchers in the fields of history, informatics and cultural technology. While diverse methods, means and approaches are put under scrutiny, the chapters consistently focus on

the connection between museums, difficult heritage and emerging technologies. The volume does not attempt to cover all geographical locations or be comprehensive in its scope – it is simply impossible to do this in just one volume. However, we made a special effort to include a variety of case studies from different parts of the world, including from Australia, China, Iraq, Italy, Sweden, Switzerland, the United Kingdom and the United States of America.

The book is divided into three parts, and each part addresses a potential path for emerging technologies to deal with difficult heritage: bringing to the surface omitted narratives, eliciting emotional and empathetic responses, and creating a sense of presence, immersion and embodiment. Significant overlap as well as commonalities between the categories proved to be unavoidable, as indicated by several parallel threads across the chapters.

Revealing Missing or Underrepresented Narratives

As mentioned in the beginning of this chapter, the tangible and intangible heritage that museums care for is the result of complex histories and various socio-political factors. Thus, not all groups are represented equally or accurately. As Rose (2016: 25) argues:

> The histories of the victors often overshadow the histories of the oppressed, the marginalized, and the underclasses by burying the subjugated stories further away into memory. The artifacts and the archives are not saved or appreciated, and they become scarcer over time as historical actors and their descendants discard objects and memories of tragedies, allowing younger generations to forget the stories these items hold.

Minorities and marginalised groups are often underrepresented or misrepresented in galleries, libraries, archives and museums (GLAM institutions). The heritage of these groups either has not historically been considered worth collecting and documenting or has actually been destroyed, thus rendering it invisible. However, in recent years, the myth of 'archival impartiality' has been progressively dismantled (Findlay 2016: 155); various initiatives have been undertaken to bring people together, to manage information and its sources, in order to challenge discrimination, to enrich and empower heritage institutions to reinterpret their collections, to diversify them and ultimately allow for the creation of more complicated and inclusive stories (Flinn 2011). Flinn also describes this process as 'archival activism', referring to the practices of both established GLAM institutions as well as community-led, independent, archival and museum projects, or hybrids of the two (Flinn 2011; Iacovino 2015). Similarly, the practice of organising exhibitions that aim to mitigate the marginalisation or exclusion of certain groups from grant narratives can be called 'curatorial ac-

tivism'. Maura Reilly (2018, 2017: n.p.) used the term 'curatorial activism' to refer to a practice of organising art exhibitions 'that commits itself to counter-hegemonic initiatives that give voice to those who have been historically silenced or omitted altogether'.

The idea of going 'outside the institution' to document marginalised or silenced stories is not new; it has been around since the 1970s. However, it is only within the last decade or so that participative initiatives for archiving and presenting previously marginalised histories have become mainstream (McKinney 2020). The role of technology has been instrumental in empowering these new participative forms of engagement with history making. Complex multimedia practices have been used by different communities to collect, circulate and make available information and resources that matter to them, or to document them in a manner that (finally) does justice to the community's past (Iacovino 2015).

However, as Findlay (2016: 158) argues, archival activists, whether they are members of communities or of institutions, need to go further; they need to embrace decentralised models of thinking and operating, as well as the technologies that will allow for such new models to be created. Managing information is critical and information matters for marginalised groups and for their representation in heritage institutions and, eventually, in history. Technological systems that allow for different models of managing information can lead to the creation of new communities and unveil information hidden in older forms of documentation. New structures of metadata are key for such transformational changes.

The chapters in the first part of this book focus on these issues and discuss how, with the help of ideas originating in archival and curatorial activism, as well as community engagement, emerging technologies can be used to challenge traditional models of recording and presenting histories, bring to the fore hidden information and stories and, ultimately, give voice to underrepresented groups.

In chapter 1, Edward González-Tennant discusses a case of heritage that was completely destroyed. The 1923 Rosewood Massacre involved a series of increasingly violent events, culminating in the displacement of the town's mostly African American community and the destruction of all Black-owned structures. The author elaborates on how the town was virtually reconstructed with the help of archaeological excavations, remote sensing, documentary videos and geographic information systems (GIS). With the help of technology, the destroyed heritage of a disadvantaged community was reconstructed and once again brought to the surface to point towards racial injustice. The primary goal uniting this work is the production of public knowledge by rendering research transparent and being honest in engaging with locals, descendants and the public alike.

Similarly, Sharon Webb in chapter 2 explores the work carried out to preserve and make available a part of underrepresented LGBTQI+ history. The chapter describes community engagement work to archive the 'Queer in Brighton' collection, a mainly oral history archive, with long-term digital preservation in

mind. It also explores the development of 'Queer Codebreakers' – an interactive installation that uses a low-tech solution to make accessible and visible queer heritage and histories. In particular, it focuses on queer archiving and community curation in museum spaces as forms of archival and curatorial activism and discusses the need to involve communities in archiving and curation processes.

In chapter 3, Anna Foka, Jenny Attermark and Fredrik Wahlberg go beyond claims of digital technology as a means for democratisation of knowledge and focus on archival online repositories of women's history, concentrating on a Swedish case study: the collection of industry leader Carl Sahlin (1861–1943) at the Swedish National Museum of Science and Technology. The chapter contributes a detailed methodology for collection enrichment, including the possibilities and pitfalls of using emerging technologies, specifically AI, for classification and enrichment so as to open up new critical questions about historical women.

Eliciting Affective and Empathetic Responses

Museums are often in the difficult position of narrating traumatic events. However, more often than not, difficult heritage resists straightforward and linear narration because of a lack of historical distance or common agreement about what happened in the past. Other times, when historical distance is there, narration through text and images might help cognitive understanding (i.e. the Holocaust did happen and millions of people died) but not emotional understanding (i.e. how did it feel to be persecuted because of your ethnicity). As Witcomb (2010: 46) explains:

> In reaching out to the senses, in seeking affective responses, multimedia installations in museums may well be more politically effective in achieving alternation in the mind of the citizen than the more traditional use of the objects in didactic displays intent on *reforming* the minds of the citizen.

Indeed, emotional understanding is key in achieving change in the opinions and perceptions of visitors, and empathy plays an important role in this process. Empathy is a twentieth-century term with multiple definitions. Reniers et al. (2011: 85) argue that empathy has two components: 'a comprehension of other people's experience (cognitive empathy) as well as the ability to vicariously experience the emotional experience of others (affective empathy)'. In general, empathy allows us to 'connect to ourselves and with others while awakening us to our connectedness as parts of a greater whole' (Gokcigdem 2016: xix). Empathetic responses to difficult heritage are important because they can influence our worldview; perceptions of the past, present and future; and, perhaps most importantly, our actions. According to Ivcevic and Botín (2019: n.p.): 'Research shows that empathy facilitates forgiveness and relationship quality, it motivates altruistic behavior

even when helping involves a cost to oneself, prevents aggression (e.g. bullying), and facilitates creativity and innovation'. But empathy can only be learned by lived experiences.

Alison Landsberg (2003: 148; 2004: 150) introduced the idea of 'prosthetic memory' to discuss 'personal memories' that are created not through individual knowledge as such but as the result of experiential encounters with technologies that often engage people with national and/or collective traumas. She argues that these mediated-through-technology memories can be instrumental in generating empathy, which in her view is crucial for the formation of feelings of solidarity, mutual understanding and, eventually, ethical behaviour. Furthermore, virtual environments can support 'true emotional responses' (Mühlberger et al. 2007: 340) and encourage a visitor to behave 'as an actor rather than an observer' (Tavinor 2005: 20).

Hassapopoulou (2018) argues that prosthetic memory overlaps with 'technomemory' to produce 'hybrid memories'. Despite the fact that she takes a negative stance against VR, arguing that it can reinforce hegemonic cultural narratives instead of promoting counterhegemonic ones, she agrees that 'the fusion of technological tools with the biological functions of information accumulation, recollection and socio-cultural associations' is indeed very powerful and can lead to people undertaking 'collective social responsibility' (2018: 383). Along similar lines, empirical studies of exhibitions created in virtual environments suggest that empathy can affect learning and support ideas like reconciliation (Muller 2020).

Empathy is most often created when the focus is not on the grand story but on individual stories, i.e. how the traumatic event has influenced specific individuals. According to Pabst (2018: 91): 'Several studies of museum exhibitions featuring personal narratives confirm the assumption that hearing another human being talk about feelings attached to specific events leads to stronger reactions than information given without an emotionally affected speaker.' Furthermore, focusing on individuals and collaborating with people who lived through the traumatic events avoids revictimisation and gives voice to the victims. As De Wildt (2018) notes, exhibiting individual stories in a museum means building a relationship with people, but it also means negotiating the way their stories can or should be presented. Therefore, emerging technologies have the potential to become an access point towards immersing into the uniquely personal experiences of individuals, thus empowering them to share their stories and allowing them to receive acknowledgement of past injustices while contributing to the formulation of prosthetic memories which might lead to solidarity, ethical behaviour and reconciliation.

The three chapters in this second section present projects that use emerging technologies to encourage an affective and empathetic reading of the subject at hand. To start with, in chapter 4, Rozhen Kamal Mohammed-Amin examines how augmented reality and virtual reality technologies have entered museums and are changing their reality. She argues that VR and AR technologies medi-

ate novel and multisensory experiences and interactions with heritage for deeper cognitive and affective engagements. The chapter elaborates on the confluence of VR and difficult heritage by discussing the motivation, development and informal evaluation of the *Nobody's Listening* VR exhibition, which aims to memorialise and engage with the Yazidi minority genocide in Iraq. A multidisciplinary team felt the need for a new way to advocate for the Yazidis and amplify their unheard voices. VR technology was thus used for perspective taking.

In chapter 5, Elena Stylianou discusses holography and its history, drawing from examples relevant to how holography is currently used in museums, with a particular emphasis on *Dimensions in Testimony*. The specific interactive installation captures and preserves the testimonies of Holocaust survivors and allows visitors to interact with these survivors' holograms without the use of headsets. Through *Dimensions in Testimony*, the chapter argues that holograms can open up the narrative space of the museum to include personal accounts and offer alternative tools for storytelling that extend curatorial practices relevant to representing difficult and traumatic histories through the politics of affect and testimony.

On the other side of the globe, personal, traumatic accounts of the past have also preoccupied Lilly Hibberd. In October 2018, as part of the national apology following the Australian Royal Commission into Institutional Responses to Child Sexual Abuse, a pledge was made to create a national museum to memorialise its findings. In chapter 6, Hibberd questions what sort of models exist for such a museum, while speculating on the role of experimental technologies in the context of lived trauma, based on insights gathered from the collaborative production of *Parragirls Past, Present*, an immersive-media film coproduced in 2017 with adult survivors of the former Australian child welfare institution, Parramatta Girls Home.

In chapter 7, Colin Sterling questions the value of the approach followed by high-profile exhibitions to communicate the profound challenges of climate change through immersive forms of display and interpretation, in terms of understanding the complexities and injustices of global warming, framed here through the lens of contested heritage. Drawing on three case studies from contemporary arts practice, the chapter explores the different ways in which 'experiencing' climate change and the Anthropocene might prompt meaningful climate action. A concluding discussion argues that museums need to be seen as part of a broader cultural ecosystem, rather than simply spaces of experience, in order to understand their role in confronting climate breakdown.

Creating a Sense of Presence, Immersion and Embodiment

This last section is about the potential of technology to create a sense of presence, immersion and embodiment; to go beyond what physical objects and interpre-

tation can offer, to become a mediation tool that can immerse visitors into an embodied presence.

Perhaps as a reaction to postmodernity and the dominance of 'meaning' and 'interpretation', the concept of 'presence' has been rediscovered and redeveloped in the fields of history and humanities (Kleinberg 2013). Hans Ulrich Gumbrecht (2004) explains that the Western world today adopts a 'meaning culture', in which knowledge is produced by a subject who is observing, rather than participating, in the world. He believes that our 'meaning culture' cannot possibly cover the full complexity of our existence and argues for the development of concepts in the humanities that go beyond the layer of meaning in order to relate to the world in more complex, bodily and space-related ways. For this reason, he argues for a shift from a 'meaning culture' to a 'presence culture'. The main dimension of a 'presence culture' is that of space and more particularly the relationship between human bodies and the world around them.

Emerging, and especially immersive, technologies have the potential to provide experiences that are not exclusively related to meaning, cognitive knowledge and interpretation but can also create a sense of presence, immersion and embodiment. However, when talking about technological applications, the terms presence, immersion and embodiment have slightly different meanings than what the philosopher Gumbrecht refers to. These terms have varied definitions that are nevertheless so interconnected they are often used interchangeably. Having in mind that there are no commonly accepted definitions for immersion, presence and embodiment, we will attempt to briefly clarify these terms. 'Immersion' can be defined as the 'feeling of being present inside an artificial environment, despite physical presence in the real world' (Górski et al. 2017: 396) and is commonly used to describe experiences such as those of VR, AR and MR. The more immersive an experience is, the more easily users can dive into an artificial world and lose awareness of the fact that they are not in the 'real' world. Full immersion can be described as the opposite of looking through a window, or a screen for that matter; a point of view that renders the viewer as an observer. Instead, full immersion places the visitor/user firmly at the centre and 'inside' an experience.

While immersion refers to an objective point of view that a system delivers, 'presence' refers to a reaction to the immersion (Slater 2003). Presence is related to the feeling of 'being there', either in a physical or digital environment. Furthermore, immersive systems try to mobilise the viewer/user by stimulating the body's senses, and this is related to our sense of embodiment. According to Sarah Kenderdine (2016: 29): 'Embodiment is multisensory and results from effects of visual, auditory, tactile, olfactory, and gustatory cues. Embodiment is entanglement through, and with, context and environment. Embodiment is immersive, resulting in emergent response to being in the world'.

Immersion, presence and embodiment of course also connect with empathy (see previous section). Immersive experiences offered by emerging technolo-

gies could encourage empathetic responses as well as critique, in the sense that, through immersion, one better realises one's own standpoint as opposed to those of others, a capacity needed when dealing with issues of difficult history. What the chapters in this section argue is that emerging technologies can immerse visitors in, and transport them to, other worlds, thus offering deeper, embodied and more introspective experiences. Furthermore, immersive and embodied experiences free the visitors from external disruptions, allowing them to engage more mindfully and fully with the museum (Stogner 2011).

Francesca Lanz and Elena Montanari, in chapter 8, focus on the challenges and opportunities posed by difficult built heritage. Technology is used to immerse visitors in the previous uses of built heritage. Difficult built heritage consists of architectural assemblages in which diverse and nested levels of awkwardness converge, resulting in a complex intertwinement of contentious meanings, painful stories and physical traces. In this chapter, through the comparison of two emblematic examples – the Horsens Fængselsmuseet and the Museo di Storia della Psichiatria in Reggio Emilia – that sit at the opposite extremes in the integration of digital tools in their exhibition design, the authors outline the challenges and opportunities posed by the reuse of 'difficult built heritage' as a museum, exploring the possible contributions – and drawbacks – of the use of digital technologies in such a musealisation process and in defining visitors' experiences.

As immersive and engaged interfaces and design in museums have begun to augment sensorial encounters with both tangible heritage and living traditions, recent theory has focused on the renegotiation of contested forms of material and immaterial heritage production. Examining a series of examples of recent immersive works collaboratively created for museum exhibitions, Lily Hibberd and Sarah Kenderdine analyse in chapter 9 both the challenges and the possibilities of an emergent domain of digitally embodied historiography – specific to marginalised experiences centred on the body – as a touchstone for future approaches to difficult, intangible and ephemeral forms of heritage within the museum.

Finally, museums and galleries are beginning to investigate how they might make use of deepfake technologies. An example that is investigated in chapter 10 by Jenny Kidd and Arran Rees is *Dalí Lives*, a video installation featuring an interactive deepfake recreation of Salvador Dalí, which was installed in 2019 at the Dalí Museum in St Petersburg, Florida. This installation makes Dalí 'present' again. Kidd explores the technical and ethical dimensions of such a practice, reflecting on the potential for positive, negative and more ambivalent uses within arts and cultural contexts. Drawing on recent examples, it considers deepfakes as a form of difficult heritage, connecting them with ongoing debates about fakery and authenticity, as well as considering issues related to their collection and

preservation. This chapter explores deepfake technologies, not merely as tools for interpretation but as material expression in their own right.

Conclusion

The main argument of this book is that emerging technologies not only provide alternative or 'new' media to discuss difficult history and present difficult heritage in museums, but they can also help the transition of museums into ethical spaces of affect, empathy, and embodied presence. They can empower archival activism and, in effect, facilitate new ways of thinking about the role and purpose of museums. They could also offer tools for new curatorial approaches and promote curatorial activism in the sense that they can involve people from different backgrounds, include marginalised or unheard voices in the curatorial process and effectively ignite discussion around difficult matters. And such discussions seem more relevant now than ever, as movements that fight against white supremacy (Black Lives Matter) and sexual violence (#MeToo), challenge racist and imperialist values and legacies, and advocate in favour of decolonising art and education, have become stronger and more vocal. But, most importantly, emerging technologies can be used to establish ethical relationships. As Andrea Witcomb argues (2020: 486): 'The opportunity to use digital representations to encourage more ethical relations between human and non-human relations is particularly applicable in contexts where difficult histories provide the terrain of engagement'.

As the chapters in this volume clearly argue, emerging technologies can be used to bring to the fore hidden stories, make silenced voices heard, encourage more empathetic responses, provide access, represent the oppressed, support the creation of new relationships with the past, present and future, and immerse the user/visitor into new kinds of experiences. However, all contributions support that technology is a powerful tool, but not a panacea; awareness of the political context and multiple actors must be at play, and hard work and constant vigilance are necessary to prevent reinforcing, rather than questioning, hegemonic narratives, or the creation of new exclusions and a different set of silent stories. New technologies are merely tools with a lot of potential. Museums have the responsibility of exploring these potentials when it comes to dealing with difficult heritage in an ethical and responsible manner.

Acknowledgements

Theopisti Stylianou-Lambert is associate professor at the Department of Multimedia and Graphic Arts of the Cyprus University of Technology and the coordinator of its Visual Sociology and Museum Studies Lab. Since 2018, she is also the Museum Lab group leader at CYENS Centre of Excellence. Theopisti has published widely on museums and photography, is the coauthor of *The Political Museum* (Routledge, 2016) and the editor of *Photography and Museums: Displaying Death* (coeditor, Routledge, 2017), *Museums and Visitor Photography* (MuseumsEtc, 2016), *Photography and Cyprus: Time, Place, Identity* (coeditor, I. B. Tauris, 2014), and *Re-envisioning Cyprus* (coeditor, University of Nicosia Press, 2010). She earned her PhD in museum studies from the University of Leicester (UK) and her MA in visual arts/museum education from the University of Texas at Austin (USA). Theopisti is also the recipient of several scholarships and awards, including a Smithsonian Fellowship in Museum Practice (USA), a Fulbright Fellowship (USA) and an Arts and Humanities Research Council Award (UK).

Alexandra Bounia is professor of museology at the University of the Aegean in Greece. She studied archaeology and history of art at the University of Athens (Greece) and museology at the University of Leicester (UK). Her research interests focus on the history, theory and management of collections and museums, museum ethics, museum sustainability, and the role of museums in dealing with difficult and political issues. Alexandra has served as the vice-rector of academic affairs and quality assurance at the University of the Aegean (2014–17) and as chair of the Hellenic Committee of ICOM (2016–18), as well as the board's executive secretary (2012–16). From 2017 until 2020 she was an associate professor of museum and gallery practice in UCL (campus in Qatar). She has published in Greek and international journals and participates in research projects in Greece and abroad. She coedited with Susan M. Pearce the book *Collector's Voice: Ancient Voices* (Ashgate Press, 2001). Her book *Collectors and Collections in the Ancient World: The Nature of Classical Collecting* was published in 2004 by the same publisher, while in 2009 her book *'Behind the Scenes of the Museum': Collections Management in Contemporary Museums* was published in Greek by Patakis Publications. Her most recent book, coauthored with Theopisti Stylianou-Lambert and titled *The Political Museum: Power, Conflict and Identity in Cyprus*, was published in 2016 by Routledge.

Antigone Heraclidou is a postdoctoral research associate at the Museum Lab of CYENS Centre of Excellence. She holds an MSc in international history from

the London School of Economics and a PhD in modern history from the Institute of Commonwealth Studies, University of London. She is the author of *Imperial Control in Cyprus: Education and Political Manipulation in the British Empire* (2017), and coeditor of *Cyprus: From Colonialism to the Present: Visions and Realities; Essays in honour of Professor Robert Holland* (2018), and "Political Actors in the Mediterranean, 1918–1964: Cyprus and Malta Compared," special issue of the *Journal of Mediterranean Studies*, 23(1) (2014). She has also published her work in international journals and was the co-organizer of three international academic conferences in London. She has taught history modules at the University of Cyprus, the Open University of Cyprus and the European University of Cyprus. She worked closely with several museums in Nicosia from her post as an officer at the Nicosia Tourism Board. Her research interests include Cyprus's colonial history, decolonisation, education and cultural heritage.

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