



Transformative Heritage: Open Source, Insurgent Nationalism, and Augmented Memories

By

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Abstract

In this paper, we analyze some of the platforms and technologies that influence the manner in which we interact and experience historical sites and heritage. Acknowledging that history is a constructed narration of the past, this paper demonstrates how contemporary technologies have agency in reconstructing histories in the present via digital platforms. By comparing online platforms for digital heritage production like Google Heritage with Augmented Reality (AR) and Mixed Reality (MR) platforms, we demonstrate how digital heritage may undergo a process of recontextualization or decontextualization from its originating settings.

We also show that digital heritage's reconstruction of history is done through the act of remediation: by turning actual remnants of the past into digital models or by replacing such remnants with virtual representation that are globally accessible, something new is created and alternative stories can be told. Within that, we consider some of the ethical issues that are raised by the migration of historical narratives into digital platforms, as we point towards a growing tendency in which history and its production can be subjected to major data companies.

Keywords: digital cultural heritage, locative media, mobile Augmented Reality, digital memory, open-source culture, Google Open Heritage

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Introduction: A Time of Heritage Transfiguration

Contemporary urban spaces present their inhabitants with an overflow of information layers. The ubiquity of cloud technologies, online platforms, and mobile devices have made it much easier to capture and share experiences. As a result, much of our knowledge on sites and places may come from others' memories and experiences, as these are mediated by popular online platforms: we read online reviews about sites, see images other visitors have shared, and read about their experience. Engaging with these materials on-site and off-site may also influence and intervene with the production of our own memories: our understanding and experience of specific sites become augmented with the views of others, as well as with information accessible on frequently visited platforms.

This mode of engagement also applies to the manner in which we experience and engage with historical places and heritage sites and, accordingly, it may also affect how we interpret broader historical, political, or national narratives. In this paper, we analyze some of the platforms and technologies that influence the manner in which we interact and experience historical sites and heritage. Acknowledging that history is a constructed narration of the past, this paper demonstrates how contemporary technologies have agency in reconstructing histories in the present via digital platforms. As we will show, this reconstruction is done through the act of remediation (Bolter and Grusin 2000): by turning actual remnants of the past into digital models or by replacing such remnants with virtual representation that are globally accessible, something new is created and alternative stories can be told.

To illustrate this point, it is useful to recall Yehuda Kallay's concept of "new cultural heritage" (2008: 11). This concept is an alternative to the more accepted term "digital cultural heritage". While "digital cultural heritage" articulates that what is being changed is the means of heritage production rather than the heritage itself, the idea behind "new cultural heritage" is that changing the means of producing, preserving, and engaging with history and heritage does indeed change the nature of the history and heritage. In other words, understanding digital heritage as "new cultural heritage" demonstrates how the medium *is* the message (McLuhan 1964). As we show, the contemporary remediation and reproduction of heritage and history via digital means transform our perspective of the past and enable the establishment of new and conflicting narratives.

This paper compares between two contemporary modes of engagement with heritage and historical narratives, which are facilitated by two different technologies: online web platforms which promote an off-site, remote engagement, vis-à-vis location-aware platforms that use Augmented Reality (AR) and Mixed Reality (MR) interfaces and Global Positioning Systems (GPS) to promote a contextualized engagement on-site. Within that, we point towards a growing tendency in which

the production of heritage and historical narratives are being affected by major data companies, such as Google, through projects like Google Arts and Culture.

In this context, we analyze two Google services and compare them with non-commercial heritage and preservation initiatives. The first is Google's Open Heritage platform, and the second is Google's collaboration with the National Museum in Brazil as a part of the Arts and Culture project. Through our analysis, we demonstrate how large companies like Google focus mostly on the design and standardization of heritage models, as they aim to establish a homogeneous online collection. While this may increase public access and engagement with history and heritage, this mode of engagement also dissociates the heritage from its original context and transform it into interactive, decontextualized digital data. Comparing the interaction with online collections to our engagement with history and heritage via location-aware or on-site technologies, we show how the latter can deepen and layer our engagement with already familiar places through including conflicting narratives in-situ. In this context, we will analyze projects like the Black Monuments Project (2018), the indigenous heritage project Wikiup (2017), and the Jerusalem Holy Mount AR app (2013). These projects provide access to alternative histories, while also becoming a tool to democratize history and expose the fact of its construction.

Hybrid Environments: Technologically Mediated Territories as Opportunities for Heritage Production

The emergence of mobile technologies has been gradually changing the scope and materiality of the places we engage with (Mayerowitz 1985; Gordon and de Souza e Silva 2011). While it has been suggested that the fast-paced technological developments may lead to a sense of "non-place" (Augé 1995), the development of location-aware technologies, which led to the emergence of locative media, has enabled new ways to interpret and engage with locations. The ubiquity of mobile, locative interfaces augments our experiences of places on and off sites in multiple ways, and therefore digital technologies have the potential to not only remove us from our physical context. Instead, digital technologies may also further enhance our ties with material environments. Over a decade ago, new-media scholar André Lemos had already argued that digital media, "does not mark the end of place (or cities, or geographies)", but rather it establishes "new processes of territorialization" (2009: 23). More simply put, Lemos contends that our constant use of technologies provides an opportunity to re-interpret places and sites, as those become technologically-mediated territories.

Our notion of place, therefore, is co-emerging in relation to a rhizome of data produced by users of mobile devices and online platforms. This understanding of

space encompasses both the material sites and the data networks superimposed on them. The growth of digital services using mobile data and GPS-based applications demonstrates multiple ways in which physical environments may become data interfaces for their inhabitants. Because we use these services as an integral part of the process of place-making, the digital information created by and within such services as well as the digital infrastructure that enables their availability, become an integral part of our understanding and experience of historic sites and heritage as well. Recognizing that these platforms gain much agency in how we access and interpret history and heritage, we should ask: how these new ways of approaching and experiencing material environments as technologically-mediated, hybrid environments impact our perception of cultural heritage sites and historic narratives?

For that matter, we adopt Laurajane Smith's definition of cultural heritage as a discourse connecting the past, present, and future through the acts of preservation and education. According to Smith's perspective of cultural history, the discourse of cultural heritage,

Focuses attention on aesthetically pleasing material objects, sites, places and/or landscapes that current generations 'must' care for, protect and revere so that they might be passed to nebulous future generations for their education, and to forge a sense of common identity based on the past. (2006: 29)

Recognizing that the digital (re)production of cultural heritage and historic narratives is discursive and is also tied to its means of production, cultural heritage itself is rediscovered as a process of content production. Drawing on the idea of "new cultural heritage", it becomes clear that the technologies involved in the production of heritage are not simply tools for the documentation and preservation of past conditions. While "heritage" looks backward and "new" points to the future, understanding new cultural heritage as discursive establishes the production of heritage as an ever-changing, creative paradox which employs the past to shape both the present and the future. Perceived as such, what follows will show how our contemporary "new cultural heritage" enables additional options for potential place-making and cultural identity building in the present. We will also show how this idea informs our perception of heritage as "open-source" (Beiguelman and Casimiro 2017), and as means to pluralistically validate alternative narratives, which have been continuously excluded or labeled as marginalized histories

Analyzing contemporary applications of digital technologies in cultural heritage contexts can, therefore, point towards some of the possibilities and methodologies for heritage production and consumption. Digital technology

should be seen as a tool for producing contemporary experiences of history and cultural narratives, useful to both local communities and global society. An inclusive and collaborative approach to heritage could potentially be achieved if we use technology to distribute power and decentralize mainstream historical narratives. In this context, we find several types of initiatives aiming to diversify our existing experience of heritage sites. Some of these projects question the traditional understanding of history as a single and chronological storyline, and present instead a confluence of multiple narratives; others, expose the hybridity of our contemporary environments by expanding the experience of place, time, and memory.

When Heritage becomes Data: Google's Local Guide and Open Heritage

As mobile technologies and digital platforms change our way of engaging and understanding places, these technologies also change our systems for heritage collection, preservation, and presentation. This change may have led to certain privatization of the heritage sector, as commercial companies such as Google have become major players in this field.

One example which portrays this change is the Google Local Guide platform. This is an online platform that includes a mobile tool, aimed to build and facilitate a discussion between “a global community of explorers who write reviews, share photos, answer questions, add or edit places, and check facts on Google Maps” (Google Local Guide: Overview). As the platform's overview page tells us, “Millions of people rely on contributions like yours to decide where to go and what to do” (Google Local Guide: Overview). Therefore, Google Local Guide has an imminent impact on how urban space is being perceived and experienced, by both random visitors and local communities. Indeed, the Local Guide project also intervenes in the practices of remembering and memory production more broadly, as memories from visiting sites become data that is both produced and consumed by a designated app. Nonetheless, this observation emphasizes the fact that projects like Local Guide inevitably influence how we experience, access, and interpret historical places and heritage sites. While heritage sites are reviewed, photographed, edited, and ‘checked’ in Google maps by international visitors, our understanding of the historical narratives and heritage these sites represent begins to form in relation to our exposure to such digital content, its popularity, and its accessibility via such platforms. A new way of ‘knowing’ places and – respectively – of knowing history, is thus being formed.

While diverse digital technologies are commonly being employed to extend the outreach of heritage and to attract younger audiences by transforming heritage

into an interactive experience (Huhtamo 2018; Barney et. al. 2016; Simon 2010), it has also been widely acknowledged that our ubiquitous use of digital technologies establishes monitored, surveilled, and disciplinary environments (Hillis 1999; Manovich 2006; Hörl 2018; Zuboff 2019). Accordingly, while increasing public access to heritage, high-profile digital heritage platforms may also function as disciplinary environments that influence our perception of heritage itself. Moreover, the heavy traffic on such platforms is also monitored, thus turning our engagement with digital heritage into a system of data extraction. In some cases, the repurposing of heritage as means of data extraction results in a sense of tension between for-profit motivations and non-profit educational goals, as well as between localized communities and global heritage 'sites' online. As we show below, some online heritage collections are established as a decontextualized destination for the global community, thus blurring the connections between objects, sites, communities, and larger national narratives.

Such dynamics of heritage production and, accordingly, of the recalibration of local heritage as a global resource are apparent in other Google platforms. Starting with the Google Art Institute in Paris, Google has been increasingly experimenting with developing digital solutions for preservation and collections in museums, art galleries, and heritage sites (<https://artsandculture.google.com>). One of Google's most recent solutions, Open Heritage, is an online platform offering digital scans of archeological sites around the world, which are organized in a clean, easy-to-use interface (Fig. 1). Open Heritage is a part of the Google Arts and Cultures division (formerly known as the Google Arts Project), both with a declared goal is to connect art and technology (<https://artsandculture.google.com/theme/6AISWNxkfTniIA>). It was built by Google in partnership with the tech company CyArk (Fig. 2). Having partnered with 68 heritage foundations around the world, they use 3D scanning devices to capture and preserve material heritage digitally (<https://artsandculture.google.com/theme/6AISWNxkfTniIA>). Open Heritage, therefore, allows free, remote access to 3D reconstructions of multiple heritage sites and items located around the globe (<https://artsandculture.google.com/project/openheritage>). It also provides users with the ability to use some of the digital tools usually employed for digital preservation and contains curated collections of digitized items and 3D models that can be downloaded to users' computers. Naturally, this form of heritage production, as well as the experience it provides, are significantly intangible and standardized. Available primarily online, it dissociates the original sites and communities from their heritage, and thus it also gradually operates to support a sense of a globalized perception of heritage which is dissociated from material heritage, places, and local communities. In such cases of decontextualized heritage, heritage becomes mostly informative; heritage - in this case - becomes data.

In both Google services, we can observe a process of co-optation: data and memories are produced and re-produced in tandem to users' engagements with these services. While the goal of the Open Heritage's scans is to further preserve these archeological sites and increase their accessibility, the result of this constant need of "saving" or preserving heritage on the cloud seems to also enhance what is called by Andreas Huyssen the "memory obsession" (2000). As Huyssen explains, our need for constant conservation and restoration of objects of memory reflects our growing fear of losing the material evidence of the past, which may lead to a lost sense of identity. And yet, this creates a paradox: our fear of losing the past leads us to create multiple, digital, and decontextualized replicas of it, that may take us further away from any evidence of past and identity.

Ultimately, while it may seem as if Google's Open Heritage reaffirms the aura of these objects and sites because it presents them as unique and as worthy of preservation, we must also notice that it repurposes or remediates such objects and sites (Bolter 2006). Accordingly, the past may be used as an instrument to manipulate users' perceptions of both historical narratives as well as their own geo-cultural positioning. Recalling that our engagement with these online platforms is always monitored, this *modus operandi* aligns with what Andreas Huyssen (2000) understands as contemporary societies' tendency for musealization: everything and everyone becomes not only an object of display but also an object of study. Google's Open Heritage and Local Guides platforms seem to have been established and perform in a direct relationship to this idea of musealization. These platforms disseminate the idea of collective curatorship among its users as they appropriate and redefine terms like "archiving", "heritage", and "exhibition". They reject notions and processes of traditional curatorship (which is usually grounded in experts' knowledge) while at the same time opening the floor for the production of heritage and narratives in a collective manner and on a global scale. As the production of heritage has been outsourced (or, crowdsourced), heritage objects had to shed many layers of local and contextualized meanings. What we may end up with is a simplified version of heritage, that feeds off and is perceived in light of users' real-time updates and interactions.

It is within this context of heritage production processes that Google becomes an institutional partner of several cultural establishments, expanding the dynamics of heritage engagements from onsite to online. This growing model of collaboration between Google, cultural institutions, and the general public raises another paradox: while Google is seemingly democratizing the domain of heritage production, the public gets to participate in the act of preserving and exploring only by giving away their data. This is indeed an act of exchange, but while the process is a collaborative one – the system through which it is facilitated is not transparent. The commercial endeavors to preserve culture disguise the

massive power of surveillance of Google data aggregating mechanisms (Zuboff 2015). In other words, while these platforms present themselves as open and as collaboratively curated to support the preservation of global heritage, what is curated here is not only heritage but also the personal information that is produced by means of constructing it and engaging with such heritage.



Fig 1: Google Open Heritage Imaging

The cultural role and functionalities of these Google platforms also demonstrate the contemporary deconstruction of heritage. As many memory objects are being digitized and ‘migrate’ to the online sphere, heritage may become less associated with its places of origin and cultural context. In other words, heritage objects are being perceived in relation to the other digital heritage objects in the online collection, rather than in relation to their local, material, and cultural context. This form of digital preservation also enables a state of “de-ruinalization” as it intervenes with these objects’ natural processes of decay (Beiguelman 2015). And yet, as the online heritage is protected from the effects of time, the digital model becomes a symbol of its own ruin because its original context and meaning dissolve into the world wide web as it is being assimilated into larger processes of globalization. While Open Heritage aims to ‘save’ important historical places from decay and obsolescence by turning them into 3D models collected and stored in the Google database, this platform seems to achieve the exact opposite: it replaces the original with an interactive, everlasting model, thus turning the original to be somewhat irrelevant and obsolete.

The detachment between online heritage objects and their local, on-site contexts seems to be intensified by the standardized aesthetic of the Open Heritage scans that subjects all objects to a uniform set of design rules. On this online

site, all places look similar, following a design framework proposed by Google and establishing a global environment in which nationalities and local contexts become secondary. The original object that gave life to the digital file seems to be disconnected from its representation; the material object turns into a symbol of its own obsolescence as it is compared with the digital version of itself that overcomes decay. These platforms thus promote a new sense of aura, practiced by the establishment of new online geographies and by a new understanding of ruins. In this case, “ruins” do not symbolize a contextualized process of becoming, but rather a decontextualized, digital stagnation of online objects.



Fig 2: Google Open Heritage with CyArk

‘Googling’ Heritage: The National Museum in Brazil

The digitization processes of the collection of the National Museum of Rio de Janeiro provide a contemporary example of the concepts and processes we discuss. In Brazil, the National Museum suffered a major fire on the night of September 2, 2018, destroying almost the entire historical and scientific collection built for over two hundred years, and which included about twenty million cataloged items. In addition to the collection, the historical building was severely damaged, leading to irreparable losses within Brazilian history and heritage. From this tragedy emerges a complex picture of the negligence of public interests in the cultural and historical fields. There is an actual state of abandonment of major science

and cultural organizations in Brazil, which resulted in many other fires like the Cinemateca Brasileira in 2016 (Roncolato 2018), the Museum of Portuguese Language in 2015, the Latin American Memorial and the Historical Street Market of Rio Grande do Sul in 2013, the Butantã Institute in 2010, and many others. According to the Brazilian *Veja* magazine, an average of one fire a year which destroys historical and cultural heritage is caused due to government negligence (Carniero 2018). These conditions established a fertile environment for corporates to take over heritage preservation and transform the physical experience of heritage and museums into a digital one. Considering the nature and mission statement of Google's Open Heritage, the National Museum's tragedy was seen as another opportunity to take over the lead in digitized heritage collections.

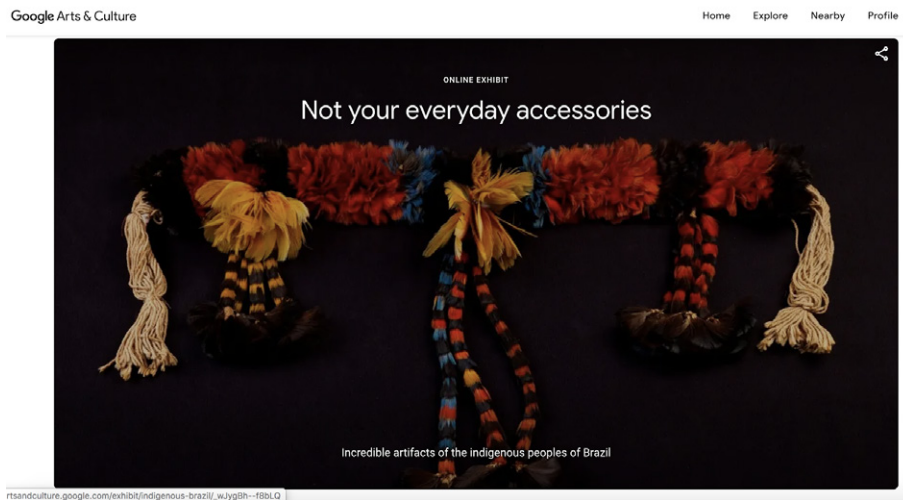


Fig. 3: Google Arts and Culture, Screenshot from Google's National Museum of Rio de Janeiro, <https://artsandculture.google.com/project/museu-nacional-brasil?hl=pt-BR>

After the fire, various communities, social groups, and local companies motivated their teams to create solutions using a variety of digital technologies, as an attempt to find effective ways to help the museum rebuild itself and restore its collections. Most of these initiatives included collaborations between local universities, Brazilian start-up companies, and local research labs (one example is a solution suggested by the Brazilian-Finnish company Zoan, in collaboration with the Brazilian Ministry of Culture). Ultimately, however, the Museum closed the door for such initiatives as Google had (already) begun to execute what seemed like a collateral damage plan. Since the Museum was already in the process of a virtual (re)construction of its collection, which started before the fire, it was decided to limit the involvement of outside groups. The partnership between

Google and the National Museum began in 2016 and since then the institution has been organizing and cataloging the collection on Google's platform, like many museums in Brazil and around the globe (Fig. 3). Today, Google has partnered with more than 50 cultural institutions just in Brazil alone, including the MASP, Museum of Tomorrow, Pinacoteca de Sao Paulo, MAM-Rio, and the Municipal Theatre of Rio de Janeiro.

Google's proposal for the National Museum's digital reconstruction was to use the same existing platform of Google Arts and Culture. They additionally proposed to supplement the experience with virtual tours and a Museum page, where the museum's essence would potentially be "retrieved" by digitally browsing its archives and by sorting through objects from the collection. The National Museum and Google Arts and Culture, with the support of the Federal University of Rio de Janeiro (UFRJ) and the Ministry of Education, also launched eight virtual exhibitions with images of 164 collection pieces destroyed during the 2018 fire. Among the artifacts that became digitally available are historical relics such as the Luzia Skull (the oldest human remnant in the Americas), the famous Titanosaurus replica, and the Bendegó Meteorite (the largest ever found in Brazil) weighing 5,260 kg. In addition to these virtual exhibits, the platform features an unprecedented virtual tour 'inside' the museum galleries, with 360-degree images captured in 2017 through Museum View. Using this tool, visitors can potentially immerse themselves in the rooms of the historic building and see in detail the objects that used to be on display. This tour is narrated in Portuguese, English, and Spanish and is also available in a VR immersive mode using the Google Cardboard or other virtual reality devices.

These circumstances demonstrate the vulnerability of museums and cultural institutions in the face of the digital advancements because, ultimately, in addition to voluntarily granting their holdings to Google, these institutions depend on major technology companies to support and maintain their online presence in order to sustain their relevance in today's digital culture. To ensure that their spaces exist and stay relevant, cultural institutions and heritage sites are required to deconstruct their materiality, dissociate themselves from their physical spaces, and rebuild those in (or – as) the virtual domain. This way, although they may dodge the bullet of obsolescence, many institutions also seem to lose much of their agency and control over their own collections. The disappearance of the National Museum as a tangible space due to the fire makes it easier for the museum to be consumed by Google's platform while, at the same time, this case intensifies and reinforces Google's image as a "savior" of heritage. In a way, the tragedy of the National Museum justifies Google's power over cultural collections, and it indirectly reaffirms such methodologies as a valid way of heritage production and co-optation. The construction of the 360 virtual tours further highlights the

gravity of the situation not only because it reflects the results of federal negligence and indifference towards heritage places, but also because it leads to the simplification and reduction of their existence. Google's approach to the case of the National Museum in Brazil seems to advocate that, ultimately, the experience of the actual place does not matter, as heritage spaces can be easily rebuilt online through digital technologies. And yet, this is a dangerous affirmation. It is this privatization of the ownership of knowledge and heritage construction itself, along with the obfuscation of the production systems and their processes, that denotes the commercialization and capitalization of cultural heritage, historical narratives, and collective memories (Huyssen 2000; Zuboff 2015; Zuboff 2019). This is done in the guise of promoting an inclusive discourse of collaboration and accessibility.

It is through such projects that we come to understand memory objects and heritage sites not as physical, material places, but rather as online sites in an informational, decontextualized cartography. The more we work to digitize heritage and historical sites, the more detached they become from the physical territory that generated them. If we are to paraphrase Jean Baudrillard, this is another example of how the map overcomes the territory (Baudrillard 1981: 3). Such growing intangibility of heritage creates a collective need to enforce and further articulate local identities in an in-situ and contextualized manner because otherwise, they risk at being lost in the digital global landscape. This may lead us to observe that, under certain circumstances, decontextualized heritage can make people less aware and further detached from their own actual socio-cultural context. Acknowledging this, we suggest that other strategies for the digitization of heritage should also be considered. Heritage should not necessarily be isolated in an informational world in order to become accessible or interactive; instead, new cultural heritage may aspire to facilitate stronger connections and modes of engagement between people and the places in which they live and inhabit. As the next section demonstrates, such strategies for heritage production can, in fact, be affective and inclusive because they practice the re-telling of histories through diverse voices and modalities in a shared, locally contextualized, environment.

Transforming local environments

The use of Augmented Reality (AR) and Mixed Reality (MR) technologies allows the implementation of digital objects in physical environments. AR and MR technologies can be defined as a collection of tools to combine physical space with an overlay of dynamic digital data. This combination is usually site-specific or object-specific, and it occurs in real-time through participants' engagement with a mobile device (Milgram 1999; Atzuma 1997; Avram 2014). Combining AR and MR with the Global Positioning System (GPS), these technologies can become

effective means of redefining places, engaging with material environments, and reflect on places' process of formation and becoming.

Adopting an on-site – rather than an online – strategy operates to connect people to physical places and their histories by reaffirming one's own physical and socio-cultural positioning (De Souza e Silva, 2006; Farman, 2013; Verhoeff, 2017; Cooley and Buell, 2017; Wright, 2018). An example of this is Mic's Black Monuments Project (Fig 4), which was conceived in response to the ongoing debate around the removal of statues of figures from the Confederate Civil War (Fisher 2020; the LA Times 2020). The Black Monuments Project is designed to expose and reject the white supremacy of monuments in North American by "correcting this sordid legacy through a mixture of history and imagination." (Black Monuments website 2018) Launched at the beginning of the Black History Month in 2018, this project aims to commemorate and celebrate black heroes and public figures by geo-locating their digital statues in sites that are relevant to their personal history and public influence (Dante Doig-Acuna for Medium Magazine 2018).

The Black Monuments 3D models (produced by Media outlet Mic in collaboration with the tech company Mixer) can be accessed through the Snapchat Lenses interface, which enables users to digitally place these 'statues' in their space. This project thus employs the layering enabled by augmented reality to appropriate the city space in order to tell alternative stories. Counter-dominant histories are therefore being revalidated through the reproduction of heritage by digital technologies. Rejecting the common 'whiteness' of American memorials, the project subverts the urban space and its traditional, mainstream narratives. This case is reminiscent of other e-memorial projects, such as Memory of Amnesia, a project that traces the removal, replacement, and repositioning of urban monuments in Sao Paulo as means to monitor and expose the politics embedded in the formation of public space (Beiguelman and Casimiro 2017: <http://www.desvirtual.com/mda/>). While Memory of Amnesia enables a digital re-insertion of removed monuments in order to question the nature and the motivations of political decisions, the Black Monuments Project validates repressed narratives by including objects that were never present in the public urban spaces. In Black Monuments, users can place the digital objects wherever they are, thus engaging in an open, ongoing process of heritage validation and spatial (re)contextualization.

These two examples are directly linked with the idea of heritage as a democratic, open, and inclusive practice, in which the constant revision of values is a key factor of the construction of collective narratives. This relates to Beiguelman and Casimiro's concept of Open Source Heritage (Beiguelman and Casimiro 2017), which considers Open Source methodologies as a way to rethink the future of heritage production. This concept signals a new approach to the

production of history and heritage by facilitating a more open, and less hierarchal, process of heritage production and preservation. Accordingly, this approach calls for the participation and collaboration of users with both systems and bodies of knowledge and with each other, to produce an inclusive, contextualized, and multilayered model of heritage.



Fig 4. The Black Monuments Project ©Mic

The process of inserting present-absent digital heritage objects into physical space in a participatory manner and through Open Source methodologies may also result in a re-appropriation and de-colonization of familiar landscapes. This is demonstrated by Adrian Duke's project Wikiup (2017), produced in collaboration with the Vancouver Native Housing Society. Wikiup is an app that geo-locates intangible, verbal traditions and memories of indigenous nations around the Vancouver bay area (Duke 2018). Through Wikiup's platform, Duke collects and curates stories contributed by members of various indigenous communities living in British Columbia. He then preserves those stories in a database and makes them digitally accessible via a designated AR app. Considering the intangible nature of the heritage preserved in Wikiup, AR is used here to also extend the practice of storytelling, which is essential in the passing of indigenous traditions (Myburgh 2018: 397). As a result, while the use of the medium indeed increases awareness and accessibility of these often-silenced histories as it turns intangible stories into digital artifacts, AR also functions as an authentic tool for self-expression in this context.

The authentication of materials uploaded to the Wikiup platform depends on the stories' validation by senior members of the indigenous community. According to Duke, this grants more authority to the app, as stories are endorsed by those who share, or are familiar with, similar experiences (Gilbert 2017: 8-9). While we might note that this system intentionally operates as means of exclusion and control to promote the counter-dominant discourse of indigenous histories in a site-specific manner, new-media practitioner Shanlon Gilbert notes that such exercise of power is also necessary to maintain the diversity and democracy enabled by AR apparatuses.¹ Considering the fact that Wikiup was released for Canada's 150th Independence Day, Duke's use of AR also demonstrates the tension between democracy and control in Canadian history by digitally illustrating Canada's repressed past: although it lacks materiality it deems presence, recognition, and incorporation – not only within landscapes – but within the mainstream national narrative. More specifically, the repressed past reactivated by Wikiup deems to be an integral part of the present and to become a valid heritage.

Ultimately, Wikiup employs AR to expand and extend an indigenous occupation of material territories through the virtual realm of cyberspace; it enables the convergence of a virtual indigenous presence within the physical landscape and in the space of the user, while illustrating the conflicts related to the formation of the landscape as we know it. Describing sites by using their indigenous names and sharing stories and histories of the native nations, Wikiup offers its users another perspective and cultural knowledge, which possibly collides with their own on multiple levels. The application's potential lies in contextualizing and in revealing the layers of a landscape from an indigenous perspective. While Wikiup continues to be developed, it is already fulfilling one of its main goals as it collects stories and turns them into histories. Duke's project is exemplary of AR practices that reveal the sociopolitical layers of land through contextualized heritage. Works like Wikiup and the Black Monuments Project ask users to consider the relationship between storytelling, place, and heritage as users critically engage with their location, and to (re)locate themselves in an occupied, colonial landscape.

This perspective is also practiced in the mobile AR project Jerusalem's Holy Mount by Sitsim (<http://sitsim.no/>, 2013). In this project, visitors to the holy mount can engage with the histories and narratives of all three Abrahamic religions simultaneously by exploring the hidden archeological layers of the site and understanding the relationships between them (a demo video is available here: https://www.youtube.com/watch?v=8lJo_BzDqV8). Using GPS technology, Holy Mount enables multiple levels of engagement with the actual site: visitors can see through the walls of existing buildings to which there is no public access, while also seeing the layers of previous architectural structures, that lie beneath their

feet as they navigate the site. At the same time, visitors can also listen to relevant sections from the Koran, the Bible, or psalms which are site-related, and learn about the actual archaeological research and findings from the Holy Mount. Thus, visitors may become aware of the questions raised by the archeological research, which often collide with religious views (Liestøl and Friedlander 2013: 431).

Holy Mount creators explain that their app is designed to facilitate a change in perspective through the changing of gaze: instead of focusing our attention on what is actually visible on the physical site, the Holy Mount app enables a spiritual (or, “synoptic”) contemplation, considering all the other cultures participating in the formation of this holy place. Accordingly, it illuminates the inevitable connections between them. (Ibid.: 430). This app thus provides a relational experience as it extends the perspective of its users to incorporate multiple narratives simultaneously. The app does not show the development of one religion or culture in a chronological manner, but rather it aims to deepen our engagement with the physical site by providing a broader context and by showing how the development of all three Abrahamic religions are connected and how their histories and traditions are co-dependent. Planned to be available only in-situ and currently still under development, the final version of the Jerusalem Holy Mount app should also include digital bulletin boards, geolocated on site and allowing visitors to share opinions, links, and additional resources relevant to the site and its conflicted history. This is another way to both increase visitors’ participation and to deepen their engagement with the actual site, while promoting a pluralistic dialogue that incorporates the many voices and traditions that pre-formed the Holy Mount as a historic place. Such on-site digital forums are also another example of open-source heritage because they portray heritage as a participatory practice that is created by means of a dialogue.

Conclusion: (re)Wiring History

This paper discusses two opposite approaches to the production of digital heritage. The first is the digitization of historic objects and monuments and the presentation of their 3D models in online collections and virtual tours. As we have observed, although increasing public access to history and heritage, this mode of recontextualizing heritage may also contribute to a sense of detachment between the objects of heritage and their material, localized environments. The second approach operates to further contextualize material heritage by including narratives of alternative histories in urban and historical places via employing mobile digital platforms with AR and MR technologies. Both approaches, however, re-establish material cultural heritage as “new cultural heritage” as a result of their employment of digital technologies. In both cases, historical narratives are

being reshaped in light of users' engagement with digital platforms, which enable alternative – global or local – perspectives of heritage objects and environments.

Analyzing these strategies for the (re)construction and consumption of historic narratives and heritage objects, we emphasize the value in developing historically contextualized engagements, which can be locally experienced. Employing AR and MR technologies is one way of developing such strategies, which allows users to experience an extended (and expanded) sense of history and place. Reaffirming users' geographical positioning through GPS, these mobile applications can deepen and further diversify the connections between people and places, and thus they may also work to strengthen local narratives, identities, and communities.

The strategies employed by the AR apps analyzed in this paper also facilitate a multi-narrative environment and an inclusive space, which emerge by the combination of the physical and digital domains. In-situ digital monuments can thus be utilized to re-signify the complexity and social hierarchy embedded in actual, physical spaces. Moreover, the mobility of AR technology and its conceptualization as locative-media can be employed to transform material environments into interfaces, through which invisible layers of history and landscapes' formation can be discovered. Thus, new paths emerge that redirect our perception of places and their histories.

We also note how employing the concept of Open Source Heritage allows us to expand the process of digital heritage production by including participatory and community-engaged practices. Open Source Heritage practices also offer an alternative to the shelf-products offered by big data companies like Google, because they operate to reconnect narratives with environments in a specific and contextualized manner. The production of heritage may therefore constantly be renewed and perceived as a 'work in progress' since it becomes the result of ongoing collaborations between communities, digital platforms, and stories. Despite such fluid mode of becoming, this mode for heritage production may offer a more robust, and affective, engagements with historical narratives.

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¹ While Gilbert acknowledges that "the democratic nature of the [AR] technology, and its ability to insert narratives into physical space, makes it a particularly powerful tool for marginalized groups," she also refers to the potential risk of the "wild west of AR" (Gilbert, 2017: 2, 7-8).