Ethically Digital: Contested Cultural Heritage in Digital Context

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Over the past century, our understanding of cultural heritage has evolved, and now, heritage is seen more as a process than a product. The advancement of digital technologies has significantly aided in the research, protection, management, interpretation, and education of cultural heritage. However, it also raises the question of how far this technology works in accordance with our current understanding of heritage as a process. It should avoid taking a reductionist approach in which heritage is cut off from its community and context. Ethical risks are higher for contested heritage when meaning and values are questioned, or when people's ability to access and enjoy heritage is threatened. This paper discusses potential ethical risks regarding access, control, dissemination, and the digital economy by looking at existing approaches, guidelines, and principles in this field and a few digital heritage projects about contested heritage. It questions whether the lack of an inclusive ethical framework could lead to a new kind of digital colonization.

Keywords:
Digital Cultural Heritage, Contested Cultural Heritage, Digital Ethics, 3D Reconstructions, Digital Colonialism.

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1. INTRODUCTION

Since the 19th century, the concept of cultural heritage has evolved. Instead of viewing cultural heritage as a mere product from the past, we now see it as a process and a dynamic discourse. Heritage is not anymore reduced to a list of objects and sites that must be preserved; rather, its social and cultural process [Smith 2006], as well as the process of understanding and constructing its meanings and values, are also included as part of the heritage. Theoretical developments in heritage studies have led to a shift from a narrow emphasis on authorized heritage, such as magnificent historic monuments and buildings, high art, and valuable antiquities, to an exploration of heritage's functions and its political, social, and economic construction.

At the same time, the application of new digital technologies for recording, researching, protecting, reconstructing, presenting, and interpreting cultural heritage has developed in frequency and range. Such an increasing application of digital technology in cultural heritage raises ethical questions and challenges. These ethical concerns need to be carefully considered and addressed as our relationship with and understanding of cultural heritage are changing.

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This paper, focusing on the evolved concept of cultural heritage and the agency of communities in identifying, valuing, and protecting heritage, discusses some of the challenges of using digital technology in cultural heritage. The discussed problems are especially relevant to contested and destroyed heritage, where meanings and values are challenged, or access and enjoyment are impeded or impossible. Several guiding principles and international charters for digital recording, documentation, and presenting and interpreting cultural heritage are analyzed to draw out common issues in addressing the ethical challenges. Case studies from recent international digital heritage projects in the context of contested heritage are examined to understand the emerging challenges associated with digital technology. The subsequent discussion centers on a number of problems, such as access and permission, ownership, decontextualization of heritage, and the digital economy that comes with digitizing cultural heritage. I argue that to respond to these rising challenges, an inclusive ethical framework is required; otherwise, there is a risk of adopting a reductionist approach to cultural heritage, in contradiction to our current understanding of heritage as a social process. If these issues are not addressed, they have the potential to widen the digital divide between those who have ready access to digital resources and those who do not, leading to digital colonialism.

The paradigm shift towards cultural heritage as a social process gradually started after World War II but did not gain momentum until the 1980s [Meskell 2018]. Since then, as the concept of heritage has expanded to include aspects of ordinary life and the recent past, it has attracted more diverse groups of society. The introduction of new concepts such as 'intangible heritage', 'cultural landscape', 'spirit of space', and 'human-centered approaches to heritage' broadened the scope of cultural heritage and led to a greater recognition of community agency in identifying, valuing, and protecting of their heritage. Recognizing heritage as a social matter means its identification is not restricted to a select group of official experts and governments. Instead, the role of communities and people in determining and identifying heritage is increasingly being recognized [Kolesnik and Rusanov 2020].

In the 1990s, the inclusion of the concept of the cultural landscape in UNESCO's World Heritage Convention emphasized the importance of studying, protecting, and presenting a cultural site within its natural, social, economic, and political context, where past and present societies are culturally engaged. The 2003 Convention for the Safeguarding of the Intangible Cultural Heritage recognized the "interdependence between the intangible cultural heritage and the tangible cultural and natural heritage" [UNESCO 2010]. By the Faro Convention, people and their values were put more at the center of the concept of the cultural heritage [Council of Europe 2005]. The spirit of place, recognized by the International Council on Monuments and Sites (ICOMOS), includes all the tangible and intangible elements that contribute to the meanings, values, and emotions of a place. It "is a continuously reconstructed process, which responds to the needs for change and continuity of communities" [ICOMOS 2008b].

The initial application of digital technology in cultural heritage was mainly to identify and record cultural heritage for research and heritage protection and conservation. However, the rapid development of digital tools has extended their application to heritage management, presentation, interpretation, education, and even trade in cultural heritage. Remote sensing, machine learning, digital 3D documentation and replication, virtual and augmented realities (VR and AR), and artificial intelligence (AI) are now used in various aspects of cultural heritage to help heritage professionals and scholars to better understand and protect heritage and communicate with a broader audience.

Efforts have been made to address ethical challenges in these regards, but ethical frameworks for digital heritage are still in their embryonic stages, as the rapid development of technology constantly presents new opportunities and challenges. The introduction of non-fungible tokens (NFTs) to cultural heritage is an example of an area that has moved faster than the assessment of associated risks [Ameneyro 2022, Glitch Studios 2022]. Digital technology has also opened new ways to interpret and present cultural heritage. Access to digital tools is not anymore exclusive to heritage experts and researchers; other actors such as governmental and intergovernmental institutions, for-profit and non-profit institutions, and the public have also access to digital technology to record and present cultural heritage and interact with digital records.

Existing guiding principles, standards, and ethical recommendations for digital recording and documentation of cultural heritage developed by institutions such as the Getty Conservation Institute (GCI), CIPA Documentation Committee, ICOMOS, and some academic projects could be expanded to create more inclusive frameworks for the use of digital technology in cultural heritage. In guiding principles, published by the GCI, Letellier et al. [2007] suggested 12 guiding principles for heritage information management in response to the questions of "Why? When? Who should carry out heritage information activities? Who is responsible? Where do heritage information activities fit into the conservation process? What is the first planning step? What should the records contain? What level of commitment is needed from decision makers? Who should have access to heritage information? What level of detail is required? What scope, level, and methods should apply? How should records be kept and identified?" [Letellier et al. 2007, xvii-xviii]. The main objective of these principles was to provide guidelines for heritage managers and decision-makers in understanding their roles and responsibilities, not to sketch out an ethical framework for digital heritage. However, some of these critical questions are valid for any ethical discussions, especially when it comes to why, when, what, and who, regarding the digital recording of cultural heritage.

In 2008, ICOMOS published the Charter for the Interpretation and Presentation of Cultural Heritage Sites, with seven principles: Access and Understanding; Information Sources; Attention to Setting and Context; Preservation of Authenticity; Planning for Sustainability; Concern for Inclusiveness; and Importance of Research, Training, and Evaluation [ICOMOS 2008a]. The ICOMOS Charter does not specifically address 3D technologies, digital replicas, and other methods such as VR and AR, but some of its general principles help with the ethical challenges of digital technologies and cultural heritage. The principle of Access and Understanding calls for facilitating public access to cultural heritage through interpretation and presentation to increase awareness, understanding, and respect of cultural heritage. In addition to emphasizing the use of scientific methods to collect evidence, the principle of Information Sources highlights the importance of living cultural traditions, oral and written evidence and stories, and meanings attributed to a site as information sources. In the principle of Context and Setting, the Charter demands that the broader social, cultural, historical and natural context of cultural heritage is considered during presentation and interpretation and that the various phases of the public interpretation of a site be distinguished. Interpretation should address the cross-cultural significance of the heritage site. Great importance has been given to the surrounding landscape and the natural environment of the site.

Santana Quintero et al. [2019, 1064] proposed six ethical categories based on the ICOMOS and the Canadian Association of Heritage Professionals' ethical principles, to be considered by heritage

recording specialists when identifying their professional obligations, including: related to ethical conduct; related to best practices; related to cultural heritage; related to the public and communities; related to other heritage recording specialists; and related to qualifications.

Some of these categories, such as conduct, cultural heritage, communities, and best practices, can address crucial ethical issues, including cultural rights, conflicts of interest, economic benefit, transparency, and sharing technology.

ICOMOS later endorsed the International Principles on Virtual Archaeology (the Seville Principles), based on the theoretical framework of the London Charter [ICOMOS 2017]. Interdisciplinarity, Purpose, Complementarity, Authenticity, Historical Rigour, Efficiency, Scientific Transparency, and Training and Evaluation are addressed by these principles. The primary purpose of virtual archaeology, according to the Seville Principles, should be to serve society as a whole and contribute to human knowledge. New technologies "must be always at the service of archaeological heritage rather than archaeological heritage being at the service of computer-based visualisations" (Principle 2).

In the Endangered Archaeology in the Middle East and North Africa (EAMENA) project, we have raised critical questions regarding the ethics of remote sensing and archaeology. EAMENA is a UK-based project at the Universities of Oxford, Leicester, and Durham, which extensively uses open-access remote sensing data and digital technology to identify and record endangered heritage sites. The questions include access to cultural heritage sites bypassing state sovereignty over sites, the possibility of undermining site protection by publicly revealing locations, the mode of interaction with local communities, and the role of remote sensing in identifying and reporting damage to contested heritage sites and in conflict zones. The proposed solution to address these challenges was a humanitarian framework designed to include communities' voices and perspectives and to respect impartiality, neutrality and independence [Fisher et al. 2021].

The FAIR guiding principles have been developed by data stakeholders, including academia, industry, funding agencies, and scholarly publishers, to ensure the reusability of data as well as findability, accessibility, and interoperability [Wilkinson et al. 2016]. Although FAIR principles advocate for open and reusable data and facilitate data sharing, the rights of indigenous communities to control, access, and benefit from data about their people, land, and resources and the related ethical challenges are not addressed. To complement FAIR Principles, the Global Indigenous Data Alliance developed the CARE Principles for Indigenous Data Governance[1]. The CARE Principles, standing for Collective benefit, Authority to control, Responsibility, and Ethics, acknowledge the concerns about people and the purpose of data, power relationships, historical, social, and structural conditions and inequalities, and data sensitivity for each community [Carroll et al. 2021, Kansa 2022]. The scope of CARE principles is expanding beyond indigenous peoples to include the data rights of the broader community. These principles can include any community whose cultural heritage has become digital data.

In 2021, UNESCO's Member States adopted a set of recommendations on the ethics of artificial intelligence (AI). The recommendations are based on universal values, including human rights, environment, diversity and inclusiveness, and peaceful, just, and interconnected societies. These fundamental values are not the same as the UNESCO concept of outstanding universal value, an

1 https://www.gida-global.org/care

increasingly contentious issue [Jokilehto 2008]. The document provides a framework of principles to help states in developing their national legislation and policies on AI. These principles are: proportionality and do no harm; safety and security; fairness and non-discrimination; sustainability, right to privacy and data protection; human oversight and determination; transparency and explainability; responsibility and accountability; awareness and literacy; and multi-stakeholder and adaptive governance and collaboration [UNESCO 2022, 18-23].

Although the guidelines and recommendations reviewed here have different scopes and purposes, they share some fundamental values that can be used to develop digital cultural heritage ethics. Understanding, presenting, and interpreting cultural heritage as a dynamic and inclusive process in its broader context, respecting all rights of communities owning cultural heritage, having a fair reason, motivation, and qualification for digitizing cultural heritage, and recognizing the agency of local communities in identifying, valuing, and preserving their heritage all find common ground in these documents to help in creating a more ethical approach to digital heritage.

2. RIGHTS TO ACCESS, OWNERSHIP, AND BENEFIT

Right to access, ownership and use are interdependent, and each issue sits within its own complex of relationships. In the digital debate, access can be conceived of as multi-layered, the first layer being access to a non-digital cultural heritage (such as site, landscape, object, artwork, and material and cultural remains or intangible heritage, such as narratives and traditions or other non-material heritage), in order to digitize it. The second layer is access to digital data and digital heritage. Digital technologies have made access to cultural heritage and data acquisition potentially quicker and easier – for those who have the resources. For example, remote sensing in the MENA enables access to heritage sites without seeking permission from governments, who traditionally control archaeology, heritage owners, and other rights and stakeholders, as well as local communities. Such technical capabilities are now readily available not only through aerial and freely available satellite imagery but also through portable digital technology. The data obtained in many cases are of such quality that they can be used to create high-quality 3D models and 3D prints.

A complex combination of pocket digital technology contested cultural heritage, right to access, and freedom of information can lead to complicated legal and ethical questions. The ongoing case between the Institute for Digital Archaeology (IDA) and the British Museum (BM) over the Parthenon (or Elgin) Marbles highlights this potential. When in early 2022, the request of IDA to scan the pieces of Parthenon Marbles held at the BM was rejected by the museum, the IDA team decided to use an iPad fitted with highly sophisticated Lidar sensors to scan the marbles anyway without informing the museum. The Oxford-based IDA said the scans would be used by a carving robot at a workshop in Carrara, Italy, to create precise and life-size copies of the marbles, which would be first displayed in an exhibition in London [Harris 2022a]. According to IDA, the replicas could substitute the marbles inside the BM for the originals to return to Greece. Referring to the long-standing dispute over the restitution of the marbles to Athens, Roger Michel, the IDA Executive Director, told The New York Times that their purpose was to encourage repatriation of the Parthenon Marbles by making copies that the BM could keep: "when two people want the same cake, baking a second, identical cake is one obvious solution" [Lidz 2022]. In an official statement, the BM said, "the Museum was deeply

concerned to hear suggestions that unauthorized scanning took place in our galleries. Any such activity would be a breach of our visitor regulations. We regularly receive requests to scan the collection from a wide range of private organizations…and it is not possible to routinely accommodate all of these" [Harris 2022a]. In November 2022, one replicated piece of the marble, the Selene Horse, went on public display at London's Freud Museum. Visitors had to pay a £14 museum admission fee to visit this piece of marble unless they had individually arranged with IDA for free admission in the late afternoon (confirmed to the author by a museum receptionist).

The digitization of the Queen Nefertiti bust, removed from Egypt in 1912 and currently kept at the Neues Museum in Berlin provides another example. The bust was secretly scanned by two artists with a portable scanner in 2016. Then a 3D printed bust was delivered to Egypt. Later the artists/activists released the digital file publicly on the internet for everyone to download and make their own copies [Wilder 2016]. While its roots in activism and the provision of open-access data makes the Nefertiti project different in essence from the Parthenon Marbles scanning project, both cases share the new possibilities digital technology gives to contested heritage and the new ethical consequences and questions raised.

The Parthenon Marbles and the Nefertiti Bust raise some of the most critical questions of cultural property restitution and where artifacts belong. Is digital technology able to transcend cultural and political boundaries to resolve these types of disputes over the restitution of cultural heritage? Oruç argues that digital replicas cannot solve the question of repatriation, as they cannot address the grievance over the lost original, but they will lead to further questions over the copyright of the digitals and who keeps the copies [Oruç 2022]. To apply digital technology in complex contexts such as the ownership of contested cultural heritage, we should know who requested their replication and whom such replicas will serve. Furthermore, who will benefit from exhibiting them? Will the digital record of the contested heritage be open access and reusable for everyone, especially the community and heritage stakeholders?

Using advanced digital technology without seeking, or even considering, let alone obtaining consent from stakeholder parties, especially those engaged in a dispute, including those requesting restitution and those retaining the originals, may result in an effective digital colonialism. This is clearly the case when contested heritage is converted into a digital asset without community consent and even more so in disputes between institutions with a colonial background who claim to own the original and a new third-party digital project that owns the digital replica. The issue is more about the narrative and the socio-political context of the contested heritage than the originality of the digital copy, where a simple digital replication may ignore or underestimate the context or fail to address it adequately.

Another way that new technologies have been applied is in the digital reconstruction and 3D-printing of destroyed heritage, particularly that lost during conflicts and disasters. Following the recent armed conflicts and terrorism in the Middle East and North Africa, and especially after the deliberate destruction of cultural heritage by ISIS/Daesh, several international projects for the digital reconstruction of destroyed heritage were initiated, many of which use archival images and crowdsourced data to create 3D models and 3D prints. Two Europe-based archaeology students launched Project Mosul in 2015 for the 3D reconstruction of intentionally destroyed cultural heritage

in the Mosul Museum (Iraq) by using crowdsourced images and tourist photographs retrieved from internet platforms such as Flickr, and applying photogrammetric techniques. This project, later renamed Rekrei (https://rekrei.org), expanded its scope to include cultural heritage destroyed by natural hazards to digitally reconstruct and preserve the memory of lost heritage through making their models accessible to the public. Rekrei partnered with the Economist Media Lab to recreate the damaged Mosul Museum in virtual reality, called RecoVR: Mosul. In a project exhibition at the International Documentary Film Festival in Amsterdam, 3D-printed artifacts of the ancient city of Hatra (Iraq) were also exhibited. Rekrei demonstrated the ease with which information on cultural heritage can be accessed in order to create a digital copy, and also proved the enormous potential of crowdsourcing images on the Internet for the digital reconstruction of destroyed heritage. Other institutions, such as ICONEM, a French startup, achieved remarkable successes on a global scale by using drone photogrammetry to reconstruct cultural heritage that had been destroyed in Syria, Iraq, and Libya and by exhibiting the results in Paris, Leiden, Doha, and elsewhere.

The reduced-scale replica of the Triumphal Arch of Palmyra (Syria) created using digital technology and 3D printing by the Institute for Digital Archaeology (IDA) is another example of the digital reconstruction projects that have sparked debate in recent years. In 2016, the replica was erected in London's Trafalgar Square in a ceremony opened by Boris Johnson, the then-mayor of London. It was then relocated to New York, Dubai, Washington, D.C., Bern, Geneva, and Florence. Beyond technical debates regarding the replica's fidelity to the original, additional ethical debates arose regarding the larger context of this ancient monument, which was destroyed by ISIS in 2015. Questions included: what are the ethical implications of erecting a reconstructed arch if there is no connection to the Syrian context at a time when there is bloodshed and human rights violations? In addition, the project was questioned for not involving the affected community in the selection and recreation process and for restricting access to digital assets, which raises the issues of ownership and benefit [Bond 2016, Khunti 2018].

In the case of the giant statues of Buddha in the Bamiyan Valley of Afghanistan, the digital reconstruction project took place in-situ. Blasted by the Taliban in 2001, the reconstruction of the two statues, one with a height of 55 meters and the other one 38 meters, has since been the subject of discussions at international and national levels between UNESCO, ICOMOS, experts and academics from different countries, the Afghan government, and the local population. Part of the local community, particularly in Bamiyan, wanted to restore the statues as an integral part of the region’s cultural landscape and the local legend, and some voices in the Afghan government, supported by ICOMOS-Germany, also sought to revive tourism and the local economy through the reconstruction of the smaller statue. However, serious challenges regarding the principles of restoration and authenticity, as well as technical and financial difficulties hampered the reconstruction [Han et al. 2018]. In 2015, a Chinese couple temporarily projected a 3D digital hologram of the statues in their void niches after receiving permission from the government of Afghanistan and UNESCO for a small group of people to see the hologram for only two days [Delman 2015]. The digital holograms, costing around $120,000, respected the empty niches as part of Afghanistan's modern history and a strong testimony in memory of the deliberate destruction of culture. Although the projection of the statues' holograms in their niches appeared to be a solution to avoid ethical, technical, and financial difficulties, the issue of the Bamiyan Buddhas still had critics who, on the one hand, believed in the

necessity of restoring at least one of the statues, and on the other, believed that too much attention was paid to these two statues when the Bamiyan Valley has many other significant historical sites and monuments that were neglected [Bobin 2015].

While cultural heritage information is readily available to institutions and projects such as Rekrei with the necessary technical resources, digital reconstruction of contested or destroyed heritage can present ethical challenges if such factors as the social, political, cultural, and even environmental contexts of the heritage are ignored. These digital recreations may serve to educate people all over the world about the importance of preserving lost or endangered heritage. However, how much consideration has been given to the opinions of local communities, especially those who have been directly impacted by the war in terms of information access and digital reconstruction? How would the affected communities benefit from these projects exhibited in the (western) world?

Moreover, while replicating contested and destroyed heritage is possible by accessing archival and open-access images, would access to the high-quality 3D files and scans be open for everyone to reproduce them elsewhere? Who will be the owner of digital copies? While cultural heritage sites and monuments themselves are generally not copyrightable and access to them and their information and images is easily possible, their digital captures and digital replicas can be copyrighted [Thompson 2017]. This is what many museums traditionally do – copyrighting their photos of objects.

With a few exceptions, most digital projects in the Middle East have focused on pre-Islamic heritage, primarily Greco-Roman, a key period for western research and tourism interest. Simultaneously, a large number of Islamic period and recent heritage sites, such as places of worship, cemeteries, and historical houses, have been targeted for systematic destruction. Failure to engage concerned communities, local stakeholders, and professionals in the process of selecting, presenting, and interpreting heritage can result in an elitist and reductionist approach to cultural heritage that reflects the cultural preferences of the tech projects rather than the concerned community, and raises the question of who benefits the most from digital reconstruction projects.

Galeazzi argues that digital technology allows for multiple reconstructions and the creation of open, dynamic, and editable ontologies [Galeazzi 2018]. However, the reconstruction of destroyed cultural heritage, especially in complex post-war and post-disaster contexts by international actors, requires the close involvement and participation of local communities and populations in all stages, with consideration of their humanitarian and development needs; otherwise, they may become a failure [Isakhan and Meskell 2019]. Although digital replicas cannot and should not replace the original, an outside perspective that focuses on elite cultural heritage can prioritize and favor their restoration projects on the ground over other heritages.

3. SOCIAL MEDIA AND CULTURAL HERITAGE

As in most aspects of modern life, cultural heritage has been influenced by the rapid advancement of digital communication technology and social media. Given that social media are also involved with issues such as access, documentation, participation, copyright, distribution, and the digital economy, it is not surprising that social media is entangled with cultural heritage-related ethical challenges. The role of social media in establishing a platform for citizen participation in decision-making and

cultural heritage management, thereby contributing to a people-centered approach to heritage and sustainable development, has been growing [Liang et al. 2021]. Social media has also demonstrated its great potential in disaster management and in times of crisis in terms of planning, early warning, information dissemination, data collection, reporting, crisis mapping, organising volunteers, training, awareness raising, and connectivity with social groups and family members. Open-source platforms such as Ushahidi (https://www.ushahidi.com) have been used for crowdsourcing data collection and crisis mapping for cultural heritage during natural hazards and disasters [ICORP and ICCROM 2015]. Large social networks such as Facebook are popular among conflict-affected communities and refugees, including Syrians and Iraqis, for sharing memories, information, and damage reports regarding their cultural heritage. Since the beginning of the Syrian civil war, Syrian civil societies and volunteers, such as The Association for the Protection of Syrian Archaeology (APSA), have been monitoring and reporting on damage to Syrian heritage sites and museums.

Despite its positive role in giving voices to communities and being useful in disaster management and heritage monitoring, social media faces challenges such as personal data privacy, misinformation, authenticity, cultural boundaries, difficulties in outreach to older populations, and the lack of regulatory authority [Mavrodieva and Shaw 2021, Singla and Agrawal 2022]. In a case study published by the ATHAR Project (https://atharproject.org/), Facebook was criticized for the lack of policies and guidelines on antiquities. ATHAR's research revealed that the absence of these policies and sensitivity to cultural heritage has transformed Facebook into a large black market for the exchange of smuggled antiquities, particularly from countries in conflict, such as Syria, and even for large items such as mosaics and architectural elements. On the Facebook platform, criminal organisations and antiquities traffickers have ready access to digital toolkits, including photo and video uploads, live streaming, disappearing "Stories," payment mechanisms, and encrypted messaging [AL-Azm and Paul 2019]. In response to the report, Facebook announced it would ban the exchange, sale, and purchase of all “historical artifacts” on its platform and on Instagram, which is also owned by the Facebook company (now Meta Platforms, Inc.). However, critics warn that the problem will continue unless Facebook takes severe steps and enforces its new policy. While researching this article, the author discovered numerous antiquity exchange groups and communities devoted to training illegal digging and treasure hunting in the Persian language on Facebook and Instagram, which are still active in Iran and Afghanistan.

4. DIGITAL ECONOMY, NFT, SOCIAL MEDIA, AND CONTESTED CULTURAL HERITAGE

The introduction of NFT (non-fungible tokens) and cryptocurrencies into the art and heritage market further complicate ethical considerations for cultural heritage. An NFT is a type of record on a Digital Ledger Technology known as Blockchain and is secured by cryptography. This makes the ownership of an NFT registrable and transferable, making it a tradable digital commodity. An NFT is like a certificate of the authenticity of an artifact, music or other items or their certified copies when a limited number of copies are produced and sold.

In March 2022, Christie's, a British auction house, sold the NFT of a digital work of art for $69m to certify the buyer’s ownership of an intangible marker connected to a unique piece of digital art.

During the Russian invasion of Ukraine, a collection of 3D-minted NFTs was launched by the not-for-profit Global Heritage Fund (GHF) and Celemeta open metaverse to support the cultural heritage sector in Ukraine [GHF 2022].

An NFT can be applied to a digital replica of a cultural heritage site or object too. On OpenSea, a digital marketplace for NFTs, there are already NFTs of digital images of rare or lost ancient objects and their asset passports for sale. When it comes to contested or destroyed heritage, then questions regarding the NFTs take on more complicated economic dimensions. An NFT can be used to address the issue of digital media and digital art ownership, but this remains an unregulated field. What happens if an NFT of a contested cultural heritage is sold to a third party after it has been digitally reproduced without the consent of the parties involved in the dispute? Is it possible that NFT is also used in the black market for illicit antiquities and forgeries? There are national and international laws in place to combat antiquity looting and illicit trafficking, but none of them addresses digital copies of cultural heritage. An NFT of a rare digital copy of a looted antiquity could be sold on the digital market with little risk to its producers, sellers, and buyers. From a social standpoint, what reaction will be elicited from a local community that has lost its heritage due to war, natural hazards, or looting by the sale of an NFT of a digital replica of a destroyed heritage?

The digitization of cultural heritage and the sale of their NFTs is quickly becoming a source of revenue for many museums and collections. Among the major institutions that have already entered into this digital market are the Uffizi Gallery in Florence, Italy, The British Museum, Boston's Museum of Fine Arts, USA, and The State Hermitage Museum in Saint Petersburg, Russia. In this process, a certificate of digital artwork or artifact of the museum is sold to a buyer, who can request to secure it on the register log of a blockchain, such as Ethereum. Although NFTs have opened new horizons for cultural heritage to enter the digital economy, at the same time, there are new questions regarding ownership and copyright issues of cultural properties and how to control and display their digital copies after being sold. In Italy, the government requested that the Uffizi Gallery suspend its NFT projects with tech companies until the contracts are reviewed and the legal and copyright issues are determined [Batycka 2022]. The sale of Doni Tondo's NFT, a painting by Michelangelo, sparked several debates, including who should own and control digital copies of cultural heritage and masterpieces as we increasingly enter the digital world and the metaverse [Foschini 2022, Harris 2022b]. However, there are situations where government oversight is impossible, such as when private entities are interacting with public ones. The preceding examples show how easy access to data and images of cultural heritage has facilitated their transformation into digital assets. The ownership of digital copies of disputed, destroyed, or world masterpieces, as well as their incorporation into the metaverse and cryptocurrency economy, remains unregulated.

5. ARTIFICIAL INTELLIGENCE (AI) AND CULTURAL HERITAGE

One of the most significant conceptual shifts in recent decades has been the recognition of cultural heritage as an ongoing process that can be understood and studied in relation to its social, political, economic, and environmental contexts. New opportunities for digitally documenting, presenting, and interpreting the past have arisen thanks to the explosion of information and communication technologies. The use of AI in cultural heritage has far-reaching consequences for conceptualizing,

identifying, valuing, protecting, creating and re-creating heritage, transmitting its values, and benefitting from it. AI offers the cultural heritage sector new opportunities and capabilities across a wide range of domains, including social media, deciphering ancient languages and inscriptions, automated site and feature detection, digitization, heritage interpretation, VR and AR, and digital preservation.

However, if the context, including the community surrounding the cultural heritage and its voice, is removed, as if the heritage were floating in an ethereal space, digital technology, such as 3D models and immersive digital environments, could lead to reductionist views and approaches to cultural heritage. The more serious problem with AI is the unprecedented quantity and quality of data collected and analyzed by tech companies, their algorithms, and their predictive models. This can lead to the diversion of learning and social inclusion and the accumulation of "instrumentarian power"; a term coined by Zuboff to describe a power that "shapes human behaviour toward others' ends" [Zuboff 2019, 8 and 498]. The way in which these pervasive AI systems are trained and their algorithms are developed affects users' perspectives on critical issues such as other cultures, values, rights, cultural diversity, human languages, religions, and cultural heritage. Will some cultures of the world be cut off from the internet due to a lack of inclusive, contextual, and fairly collected and managed data of those cultures/cultural heritage? This may lead to digital colonialism, in which advanced technologies are predominately based on data without regard for inclusivity, collective benefit, or ethics. The increasing use of AI in scraping the internet and extracting images and content to serve as training data for machine learning or to produce new content can also cause legal and copyright issues [Vincent 2023].

In the case of contested, disputed, destroyed, or displaced cultural heritage, this risk is heightened. In these instances, meanings, values, and narratives associated with heritage are challenged or undermined, or access, enjoyment, and benefit of cultural heritage are not equally or at all possible for all stakeholders or communities who consider themselves associated with that cultural heritage. The issue of access raises ethical questions at different levels, including easy and quick access to cultural heritage data and inequity of access to technology and digital skills. In many instances involving contested heritage, these can alter the relationship of (part of) the local communities with their heritage and create new digital narratives and digital economies.

There are different guidelines and ethical recommendations for digital documentation, interpretation and presentation, data management and governance, and AI. As discussed in this paper, ethical questions related to digital heritage encompass different areas, including access, data collection, data processing, data management, documentation techniques and technologies, data visualisation, interpretation and presentation, copyright, digital economy, and illegal and misuse of digital heritage. In the absence of a general and comprehensive framework that can address all these complications, the existing guidelines and recommendations should help to sketch the outlines and principles of such an inclusive ethical framework, bearing in mind that the rapid development of digital technology can always result in the emergence of new and unanticipated problems.

The core values of this ethical framework, based on existing guidelines, should consider, among other principles, the purpose of digital heritage, its setting and context, fair access, collective benefit, and diversity and inclusiveness, with communities and people and their rights and voices at the center.

It is possible to argue that digital technology facilitates interaction with cultural heritage and provides a forum for communities to be heard. However, what process should be in place to include the voices of multiple communities without excluding or favouring one community or specific elements of the cultural heritage context over other elements and voices?

Case studies discussed in this paper indicate that moving toward a more inclusive ethical framework that can address sensitive issues associated with contested digital heritage is not solely the responsibility of cultural heritage professionals, but that tech companies, the antiquities market, and international lawyers should also be involved in this discussion.

6. CONCLUSION

Cultural heritage is intertwined with a wide range of complex human and societal issues, including those related to politics, history, identity, religion, ethnicity, and environment. Research, education, and protection of archaeology and cultural heritage in all its tangible and intangible forms are aided by digital technologies such as 3D recordings and replicas, immersive digital spaces, remote sensing, interactive and mapping tools, mobile applications, social media, and other forms of digital tools and platforms. Ethical concerns, such as those related to access, copyright, interpretation, and digital benefit, will arise if this technology is used without considering the context of cultural heritage, especially in relation to the contested heritage. While digital technology is advancing at a breakneck pace, a digital divide is widening between the Global North and Global South, which has the potential to foster digital colonialism. Access, re-creation, re-presentation, re-interpretation, and economic rewards from digital heritage will be monopolized by a select few with sufficient digital capital and capability. Ethical frameworks for digital heritage should address fair access, collective benefit, inclusivity and diversity, and human rights. This can be achieved through a more widespread conversation among heritage professionals, tech companies, lawyers, communities, and heritage stakeholders. Addressing these ethical concerns in a new and inclusive digital heritage charter drafted by appropriate international organizations could be beneficial.

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