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AI and Heritage: A Discussion on Rethinking Heritage in a Digital World

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ABSTRACT

It is widely understood that cultural heritage represents a dynamic phenomenon: it is created in the present by us ascribing value to material or intangible inheritance from the past, we know that different past societies cherished such remains much like us, and what constitutes it changes over time. And yet, up until the present, it was implied that these things that we inherited and value have been made by humans. With the rise of generative AI programs, that is no longer a given. We already have programs capable of producing works that get a lot of praise and even win art prizes, like the case of Théâtre D'opéra Spatial, and this is just the beginning of the current AI revolution. These developments with AI are already challenging our established views, legal frameworks, regulatory systems, and many other things in our society. Because of that, this article aims to provide a brief overview of how our notion of what constitutes cultural heritage changes and explore why these developments are different from previous inventions and why they pose a challenge to our established views on cultural heritage, in the hope of opening up a discussion on what constitutes heritage in an increasingly digital world.

Keywords: Generative AI, AI-generated art, digital heritage, AI impact on culture, cultural heritage.

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Introduction

David Lowenthal, a pioneer in the field of heritage studies, reminds us that heritage isn't history or just something that is inherited from the past; it is created by us to suit our own needs in the present by us ascribing value to certain things inherited from the past (Lowenthal, 1998a). Furthermore, Lowenthal reminds us that while heritage came to prominence in the modern world, as he puts it, "heritage is as old as humanity" (1998b: 1). In fact, even interactions with cultural heritage like our own can be traced throughout history. For instance, there is nothing new in collecting cultural artifacts inherited from the past. It is rather well known that the first modern museums where such artifacts were displayed for the public to see were created from private collections of wealthy individuals and aristocrats known as cabinets of curiosities, which were common in Europe from the Renaissance onward (Impey and MacGregor, 1985). Not only that, similar collections can be found in the ancient world as well, such as the famous collection from the mid-6th century BC found at Ur which contained artifacts that were already hundreds of years old and even clay cylinders containing descriptions of objects that were part of the collection (Wooley, 2006: 238). Similarly, today heritage tourism constitutes an entire branch of tourism. Yet, even in the ancient world, there were people who embarked on travels to visit famous heritage sites. There are numerous instances that could be cited, however, perhaps the most vivid illustration of the similarities is provided by the ancient Greeks and Romans who visited the centuries-old

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tombs in the Valley of the Kings, leaving behind over 2,000 inscribed graffiti that contain the names of the visitors, the years of their visits, and even a few impressions (Reeves and Wilkinson, 1996: 50–51).

But while the view that certain objects inherited from the past, i.e. heritage, are valuable and worth protecting, collecting, and/or visiting can be found in different cultures and periods, the concept of heritage in these cultures isn't the same. Simply put, a visit to the tombs of pharaohs by a Roman isn't the same as a visit to sites in Rome by a British aristocrat done as a part of their Grand Tour, which was an important aspect of education and a coming-of-age passing between the 17th and 19th century given that they didn't share the same concept of heritage. Heritage is, after all, a cultural construct and, as such, it differs between cultures and evolves over time. So, even if we were to look at only one culture, we would see it changing over time due to different cultural, political, and other influences. UNESCO offers us the perfect example of this.

The United Nations Educational, Scientific and Cultural Organization was established in 1945 by the United Nations in order to promote world peace and security through intercultural understanding. However, while today UNESCO is perhaps best known for protecting heritage of universal value, this aspect of its work would come much later; although even its first director-general, the evolutionary biologist Julian Huxley, was a passionate internationalist and promoted the idea that there is only one single human culture, the vision of there being a need to categorize and protect heritage that is of value to all of humanity gained prominence in the 1960's, following the International Campaign to Save the Monuments of Nubia. Acknowledging the need for future action, UNESCO created the World Heritage Committee and called for a convention and, sure enough, the *Convention Concerning the Protection of the World Cultural and Natural Heritage* was signed in 1972, creating the idea of "World Heritage Sites." Just three years later, enough UN Member States ratified the decision, thus making it official, and in 1978, during the second session of the World Heritage Committee, the first cultural and natural sites were inscribed on the newly created List of World Heritage Sites (Todorović, 2022: 851).

As with any other treaty, the 1972 *World Heritage Convention* outlined what is meant by "world heritage:" cultural heritage (monuments, groups of buildings, sites) and natural heritage (natural features, geological and physiographical formations, natural sites). This original definition of world heritage and what constitutes it changed a lot over the years. A notable example of that is the fact that this original definition doesn't in any way acknowledge intangible cultural heritage, such as folklore, traditional beliefs, traditions, or even language. The current one does,[1] and the value of intangible cultural heritage has been acknowledged by UNESCO in other ways, such as by the creation of the Intangible Cultural Heritage Lists following the signing and ratification of the 2003 *Convention for the Safeguarding of the Intangible Cultural Heritage*. This change, of course, didn't come out of nowhere. In fact, the General Conference of UNESCO[1] adopted a "Recommendation on the Safeguarding of Traditional Culture and Folklore" back in 1989 and UNESCO started numerous initiatives over the years such as the *Red Book of Languages in Danger of Disappearing* (1993), the *Memory of the World* programme (1996), and the *Masterpieces of Oral and Intangible Heritage* (1998). Not only that but by the time of the 2003 Convention, several countries already had legal instruments in place for safeguarding intangible cultural heritage. Japan, for one, defined intangible cultural property (無形文化財, mukei bunkazai) in its 1950 *Law for the Protection of Cultural Properties* (ACA, 2019: 3–4), and their pioneering attempt to protect intangible cultural heritage was followed by other East Asian countries such as South Korea (1964), Thailand (1985) and the Philippines (1973) (HSRC, 2004: 14–21). That being said, as several heritage studies researchers have pointed out, the importance of the 2003 Convention shouldn't be downplayed

[1] In 2005, UNESCO modified the criteria for the selection of cultural and natural heritage to be inscribed on the World Heritage List. One of the changes was the fact that now cultural heritage being assessed could also be inscribed on the grounds of it being 'directly or tangibly associated with events or living traditions, with ideas, or with beliefs, with artistic and literary works of outstanding universal significance'.

since it provided a framework that UN Member States could use to safeguard their intangible cultural heritage and also contributed to an entire paradigm shift (Blake, 2017, pp. 11–19). In fact, a year before the first inscriptions on UNESCO's newly created Representative List of the Intangible Cultural Heritage of Humanity, Chiara Bortolotto already postulated that UNESCO's treatment of intangible cultural heritage is indicative of a change from a Western museological approach to heritage to a new one. As she pointed out, "UNESCO's focus is now centered (...) on the dynamic nature of culture and on the performing and continuous recreation of cultural expressions. This new approach aims at conceiving heritage not only as a consecrated masterpiece of the past to be venerated and preserved but also as a symbolic and living space to be appropriated by local communities who are the bearers of a collective and active memory. UNESCO's cutting-edge definition of heritage is therefore not simply the result of the introduction of the category of intangible heritage, but should be considered as the consequence of a longer and more complex process stimulated by a reappraisal of the overall idea of heritage" (2007: 21). Today, everyone acknowledges the existence and value of intangible cultural heritage and it is widely understood that heritage isn't tied to materiality. The problem is, however, that our view of what constitutes cultural heritage is proving to be inadequate in the 21st century because it has always been implied that objects that constitute cultural heritage were created by us. That is, we ascribe meaning and value to material objects or intangible ideas created by humans, but for the first time in history, thanks to technological breakthroughs with artificial intelligence, that is no longer a given. With the rise of generative artificial intelligence capable of generating texts, images, or other media, it is no longer a given that an artwork that we are looking at or a work that we are reading was produced by a human. It could very well be the case that it was produced by a generative AI program since generative AI models are trained on the patterns and structure of their input training data, and are capable of generating new data that has similar characteristics but is nevertheless different. Because of that, this article explores the notion of heritage today, aiming to open up a discussion on the future development of our conceptualization of heritage in a world where artworks and other media can be created by entities other than humans.

Understanding Heritage in a Digital Space

Before moving on to the debate about the impact of the recent developments with AI on our conceptualization of heritage, it is important to highlight that the relationship between heritage and digital technology isn't a new one. There is a rich history of employing digital technologies to safeguard cultural heritage and crafting digital artworks. Furthermore, for years now, digital technologies have been used in various ways to help preserve material and intangible heritage to such an extent that scholars and practitioners introduced the very concept of "digital heritage" to define it (MacDonald, 2006; Parry, 2007; Parry, 2010; Thwaites, 2013; Din and Wu, 2015). But, in addition to such attempts where material or intangible cultural or natural artifacts have been re- created in the digital world in an attempt to preserve them, study them, and/or promote them, a practice that definitely has a somewhat long history considering that, for instance, a 3D reconstruction of Dudley Castle in England as it was back in 1550 was made available to visitors way back in 1994 (Johnson, 1996), there is an even longer history of digital technologies being used by artists to create artworks.

Christiane Paul provided a useful and important overview of the ever-evolving and changing digital art scene (2003). Indeed, today numerous examples of digital art exist, from somewhat traditional animated and still 2D and 3D imagery to digital paintings, and all the way to algorithmic art and data art. In fact, digital art gained wide popularity in 2020 and 2021 due to the NFT craze of the time, gaining particular prominence following the sale of Michael Joseph Winkelmann's work *Everydays — The First 5000 Days* on March 11, 2021, at Christie's for $69 million (Brown, 2021). And when it comes to heritage studies, NFTs (Non-Fungible Tokens) represent a particularly interesting case study. After all, non-fungible goods, such as an NFT, are goods that cannot be exchanged for a similar good since the value of these goods exceeds their material value. Examples of such goods are unique works of art in the real world or NFTs in the digital space, which represent unique digital identifiers, typically containing a reference to a

digital file, that are recorded on a blockchain and are used to certify ownership and authenticity. And just like with real works of art, there is an entire market around NFTs (Ante, 2022: 216–217), despite them not necessarily granting their owners copyright or intellectual property rights (Aksoy and Üner, 2021; Okonkwo, 2021). Hence, the value of an NFT comes from us ascribing value to the token and the digital file that it references, just like with regular artworks and with heritage generally.

Needless to say, with the rise of the digital economy and the digital world occupying an ever-greater space in our lives, digital artworks are all but bound to play an important role in that economy and our culture. After all, while the NFT craze subsided, in 2021, Facebook's CEO Mark Zuckerberg announced that the company would change its name to Meta Platforms and start focusing on creating an immersive world that can be accessed through virtual reality headsets, creating a trend that many started to follow, including museums. Namely, different journalists, academics, and artists advocated for the creation of new museums in the metaverse, some established museums already started creating them, and researchers are already proposing how to improve such virtual museums in the metaverse (Lee, Park and Lee, 2022). Hence, the existence of virtual museums (in the metaverse) where visitors can look at valuable NFT-based digital artworks that are praised and treated as heritage isn't beyond the realms of possibility in the not-too-distant future.[2] However, there is an evident difference between such digital artistic heritage and works such as, let's say *Théâtre D'opéra Spatial*, which Jason Allen created in 2022[2] using Midjourney and which won the 2022 Colorado State Fair's annual fine art competition on September 5, becoming one of the first AI-generated images to win an art prize and launching numerous controversies because of that.

Théâtre D'opéra Spatial as a Case Study

Allen's work offers a perfect case study for the challenge that AI presents to our current conceptualization of heritage because, ever since it won the Colorado State Fair's fine art competition, *Théâtre D'opéra Spatial* has been at the center of numerous controversies and debates. Essentially, many artists criticized the fact that the winning artwork was AI-generated, however, that wasn't against the Fair's rules. Allen disclosed that he used Midjourney to create the piece and while two of the judges didn't understand at the time that Midjourney is an AI program that generates entire images from language descriptions, they confirmed that even if they had known this fact, they would have still awarded Allen the prize (Roose, 2021).

The problem that many highlighted when it comes to AI programs such as Midjourney is that they aren't new tools that offer artists a new medium or way to express themselves, like the invention of the camera in the 19th century which opened up new horizons and received certain backlash (Marien, 2014). Such programs are trained on large amounts of artworks created by countless artists, which is why some of them even filed class action lawsuits for copyright infringement (Mattei, 2013), though this isn't the only challenge when it comes to the copyright of AI-generated artworks. Discussions raged for months over who holds copyright on such works until a federal court ruling in August 2023 confirmed that AI-generated artworks cannot be subject to copyright because copyright law only extends to human beings (Small, 2023).

And yet, while copyright law may only extend to works created by humans (so far), AI-generated artworks are still a challenge to our traditional notion of heritage. Simply put, such works can hold artistic value, hence they could be treated as cultural and artistic heritage, and for the first time in human history, we are faced with such works being produced by a non-human entity. After all, there are numerous instances of works, such as photographs, being created accidentally by animals. One well-known case involves a crested macaque's photograph of himself, which became the center of a legal dispute that

[2] While they aren't in the metaverse as of writing this article, there are several such virtual museums dedicated to displaying NFT artworks, such as the *Seattle NFT Museum*, *NFTmuseum.art*, *Muse0*, and even one that is in the metaverse—the *Musee Dezentral*.

lasted several years before it was resolved on the same grounds of copyright belonging exclusively to humans (Cullinane, 2018). There are other cases as well, such as different animals being trained to paint; some of these paintings, like those of Congo, a chimpanzee held at the London Zoo, were praised by artists such as Salvador Dali, acquired by Pablo Picasso, and sold at auctions for thousands of pounds, gaining considerable fame due to that reception (Reynolds, 2005). However, there are evident differences between animals accidentally taking photographs of themselves or animals in captivity being trained to paint and generative AI, notably that such AI programs aren't living beings producing works, but programs trained on artworks already produced by humans, which generate new works based on instructions provided by their users. But, the truth is that while AI art is becoming more prominent, getting more attention, and different programs for generating it are being developed and made available to the public faster than ever, AI art itself isn't as new as one might think.

AI Art: A Brief History

The development of AI art can be traced back to the mid-20th century and the development of computer art. During this time, artists and computer scientists started exploring the intersection of technology and art: artists such as Georg Nees and Frieder Nake, and engineers such as A. Michael Noll pioneered the use of rudimentary computing machinery to create abstract artworks during the 1960s and even organized the first exhibitions of computer-generated art. Specifically, the first exhibition was organized in 1965 in the lecture halls of Max Bense at the University of Stuttgart, where a dozen black-and-white designs produced algorithmically on the newly introduced Zuse Graphomat Z64 plotter by the then graduate student at the university Georg Nees were exhibited for his fellow students to see. That same year, Michael Noll who worked at Bell Labs also exhibited his own computer-generated art at the Howard Wise Gallery in New York City, and the Galerie Wendelin Niedlich in Stuttgart also organized an exhibition of algorithmically-generated Zuse Graphomat Z64 plots towards the end of the year (Smith, 2019: 69). Several other artists followed in their footsteps, developing their own algorithms and coded instructions that were capable of generating visual patterns and abstract compositions, often characterized by geometric shapes and intricate symmetries, and out of their pioneering work in computer art, in less than a decade, AI art would emerge.

Harold Cohen, an artist and computer scientist working at the University of California (San Diego), started working on a computer program capable of generating original artistic images in 1968. In just a few years, Cohen would develop the first such program and he would continue working on them from the 1970s until the 2010s. His programs are collectively named AARON and they represent a seminal AI-based creative tool that employs procedural rules and algorithms in order to generate intricate visual compositions. Hence, what sets AARON apart from previous computational art experiments is its degree of autonomy—unlike its predecessors, it could iterate and evolve its creations without direct human intervention. Needless to say, Cohen's work on AARON was groundbreaking, and AARON produced numerous artworks that featured abstract shapes and vibrant colors, and that exhibited a unique blend of human guidance and machine autonomy (McCorduck, 1991).

Indeed, AARON challenged the conventional notions of authorship since a machine played an active role in the creative process for the first time ever, and it also paved the way for the development of generative art. Sure enough, in the 1980s, artists such as William Latham and Karl Sims embraced generative art, demonstrating how algorithms could be used to generate intricate and visually captivating artworks as they harnessed the power of computation to create organic, biomorphic forms that transcended traditional artistic boundaries. And, in the following decades, artists and computer scientists would leverage machine learning algorithms, neural networks, and deep learning models to create artworks that blur the boundaries between human and machine creativity, long before the development of today's programs such as Midjourney, DALL-E, Stable Diffusion, and other text-to-image models. In fact, it can be argued that the only reason why works such as *Théâtre D'opéra Spatial* are finding themselves at the center of heated debates today is because the programs capable of making them are becoming widely accessible.

After all, some 5 years before Allen's work sparked the debates that we mentioned, the *Portrait of Edmond de Belamy* by the Paris-based arts collective Obvious gained a lot of attention within the art community, technology community, and generally following its sale for $432,500 at a Christie's auction back in 2018. What made the sale of the *Portrait of Edmond de Belamy* so famous was the fact that the work was created using a generative adversarial network (GAN) software package. That is, the portrait of a somewhat blurry man that was printed on a canvas and sold at auction was created by an algorithm that referenced 15,000 portraits from various periods (Alleyne, 2018). And, sure enough, the sale of the *Portrait of Edmond de Belamy* initiated the exact same debates around authorship that we already mentioned (Epstein, Levine, Rand, and Rahwan, 2020).

Instead of a Conclusion: Opening a Discussion

Of course, it goes without saying that the visual AI art that we mentioned isn't the only example of how artificial intelligence is utilized by artists. For instance, AI algorithms have also been employed to compose melodies and harmonies for quite some time; back in 2016, the Sony CSL Research Laboratory released pop music composed by AI, *Daddy's Car*, a song reminiscent of The Beatles, and *Mr Shadow*, a song generated in the style of Irving Berlin, Duke Ellington, George Gershwin and Cole Porter (Goldhill, 2016). Just two years later, Taryn Southern released an entire album, *I AM AI*, which was composed and produced with artificial intelligence. Not only that, artificial intelligence had a significant impact on literature as well (Çelik, 2023) and there are already entire AI art competitions. And, when it comes to heritage, artificial intelligence already plays an important role in heritage studies and museum practice in numerous ways, and it can play an even more important role. To name just a few of the most noteworthy examples:

1. *AI-Enhanced Cultural Heritage Preservation*. Namely, AI-powered digitization and restoration methods can be used on everything from ancient artifacts and historical documents, all the way to artworks. For instance, AI algorithms can be used to analyze damaged artworks or manuscripts, identify missing portions, and generate predictions of what the complete artifact might have looked like.

2. *AI-Driven Cultural Heritage Research*. Similarly, in addition to the mentioned application of AI to help preserve and research ancient manuscripts, there are other applications when it comes to studying cultural heritage. For instance, AI can prove to be a very valuable tool for archaeologists when it comes to remote sensing (Argyrou and Agapiou, 2022) and for linguists as natural language processing is already showing promising strides when it comes to translating ancient texts (Nelson, 2023).

3. *AI-Generated Heritage Interpretations*. AI is already being used for art analysis and is being employed in digitized artwork collections (Cetinic and She, 2022: 1–8), so building upon this and creating programs capable of generating interpretations of cultural heritage by analyzing historical data and contexts isn't that big of a stretch.

4. *AI-Generated Virtual Museums and Tours*. Even today there are discussions on how to combine AI and VR to create personalized interactive tours of historic places and museums, which would also make them more accessible. In fact, there are already examples of artificial intelligence being used by museums to create interactive exhibitions and virtual tours, such as those the Smithsonian American Art Museum, the Rijksmuseum in Amsterdam, the British Museum, the Louvre Abu Dhabi, and the National Museum of Natural History (see AIContentfy, 2023).

There is no doubt that we will continue seeing new applications of and developments with artificial intelligence. Generally speaking, AI is here to stay, and more likely than not, generative AI programs will play an even more important role in different aspects of our lives in the not-too- distant future. Precisely because of that, we need to deal with their implications, including when it comes to heritage.

As mentioned, generative AI programs are, essentially, tools that humans can use to create artworks by describing what they want created, however, these artworks are generated based on artworks created over the years by numerous artists. Because of that, arguably such programs don't "create new works of art," but rather they use existing artworks and incorporate elements of them in order to generate a new work that the user is describing. Needless to say, there is significant backlash from artists because of those and other challenges that generative AI programs pose to the process of creating art (Shaffi, 2023). However, that doesn't necessarily imply that the generated works cannot possess artistic value and be treated as artistic heritage. After all, we know of somewhat similar instances from art history, like Renaissance sculpture—numerous Renaissance sculptors were influenced by ancient sculptures. They used the form of ancient Greek and Roman sculptures and created new artworks depicting not only scenes and figures from Greek and Roman mythology, but also portraits of their contemporaries and Biblical figures. And yet, there is a significant difference between sculptures from the Renaissance and AI-generated artworks because the former was the result of creativity and honed skill, while the latter is the result of descriptions being inserted into a program that draws on existing artworks that are incorporated into its database. Precisely that fact is a point of contempt for artists today, which is understandable, yet it doesn't necessarily imply that AI-generated artwork cannot become heritage in due time.

Generative AI programs, be they image-based like Midjourney or text-based like ChatGPT, are tools that can be used to produce works of art. And, given that works of art need to be material and need not be entirely innovative in order for them to become valuable artistic cultural heritage, there is nothing that prevents AI-generated works from becoming said heritage so long as we ascribe value to them. There is nothing that prevents an artwork generated by Midjourney or any other current or future similar programs from becoming "21st-century artistic cultural heritage." Still, for the time being, such works fall beyond what we envision when we picture "cultural heritage" because, while a human described what the final product should look like through prompts, that final product was created by a non-human inanimate AI program.

Indeed, it has long been asserted that culture is uniquely human, though recent studies of animal behavior bring that into question, pointing to the existence of animal cultures (Laland and Galef, 2009; Schaik, 2010; Whitehead and Rendell, 2014; Ramsey, 2017; Schuppli and Schaik, 2019; Viciana, 2021). However, the production of artworks, monuments, artifacts, and other examples of what we consider cultural heritage remained exclusively the domain of humans, though that is no longer the case. Granted, it is still too early to tell what will come from the current AI revolution. We have yet to see what future generative AI programs will be created, whether we create artificial general intelligence capable of accomplishing any intellectual task that humans could do, and the implications of these or other developments. And yet, it cannot be denied that the recent developments with AI have had a tremendous impact on our society, challenging our views on what it is to be human, our legal and regulatory frameworks, and so much more, despite these being just the early days of AI development. Precisely because of that, it is worth going back and reflecting on our rather anthropocentric view of cultural heritage since we are slowly approaching a world where humans are no longer the sole source of works that are reflective of our culture and treated as heritage.

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