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Sustainable Digital Landscapes of Experience: The *Unesco Memory of the World Programme*

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Abstract. The aim of this paper is to address the importance of sustainability standards in the creation of heritage digital landscapes, which are essential to ensure the longevity and meaningful impact of cultural heritage in the digital era. The present research stresses how the concept of sustainability should be addressed in its multifaceted nature, accounting not only for ecological but also social, economic and cultural perspectives, and that it should be taken into consideration in all the phases of digitization, ensuring a comprehensively sustainable process. In order to shed light on these issues, this paper introduces the current state of the art of the matter; examines the challenges of digitizing cultural heritage; argues for a broader perspective on sustainability and presents the case study of the *UNESCO Memory of the World Programme* to evaluate the sustainability of digitization efforts within the creation of an international and cross cultural experiential field.

Keywords. Sustainability, digital archiving, cultural heritage, landscape experience, UNESCO.

1. *Introduction*

The concept of sustainability is one of the most investigated by the literature of the last 15 years. However, its definition remains open to a myriad of interpretations. The first definition of "sustainable development" was formulated in 1987 during the *World Commission on Environment and Development*. The document that was drafted at that time was named the *Brundtland Repor*t, after the commission chair Gro Harlem Brundtland, or *Our Common Future*. Specifically, sustainable development was defined there as «meet[ing] the needs of the present without compromising the ability of future generations to meet their own needs». Similarly, the National Research Council describes it as «the reconciliation of society's developmental goals with its environmental limits over the long term» (Brundtland [1987]: 2). Based on these definitions, sustainable development can be viewed as a process of change where resource consumption, investment direction, technological development orientation, and institutional changes unfold harmoniously, enhancing both current and future potential to meet human needs and aspirations. This definition emphasizes the importance of meeting the needs of the present without compromising the ability of future generations to meet their own needs. Twenty years later, Crutzen (2006) described sustainability as maintaining resources within certain levels to ensure survival in a constantly changing environment. This remains arguably the greatest challenge of our time, especially when viewed through the lens of digitalization (Paschalidou et al. [2022]). The intersection of sustainability and digitalization raises new questions, particularly when applied to cultural heritage preservation, where the ecological, economic, social and cultural dimensions of sustainability need to be comprehensively addressed (Preuss [2016]).

Indeed, despite its significance, the concept of sustainability is often marginally addressed within the cultural heritage sector, particularly in digital contexts, as it will be argued throughout this paper. Mostly, it appears to be a general concern of which art institutions are aware, yet do not feel strongly responsible for. It is debated in terms of its survival (Loach, Rowley [2016]), managerial (Wroblewski et al. [2019]) and regulatory (Trimarchi [2004]) importance, but rarely addressed strategically. Nevertheless, we argue that it can no longer be treated as a secondary issue, especially since cultural institutions have begun to engage frequently and widely in digital endeavors: a set of activities which displace cultural relations and experience on a new level, creating new spaces of experience and thus calling for a sustainability check of these new environments.

Whilst digital technologies transversely entertain the museum sector (Giannini, Bowen [2019]), this paper refers to sustainability in relation to the digitization of archival cultural content. Through these kinds of processes, museums, libraries and archives have been having the opportunity to design new cultural and experiential

spaces, made of the combination of elements of diverse origins, and destined to be accessed and viewed from multiple geographical locations. These types of digital spaces offer an interesting opportunity as objects of study, as they carry many of the characteristics which identify the notion of landscape. They engage with the same conceptual, ecological, social and cultural complexity, being new fields of experience which transcend the physical realm yet continue to exercise their impact on it. To analyze them from the perspective of sustainability entails ensuring, following Brundtland's definition, that these programmes truly meet the needs of future generations, not only of the communities of the present. Before delving into this matter, however, it is necessary to frame digitization within the cultural system.

While the preservation and transmission of heritage has been for centuries a task granted to museums, libraries and archives, today it depends, necessarily, on the investment that these institutions devote to digitization (Perry [2010]). Digital archiving has become a normative practice in the global management of cultural heritage. It is promoted, incentivized and financed for a variety of reasons, spanning from conservation to administration, research and safekeeping (Grau [2017]). In the cultural industry, it is advertised also as a crucial way to preserve traditional identities, ensuring their long lasting through time and space (Manovich [2013]), as well as the one possible path towards the creation of a universal digital memory (Lévy [2010]).

Through this process, a new digital landscape is being created: one which derives its aesthetic and formal identity from the cultural and practical choices of the institutions engaged in digitization. The digital platforms which host and make accessible cultural contents vary greatly, shaped by the combination of social, political and economic characteristics of the stakeholders, the technologies and the contents involved.

While the necessity to digitize seems to be nowadays granted in the institutional scenario (Katre [2011]; Chan [2014]), there is still a very open debate on which are the best methodologies and technologies that have to be employed for this process to be successful (Santos et al. [2021]).

All that considered, this paper tackles digital archiving from the perspective of sustainability, trying to investigate what should be meant by sustainable digitization in this field. Claiming that a sustainable digitization requires more than meets the eye. While questions of ecological sustainability are at times discussed in relation to digital technologies and digital archiving (Pendergrass et al. [2019]), a more complex understanding of what sustainability can mean for a community and its heritage – on a social, economic and cultural level – is rarely taken into account.

Moreover, we argue that the necessity for a comprehensively sustainable digitization is justified within the shared and widely accepted goal of digitization: allowing individuals to make knowledge connections between past, present and

future. Digitization, in fact, serves the scope of enabling people all over the world to engage with collections they would have not been able to discover otherwise: building a new playground for the creation of memory and identity (Van Dijck [2007]). For this to happen, however, a sustainable process needs to be enforced and cultural heritage would need to be curated, stored and delivered through methods and platforms which meet the experiential needs of new generations. In this sense, discussions on interface, new media, and new technology need to be at the forefront of digitization efforts.

In order to deal with the aforementioned issues, this paper is organized in other 4 sections, as follows: Section 2, titled "The challenges of digitizing cultural heritage" sketches generally the problematic aspects of digitizing in the field of cultural heritage. It addresses the numerous steps which partake into the digitization process, listing the different limits and concerns with reference to each passage. It serves the aim to clarify the nature of a very multifaceted and complex phenomenon. Section 3, "Sustainability for digital heritage", addresses digitization from the perspective of sustainability, stressing why it is important to employ a comprehensive sustainability approach to digitization. It describes what can today be defined as the four pillars of sustainability: the environmental, economic, social and cultural ones. The first three are the most discussed in the literature, but we argue here that a fourth, relating to culture, should also be included as a central aspect. These four pillars, understood in their collective and interdependent importance, empower a more structured and reliable understanding of sustainability. Afterwards, Section 4, "UNESCO Memory of the World Programme" focuses on the Unesco initiative *Memory of the World Programme*, which we have chosen as a representative case in the landscape of digitized heritage, through the creation of a platform where the concepts of time, presence and memory can openly dialogue. By aiming to «achieve the different aspects of documentary heritage, including identification, preservation, access, policy mechanisms as well as national and international cooperation» (UNESCO [2022]), and thanks to its more than 3 decades of cross-national experience, the project stands as an ideal candidate for analysis. Indeed, our aim is to assess the extent to which it can be considered an example of good practice with reference to sustainability. Lastly, Section 5 wraps up conclusions.

2. *The challenges of digitizing cultural heritage*

As anticipated, there are a variety of widely discussed issues with the digitization of cultural heritage.

To begin with, the digitization of cultural heritage stands on an ideological bias. Which is tied to the fact that policy and content choices in the digitization

process depend on the people who work in cultural institutions, and who end up becoming the decision makers of a process which regards an entire community. These processes are rarely collective processes (Kizhner et al. [2021]), making the implementation of fair principles (Vlachidis et al. [2022]; Wilkinson et al. [2016]) a challenging task. This translates into a visibility issue, as these choices, which become representative of a community, end up becoming visible on a much larger scale than when they were confined to the physical realm.

Adding to this scenario, there is the functioning of the technological apparatus which operates the digitization process. The algorithms used to digitize heritage perform better some tasks than others, like object recognition (Madhu et al. [2019]; Crowley, Zisserman [2014]; Torresani et al. [2010]), style recognition (Lecoutre [2017]; Arora, Elgammal [2012]; Karayev et al. [2014]) and classification (Saleh, Elgammal [2017]), canceling other relevant aspects of heritage identity. Moreover, algorithms operate by creating metadata on the objects, tagging them, and attributing problematic descriptions to images (Campolo, Crawford [2020]). The reasons underlying such biases are various, depending both on the technical limits of the algorithmic processes (Sachs [2020]) as well as on the choices made by humans beyond them (Bode [2020]).

Further, it is important to consider that, once digitized, the heritage is made accessible and experienceable through other media, drastically changing its identity. Encountering processes of remediation (Bolter, Grusin [2000]) and relocation (Casetti [2012]), and being heavily affected by the technological possibilities and choices of the institution it belongs to. Lastly, digitization is rarely done in a transparent manner, i.e., communicating which are the steps, decisions and issues involved (Craig [2021]). This lack of transparency can lead to misunderstandings, mistrust, and potential setbacks in the implementation process. On the other hand, clear communication about the digitization process, including the rationale behind decisions and the challenges encountered, is essential for gaining stakeholder buy-in and ensuring the successful adoption and integration of digital technologies.

While these issues are widely accounted for in the literature, there is a further problem with digitizing cultural heritage: the sustainability of this process. This aspect, which has become more and more relevant in the scientific literature regarding digitization and the digital ecosystem – not necessarily related to heritage cases – is one worth expanding on. Digitization, while providing opportunities for cultural preservation and global accessibility, also involves significant environmental and social impacts. The extraction of raw materials for Information and Communication Technologies (ICT) infrastructure, such as rare earth elements, has adverse environmental consequences, contributing to climate change and resource depletion (Paschalidou et al. [2022]). Additionally, the energy demands of digital storage and computing power, especially in data centers, continue to grow

at an unsustainable pace (Preuss [2016]). Evangelia Paschalidou and colleagues (2022) stress that the integration of strong sustainability principles – emphasizing "eco-sufficiency" over efficiency – into the digital preservation of cultural heritage is essential for mitigating the environmental impacts of the ICT infrastructures. Indeed, sustainability in the context of digitizing cultural heritage involves ensuring that digital preservation efforts are economically, environmentally, and socially viable in the long term. It encompasses considerations such as the long-term accessibility and usability of digital records, the environmental impact of digital storage and maintenance, and the economic costs associated with ongoing digital preservation. Additionally, it addresses the need for robust and adaptable digital infrastructure, as well as the training and support required for professionals managing these digital assets. By expanding on these considerations, we can develop more comprehensive strategies to ensure that the digitization of cultural heritage is sustainable, preserving our collective cultural memory for future generations and avoiding a negative impact on the technological and natural environment which hosts and surrounds us.

3. *Sustainability for digital heritage*

In the previous section we addressed the most important and discussed challenges of digitizing cultural heritage. Procedural and ideological issues which inevitably impact the efficacy and success of this process. Amongst these, the concept of "sustainability" stands out, with the need to be addressed in its multifaceted complexity. Indeed, when we generally deal with sustainability, the literature usually refers to the so-called «three pillars» (Purvis et al. [2019]: 681), i.e., the environment, the economics and the society. These pillars are embedded in the formulation of the Sustainable Development Goals (SDGs) set out in 2015 by the United Nations' Sustainable Development Agenda for 2030. It is worth noting that, despite its widespread use in the literature, the conceptualization of sustainability as a tripartite object, has been challenged as lacking theoretical foundations. Indeed, they are generally referred to as the three aspects that need to be taken into account when assessing if something – a device, a process, a community – is sustainable. On closer inspection, however, there seems to be no original urtext from which this formulation derives: it seems to be used in the literature and generally taken at face value. Ben Purvis and colleagues note as early as 2001, this approach has been presented as a «common view» of sustainable development (Giddings et al. [2002]): «so commonplace it seems not to require a reference» (Purvis et al. [2019]: 685).

However, the pillars represent a theoretical guideline which can be followed in order to embrace the complexity of what it means for a process or project to

be "sustainable". Indeed, since our planet is facing crucial global challenges, governments and institutions are engaged in a race for sustainable solutions that, if not properly pursued, can lead to forms of green-washing, i.e., what we might call a kind of ethical sophism, which seeks to conceal the negative impacts of a given object or circumstance, cloaking it instead in alleged benefits from the standpoint of environmental and ecological impact (Floridi [2022]).

Since it appears there is no compelling argument for the three pillars of sustainability to be considered so immutable, Kirsten Loach and colleagues (2016) argue for the integration of a fourth pillar, which is largely overlooked by the literature: cultural sustainability. The utility of this fourth pillar lies in preserving and maintaining communities' cultural beliefs, practices, and heritage conservation through time by safeguarding their memory. Cultural sustainability ensures that the intangible heritage of communities, including traditions, languages, and arts, is protected and nurtured. This pillar recognizes that cultural diversity and heritage are crucial for social cohesion, identity, and resilience, especially in the face of global challenges and changes.

By integrating cultural sustainability into the broader framework, the importance of cultural heritage in fostering a sense of belonging and continuity is acknowledged, enriching the overall sustainability agenda. This fourth pillar, moreover, falls under one of the SDGs, i.e., SDG 16: «promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels». Specifically, target 16.10 aims to «ensure public access to information and protect fundamental freedoms, in accordance with national legislation and international agreements». Cultural heritage, indeed, beyond any empty rhetoric, represents a crucial resource essential to the development of the next stages of humanity. It provides valuable insights into past human experiences, guiding us in making informed decisions for the future. By understanding and preserving our cultural heritage, we can draw lessons from history, appreciate diverse perspectives, and foster innovation rooted in traditional knowledge. This continuity and adaptation of cultural practices enrich our collective wisdom, enabling societies to navigate contemporary challenges with a deeper sense of identity and purpose. Thus, cultural heritage is not just a relic of the past but a dynamic and integral component of sustainable development and human progress.

If culture should be an important perspective when addressing the sustainability of a process, how is the sustainability of culture theorized? Strictly concerning digital preservation, usually the terms refer to economics, namely to financial and staffing resources. When discussing environmental sustainability, the efforts go in the direction of reducing organization impacts through improvements to the built environment and on adapting, or reacting, to the effects of climate change. Awareness of the negative environmental impact of digital pres-

ervation practice has increased over the last years, yet the focus mainly remains on developing sustainable financial models and staff workflows to cope with the increasing scale of digital content (Pendergrass et al. [2019]).

Moreover, sustainable digital preservation also refers to the longevity of a digital preservation program. For example, the Digital Preservation Network's Digital Preservation Workflow Curriculum includes a model on ensuring that a digital preservation project endures beyond the project phase, and that the practices developed as part of the project become systematic. Furthermore, UNESCO's guidelines for selecting materials for digital preservation refer to sustainability as endurance, encouraging to evaluate the sustainability of materials to assess their capacity to preserve it for long-term access and use (Pendergrass et al. [2019]).

All the above considered, this section addresses how the notion of sustainability in general, and sustainability tied to cultural heritage and the specific branch of digital archiving in particular, are matters that should be carefully and further researched This should be taken into consideration when presenting, discussing and analyzing initiatives that are labeled as sustainable (Figure 1). Even more, this perspective becomes important when the initiatives in question are internationally led and aim to establish a cross-cultural landscape of experience, which in turn impacts multiple cultural, social and physical environments.

4. *UNESCO Memory of the World Programme*

The case study that will be analyzed in this section of the paper aims to provide a relevant example for the above discussion and to try to understand in practice how the complex and multifaceted requirements of sustainability can be further discussed with reference to a concrete project. The reasons why this specific project appears promising are multiple. Firstly, it is an international and cross cultural digitization project, and therefore it is characterized by the complex nature described above. It involves all the layered steps of digitization aforementioned, and it embodies the multifaceted aspects of a landscape digital environment. Secondly, it was framed specifically within the discourse of sustainability by its curators and programmers, hence endorsing the same awareness and care for sustainable development which has been argued as necessary through this paper. As such, it appears as an ideal candidate to advocate for consciously sustainable programming. Lastly, its distributed geographical origin and pertinence makes it relevant on a plural level, aspiring for a wide degree of interest.

The idea of the *UNESCO Memory of the World Programme* was conceived in the early 1990s, when digitization and online accessibility in the cultural sector was at its very beginning (Bowen [1995]). The vision of the programme was,

and is, that «the world's documentary heritage belongs to all, should be fully preserved and protected for all and, with due recognition of cultural mores and practicalities, should be permanently accessible to all without hindrance». The programme was developed with the mission to «increase awareness and protection of the world's documentary heritage, and archive its universal and permanent accessibility. To be accomplished through three key objectives. The first to facilitate preservation, by the most appropriate techniques, of the world's past, present and future documentary heritage. The second to assist universal access to documentary heritage, which may be done by encouraging institutions and individuals holding documentary heritage to make it accessible as widely and equitably as possible, in analogue and/or digital form, as appropriate. The third to increase awareness worldwide of the existence and significance of documentary heritage and thereby foster dialogue and mutual understanding between people and cultures (Di Giovine [2015]).

Facilitating preservation, assisting documentary access and increasing awareness are three objectives that the UNESCO empowers on a global network level, as they are meant to be fostered within an interconnected system, which unites digitized content transnationally within one cultural landscape. In so far as this programme is concerned, the international dimension, and its complex social, political and cultural nature, is central. It defines the identity of the project, which finds its reason for being within the aim of connecting diverse cultures in one unitary space.

For its 30th anniversary, in 2022, the programme decided to celebrate with a shared theme: «Enlisting documentary heritage to promote inclusive, just and peaceful societies». This choice is directly inspired by the 2030 Agenda for Sustainable Development, and the SDG16. The celebration of the programme was organized on a double level, both globally and nationally. Globally the following forms were chosen: an exhibition of 30 posters displayed along the face of the UNESCO headquarters in Paris for 1 week; an on-line symposium with speakers and testimonies, and the publication of an anniversary statement. Locally, national and regional communities were given the chance to organize exhibitions, launch publications, create new digitization registers, media events, quizzes for children, and the production of YouTube videos.

With the details of the programme in mind, and with reference to the openly declared intent of the organization to operate within culturally sustainable goals, it is worth trying to assess the event with reference to the four pillars of sustainability.

Being sustainable from an environmental perspective would require reducing the organization's impact and acting in a way which is conscious of climate change. The programme, however, does not seem to explicitly address environmental sustainability in its operational guidelines. Different contents have been produced for the occasion (from paper products to exhibitions to a series of digi-

tal initiatives and materials), with no reference to a comprehensive strategy to minimize the footprint of the event. There is little evidence of a comprehensive environmental strategy that tackles energy use, material sustainability, or digital lifecycle management. This lack of direct focus on minimizing the ecological impacts of the digitization process weakens the programme's overall sustainability efforts. Indeed, we should not overlook the fact that the programme undirectly supports a larger system that relies on energy-intensive data centers that consume huge amounts of electricity, much of which is still generated from fossil fuels. This reliance on non-renewable energy sources ties the programme to extractive energy systems, which further contribute to environmental degradation through their heavy impact on people and land. Furthermore, this issue also concerns the raw materials that are extracted to build the equipment needed for digitization. These devices tend to have short life spans due to technological obsolescence, which contributes to huge amounts of electronic waste. They often contain harmful substances such as lead, mercury and cadmium, which, if not properly managed, can leach into ecosystems and contaminate soil and water. Without a strong commitment to renewable energy data storage, the environmental sustainability of the programme remains a significant challenge.

In terms of economic sustainability, which refers to staffing and financial resources, the project stands on the contribution of local and national committees and regular programme contributors. This proves a sustainable account in terms of resource allocation, coherent with regular spending strategies. By employing professionals which are already part of the workforce of the institutions involved, and also distributed geographically in all the countries engaged, the project proves a wise and sustainable use of economic resources.

From a social perspective the digitization efforts, in order to be sustainable, would require a comprehensive and tailored understanding of the experiential needs of today's digital public, towards which the programme is supposed to be directed. For the new content produced to be socially sustainable it would have to be designed and made available via a media environment which specifically serves a contemporary audience. However, the types of events, contents and activities organized do not seem to be particularly updated, and are hardly different from the ones the organization has been working on for the past 3 decades. This proves continuity and the capacity to capitalize on acquired knowledge and practices, but a scarce ability to innovate in line with developing social needs.

Lastly, the programme explicitly states to be addressing cultural sustainability, which relates to institutional accessibility, freedom, peace and inclusion on cultural grounds across different societies. It is however hard to observe a strict link between the above-mentioned activities and these very strong objectives, as they do not seem to impact the communities they were designed for in such a powerful manner as to build new perspectives of freedom, peace and inclusion. Neverthe-

less, the accessibility aim is undoubtedly partly addressed, as more information and content is preserved and made available through the digital platforms engaged.

Overall, it seems that even this programme, with such a strong and explicit commitment to sustainability in its digitization efforts, lacks a comprehensive and effective strategy to actually implement the core aspects of a sustainable endeavour within digitized cultural landscapes. On the other hand, it is one of the first initiatives in the cultural heritage field to explicitly seek to raise awareness of the key issues in addressing sustainability. Moreover, it does so on a broad international scale, broadening the debate on the subject to include a complex environmental dimension, that of digital heritage landscapes. It can therefore be seen as a reference for future events and projects.

5. *Conclusions*

So far, this paper has sketched the complexity of the notion of sustainability for digital archiving in international cultural networks, by attempting to encompass all the multifaceted aspects of this issue. Given the increasing importance of digitization in the creation of cultural landscapes of experience, this analysis has attempted to assess the different components that need to be taken into account in order to assess and ensure the sustainability of digitization in the arts. The challenges of digitizing cultural heritage have been described, and the importance of dealing with them from different perspectives has been stressed. The relevance of a sustainable perspective, which becomes even more pressing when international network endeavors are addressed, has been also underlined. The *UNESCO Memory of the World Programme* served as a case study worthy to be analyzed to evaluate in which direction we are moving to assess the criticalities related to a sustainable digitization of cultural heritage. As an international project, which connects and merges professionals and heritage from different parts of the world, it testifies to the global trend of transcending physical borders and creating new geographies, relocating the landscape debate on a digital, and transnational, level. As an environmental project, which aims to design a new space of experience for the encounter of arts around the world, it stands to all the political, social and cultural complexities of wide territorial and medial programmes. In its analysis, the difficulties of successfully implementing sustainable projects, even when there is a stated and defined intention to do so, have been shown. Ultimately, it can be considered as a reference experience to benchmark international digitization networks programmes to a sustainability check. All the above considered, the core claim of this paper is that digitization in this specific field requires more than literature seems to have addressed so far. And that to fulfill *real* sustainable processes, a more in depth, strategic and comprehensive account should be considered.

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