

Heritage Presents:

Critical Approaches to New Media and Cultural Heritage

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Abstract

To understand what cultural heritage means in the 21st century, the emergence of rapid developing new media in this field needs academic attention (Kalay et al., 2007; Harrison, 2010; Harrison, 2013). This explorative study aims to start scientific debates by approaching new media in heritage practices by examining two cases and conducting an experiment within a museum setting. During the experiment (n = 82), participants were observed and interviewed while they were engaging with a copy of one of the museums' top pieces in Virtual Reality. The role of new media is examined in relation to the Authorised Heritage Discourse, which dominates the way heritage is seen according to scholars in the Critical Heritage Studies (Smith, 2006). By comparing the representation, management and dissemination of new media in heritage, this research suggests that scholars concerning new media applications, to form dialogical and interdisciplinary approaches within heritage practices, should move beyond technical aspects and verisimilitude.

1 Introduction

‘Everything not saved will be lost.’ – Nintendo “Quit Screen” message

Since we do not know what the new media of tomorrow is, it is a necessity to document and research them today. Especially their involvement and effects in fields that nowadays are focused on the past, like the one of cultural heritage. This field is more than ever omnipresent and active due to raising attention to its threats. Recent events, like the iconoclasm and looting by terroristic groups or the danger caused by natural disasters as a consequence of climate change, do not only worry heritage experts but it also shocks all kinds of individuals and communities around the globe. As a response to these threats, an increase in ‘heritagisation’ (Walsh, 1992) can be seen over the last decades. For a long time, the academic field was focused on the pragmatic side of heritage, but an interdisciplinary field arose to research the context of critical analyses of the use of the past by governments to build a sense of national identity. In this academic debate there is a large focus on laws and perceptions of heritage. But it is lacking research of the effects of the new media that are also omnipresent in the field of cultural heritage. The technologies for these media have progressed significantly over the last decade and became more accessible for different kinds of scientific, educational and recreational purposes. Nowadays many heritage museums, sites and academics make use of new media to show reconstructions, provide context and to create interactions. But, how meaningful are these applications? Are heritage scholars and practitioners equipped well enough with the knowledge, skills and tools to use forms of new media in a way that it enhances the heritage it applies to? Can it move beyond being a gimmick or a bait to attract visitors? And could these technologies help identifying what heritage is truly meaningful, necessary or important to preserve via a bottom-up approach?

Academics in the field of Critical Heritage Studies state that a hybrid forum is important for the future of heritage. Current research try to emphasise that heritage is something that emerges out of the relationship between past and present as a reflection on the future (Harrison, 2010). Heritage is an active assembling of series of objects, places and practices that we choose to hold up as a mirror to the present, associated with a particular set of values that we wish to take with us into the future. As such, heritage is not inert or passive, but has the potential to engage directly with questions of contemporary global concern. Thinking of heritage as a creative engagement with the past in the present focuses our attention on our ability to take an active and informed role in the production of our own future.

The foundation of this argument is a dialogical model, in which heritage is seen as emerging from the relationship between people, objects, places and practices, and which does not distinguish between or prioritise what is ‘natural’ and what is ‘cultural’, but is instead concerned with the various ways in which humans and non-humans are linked by chains of connectivity, and work together to keep the past alive in the present for the future. An overlooked part in these chains is the rapid development, use and emergence of new media.

Within this research the focus is on this relation between new media and heritage, which raises the following main question: how can new media democratise heritage? My current research is explorative and aims providing a fundament for scientific debate and research around this question, rather than coming up with a clear-cut answer to it.

2 Literature review

2.1 Heritage, some definitions

The term heritage is nowadays a very tricky and broad one used at any opportunity. For many people, heritage is the equivalent of history (Lowenthal, 1994), and it might be used to

describe anything from the solid such as buildings, statues, and memorials to the more conceptual like music, language, and rituals. It often appears as something positive, especially if there could be gained some economic benefits: a *monumental* building, (with) *historical* features, brewed according to the *traditional* recipe, and so forth. The term also encompasses a wide variety of sizes and dimensions. It can be used to describe everything from tiny bones and shards of vases in archaeological sites to vast landscapes or from enormous castles to ordinary residencies. By way of example of this broad span of the concept heritage, consider the list of 'types' of cultural heritage that UNESCO produced in 2002 during the United Nations Year for Cultural Heritage (see Appendix A). It is already a comprehensive list with over twenty categories, but it only includes those things that might be considered for listing by UNESCO as *cultural* heritage and thus lack the various types of *natural* heritage or parts of heritage that can not be listed, for whatever reason. Although the UNESCO list merely focuses on cultural heritage, it does give an idea of the vast number of objects, places and practices to which the term might be considered to apply "officially". Creating this list also introduces a concept that is central to heritage: categorisation and listing. Organisations, academics and institutions concerning the management of heritage depend on a process of categorising, ordering, listing and subsequently archiving and/or conserving it (Harrison, 2013). The implications of this are discussed further in Chapter 2.2. Finally, to put the concept of heritage in an even broader light before converging to a contemporary definition used in this research, it is important to point out that the notion of 'heritage' is constantly evolving over time. The concept of heritage as things and traditions from the past have been with us for a long time, but there are some ways in which heritage is defined, managed and understood that are distinctive to our late-modern period (Hobsbawm & Ranger, 1983; Breglia, 2006; Harrison, 2013). Most importantly, its distinctiveness occurs due to the vast number of different categories of things it might be found to describe.

To understand what heritage means in the 21st century, it is helpful to consider heritage not as a 'thing' or a historical or political movement (Harrison, 2010) but treat it as a set of attitudes to, and relationships with, the past (Walsh, 1992; Smith, 2006; Harvey, 2001; Harvey, 2008). These relationships are formed in the present (Tunbridge & Ashworth, 1996; Lowenthal, 2004; Graham & Howard, 2008) and reflect the current concerns and attachments to places, objects and practices from the past (Harrison, 2010). These connections can strongly vary geographically and over time (Byrne, 1991). Following this line of thought, various practices of heritage are as important in understanding where we come from and who we are now as the physical objects and places. Practices of heritage (e.g. music, languages, religion) are used alongside places and objects (buildings, artefacts, statues) to create our collective social memory (Harrison, 2010). So, according to Harrison (2013) and Smith (2011), heritage is something dynamic and alive. It incorporates a range of activities and actions which often occur at certain places. These places become places of heritage because of the events of meaning-making and remembering that occur at them and because they lend a sense of occasion and reality to the activities occurring at them (Smith, 2006). So, for every object or place, there are also practices, or to put in different words: for every object of tangible heritage there is also an intangible heritage linked to it. Therefore, Smith (2006) argues that all heritage is intangible. To be more precise: there should be no distinction between tangible and intangible heritage.

2.2 Authorised Heritage Discourse and Critical Heritage Studies

It was the famous publication of David Lowenthal's *The Past is a Foreign Country* in 1985 that marked the beginning of focused academic attention on heritage in, at least, many Western countries. Lowenthal reacted in his analysis to three intertwined events: firstly, the increasing public and political interest in saving human creations for future generations since

the end of World War II (Lowenthal, 1985; Smith, 2011), secondly the economic growth in exploiting heritage, what manifested in two ways: heritage as a tourist attraction (Handler & Gable, 1997; Urry, 2002; Dicks, 2003) and via the rise of small, community-specific museums and heritage centres that challenged the traditional national focus of larger museums (Smith, 2006) and the third event was the increasing academic concern with the occurring right-wing populism in several political and social levels in most of the Western societies (Lowenthal, 2015). Heritage in the time of Lowenthal was understood in two ways:

The first was a professional and technical discourse: a set of ideas that focused attention on normalising a range of assumptions about the nature and meaning of heritage, especially in favour of heritage professionals, governments and academics (Carman, 2003; Carman, 2005; Smith, 2006). The Australian archaeologist Laurajane Smith calls this the Authorised Heritage Discourse (AHD). The ideas of Smith about this particular discourse are linked in many ways to Michel Foucault's studies on the discursive order (Foucault, 1993, 2002) and Antonio Gramsci's concept of cultural hegemony. These concepts assume that values that are interpreted by various people in a position of leading command, are communicated to the rest of society, which in turn accepts these values as common-sense (Gramsci, 1971).

The first signs of an AHD originates in the nineteenth-century Western European architectural and archaeological debates over protecting and preserving old buildings, sites or aesthetically pleasing material objects for future generations (Harrison, 2013). This way of thinking about inheritance excludes laypersons of current generations from having an active use of it, as the central belief is to pass on the heritage unaltered. Through its bureaucratisation and professionalisation, heritage has become an industry wherein these laypersons can engage with heritage only passively. They are more than welcome to view it at museums or sites, but the decisions about what should or should not be considered as heritage must fall under the care of experts, often museums, archaeologists, curators and so on (Smith, 2006). According

to Smith (2006), the problem that arises here is embedding the notion that the value of the heritage is inherent to the tangible aspect of the object, and therefore neglecting the intangible practices between people and objects. Assumptions about this innate value of heritage rather than associative - as if heritage is contained *within* objects - reinforce the beliefs that it represents all that is good about the past (Smith, 2011). Because of this focus on the material aspect, heritage is generally seen as fragile, finite and non-renewable and should therefore be managed and preserved with care according to the AHD.

The second idea of heritage, which even amplifies the idea of an AHD, has been the notion that it is 'false history' (Lowenthal, 1998). In many Western parts of the world, heritage was used to challenge the socially and politically conservative belief that societies should return to forgotten, past social and cultural values (Smith, 2011). Heritage scholars believed that this political use of heritage could be regulated by bringing it under the control of professionals like historians, archaeologists and curators. Hence, these professionals would subject the relation of heritage with history to scrutiny to temper its conservative usage. Raphael Samuel (1994), a scholar who was as influential for the development of heritage studies as David Lowenthal, argued that besides the conservative use of heritage, there were also a wide variety of social ways that merited academic attention. Despite these insights from Samuel, the understandings of heritage kept appearing technical as described above (Hall, 2006; Smith, 2011).

In recent years a surge in the academic literature can be seen that Harrison (2010) described as 'critical heritage studies' (CHS). The solely focus on technical aspects of preservation and management of heritage started to raise some critical issues. One of the main issues is community engagement in heritage and museums. CHS involves investigation of the relationship between the largely top-down approach dominated by the AHD and the bottom-up engagement between people, objects, places and memories and how community groups use

heritage (Smith, 2011; Harrison, 2013). CHS aims to open up heritage studies to a more (new) interdisciplinary field of inquiry that draws on a range of academic disciplines and skills, including new emerging ones, for instance, in the field of computer sciences (Gentry & Smith, 2019).

2.3 New Media

Before going into more detail about the relationships between new media and heritage, it is necessary to understand what new media is. Since there are many different approaches to describe new media, the ideas of the Russian scholar Lev Manovich found to be most helpful in light of this research. In his seminal book *The language of new media* (2001), Manovich proposes five "principles of new media": numerical representation, modularity, automation, variability and transcoding. These five principles should be considered more as tendencies rather than absolute laws, and these tendencies will increasingly manifest themselves when computerisation affects media and forms of culture (Manovich, 2001).

First, because all new media objects are composed of digital code, they are essentially numerical representations. New media objects can be described mathematically. For instance, a circle drawn on an iPad can be described with a mathematical function. New media can also be manipulated through algorithms. Taken the example of the drawn circle, by applying algorithms, the circle can change colour or in size. Or, for another instance, it is possible to edit photographs: remove background noise, apply filters or improve the brightness. So media becomes programmable because, when you completely decompose new media, its materiality consists of only zeros and, therefore, could be digitally altered.

The second characteristic is modularity. New media objects consist of independent elements (e.g. pixels, texts, scripts). These elements combine together to form objects like photos, sounds, shapes or even larger-scale objects formed with a combination of these objects

such as a YouTube video or computer game. These independent elements are assembled but continue to maintain their separate identities and structure and can be modified independently. In his book (Manovich, 2001), Manovich uses the World Wide Web as a new media example with a modular structure composed of independent web pages, and each webpage itself is composed of code and elements that could independently be altered.

The third principle is also a consequence of the first two: automation. Many operations involved in media creation, modification and access can be automated due to numerical representation and modularity. Manovich (2001) makes a distinction between 'low- and high-level' automation. Image correction in Photoshop is an example of low-level automation: colours can easily be brightened by using simple algorithms or templates. In the case of high-level automation, the computer needs to understand, to a certain degree, the semantics embedded in the objects. An example is the Artificial Intelligence engines in games, which adapt the digital environment to the player's skill level.

The fourth principle, variability, assumes that new media objects are not fixed but can exist in various and infinite versions and are mostly automatically generated by a computer. Old media needs human interaction to be assembled. For example, to create a poster to announce an exhibition, the designer needs to select and arrange textual and visual elements in a composition. The result is 'stored' in the material, in this case, the paper the design is printed on. Numerous copies can be made of this single poster, but they are all identical. An example of a new media object that illustrates variability is an online dictionary. In contrast to a printed, physical dictionary, the online one can have multiple versions. When new definitions are added or some mistakes in previous versions altered, the online dictionary can update as a whole without changing the complete structure or individual parts such as description pages of words. On the other hand, the printed dictionary needs revising in total, the structure to be alternated and it will be published and printed as a new version.

The last principle is transcoding and, according to Manovich (2001), it is "the most substantial consequence of the computerisation of media" (Manovich, 2001, p. 45). Transcoding is the process by which media objects are transformed into computer data (e.g. databases, pixels, arrays), but of which the representation is interpretable by humans (e.g. images, sounds, texts). Manovich uses the term more metaphorically than the more technical concept used in computer practices and sciences. In the latter, transcoding refers to the conversion from one digital format into another, for example exporting a Word document into a PDF file. Manovich uses transcoding more as a conceptual term to describe the exchange between what he calls the 'computer layer and the cultural layer' (Manovich, 2001, p. 46). As examples of categories in the cultural layer Manovich provides: "the encyclopedia, story and plot, composition and point of view" (Manovich, 2001, p. 46) and as examples in the computer layer, he mentions concepts such as "process and packet, sorting and matching, function and variable, computer language, data structure and database" (Manovich, 2001, p. 46). Because new media is created on, distributed via, connected with and archived on computers, it can be expected that the logics, structures and operations of the computer layer will heavily influence the cultural layer (Manovich, 2001). More recent research will even argue that it is a two-way effect in which cultural forms also translate into the computer layer (Van den Boomen, 2014). Critique on Manovich comes from the fact that he makes a clear-cut division between the computer layer and cultural layer, without taking into account that the names and concepts (e.g. mail, files, page, packet) used in the computer layer are metaphors imported from cultural practices. Eventually, they may gain new meanings in their digital context, but they can not be seen separated from the cultural layer because of their origination (Van den Boomen, 2014).

2.4 Representation, Management and Dissemination

Manovich' ideas are somewhat abstract, but when applied to a particular domain as, in the case of this research, cultural heritage, these principles get specific meanings and can be used to examine the affordances of new media as means of representation, management and dissemination of cultural heritage (Kalay et al., 2007; Callon et al., 2011).

Representing heritage in digital form makes it possible to manipulate the information it contains and provide it with possibilities that older forms could never possess (Kalay et al., 2007). For instance, artefacts or buildings that have fallen into decay can now be digitally reconstructed or restored to a particular period of time. In addition to the objects or places themselves, it is also possible to simulate the practices these sites used to support. The represented heritage can potentially show a way more enclosed and rich version. It is not hard to imagine the differences between an empty and in disrepair Roman hippodrome and a version that is vivacious, filled with excitement and activities. The digital reconstruction process, however, is quite different from restoring a physical object, and it comes with new challenges and effects. Through transcoding, more and more pieces of information can be added to a digital model via various sources like laser scanning, bundling photo's or extracting details from written texts. Yet, every source presents different difficulties and considerations. It is often the very abundance of information that makes it complicated (Kalay et al., 2007). How trustworthy is the source? Which details should be kept and which discarded?

Digitally reconstructing heritage is, in comparison to working with the original or physical objects, relatively low-cost. Hence, it affords the advantage of developing alternative narratives or interpretations which can even be kept side-by-side. It opens up possibilities for heritage professionals and scholars to compare and contrast different versions and try out different knowledge preservation approaches. Another seeming advantage for the management of digitalised heritage is that data storage affords to store enormous quantities of it, which no

museum or archive could ever achieve with physical objects. Plus, the ability to rapidly search the data offers new ways to experiment with disparate narratives. However, digital storage and maintenance of heritage are also fragile (Kalay et al., 2007): which technologies of new media are stable enough to trust and enhance heritage preservation? Kalay et al. (2007) especially make remarks on the tendency of heritage management that embraced new media to quickly discard the 'old' media forms for the 'new'. Its short history is replete with examples: primarily to save storage space or cut costs.

Once the heritage is captured in a digital form, the content can be easily disseminated and made widely available to everyone with access to a computer (Kalay et al., 2007). But the digital versions present the users with problems and discussions of authenticity and contextuality (Jones et al., 2018). Kalay et al. (2007) argue that laypeople need guidance in their experience with heritage. For example, this guidance is provided in the form of guided tours, signage, guide books and so on. Most of the time, these guided efforts are linear narratives to minimize noise in the communication of the heritage. New media, in contrast, is hardly linear and shifts much of the authority for constructing the narrative in the hands of the viewer (Kalay et al., 2007). According to Kalay et al. (2007), such freedom can be good and desired, but it can also contribute to a confusing visit or viewing, resulting in derogation of the overall understanding gained from the heritage object or site. Moreover, to pay a visit to a heritage site or museum requires some effort that conditions the visitor to be more attuned to it. It often involves spending money on tickets, taking the time to travel to its destination and making mental and physical preparations. Dissemination via new media reduces these preconditions of conditioning and contextualising (Kalay et al., 2007). For instance, viewing the Great Pyramid at Giza on a mobile phone screen while lying on the couch is way more detached and less engaging and must contend with the cultural experience of standing next to it.

3 Method

This research should be considered an explorative study based on examining the role of new media in the heritage domain and how it contributes to the assumed AHD. This paper aims to be more of a stepping-stone within an interdisciplinary field or a new approach to the debate within the Critical Heritage Studies, rather than an all-encompassing study with rigid answers. Therefore, two cases were examined to present multiple ways how new media could manifest themselves within heritage practices. The drawn analyses are based on the interpretations of the researcher and described on the basis of observations while attending both the event in Venlo and the exhibition in Paris. To obtain a more controlled environment for examining ideas around new media and an AHD an experiment was done in collaboration with the National Museum of Antiquities in Leiden.

All the discussions in this paper were drawn on the notion of finding any effects related to the AHD by examining the representation, management and dissemination of heritage through new media. Considering the depth and variety of new media, we opted for examining cases wherein Virtual Reality plays a central part, albeit varied between a key role, as in the experiment, to a merely supporting one as in the RoMeincraft project. However, it is important to mention that this research is not about Virtual Reality in particular, but this medium is used as a starting point for examining the role of various new media concerning heritage. In the case of defining heritage, we followed the idea of Smith (2006) that all heritage is intangible. But we have to make the following remark concerning this research: the cases and experiment were strongly focused on the tangible aspects of heritage – buildings, places and statues, but only for comparing and pragmatic purposes.

4 Case study: Age-old Cities

4.1 Walk-through of the exhibition

Age-old cities: a virtual journey from Palmyra to Mosul is a major exhibition held in the *Institut du Monde Arabe* (IMA; Arab World Institute) in Paris from 10 October 2018 until 17 February 2019. It is a collaboration between the IMA, UNESCO, the French video game company Ubisoft and ICONEM - a French startup that is specialised in digitising endangered cultural heritage sites. Involving the expertise of these technology companies in an exhibition about heritage makes it perfectly suitable for a case study.

The exhibition did not display any artefacts but only showed images. The aim of the IMA was to immerse the public in the cities Aleppo, Palmyra, Mosul and Leptis Magna to raise awareness about the stakes involved in preserving and protecting these cities under the threats of war, terrorism and looting. The exhibition consisted of three major rooms, each one dedicated to Mosul, Aleppo, or Palmyra and Leptis Magna. The setup of these rooms was more or less the same, with an enormous-screen projection of the 3D constructed images of several heritage sites in these cities. Paired with these projections were archival photos shown on smaller screens and round tables with a map projected on them to show the heritage sites' locations and provide additional information. Between the major rooms were smaller rooms with videos ranging from clips out of (local) documentaries to additional 3D footage. Almost at the end were four cubicles, each with a virtual reality experience of 60 seconds showing ten sites which also been projected in the big rooms. The exhibition's last room was dedicated to images of various heritage sites worldwide currently endangered or starting to be due to nature or humankind. The overall experience was built upon the hope to raise awareness for these endangered cities and heritage sites.

4.2 Reflecting on the case

Using no tangible objects at all in an exhibition about four major cities containing loads of tangible things is an approach that heavily relies on new media for representing the heritage. The exhibition shows a particular part of the history of the sites: a short period in a series of discursive practices. The long history of these places has withstood more noteworthy events instead of the destruction by ISIS only. However, the curators firmly focused on showing this aspect of history. The images of the buildings (e.g. the interior of Our Lady of the Hour Church in Mosul) are highly detailed rendered as a short movie wherein the camera slowly moved through the object. Because of the many details, big screen and camera movement, the visitors have little space to reflect on the case. The digital representation of the heritage seems to have as the primary goal to evoke shocked reactions from the visitors based on the imagery of the destroyed sites. By not providing more context about the activities of these sites within the representation, the curators heavily focus on the material aspects and the preservation. It exemplifies the notion of heritage as constructed in the AHD.

If the main goal of the exhibition is to make viewers aware of the decay and obsolescence of the sites and the importance of protecting them, why excluding the ideas and judgements of the general public? The creation of the exhibition gave preference to the work of particular academic and technological disciplines over members of the public or other (non-heritage) specialists who might form an opinion of the significance of the sites. Again, it is possible to see here the exclusion of the general public and the emphasis on heritage as the realm of professionals that Smith (2006) suggests are features of the AHD.

Because of the high-detailed 3D scanning of many squared kilometres and the use of an enormous amount of photos taken (sometimes with the help of long-distance drones) over the course of two years, a lot of information is stored digitally. All this material has been used to produce 3D renders of the sites. Right now, it is only possible to ruminate about the

management choices the IMA will make concerning the value of these 3D renders compared to other forms of documentation such as photos, written text, diaries and videos, rather than drawing conclusions solely based on the exhibition. But how important will these new media be seen compared to the old forms? Will they turn into a direction where they will heavily rely on the 3D renders as a primary source for documentation? Of course, one of the reasons for the exhibition was to showcase the possibilities of new technologies. Still, older forms of media did also partake in conveying the importance of preserving these sites. However, these forms of media were subdued to the enormous projections of the 3D images and little to no context was given about the connection of these various media. For instance, the historical photos shown on a relatively small screen were played in a looped presentation with no significant information given about these photos or the period when they were produced. Or, the interviews with the local communities who used to do various activities at the sites were projected in small, almost hidden, rooms by video projectors of much lower quality than those used in the main rooms for the 3D renders of the buildings and cities.

The choice for using virtual reality could potentially contribute to the dissemination of these heritage sites transcoded into 3D renders. Due to the rapid development of virtual reality headsets, computers and mobile devices, virtual reality as a medium becomes more accessible for a growing audience. The IMA chose not to disseminate the virtual reality experience but to keep it within their exhibition. As Kalay et al. (2007) argue, providing guidance and context by forms of new media is sometimes a necessity, but is this true in the case of this exhibition and how the virtual reality experience was implemented? At the very last end of the exhibition visit, visitors were only given 60 seconds with the headset to rush through six large, high-detailed sites in a fixed sequence. There was almost no time to explore the virtual space, let alone possibilities to interact with the heritage at the visitors' own pace. At last, since the virtual reality experience was used with much fanfare in the promotion for the exhibition, but shown

at the very end as if it was an 'exit through the giftshop', it could be argued that this particular use contributes to the 'marketisation of heritage.' A term coined by the British sociologist Tony Bennett (2013) to describe the dissemination of new media as a mean to attract visitors rather than using it as a practice of heritage.

This focus on the tangible and material, along with the rather sensational setting of the exhibition and its contents, seems consistent with Smith's contention that the dominant western discourse of heritage is focused on material things rather than intangible practices.

5 Case study: RoMeincraft

5.1 Walk-through of the project

RoMeincraft is a combination of live events on location and an online platform where the Roman *Limes* interactively can be explored. A major part of the project is the events, mostly held in museums. During these events, visitors can work on reconstructing a Roman building in the game *Minecraft* supported by archaeologists and historians. The participants (mostly children) got provided with a booklet including some instructions and reference points, but they are free to choose how they want to work on the reconstruction. *Minecraft* is a sandbox video game where players can build their own 3D world by placing a variety of different blocks with fixed dimensions into the virtual world, one by one. The participants of RoMeincraft need to use their creativity to create the reconstructions within the limitations of the game. Aside from working on the reconstructions, participants are also able to move through their built world with the help of a virtual reality headset. All the created reconstructions are ready to download after the event, so the participants or others interested can work further on or view them from any computer or device, which runs the game *Minecraft*.

The live event where the most insights of this case study are based on took place on 4 January 2019 at the Limburgs Museum in Venlo, The Netherlands. The researchers of RoMinecraft equipped a room in the museum with computers and a virtual reality headset. Visitors were free to join the event whenever they wanted it, and they could participate for as long as they desired. Most of the participants were children, but their parents or guardians were also allowed to take part in the project. The researchers acted as facilitators to guide the participants in getting accustomed to the game, providing information and tips about the reconstructions and, when desired, offering background info on the Limes. The participants built simultaneously on the virtual reconstructions of the settlements and sites in one large *Minecraft* world. They were free to choose which part they would like to contribute, sometimes together with many other participants, sometimes alone.

5.2 Reflecting on the case

Due to the limitations of the game *Minecraft*, it is impossible to strive for a perfect representation of the settlements, buildings and site alongside the old Roman Limes in the virtual world. While the gameplay of *Minecraft* is strongly focused on building things, the players are limited to building with only blocks that need placement on a 3D grid. Consequently, historical, visual accuracy becomes less achievable and less important. The transcoding takes place on other dimensions, rather than representing the objects as meticulous 3D renders, and becomes more relational. For instance, the game requires the player to build block-by-block and, although debatable how accurate, emulated physics are applied to this virtual world. Hence, this forces the player to tactful place the blocks to reconstruct the buildings, and it can hint at how labour-intensive it was to build the settlements back in the Roman days. Another principle of this form of representation is the possibility to alter the

virtual objects. Players can move around the blocks and change the constructions until they see fit.

Creating from the ground-up involves the participants as laypersons in the practices of the heritage. It offers room for debate. What do the participants think about the Roman sites? How important is this particular form of heritage for them as individuals? On the other hand, discarding or neglecting many details can lead to an oversimplified heritage representation. It is not the goal of RoMinecraft to create something near the original, but how does it relate to the bigger picture?

In terms of management and dissemination, the RoMinecraft project heavily relies on a software application that is not initially created for the use of heritage. However, multiple copies and versions of the built world can easily be saved and distributed. It is super low-cost, and, in theory, an infinite amount of players can download their own version. In addition, different reconstructed versions of the same settlements or buildings can be made during multiple events to compare afterwards.

It could be argued that, due to this particular choice of representing the heritage of the Roman Limes using the game *Minecraft*, new media plays a dialogical role in this heritage practice instead of conveying a message from the expert field. It might contribute to a setting that the AHD less dominates. It is due to the playful, fun and explorative character of the game that the ideas and accuracy conveyed by experts are not that relevant. Hence, this playful approach could even open up new dialogical insights based on creativity, fun and curiosity which experts could never achieve because of their heavy involvement.

6 Virtual reality experiment at the National Museum of Antiquities

To examine the engagement with digital representations of heritage objects, visitors were subject to a virtual reality experiment in the National Museum of Antiquities in Leiden, the

Netherlands. The goal was not to find new applications for virtual reality in a museum setting but to find out how visitors react to the museum object while viewing a digital representation of it and their attitude towards this virtual object and the real one after the experience. Therefore a part of the museum has been emulated into a virtual environment, trying to replicate the setting of the museum as accurate as possible so that the only difference would be the medium.

6.1 Method

This research is based on observations of 82 visitors of the National Museum of Antiquities who viewed the digital object in the virtual environment. Of whom 38 were surveyed with an in-depth qualitative questionnaire. The experiment was held on Friday 11 and Saturday 12 January 2019, and a total time of fourteen hours of observations was logged during these days. The surveys were taken one-to-one as much as possible, with the interviewer taking notes as verbatim as possible. Since most of the participants were visiting the museum in pairs or groups, some surveys were done in a group to prevent discouragement due to time. The virtual reality headset attracted a lot of attention from small children. Although these kids ($N = 27$) were not surveyed, and for safety reasons, the headphones were not plugged in, observing these participants did add valuable insights.

One of the highlights of the museum is a statue of Maya and Merit, sitting next to each other. Maya was the 'Director of the Treasury' in the Egypt of Tutankhamen and Horemheb (Rijksmuseum van Oudheden, 2019). The statue is dated c. 1320 B.C. and made out of limestone and found in Saqqara, the necropolis for the Ancient Egyptian capital, Memphis. A high-resolution 3D scan of this statue of Maya and Merit was imported in Unity3D, a 3D gaming software (Image 1). The pedestal, floor and text sign were created in Unity3D, and, to add as less distraction as possible, no walls, ceiling or other spatial objects were created.

The virtual reality headset used was a HTC Vive, and headphones were used as an alternative for the audio-tour devices. For the audio fragments, the Dutch and English texts on the website of the museum about the statue were recorded. The experiment took place next to the entrance of the museum, and a big roll-up banner was placed to attract attention. The visitors were informed as little as possible about the research to give them the idea that the virtual reality experience was part of the museum. No time limit was set, and the only instructions given were a view safety rules. The participants were free to approach and engage the virtual model as they pleased.

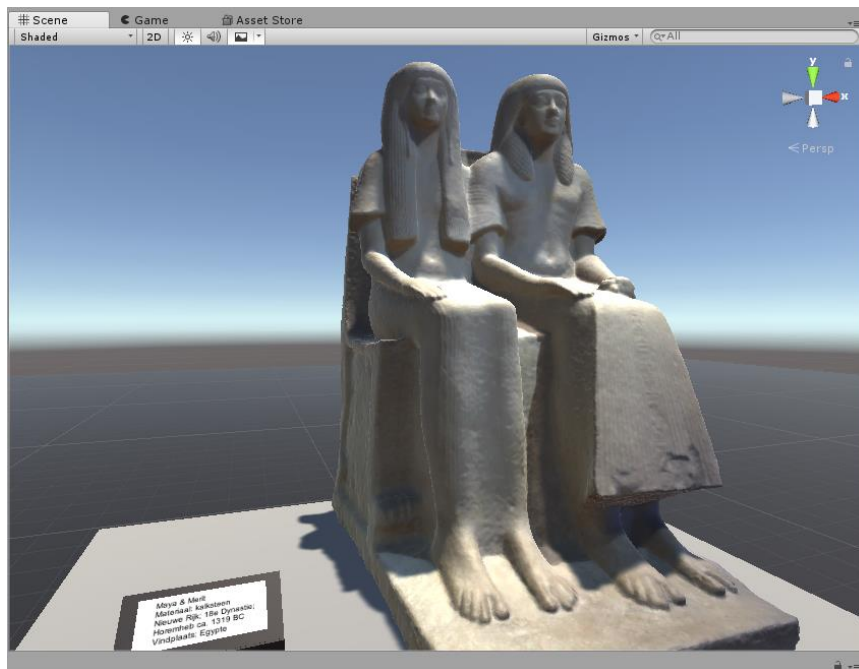


Image 1. 3D scan of Maya and Merit in Unity3D

6.2 Results

6.2.1 Participants

38 of the 82 participants had done the in-depth interview. Of the total of 82, there were 27 children who were found not suited for the questionnaire, mainly because of their age. The remaining 17 participants did not take part in the survey for different reasons: e.g. they were

part of a large group, no time, and two did not want to answer the questions. Of the 37 participants 66% were male (N=25) and 34% female (N=13). Almost all the participants do or did attend a higher education level (N=34), and the group had an average age of 39. With 87%, the majority of the participants is Dutch, and 60,5% of them do visit a museum at least six times a year (N=23). These results show that the participants match a typical profile of the museum visitor: higher education graduates and visiting a museum multiple times a year. 23,5% of the participants worked in a field related to heritage (N=9). Hence, with caution, it could be argued that most of the participants can be labelled as lay-persons concerning heritage practices.



Image 2. Setup of the VR experiment in the National Museum of Antiquities.

6.2.2 Virtual reality experience

Almost all the respondents had little to no experience with virtual reality (92%, N=35) and many of them reacted excited on the virtual reality installation beforehand. During both days, only a few visitors of the museum knowingly did not want to take part. Reasons given

included bad experiences, no time or not-interested in general because they wanted to see a specific part of the museum.

Everybody did want to hear the audio fragment as part of the experience. They were not obligated to do so, like the official audio-tour of the museum, but since this was for many the first or second time with virtual reality, they opted for the full experience. Notable is that 92% of the participants viewed the digital statue for at least two minutes. A plausible explanation for this could be that, since all the participants did want the audio, most of them fully listened to the fragment with a duration of one minute and 44 seconds. However, a vast majority of 60,5% spent even more time in the virtual environment: at least three minutes.

A big difference in behaviour could be seen between children and adults. Adults tend to move very cautiously, and many stood still in front of the digital statue as if they were facing the real object. They even held their hands folded behind their backs. After a minute or so, they slowly moved around the pedestal to examine the backside of the statue. They were anxious about tripping over, although there was nothing there except the empty floor. Some of the participants started to explore more after a while and tried to touch the digital statue. Like the movement around the object, the touching was also done very carefully. In contrast to these cautious movements, most of the kids immediately flew off when they put on the headset. They immediately started to test out the digital pedestal and were grasping in the air to feel if the object they see in the virtual environment could be touched. The behaviour of the kids was way more exploratory compared to the adults. Many children wanted to explore the digital statue from as many angles as possible and started to “walk into” the statue to compare their body size with it. Although the adults were not as exploratory as the kids, many of them were very enthusiastic about the possibility that they could walk around the statue.

6.2.3 The digital object vs. the real one

Almost every participant argued that the real statue of Maya and Merit could never be replaced with a digital representation. Albeit that 56% did not know the statue of Maya and Merit. A returning argument is that the real object represents the truth of the history it represents. The material is proof of the period and stories from where the statue originates from. As a participant stated: 'the idea that you can touch an object out of that period of time makes it valuable' (P28, male, 38, Biology). In addition, most of the participants concluded that virtual reality technology is interesting and of high quality, but it could not come near a (hyper)realistic image. Therefore they preferred to be in close contact with the real object, although they were limited to other factors due to the museum rules like the prohibition of touching or walk behind it.

6.3 Reflecting on the experiment

At first, people reacted to the questions 'What does cultural heritage means to you?' and 'How important is the real object?' almost unanimous that it is very important for them, that it should be for everybody and that the objects should be preserved at any costs. However, when the question got narrowed down to a specific topic, like the statue of Maya and Merit, the answers started to differ, and most of the participants were not really interested in the individual objects but did want to know more of the context of the objects as a collection. That's also one thing they expected from new media like virtual reality: to enrich the visitor with context so they could get a better understanding of where these objects came from and what the value is in their (the participants) culture. These arguments are in favour of new media principles, which could be attributed to the idea of representation (Kalay et al., 2007). However, this virtual reality experience was seemingly missing those. A possible explanation for the participant's urge to obtain a more enriched context could be that the digital representation was trying to emulate as close as possible the actual statue. The virtual model contained many technical

details and tried to have as many resemblances as possible, but therefore it automatically focused on the material aspects. It could be a characteristic that contributes to the notion of an AHD.

It seemed like that the participants enjoyed the curatorial role of the museum to teach them about different cultures and heritage, but they also would like to have a more rich context around it so they could make a better consideration for themselves about how they think about a particular culture or heritage object. With the many objects the museum holds, it would be nearly impossible to provide such a context around the real objects. In terms of management, the virtual reality setup might function as an exploratory tool for the museum to find new ways to curate their objects or to discover how their assumed values resonate with the visitors. For instance, it is less strenuous and more cost-effective experimenting with virtual objects in a virtual reality for new layouts for the exhibition rooms, rather than moving around the museum pieces. Solely based on this argument, new media creates possibilities to get lay-persons and communities more involved.

Another notable observation was that many visitors did not associate the objects in the museum with their own heritage. They were curious about the objects for different reasons, most of the time to learn something (new). An often-heard desire was that the participants would like to use digital images of objects to do things that are impossible to do with the real ones: e.g. enlarge them to inspect details, disassemble them to learn how it is made, use it like how it was used in the period it originates from and to see it next to other objects for comparison. This might sound promising for developing an interdisciplinary forum, but as Kalay et al. (2007) remark, preconditioning should be taken into account. All the participants had a positive attitude towards the museum, the virtual reality experience was new for most of them, and the willingness to partake in the experiment was high. In other words: would the

visitors also be so much engaged with the virtual objects when these were widely disseminated and easy to access?

Overall, the experiment at the National Museum of Antiquities provides some compelling starting points for a debate about the role of new media in heritage practices within a museum setting. However, these findings definitely need to be placed under scrutiny by future research. The 'new' in this new media form acts as a brilliant conversation starter and as a magnetic to put more attention towards the heritage objects, but on the other hand, it still heavily relies on the guidance, curation and development of the creators. It could be argued that a particular virtual reality experience in such a museum setting is more that of a gimmick in the AHD, rather than a forum for critical thinking and engagement with heritage.

7 Discussion

This paper shows the great motivational power of new media applications, albeit only a tiny tip of the iceberg. This research should be considered as a starting point or an incentive for further debate and research. The collected data is inconclusive, although they suggest that new media encourages new dialogical ways of engagement and therefore could contribute to the hybrid forum of heritage which academics in the field of CHS claims to be essential for the future of heritage (Harrison, 2010).

As highlighted in this paper, new media could be exploited way more than only as a tool for recreation and representation of physical entities of heritage. As the RomeinCraft case and the VR experiment show, new media has the potential to become a tool for new, creative and engaging forms of interaction with heritage.

Based on the earlier ideas of Kalay et al. (2007), which suggests that the opportunities for new media in heritage practices build in significant part upon the potential of transcoding, we found reasons to argue for more academic research on new ways of representation of

heritage, which are not focused on verisimilitude or (visual) accurate aspects. As illustrated by the RomeinCraft project and the VR experiment, in contrast to the Age-Old Cities exhibition, interaction with heritage in a more abstract way could form meaningful engagement that can not be achieved by displayed physical objects or through the constraints of a museum setup.

On the other hand, we also suggest that the use of new media should always be put under scrutiny, especially when the goal is to establish more dialogical interactions and to move away from an AHD. The Age-Old Cities case show that the intention was to make the distant heritage sites more accessible, but because the applied technologies were more a tool for marketing and excitement – and therefore lacking context and possibilities for interaction – it only contributes to the notion of an AHD. For this instance, the 3D scans made of the heritage sites are already highly technically detailed and probably hard to interpret for most of the visitors, let alone that these 3D images were projected on big screens, in sequential order and with rapid movement. It left no room for new interpretations by the audience, except for maybe astonishment.

In terms of management and dissemination, more systematic and thorough evaluation work needs to be done. This research shows hints that new media could make interaction with heritage more accessible for the wider public because it is relatively easy (and low-cost) to distribute multiple copies. However, new media also needs preservation due to rapidly changing technologies. Also, distributing forms of heritage on a large scale could also raise questions around context. Providing little to no information via experts could even work counterproductive for working towards a more hybrid and dialogical forum.

As the function of heritage sites and museums change, the role of new media within these practices is evolving along. This explorative research demonstrates that the interaction of the public with cultural heritage need not be passive and that new media can offer opportunities for developing new forms for expressing and understanding cultural heritage and for

collaborating on issues pertaining to it. The field of CHS pleads for a more interdisciplinary one, so the role of new media should therefore also be examined widely. The challenge implicit here is to move beyond verisimilitude and merely technical use of new media, and to put academic focus on the sociological aspects of using new media in heritage.

8 References

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Appendix A

List of types of cultural heritage that UNESCO produced in 2002 during the United Nations Year for Cultural Heritage (Harrison, 2013).

UNESCO included the following items on its list:

- Cultural heritage sites (including archaeological sites, ruins, historic buildings)
- Historic cities (urban landscapes and their constituent parts as well as ruined cities)
- Cultural landscapes (including parks, gardens and other modified landscapes such as pastoral lands and farms)
- Natural sacred sites (places that people revere or hold important but that have no evidence of human modification, for example sacred mountains)
- Underwater cultural heritage (for example shipwrecks)
- Museums (including cultural museums, art galleries and house museums)
- Movable cultural heritage (objects as diverse as paintings, tractors, stone tools and cameras – this category covers any form of object that is movable and that is outside an archaeological context)
- Handicrafts
- Documentary and digital heritage (the archives and objects deposited in libraries, including digital archives)
- Cinematographic heritage (movies and the ideas they convey)
- Oral traditions (stories, histories and traditions that are not written but passed from generation to generation)
- Languages
- Festive events (festivals and carnivals and the traditions they embody)

- Rites and beliefs (rituals, traditions and religious beliefs)
- Music and song
- The performing arts (theatre, drama, dance and music)
- Traditional medicine
- Literature
- Culinary traditions
- Traditional sports and games

Appendix B

Data of the VR experiment.

	N	Minimum	Maximum	Mean
	Statistic	Statistic	Statistic	Statistic
Age of the participant	38	12	71	39.42
Time spent with the VR headset on in minutes, rounded off to whole numbers	38	1	5	2.58
Valid N (listwise)	38			

Appendix 1. Descriptive statistics of age of participants and time spent with the VR headset.

		Frequency	Percent
Valid	F	13	34.2
	M	25	65.8
	Total	38	100.0

Appendix 2. Frequencies of Males (= 'M') and Females (= 'F').

		Frequency	Percent
Valid	HAVO	1	2.6
	HBO	10	26.3

MBO	1	2.6
N/A	3	7.9
VWO	3	7.9
WO	20	52.6
Total	38	100.0

Appendix 3. Frequencies of highest education level (Dutch system) attended.

		Frequency	Percent
Valid	Agroculture	1	2.6
	Archeology	4	10.5
	Audio	1	2.6
	Biology	1	2.6
	Cultural	1	2.6
	Customer service	1	2.6
	Education	2	5.3
	Engineering	1	2.6
	Healthcare	3	7.9
	History student	2	5.3
	ICT	2	5.3
	Monteur	1	2.6
	Museum	2	5.3
	N/A	6	15.8
	Office employee	1	2.6
	Physics	1	2.6

Student	6	15.8
Technical	1	2.6
Unemployed	1	2.6
Total	38	100.0

Appendix 4. Frequencies of working sectors of the respondents.

		Frequency	Percent
Valid	Dutch	33	86.8
	Other	5	13.2
	Total	38	100.0

Appendix 5. Frequencies of nationality, divided into 'Dutch' and 'Other'.

		Frequency	Percent
Valid	First time	10	26.3
	Second or third time	4	10.5
	Regular visitor	23	60.5
	Total	37	97.4
Missing	System	1	2.6
Total		38	100.0

Appendix 6. Estimated amount of times visited the National Museum of Antiquities (RMO).

Regular visitors do visit the museum at least two times a year.

		Frequency	Percent
Valid	Recreational	15	39.5
	See specific exhibit	15	39.5
	See the collection	1	2.6
	Other	6	15.8
	Total	37	97.4
Missing	System	1	2.6
Total		38	100.0

Appendix 7. Reason for visiting the National Museum of Antiquities (RMO).

		Frequency	Percent
Valid	N/A	1	2.6
	No	21	55.3
	Yes	16	42.1
	Total	38	100.0

Appendix 8. Recognition of the statue Maya and Merit by the participant.

		Frequency	Percent
Valid	None	18	47.4
	Tried it once	17	44.7
	Experienced	3	7.9
	Total	38	100.0

Appendix 9. The level of experience with Virtual Reality from the participant. Experienced means that the visitor at least did it twice for a significant amount of time.

		Frequency	Percent
Valid	1 - 5 times a year	14	36.8
	6 - 10 times a year	9	23.7
	More then 10 times a year	14	36.8
	Total	37	97.4
Missing	System	1	2.6
Total		38	100.0

Appendix 10. Times per year the participant visits a museum in general.