Alliance for Research on Cultural Heritage in Europe

ARCHE

Deliverable 2.1

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Abstract

The aim of Task 2.1 was to explore and better understand the future landscape in which the ARCHE alliance will operate, in order to orient and inform a future-facing Strategic Research and Innovation Agenda. This was realised through a peer reviewed Foresight study (by ICCROM), supplemented by a literature study of research strategies and future and emerging technologies (by OCW), and a stakeholder workshop.

The study undertaken by ICCROM examined how different fields are anticipating the future using Strategic Foresight as a key means to understanding future needs and considerations. Through an exercise of data gathering and analysis, this study examined indications to different possible futures, and the implications these may have for heritage in the EU context, derived from a body of future-oriented literature spanning sectors such as the environment, economics, health and education, as well as arts and culture, and heritage.

This report presents the findings of this peer-reviewed literature review, outlining identified megatrends, cross-cutting themes and opportunities for action for the heritage sector. It also analysed the ways in which Foresight is used and how similar approaches might benefit future strategy development for heritage.

Revision history and list of contributors

Version	Date	Authors	Description
Main body report			
1	14/05/2023	Gustav Wollentz, Alison Heritage, Hana Morel, Sarah	Project coordination: Alison Heritage (ICCROM)

		Forgesson, Amy Iwasaki, Ana Cadena-Irizar	Data analysis (design & execution): Sarah Forgesson & Hana Morel Report co-authorship: Sarah Forgesson, Alison Heritage, Amy Iwasaki, Hana Morel & Gustav Wollentz Data visualisation: Ana Cadena-Irizar Copyediting: Amy Iwasaki
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Executive Summary

Introducing the task

The Alliance for Research on Cultural Heritage in Europe project (ARCHE) was launched in 2022 to promote holistic approaches to cultural heritage research and innovation. Funded by the European Commission, ARCHE brings together a consortium of 24 governmental and university partners from 18 European countries. Core to its work is the development of a new Strategic Research and Innovation Agenda (SRIA) for heritage, co-designed through a wide consultation process engaging diverse stakeholders, to stimulate joint actions in emerging areas of need. To inform a future-facing SRIA, ICCROM undertook the current study to examine how different fields are anticipating the future using Strategic Foresight. It reviewed future-oriented literature spanning the environment, economics, health, education, arts and culture, and heritage. In its findings, the study outlines identified megatrends, cross-cutting themes and possible opportunities for action for the heritage sector.

What is Strategic Foresight?

Strategic Foresight, which sits within a wider body of practice called Foresight, is a range of approaches, tools and skills that can help organisations explore, imagine and shape different futures. Unlike Forecasting, Foresight does not aim to predict the future. Rather, Foresight seeks to broaden our horizons concerning what may be possible in the future. Foresight helps identify strategic actions towards desirable futures, increasing our opportunities to make positive change today. Instead of providing a blueprint for the future, Foresight increases resilience and adaptability in the face of a constantly changing world.

Methodology

The reviewed literature comprised 46 sources from the heritage and adjacent sectors selected through recommendation and review of publications and studies from relevant and recognised institutions and actors in the field. Formats included white papers; peer-reviewed articles and volumes; research agendas; working papers; and reports published by governments, research institutions,

intergovernmental and non-governmental organisations, professional associations and the private sector. As Foresight is still relatively nascent to many fields, relevant literature that presented broadly future-oriented research was also considered. Time horizons considered by the reviewed studies ranged from 4 to 79 years out from the time of the research, with the vast majority between 10 to 30 years. The data was analysed using an abductive coding approach to identify existing, emerging and anticipated global trends, as well as uncertainties to widen the ambit of potential trends.

Findings

Megatrends

Political shifts

Many studies highlight the shaping of new geopolitical alliances, irreducible to traditional dichotomies such as 'Western' and 'non-Western', and the expansion of value systems beyond Eurocentric world views. These shifts potentially form divergent geopolitical trajectories for the future, marked by decreased multilateralism in favour of more unilateral and nationalist agendas, potentially hindering global cooperation in tackling common challenges; so-called middle powers may play an important role in building global solidarity. Youth disillusionment is flagged as a major risk for the future, connected to economic instability. In a scenario of increased unilateral and authoritarian agendas among states, populism and political extremism may potentially weaken liberal democracies. The literature also pinpoints possible counter-trends, including increased awareness among states of shared challenges and solutions. Anticipation and long-term thinking are signalled as critical instruments for proactivity and global solidarity. A possible implication for heritage is that it may become more politicised and used for divisive and polarising purposes.

Economic developments

Studies highlight the unsustainability of economic models based on ever-increasing consumption and indicate ongoing trends of widening income gaps and wealth concentration. Increasing inequality in turn may drive political instability and conflict, and reverse human development gains. These effects will likely be differentially distributed, both within and between countries, with

developing economies impacted more greatly. Such developments may have profound implications for heritage, hitting two primary funding sources: public financing and tourism revenue. As budgets tighten and heritage will likely have to compete harder for support, evidence of socio-economic and environmental impacts will be key to justifying investment. A shift towards regenerative and wellbeing economic policies may offer unexpected advantages in recognising goals more suited to heritage impacts. Reduced public funds may also drive policy innovation around broader approaches to health and social welfare, using culture and heritage for diverse ends.

The climate crisis

Climate change and environmental degradation will have a major impact on the world in the coming centuries, challenging presumed certainties and expected lifestyles. Future scenarios and counter-trends depend on the recognition of, and accountability to, the causes of climate change. Possible scenarios involve the engagement of emerging technologies in achieving the UN SDGs, and civil unrest due to disruption of agricultural production, economic supply chains and diplomatic relationships across regions. Hope may be found in strategies that enhance collaboration and empower communities through necessary investment, resources and services to adequately respond to climate change. Far-reaching implications for heritage will affect how heritage is identified, understood, managed and practised. Possible effects include widespread heritage abandonment and loss (particularly of intangible heritage); creation of new forms and meanings of heritage through climate adaptation; increasing employment of heritage within climate change responses; integration of culture into future risk prevention, mitigation and adaptation plans; and recognition of heritage as vestigial evidence of lost biodiversity and ecosystems.

Changing societies

World population growth until 2050 could put significant pressure on social, environmental, political and economic infrastructure, and lead to unsustainable expansion of already overpopulated areas and rural depopulation. The world population is also expected to get older with increased life expectancy, although these gains are slowing and may be reversed. People may spend more years in ill health as age-related diseases become more common. For the young, multiple career paths will likely become the norm due to job instability. At the

same time, increased transnational migration — largely induced by the climate crisis, wars and conflict — is likely, creating progressively more heterogeneous societies that challenge notions of national identity. Among the heritage implications is a risk that many traditional skills, knowledge and crafts may disappear. However, an ageing population may also result in greater numbers of elderly people playing a more participatory role in heritage, also through lifelong-learning, which may help to hinder the development of age-related diseases. Heritage will need to reflect increasingly heterogeneous societies, and in the main may be considered less tangible, immutable, past-oriented and place-specific, instead moving towards the intangible, changeable, future-oriented and transnational.

The digital transformation

Advancing technology and digital intensification are leading to an increasingly interconnected world in which technological innovation is the crucible of global competition. Potential future paths range from healthy competition between powers under a broad framework of shared standards and breakthroughs, to a decoupled world where technological power is concentrated within blocs. AI development will likely dramatically accelerate, with AI becoming an invaluable tool in many facets of daily life and work. Through job polarisation, AI may replace some routine jobs while creating new types of work. Digital transformation risks raising inequality, and the increasing development of a 'digital underclass'. Immersive reality and interactive experiences will likely become essential tools in daily life and the heritage sector, and AI and other emerging forms of technology may also soon be considered cultural heritage. Heritage also has a potentially critical role in the development and regulation of more ethical, public values-based AI that can better serve society. Robust frameworks are needed to ensure heritage data is both protected and accessible, enabling communities to create, curate and sustain their own heritage.

Cross-cutting themes

Changing and competing values

Several studies indicate an increasing trajectory within wider policy development towards people-centred approaches, polyvocality and the recognition of

different knowledge and value systems, also in acknowledgement and redress of the effects of colonialism and historical injustices against marginalised groups. However, this trajectory is anticipated to meet resistance. Large-scale transnational movements could unbind some values and identities from the nation-state, and find dynamic senses of belonging that are no longer rooted in static geographies. Universalist, top-down agendas may need to make way for bottom-up, multivocal approaches — the influence of international organisations may wane unless they embrace these inclusive approaches. Organisations will likely need to be transparent about how heritage has been and continues to be misused to justify oppression, exclusion and conflict.

Sustainability

Sustainability concerns the equity, equality, rights and wellbeing of both humans and nature. Clear trends in sustainability in the review related to inequality and inequity, vulnerability, participatory decision-making, and education and/or capacity building. If global and local institutions fail to respond and adapt to the societal megatrends through equitable distribution of resources and services that empower communities to support themselves, it may not be possible to instigate a meaningful transformation towards a more just and cooperative world. To remain relevant, the heritage sector will need to promote sustainability by embracing inclusivity in intergenerational and cross-cultural dialogue, highlighting diverse voices and knowledge systems, and promoting lifelong learning.

Wellbeing

Wellbeing as a rising topic within policy, practice and research may continue to see greater emphasis with growing consensus around the need to secure quality of life in the face of global challenges. At the same time, counter-trends — fuelled by tightening economic conditions, deregulation, political shifts and conflict — may emerge, compounded by a lack of shared definitions and tools for measuring wellbeing, and ways of embedding it within policy practice. A move towards wellbeing may be advantageous for heritage in emphasising policy goals more aligned with the essential nature of its value. In turn, this may stimulate greater interest in heritage from other areas and incentivise cross-sectoral collaboration with, e.g., health and the environment. Key policy dimensions may centre on issues of mental health, social inclusion and trust,

focusing on the elderly, youth, and marginalised and underserved communities. In the future, heritage investment could depend on evidencing wellbeing impacts, and heritage management may ergo shift towards evidencing and promoting wellbeing.

Building resilience

Drawing on these Megatrends, Cross-cutting themes, and the wider academic literature, the study also inductively identified potential opportunities for action, through which heritage could contribute to ameliorating the impacts of future change. These are summarised as follows:

Addressing inequalities

To address deep rooted and persistent inequalities, the adoption of a human rights-based approach to heritage is fundamental. This entails recognising and including under-represented perspectives, building trust with marginalised groups, and acknowledging and addressing historic and systemic injustices. For this to be possible, heritage organisations will need to actively work to diversify representation and identify and dismantle barriers to inclusion, and enact systemic changes in policies, practices, education and staff recruitment.

Reducing societal tensions

To proactively face the anticipated megatrends and help address urgent societal challenges, embracing change will be key. As a first step this requires acknowledging dissonances within heritage that may compound inequalities, and accepting its inevitable mutability, in order to help communities absorb and adapt to transformation and loss. To strengthen social cohesion, innovative, participatory and accountable governance within heritage is needed, as well as an outward looking stance to build inclusive and integrated partnerships across sectors, industries and organisations. Prioritising grassroots initiatives and bottom-up approaches can strengthen a sense of local ownership. To realise these goals, the heritage sector can act as a facilitator, providing platforms to connect people and communities, which are centred on listening to understand diverse perspectives.

Centering sustainability and wellbeing

As science and technology drive innovation, cultural heritage can make greater contributions to sustainability through heritage-based solutions in areas such as sustainable building and infrastructure development, land use and water management, food security, and carbon sequestration. This requires greater recognition of the potential contributions of heritage — e.g., through natural heritage and Indigenous and traditional knowledge — and likewise including these within disaster risk reduction plans. Hand in hand, it is important to articulate how this contributes to current and future wellbeing. Wellbeing economic models could offer opportunities to explore people's heritage preferences, provide meaningful evidence of heritage impact and frame desired outcomes in terms that both reach broader policy areas and help embed heritage within these.

Re-imagining learning

Ageing populations, an anticipated skills gap, and a future employment landscape where career paths may switch more frequently, will require education orientations towards lifelong learning, including formal, non-formal and informal learning in which heritage can play an increasing role. These orientations could further centre co-creative approaches that blur or dissolve boundaries between learners and teachers, focusing on exchange, dialogue and understanding. Emerging technological tools may help develop innovation in teaching and facilitation and help develop a more flexible range of capacities. The digital transformation will require identifying which 'human skills' are needed to complement emerging technologies, along with supporting digital literacy to address the digital divide across ages and geographies. Finally, cultural heritage is well-equipped to provide valuable insights into what it means to be human, which can contribute to developing more ethical technologies (particularly AI) that are sensitive to public needs and values.

Evidencing impact

To build sustainable heritage futures, the sector will need to evidence and enhance its contributions to sustainability and wellbeing through a paradigm shift that looks beyond solely conserving and managing heritage. To address inequalities and restore trust in institutions, greater transparency and public accountability are needed regarding who does and does not benefit from

heritage. This demands better ways of articulating and evidencing heritage impacts through combined qualitative and quantitative methods that communicate compelling narratives supported by hard evidence, regarding what matters to people and how heritage improves lives. Possible opportunities lie in developing tools that address a wider range of societal wellbeing markers within cultural capital assessment. Greater awareness of wellbeing outcomes could help pinpoint complementarities between different policy areas and enable cross-sectoral partnerships so that investing in heritage versus other areas becomes not a zero-sum game, but rather a win-win.

- **Using anticipation: developing Foresight thinking**

Anticipation and long-term thinking are essential to proactively meet future challenges with greater global collaboration and to increase resilience in the face of unprecedented changes. Strategic Foresight should therefore be a priority, also within the heritage sector, to look beyond short-term goals and agendas. As here outlined, heritage is deeply implicated in each anticipated megatrend and can potentially play an important role in shaping future trajectories. Nevertheless, Foresight is underdeveloped within the heritage sector. Global heritage organisations can help raise awareness about Foresight, develop greatly needed capacity-building Foresight initiatives, and supply concrete tools and resources.

Noteworthy takeaways

Many of the themes outlined are familiar as they represent deep drivers of change with likely long-term and significant effects. The study also revealed a number issues that perhaps receive less consideration, but which are worth noting:

- **For policymakers**

  In the face of complex challenges, policy development will likely shift towards exploiting synergies between sectors to deliver essential services, with greater recognition of the cultural dimension within broader policy areas. This may open opportunities to utilise heritage in new ways, but to do so a greater base of evidence will be needed.

Policy will likely increasingly centre on enhancing wellbeing and sustainability. Heritage is well suited to play a wider role in contributing to this, and shaping how we conceptualise societal and economic success.

To support effective policy innovation, Foresight is needed to explore how heritage can decisively shape a more desirable, sustainable and just future.

For researchers

- In an increasingly digital future, heritage can provide valuable insights concerning what it means to be human, and help inform the development of more ethical AI - and/or improve resilience to its adverse effects.
- Heritage can help prepare us to deal with the unexpected and uncertain. Exploring the diverse ways in which it can do this will yield new roles for heritage in a rapidly changing world.
- To embed heritage within wider policy areas, a greater base of evidence is needed regarding its contribution to sustainability and wellbeing. These impacts need to be expressed in measures that are meaningful to other sectors.

For heritage institutions

- Heritage conservation operations may increasingly shift towards managing and helping communities coming to terms with loss. Inclusive, transparent and sustainable processes for this will be needed.
- In addition to threatening some forms of heritage, change also creates new heritage. In the future we will likely see heritage become increasingly transnational and diverse, with new emerging forms shaped in part by the climate crisis. AI and its outputs will also eventually become heritage.
- To remain relevant and have a sustainable future, organisations must reach beyond the scope of heritage towards a broader and more integrated horizon and provide evidence of their wider impacts. Foresight can help organisations to envision and realise their future role, while building adaptability and resilience.

Introduction

Aims and objectives

In September 2022, the Alliance for Research on Cultural Heritage in Europe project (henceforth, ARCHE) was launched with the aim to develop a holistic approach to Cultural Heritage Research and Innovation, realised through a pan-European network of researchers, heritage professionals, institutional bodies and citizens. The ARCHE project is funded by the European Commission and coordinated by the Fondation des Sciences du Patrimoine (France) and brings together a consortium of 24 partners from 18 European countries.

As a core part of its work, ARCHE will develop a new Strategic Research and Innovation Agenda (SRIA) for heritage, co-designed through a wide consultation process engaging diverse cultural heritage actors, with a view to stimulating joint actions in emerging areas of need. However, to stay relevant, the SRIA must be forward-looking and provide an orientation that responds to the needs and perceptions of today and into the future. More than this, it should be proactive in seeking new opportunities to drive change in positive ways.

The direction and resilience of cultural heritage across Europe clearly depend on the nature of future environments and plausible scenarios it will face. Therefore, to orient and inform a future-facing SRIA, the current study was undertaken by ICCROM to examine how different fields are anticipating the future using Strategic Foresight, an innovative approach that is increasingly acknowledged within strategic planning as a key means to understand future needs and considerations. Through an exercise of data gathering and analysis, this study examined indications of different possible futures, and the implications these may have for heritage in the EU context, derived from a body of future-oriented literature spanning sectors such as the environment, economics, health, education, as well as arts and culture, and heritage. It also analysed the ways in which Foresight is used within these different areas, and how similar approaches might benefit future strategy development for heritage.

This report presents the findings of this literature review, outlining identified megatrends, cross-cutting themes and opportunities for action for the heritage sector.

Strategic Foresight

Strategic Foresight is a set of approaches, tools and skills that can help organisations explore, imagine and shape different futures. A successful Foresight exercise broadens the range of possible futures envisioned for a sector or area, including novel futures previously unimagined. Furthermore, it makes the uncertain future actionable by identifying relevant actions and strategies to help organisations move towards desirable futures. Foresight lays the foundation for organisations to be proactive towards the future through long-term strategies that are adaptable and resilient, rather than simply reactive towards emerging changes.

That said, it is useful for this report to distinguish between Foresight and forecasting. A key feature of Foresight lies in its ability to expand mindsets concerning what may be possible in the future, and by doing so, challenge our core assumptions concerning what the future will be like. In contrast, Forecasting is probabilistic and aims to predict the future, most commonly through extrapolating trends into the future. Thus, forecasting is predictive, while Foresight is explorative. Further, while forecasting usually engages with the short-term future within the next five years, Foresight approaches a much longer temporal horizon that can expand beyond even 50 or 100 years. The degree of success of a Foresight exercise is not determined by the estimated probability of anticipated futures, but rather by how the exercise managed to expand the horizon of future possibilities and how these can connect to actions and strategies in the present.

Foresight is a field that is advancing rapidly with devoted journals[1], university courses[2] and transnational networks[3]. Furthermore, the value of Foresight is increasingly emphasised as essential to proactively meet the challenges facing the world, e.g., by the UN, which plans to implement five elements within the upcoming years to greatly expand and improve its Strategic Foresight work (UN, 2021). These five elements include UN Future Labs as spaces for systemic and systematic global futures research, connecting the dots between available Foresight reports, and synthasing and prioritising between identified opportunities

[1] https://www.emerald.com/insight/publication/issn/1463-6689
[2] https://www.ucl.ac.uk/bartlett/heritage/heritage-evidence-foresight-and-policy-msc
[3] https://www.emerald.com/insight/publication/issn/1463-6689

and challenges. The UN is also planning a Summit of the Future to be held on 22–23 September 2024. While these plans are still underway, they have been endorsed by many scholars within Foresight and futures thinking (The Millennium Project, 2022). Furthermore, the European Union has established a Foresight Network of Ministers for the Future, which began work in 2021. These efforts underline how enhancing long-term Foresight thinking has become an urgent global concern. However, this is yet to be broadly recognised within the heritage sector (Holtorf & Högberg, 2022), where futures awareness tends to be lacking (Högberg et al., 2017).

In this report, we focus specifically on Strategic Foresight. However, it is worth addressing that Foresight is emerging alongside adjacent future-oriented fields such as critical futures (Ahlqvist & Rhisiart, 2015), sociology on futures (Adam & Groves, 2007; Urry, 2016) and the anthropology of the future (Bryant & Knight, 2019). Important work has also been done in anticipation studies to move towards a more integrated approach (Poli, 2017; Miller, 2018). These highly interrelated disciplines have jointly contributed to a more critical approach to predictive models and the instrumentalisation of the future for present gains. Sociologists Adam and Groves (2007) have argued that predictive models risk colonising and commodifying the future, stating that 'the task for contemporary experts on the future therefore is not about knowing…[the] future but rather about aiding individual and social endeavours to choose wisely from a spectrum of options and preferences with their associated potential effects' (p. 34). Such critical perspectives are increasingly recognised within Foresight, which aims to expand horizons and create more opportunities for positive change — not to predict. Within Foresight, the future is always understood in plural terms with the recognition that there is not one certain future but multiple possible futures. Thus, while this report focuses on Foresight, it will also, when relevant, reference adjacent fields to create synergies and maintain a critical approach.

1. Methodology

1.1. Definition of heritage

This study takes as its starting point the definition of heritage as cultural capital, as set out in the Faro Convention:

> '...cultural heritage is a group of resources inherited from the past which people identify, independently of ownership, as a reflection and expression of their constantly evolving values, beliefs, knowledge and traditions. It includes all aspects of the environment resulting from the interaction between people and places through time.' (Council of Europe, 2005)

To this, the study also applies the definition developed by the Joint Programing Initiative on Cultural Heritage (JPI CH) which considers cultural heritage as comprising tangible heritage, intangible heritage, digital heritage and natural heritage (JPI CH, n.d.). Finally, the study also recognises heritage institutions as not for profit, permanent organisations working in the service of society whose mission is to research, conserve, interpret, manage and provide access to cultural heritage.

1.2. Selection of literature

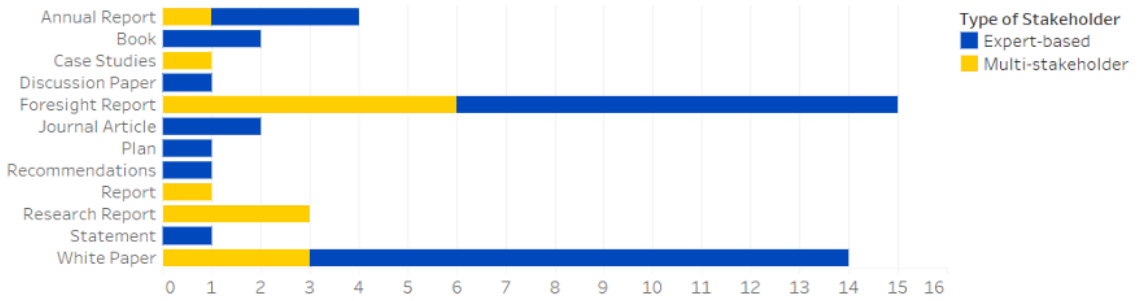

Figure 1 Types of sources reviewed, and stakeholders involved.

A broad range of existing literature was selected for review through recommendation and review of reports produced by relevant organisations. Formats considered included white papers; peer-reviewed articles; research agendas; working papers; and reports published by governments, research institutions, intergovernmental and nongovernmental organisations, professional

associations, and the private sector (see Fig. 1.1). Literature was sourced both internally from the heritage sector and externally from adjacent sectors that might impact upon cultural heritage (see Fig. 1.2). The search end for literature was determined by time constraints. A comprehensive list of the literature reviewed is supplied in the References.

Given that Strategic Foresight is still relatively nascent to many fields including heritage (Holtorf & Högberg, 2022), literature that presented broadly future-oriented research — including forecasts — was considered in addition to studies that engaged explicitly with Foresight methods. Of the 46 total sources reviewed, 18 studies engaged with Strategic Foresight in part or all of their research, and the remainder did not explicitly engage with Foresight at all (see Fig. 1.2). Chapter 5 presents a thorough breakdown of the literature review, the different research methods used and their implications. As highlighted in the introduction, we also occasionally reference sources external to the literature review with the purposes of finding relevant connections to adjacent fields and ensuring a critical perspective. For clarity, in Chapters 3 and 4, the external sources will be indicated with an asterisk (*).

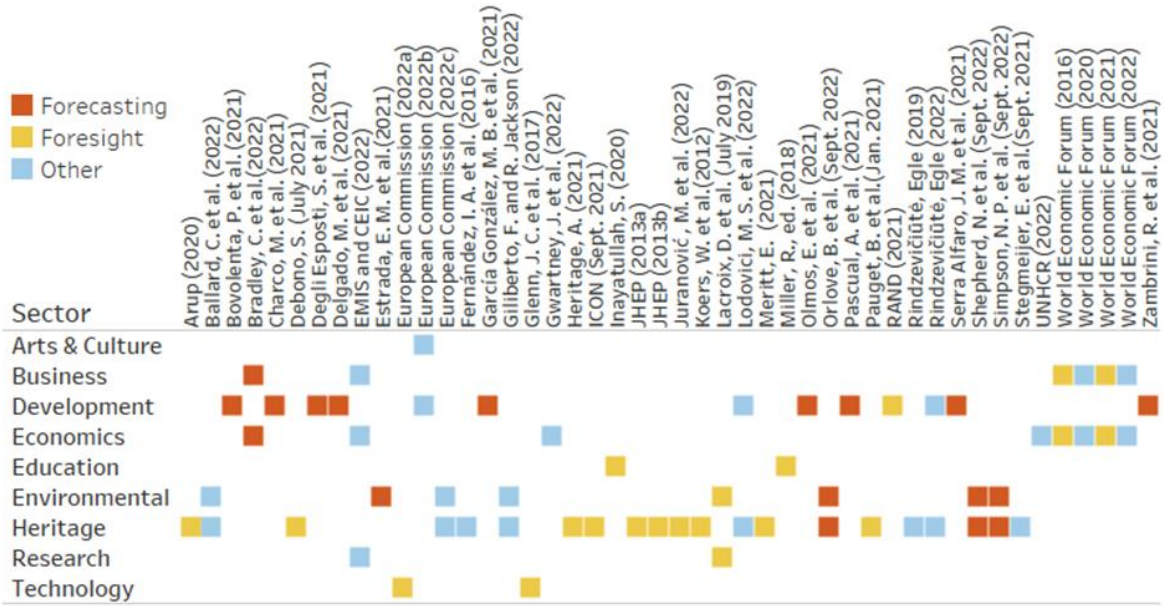

Figure 2 Sectors represented across the reviewed literature, and studies' use of Foresight and forecasting methods.

1.3. Analysis of literature

Between mid-October to December 2022, an extensive review of the above literature was conducted to gain an understanding of existing, emerging and anticipated global trends. The researchers focused on extracting references identifying both existing structural forces (demographics; the state of the environment, economics and global affairs; and technology) and key emerging trends, including what influences may impact or shape them over time. Uncertainties were also noted to widen the ambit of potential future trends.

The analysis involved a number of steps:

1. Active and thorough reading of each document to ensure familiarisation with the context and narratives;

2. Extraction of citations directly from the literature with sentence and/or paragraph highlights, and page numbers, which were collated into an Excel database;

3. Coding of the extracts with keywords that the researchers felt categorised the qualitative data or its context;

4. Coding of the extracts into iterative 'sub-theme' categories, created through a cyclical act of identifying further codes and links across the raw data;

5. Coding of the extracts into one or more categories of an adapted PESTLE framework: Political, Research, Environmental, Social, Technological, Economic, Legal (PRETSEL);

6. Consideration of potential influences the keywords and sub-themes might have on the heritage sector, in any capacity;

7. Identification of research methods and methodologies undertaken in each literature.

The coding was approached abductively, combining iterative code creation with a structured PRETSEL framework. Following the multi-round coding processes recommended by Thompson (2022) and Saldana (2015), initial coding produced

specific and concise codes (keywords) that expressed a high volume of interpretations and points of significance. Sub-theme coding was more selective and consolidated keyword coding, removing specificity deemed insignificant to the task. Finally, each textual extract was placed into the PRETSEL framework; in some instances, sub-themes were categorised into two possible PRETSEL categories due to their interrelationship (see Fig. 1.3). This three-step process ensured that the final coding would remain close to the data. Throughout the entire process, transparent documentation in a shared spreadsheet among the researchers helped provide a clear visualisation of the conceptual bridge taken across codes.

This thematic analysis developed a set of latent themes (the codebook is found in Annex 2), which 'go beyond what was explicitly said, revealing the underlying ideas, assumptions, and conceptualisations within the data' (Campbell et al., 2021, p. 2014). The extracts and themes produced in this analysis informed further inductive and deductive considerations for the state of heritage now and into the future, which are articulated in the writing of this report.

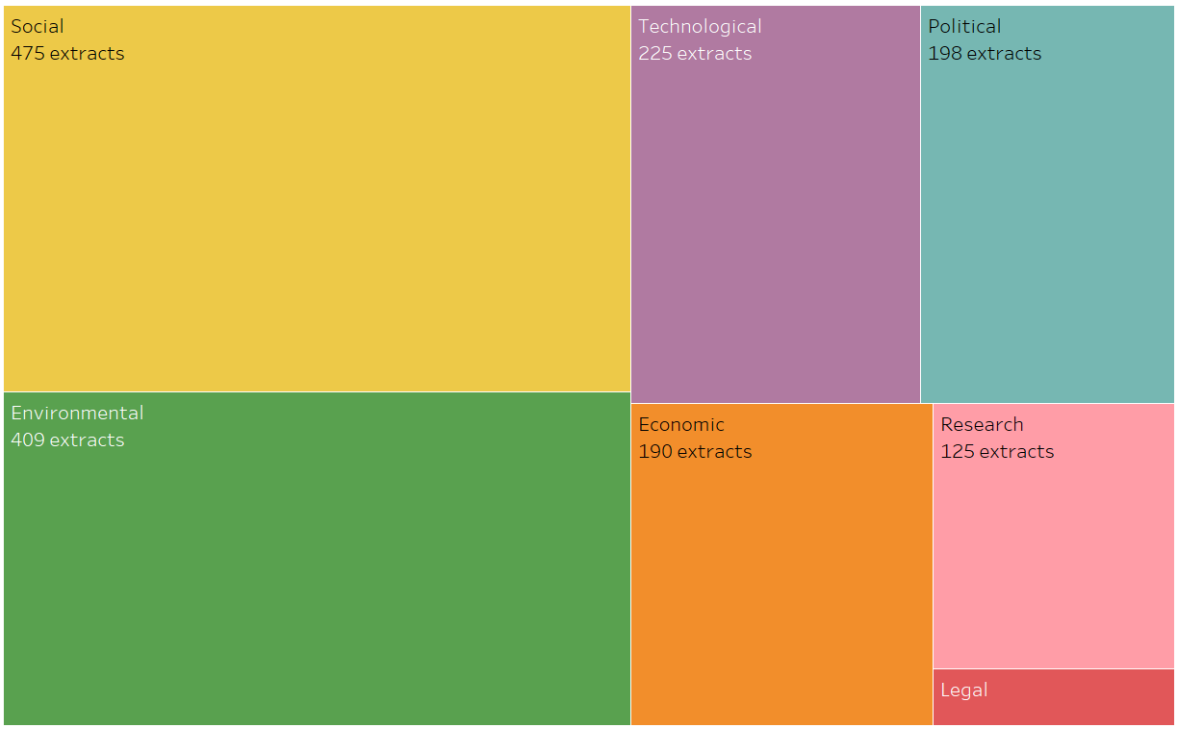

Figure 3 Distribution of text extracts produced through the coding process, shown across PRETSEL categories.

1.4. Degrees of uncertainty

Biases in this research include which themes of foci were considered relevant for inclusion, and which were not. The researchers extracted content from the literature that they considered directly or indirectly relevant to the heritage sector in terms of impacting or driving changes at local, national and global levels, both in the near and long-term future.

It is important to underline that this report covers some possible trajectories identified in the literature review, but the future is uncertain and the scenarios and counter-trends presented could develop in many ways. The review is not exhaustive, and the material analysed has several limitations in terms of the methods used and the degree of participation and inclusion seen in their Foresights processes (more details in Chapter 5). The reviewed material was limited by language and time restraints — only literature available in English was reviewed so as to conduct the analysis in a timely manner. While the review covers various geographical regions and countries (Figures 4.1–3), European cases are proportionally higher. Furthermore, while we mostly draw upon studies published within the last three years, these studies are occasionally informed by data gathered during preceding years, requiring consideration of a time lag.

Open, participatory and cross-sectoral Foresight processes help imagine more diverse, novel and interconnected futures. However, Foresight is still uncommon within the heritage sector, and when carried out, it tends to be expert-based and uni-sectoral. This is evident within the reviewed material (Figure 4.7), and more participatory and interconnected Foresight processes likely would have identified other types of futures. The scenarios presented below should therefore not be taken at face value, as these limitations need to be considered. Once again, our purpose is not to predict the future. Instead, we aim to broaden perspectives concerning how the future might develop in different ways depending on actions and strategies today. Further, the report is a call for more Foresight to be conducted in the heritage sector, and for heritage to be more often included in Foresight studies.

2. Global Shifts Re-Shaping Our World

'Unprecedented' — a word that has been increasingly used over the past three years to describe an extraordinary and unsettling series of events that have swept across the world. A pandemic compounded by powerful global shifts is reshaping the landscape of relative certainties that the world has been accustomed to for some time. Yet these shifts have long been brewing, as evidenced by various 'eruptions' that have taken place throughout the past 50 years, and provide context to this emerging era. Changing regional power dynamics, environmental breakdown paired with resource scarcity, demographic shifts, technological revolutions and competitions, are megatrends increasingly rooted in the human consciousness and are driving momentous changes in behaviours, lifestyles, practices and values.

This chapter identifies four priority megatrends which have, and will continue to, shape heritage practice and policy over the coming decades. Their implications for cultural heritage are substantial and require deep consideration, investment and focus if the sector is to build resilience and proactively face an increasingly uncertain future. After elaborating on the four megatrends, three additional cross-cutting themes are presented. These cross-cutting themes are deeply interconnected with the megatrends and represent emerging value systems and responses to change that hold major implications for heritage.

2.1. Megatrends

2.1.1. Geopolitics and global economics

Overview

The world has undergone large-scale changes in recent years that are reshaping global politics and shifting power balances. Covid-19 catalysed a global economic shock on a scale not experienced since World War II. The effects of the global pandemic will have long-term implications for the future. Furthermore, the pandemic led to an overall expansion of the state, in some cases decreasing possibilities for public intervention and leadership (Bradley et al., 2022, p. 17). Such autocratic tendencies may last beyond the pandemic (WEF, 2021, p. 55). The 2022 edition of the World Economic Forum's Global Risks Report, which

gathered multistakeholder perceptions on global risks over a 10-year horizon, states the following:

> Rising commodity prices, inflation and debt are emerging risks. The economic fallout from the pandemic is compounding with labour market imbalances, protectionism, and widening digital, education and skills gaps that risk splitting the world into divergent trajectories. (p. 8)

The possibility of divergent global trajectories was further reinforced by Russia's invasion of Ukraine on 24 February 2022. Most countries were quick to voice their opposition to Russia, while other major global powers, such as China, India and South Africa, abstained from the UN resolution condemning the invasion. These explicit geopolitical divisions and allegiances manifest continuous shifts of power structures and the likelihood that major non-western actors will assume increasingly influential roles in future world politics, shaping new balances and unsettling the geopolitical landscape (WEF, 2020). According to UN estimates, Nigeria may become the third most populous country by 2050 (Heritage et al., 2023, p. 126). In February 2022, China's GDP overtook that of the entire European Union; a month later, India surpassed the UK to become the world's fifth-largest economy by GDP (Bradley et al., 2022). Notably, China and the USA together form 40% of the world's global GDP, and incidentally also constitute the highest emitters of greenhouse gases (WEF, 2020). Indications are that these two global powers are likely to become increasingly estranged, competitive and engrossed in national security concerns, rather than uniting in meaningful policy and action that could lead efforts to tackle global priorities and challenges, and deliver radically different global trajectories for the future.

This reflects a general trend of waning multilateralism in favour of more unilateral and possibly nationalist agendas among states (WEF, 2020, p. 6; Heritage et al., 2023, p. 6). This isolationism hinders global cooperation in tackling common challenges such as the climate crisis, health, poverty reduction and technology governance (Gunashekar et al., 2021; WEF, 2021, p. 57). So-called 'middle powers' may therefore have an important role to play in building global cooperation:

> Middle powers — states that lack superpower status but still play influential roles in international relations — have the potential to forge a more stable, sustainable and cooperative balance of power, individually or in some collective constellation…[as] champions of multilateral cooperation in areas of trade, diplomacy, security and, most recently, global health. (WEF, 2021, p. 55)

Rapid inflation, a legacy of the global pandemic coupled with higher energy costs, is also being felt across governments, businesses and communities in most countries. With inflation outpacing growth in wages and spending, ongoing trends of widening income gaps and concentrated wealth become ever more apparent (Glenn et al., 2017, p. 1). Exacerbated by COVID-19, extreme poverty and social inequality are on the rise (EMIS & CEIC, 2021, p. 7), which threatens to undermine social cohesion at least on a short-term scale:

> 'Social cohesion erosion' is a top short-term threat…Disparities that were already challenging societies are now expected to widen — 51 million more people are projected to live in extreme poverty compared to the pre-pandemic trend — at the risk of increasing polarization and resentment within societies. (WEF, 2022, p. 8)

Possible scenarios of development and counter-trends

The literature review shows these anticipated shifts in the global arena to be connected to different possible scenarios and counter-trends. One common scenario is a possible future in which populism (EMIS & CEIC, 2021) and political extremism (Heritage et al., 2023, p. 86) pose real threats to liberal democracies (Fiorentini et al., 2021, p. 107) by sowing distrust of public institutions and dismantling institutional stability, pillars of democracy and its mechanisms (Gunashekar et al., 2021). Increased social exclusion may further exacerbate the current reality:

> In recent years, a trend towards increased polarization between communities can be witnessed everywhere...A far-reaching negative consequence is social exclusion, which means that certain social groups do not have access to the opportunities that others do have access to. (Koers et al., 2012, p. 8)

Disruptions to civic engagement and participation may also compromise good governance within democratic societies, including 'the risk of autocracy, with corresponding censorship, surveillance, restriction of movement and abrogation of rights' (WEF, 2021, p. 56):

> In many countries, regardless of governance approach, nationalistic impulses have paralleled the pandemic-induced centralization of power. Policy decisions taken in 2020 may persist beyond the pandemic, enabling some governments to use repressive measures to control restive populations and allowing leaders with autocratic tendencies to pursue broader, longer-term agendas. 'Political entrepreneurs' could seek to leverage growing nationalism.,. (WEF, 2021, p. 55)

However, as highlighted through a systematic overview of 307 Foresight scenarios, there may also be counter-trends to a more separated, authoritarian and polarised world (Lacroix et al., 2019). Some scenarios pinpoint the possibility of increased awareness among states of shared challenges and solutions, such as those of the Sustainable Development Goals (SDGs), or more specifically the climate crisis (also presented as a possible trend in Gunashekar et al., 2021). The need for proactive coordination and constructive action among states to tackle global concerns has been demonstrated through a plethora of ratified global conventions, often with environmental foci (Lacroix et al., 2019, p. 9). To move towards proactivity and global solidarity, anticipation and long-term thinking, which we will return to in Chapter 4, are critical instruments.

Meanwhile, the implications of economic and educational instability suggest youth disillusionment is a major risk for the future:

> Limited economic and educational prospects are likely to exacerbate youth frustrations. The compounding trends of lower intergenerational mobility and widening socio-economic inequalities, exacerbated by the COVID-19 crisis, have markedly deteriorated youth's mental health…since the start of the coronavirus pandemic, mental health has deteriorated for 80% of children and young people across the globe. (WEF, 2021, p. 45)

The future, globally, will become increasingly interconnected and interdependent by nature of emerging technologies and demand/supply needs for resources (RAND, 2021; Arup, 2020). Nevertheless, the anticipated power shifts may challenge both Euro-centric, as well as so-called universal, values, which could result in a 'diminished engagement of state parties within international organisations' (Heritage et al., 2023).

Another possible trajectory marks a shift away from dominant value systems across the West (e.g., Eurocentric values) via calls for increased inclusivity and diversity. This provides incentives for global organisations to recognise and incorporate different knowledge and value systems, worldviews and ways of being into their own operations and practices. Here, a greater pluralism is acknowledged, where the rights and perspectives of Indigenous, marginalised and/or subaltern groups are recognised and included within global agendas (Sjölander-Lindqvist, 2021, p. 160; Veldpaus et al., 2021, p. 207; Heritage et al., 2023, p. 30):

> The inclusion of multiple and diverse knowledge systems — also termed plural knowledge systems — has been recognized as a key element in robust decision-

> making for informing policy, science, and social action. (Orlove et al., 2022, p. 34)

While such increased pluralism and tolerance provide many opportunities, it could potentially trigger a backlash or counter-trend from more conservative, nationalist ideologies that promote exclusion through identity politics.

These possible scenarios and counter-trends are useful guides for exploring opportunities for the heritage sector to build resilience, which will be expanded upon in Chapter 4.

Implications for heritage

Shifts in world dynamics and structural forces inevitably have implications for how heritage is used, politicised and managed, as well as how it responds to such changes. Historically, heritage has been used as a resource for nation-building that ignites patriotism and nationalism (Anderson, 1991*). Value systems and interpretations of histories have been created and reinforced through heritage assets and discourses. Therefore, in a potential future scenario of increased polarisation, nationalism and populism (EMIS & CEIC, 2021, p. 9), it is important to recognise the ways in which heritage is instrumentalised to create rhetorics that marginalise certain groups via certain 'authorised heritage discourses' that justify exclusionary policies (Smith, 2006*). It is possible that heritage will become even more politicised and exploited to push nationalist agendas and incendiary identity politics. ICCROM's horizon scan report (Heritage et al., 2023) assessing a 15-year horizon anticipated the following:

> What we today consider to be politically extreme has become normalized and accepted as the norm in society at large. On the other hand, political neutrality is an extreme position, which means that it is very seldom put forward as a viable option…This also means that people very seldom meet those who do not share their own political standpoints. (p. 86)

In an increasingly politicised and polarised future, it will be essential to actively employ heritage to build more accessible, inclusive and sustainable futures that are centred around social justice and equity. Here, people-centred, community-based and participatory approaches are required (Giliberto & Jackson, 2022, p. 20). Further, an increasingly interconnected world may demand greater societal integration of heritage and heritage research, perhaps even leading to a reinterpretation of heritage:

> The paradigmatic shifts ensuing from globalisation…will force reinterpretation of cultural heritage. There will be an open science of cultural heritage research, with greater participation from citizens and consumers; cultural heritage research will be more integrated into society. (Rhisiart, 2018, p. 113)

A potential future with a high level of youth disillusionment, coupled with a rise in social inequality and poverty, will likely create new demands on heritage. Here, it becomes essential to recognise the role and value of heritage for fostering sustainable economic development, and creating work and meaningful activities for all ages. To maintain relevance, heritage will need to be a resource for tackling poverty, inequality, racism, sexism and other social challenges facing communities.

2.1.2. The climate crisis

Overview

Climate change and environmental degradation are among the key megatrends that will impact the world in the coming centuries. While human life has always been indebted to the wider environment, it is only in recent centuries that economies of industrialisation and extraction have created serious imbalances regarding our insecure dependencies on the Earth and its provisions. Clear signs of the climate crises continue to manifest themselves globally, from evidence of microplastics in placentas (Ragusa et al., 2021*) to the increased frequency of extreme weather events disrupting seasons and, with it, the livelihoods of all life, including so-called compound events such as extended drought periods and heat waves.

The complexities and interdependencies across existing and emerging global challenges (e.g., population growth, digital technology dependencies) will probably continue to create environmental tensions and pressures in relation to geopolitical dependencies and securities, waste, environmental footprints, the mining and processing of critical raw materials, and ethical concerns (European Commission, 2022a, pp. 2–9). According to recent research by the Spanish National Research Council (CSIC; Moyano Estrada & García Azcárate, 2021), the impacts may include:

> …the management of natural resources; the spread of viral pandemics; the recurrence of natural disasters; new sources of energy production and use; road mobility and intra- and inter-territorial transport; the new forms of economic organization; the preservation of ecosystems; the advancement of robotics and

> artificial intelligence; genetic engineering; biomedicine; the preservation of rivers, seas, and oceans; the exploration of interstellar space; governance matters; mitigation of the effects of climate change; the sustainability of health and sanitary systems; changes in eating habits; international relations; demographic changes and increased life expectancy; social inequality and exclusion. (p. 11)

Ongoing political prioritisations focus on the nuances of geopolitics, competition and the market economy, and emerging concerns to national security. Meanwhile, climate change impacts continue to threaten presumed certainties and expectations of lifestyle that have been entrenched for some time now, particularly across North America and Europe.

Possible scenarios of development and counter-trends

Future scenarios and counter-trends depend largely on the recognition of, and accountability to, the causes of climate change. From that comes interpretations of thresholds, or what scientists call the 'Point of No Return' — the point, currently marked for the year 2045, at which no possible policy measure could help undo the unfolding crisis. How the world responds will dictate degrees of capacities for adaptation and resilience, rather than a scenario in which the climate crisis does not occur. Previous decades of warning signs and scientific climate change projections have, in a penny-dropping moment, caught up with the world in the present: millions across the world have now experienced extreme weathers, droughts, floods, wildfires, invasive species, coastal erosion or visible loss of biodiversity. The complexities and politics of climate change may well exacerbate existing global tensions and allegiances. Highlighted below are possible scenarios, as well as counter-trends, which are by no means exhaustive given the unpredictability of the sheer scope and scale of climatic impacts.

In terms of European policy, the European Green Deal, proposed in 2019, aims to make 'Europe the first climate-neutral continent by 2050 [seeking to] transform the EU into a modern, resource-efficient and competitive economy, with no net emissions of greenhouse gases by 2050, economic growth decoupled from resource use and no person or place left behind' (European Commission, 2022c, p. 5). However, as 'the EU has been pushing to include the EU Green Deal and its Farm-to-Fork sustainability strategy' forward, ASEAN, in turn, considers the EU Green Deal detrimental to its palm oil-producing members and has refused to accept it as a starting point for the future talks' (EMIS & CEIC, 2021, p. 48). This clear discount of wider global implications and interpretations of the European

Green Deal marks a naivety in the complexities of addressing climate change and the cascading impacts of both action and inaction. Equally problematic was the Green Deal's previous exclusion of cultural heritage, demonstrating failures of the heritage sector's ongoing attempts to demonstrate its relevance and key contributions in addressing the crisis. The 2021 launch of the European Cultural Heritage Green Paper showed the potential for this changing (Ballard et al., 2022, p. 8).

Other possible scenarios include the coupling of emerging technologies with the climate crisis. With green and digital transitions both on top of the EU's political agenda, more reflection and scrutiny as to 'their interplay will have massive consequences for the future [and] key for achieving the United Nations Sustainable Development Goals' (European Commission, 2022a, p. 1). Work is already being done to explore how digital technologies could facilitate climate neutrality, pollution reduction, and landscape and biodiversity restoration. For example, 'the development of the EU Destination Earth (DestinE) and its digital earth twins is key to predicting the effects and building resilience to climate change' (European Commission, 2022a, p. 2). In terms of water management, the Digital Twin of the Ocean is expected to 'help to design the most effective ways to restore marine and coastal habitats, support a sustainable blue economy, mitigate, and adapt to climate change' (European Commission, 2022a, p. 2). Certainly, the emergence of renewable energy as a potential solution has opened a range of opportunities and potential challenges, including a complex disruption to energy supply and demands. Meanwhile, the 'availability of local renewable power may become a strong motivation for manufacturers to relocate and join clusters' (EMIS & CEIC, 2021, p. 41). These developments could lead to physical movements of businesses, and with them, large labour forces. Opportunities here include investments and the upskilling of populations; challenges, meanwhile, include regional brain drains and declining growth.

Globally, societies lie vulnerable to climate-related hazards due to centuries of 'demographic expansion, extensive urbanization, and the increased concentrations of infrastructure in spaces deemed as being at high risk from natural disasters' (Charco & Martí, 2021, p. 37). From a people-centred perspective, climate change will inevitably impact communities across the world, affecting critical lines of resources and production. This includes disrupting water and food supplies, agricultural production, economic supply chains and

diplomatic relationships across regions. A possible scenario points to civil unrest, and governments and institutions grappling with solutions to mitigate threats of multi-hazard scenarios. However, hope can be found in strategies that enhance collaboration and empower communities with the necessary investment, resources and services needed to adequately respond to climate change:

> Effective hazard mitigation [and adaptation] is only achieved if communities directly threatened by the hazard are actively involved in mitigation [and adaptation] measures…In this sense, educational and outreach activities…have the triple function of disseminating scientific information, fostering the community awareness, and of creating a positive bond based on mutual confidence between population and scientific community. (Charco & Martí, 2021, p. 47)

Implications for heritage

'Climate change is a geopolitical issue, which will affect all heritage sites' (Giliberto & Jackson, 2022, p. 77), as well as the various modalities of heritage, including heritage as a *human archive* of values, practices and ways of living (Morel et al., 2022; Orlove et al., 2022; Shepherd et al., 2022). As such, the implications of the climate crisis on heritage are far-reaching; the challenges shake the very value systems and foundations of how heritage is identified, understood, managed and practised — regardless of community.

Here, it is worth citing Shepherd et al.'s (2022) three heritage 'modalities':

> The first of these is a popular usage of heritage, in which it codes for ideas like identity, tradition, belonging and descendancy. The second is an official, legal and institutional usage, focused around definitions and distinctions…A third modality of heritage is a concept of heritage as it appears in research spaces, in the interdisciplinary field of heritage studies (as opposed to the second modality, which is often referred to as heritage management). (p. 7)

In relation to the first modality, concerns regarding losses and damage become far more relevant. With heritage understood here as a range of human (and living) archives of tangible and intangible heritage, the climate crises can:

- create new forms of heritage (e.g., ways of knowing and being, traditionally adapted practices and skills) through adaptation to new climate-based norms;
- inspire the need to recognise different knowledge systems and their contributions to climate change responses;

- increase awareness on how traditional knowledge can lead to a more sustainable and climate-resilient society (European Commission, 2022c, p. 27); and

- cause the continued and devastating loss and damage of tangible and intangible heritage to local communities and Indigenous Peoples across the world.

In relation to the second modality, the focus heavily weighs on management either through a national 'duty of care', or through more community-based practices of stewardship and custodianship. Here, the climate crises can:

- accelerate the need for 'equipment upgrades for energy efficiency requirements' across heritage assets and sites (EMIS & CEIC, 2021, p. 39–40);

- call for necessary changes to the management of natural and cultural resources and heritage;

- inspire the need to think holistically about culture, education, youth, and innovation and research (European Commission, 2022b);

- recognise mitigation and adaptation strategies of past and living communities; and

- 'establish an educational programme for young people that can help to raise awareness about the importance of cultural heritage in the region and the impact of climate and environmental disasters there' (Giliberto & Jackson, 2022, pp. 72–73).

In relation to the third modality, there are ongoing needs to:

- address the complex relationship of the past with the present, and how these relationships exacerbate vulnerability for diverse groups and communities, particularly in relation to historical processes (e.g., industrialisation, colonisation and extractive economies);

- understand gaps in data, including the capacity of heritage to provide relevant and useful information about the past and long-term processes;

- rethink processes of decision-making, and the role of heritage in inclusionary/exclusionary practices concerning values and significance; and

- integrate cultural dimensions into future planning of risk prevention, mitigation and adaptation.

Changes in legislation and regulation across some nations have led to 'increasing pressure on the heritage sector to reduce its environmental impact and proactively contribute to sustainability' (Heritage et al., 2023). Yet the heritage sector's mounting concerns also relate to the communities of which its research and practice are the basis, who face the devastating risks of losses and damages to their livelihoods and heritage. The European Commission's Open Method of Coordination Group (OMC) of Member States' experts strongly believes that cultural heritage needs to be included in 'all mainstream policies and funding programmes' and that 'the costs of action are lower than the costs of inaction' (European Commission, 2022c, p. 7). Adjusting policies to ensure a more progressive framework prioritising 'wellbeing, resource efficiency, circularity, and regeneration' is needed to reach 'climate neutrality, sustainable resource use, zero pollution and halting the decline in biodiversity' (European Commission, 2022a, p. 10). At present, there is little in-depth knowledge about the impacts of the climate crisis on both tangible and intangible heritage, and the cascading consequences a multi-hazard scenario will bring.

2.1.3. Changing societies

Overview

The world population is expected to grow until 2050, potentially reaching some 10 billion, at which point a population decline is expected (Heritage et al., 2023, p. 29). However, continued population growth during the next 30 years will most probably put pressure on all social, environmental, political and economic infrastructure, e.g., food production, environmental management and financial support systems (Glenn et al., 2017, p. 2). Cities will expand as people move towards urban areas, with towns potentially growing into cities, leading to an unsustainable expansion of already extensively inhabited areas. This may lead to the depopulation of rural areas, debilitating their economies as young people move in search of more opportunities (Koers et al., 2012, p. 6). Also relevant is the

expected shrinkage of the family unit, currently at a record low across Europe, which also reflects a shift in values concerning marriage, the social status of women, family size traditions and family planning. Of course, these 'personal' decisions have larger implications for future populations, needs, demands, and — more crucially — able workforces and the movement of people. Examining demographic development since 1989, Bradley et al. (2022) found the following:

> In demographic forces, the march of urbanization led an additional two billion people into cities, and city dwellers outnumbered those living in rural areas…The number of large cities more than doubled, from 274 to 579, with 81 percent of them outside the West. Fertility rates continued to fall globally, converging toward smaller family sizes. (p. 11)

The world population is expected to get older, with increased life expectancy (Moyano Estrada & García Azcárate, 2021). People will most likely live active and healthy lives longer: 'although the world is aging, biological breakthroughs could dramatically extend the lives of healthy, mentally alert people way beyond what is believed today' (Glenn et al., 2017, p. 2). However, with increased life expectancy people will probably spend more years in ill health, connected to a possible rise in obesity and infectious diseases (Arup, 2020, p. 21). Age-related diseases such as dementia may be much more common even in the short-term future (Heritage et al., 2023, p. 109).

Inevitably, such societal changes will create tolerances and intolerances across political echelons as governments attempt to assess the trade-offs and cost-benefits of ensuing socio-economic challenges. The future will see increased transnational migration and movement, largely from the Global South to the Global North, and intricately connected to colonial legacies (Heritage et al., 2023, p. 29). Much of this movement will likely be induced by the climate crisis, discrimination, persecution, human rights violations, natural or human-made disasters, and ongoing and escalating violent conflict (WEF, 2021, p. 88; UNHCR, 2022, p. 2). Already by the end of 2021, 89.3 million people worldwide had been forcibly displaced (UNHCR, 2022, p. 36). Internal displacement within countries is expected to increase as well. These mass migrations could result in large diasporic communities.

Possible scenarios of development and counter-trends

The growth of urban areas worldwide poses a set of future challenges related to rural depopulation and urban segregation. Persisting inequalities may further

divide 'rich' and 'poor' urban neighbourhoods. In addition, urban growth will strain land and water resources, which can heighten risks of conflict:

> Competition over diminishing land and water resources, movements to urban centres that strains their infrastructure, and rampant increases in global food prices that will hurt the urban population in low- and middle-income countries are the main factors heightening the risk of increased conflict…[especially] in countries with weak governance and infrastructure and/or insufficient resources. (UNHCR, 2022, p. 10)

A key challenge for the future will lie in creating modern, integrated urban areas with improved quality of life for residents. Here, restoring green areas will be essential (García González & Jordano, 2021, p. 160).

Likewise, an ageing population carries several implications for the future. People may live active and healthy lives longer, potentially increasing the involvement of volunteers 'in activities that were formerly the preserve of the state and professionals' (Arup, 2020, p. 7). According to the CSIC, this development may even contribute to a paradigm shift in how old age is being approached:

> As a society, we must change the ageist paradigm 'old age equals burden' by promoting active and healthy aging, from a human rights-based approach to aging, emphasizing social participation and lifelong learning, as well as making educational paths more flexible and reconciling reproductive and labor trajectories. (Moyano Estrada & García Azcárate, 2021, p. 176)

Emerging global shifts are 'currently generating new categories of value-creation, altering the nature and organisation of work, enlarging the role of learning, changing the meaning and practice of age-based landmarks like retirement' (Miller, 2018, p. 132). In a landscape of demographic shifts, changing attitudes and values could demand new ways to structure education to emphasise flexibility and lifelong learning (Heritage et al., 2023, p. 32).

However, this development will depend upon how other societal challenges such as poverty and inequality are handled, as these may affect access to vital health services and increase the vulnerability of disadvantaged groups. These challenges, paired with a rise in age-related diseases, could form a counter-trend to active ageing if left unaddressed. Further, Arup (2020) suggests a direct link between an ageing population and the prevalence of disabilities (p. 6). A focus

on health and wellbeing could be a potential game-changer for a more sustainable and resilient future.

Large diasporic communities in the Global North and high rates of both voluntary and involuntary global migration will likely produce progressively heterogeneous societies (UNHCR, 2022). The future may increasingly emphasise transnational connections and values, challenging purely national ones. Moreover, the decolonisation of persisting colonial legacies will likely be a top priority. However, the aforementioned prevalence of increased nationalism, autocracy and populism may create tensions and conflict, and pose an exclusionary counter-trend to transnational development (Heritage et al., 2023, p. 30).

Implications for heritage

Among the implications of these anticipated changes for heritage, the literature frequently highlighted a possible skills gap. Specifically, there is a risk that traditional skills, knowledge and crafts may disappear with an ageing population that finds fewer young people who are willing or able to learn them (Arup, 2020; EMIS & CEIC, 2021).

> For the domain of cultural heritage this may imply that it will become more difficult to have access to (traditional) skills and knowledge needed in the preservation and conservation of cultural heritage and that it may become increasingly important to preserve certain skills and crafts, also as part of cultural heritage. (Koers et al., 2012, p. 9)

An ageing population may also result in greater numbers of elderly visitors to heritage sites. Additionally, the elderly may play a more active and participatory role in contributing to the meanings and social contexts of heritage, often on a voluntary basis. Heritage could also play a role in hindering the development of age-related diseases through, e.g., co-creative activities, and memory stimulation through objects and places:

> …both physical and digital environments will play a major role to stimulate memories in an active and affective way. It is possible that elderly people will be voluntary caretakers of many heritage sites, in which the act of collectively taking care of the physical environment within a social context contributes to lifelong learning and social cohesion. (Heritage et al., 2023)

However, an older population and associated health issues mandate that heritage be accessible and inclusive, as long-term health problems and

disabilities are one of the most common barriers to visiting heritage sites (Arup, 2020, p. 6).

In a future of migratory flows and large diasporic communities, heritage in the main may be considered less tangible, immutable, past-oriented and place-specific, instead moving towards the intangible, the changeable, the future-oriented and the transnational. Through this shift, heritage could serve as a resource to forge new meanings and attachments, and fortify bonds between communities (e.g., Shepherd et al., 2022). However, the role of heritage in strengthening place-based identities and senses of belonging will most likely continue to be of significance:

> The long term challenge for the heritage sector is how to manage and value heritage in a way that reflects the increasingly heterogeneous nature of society, and how to ensure that heritage protection agendas are properly reflective of that society. Some traditional identity-based indicators are shifting and will continue to shift with globalisation, technology change and increased migration. Place-based identity is particularly important, with place being inextricably linked with the notion of 'who we are'. (Arup, 2020, p. 21)

To proactively face a future of large-scale movements and diversity, 'cultural institutions need to be seen as spaces for cultural transmission, intercultural dialogue, learning, discussion and training' (European Commission, 2022c, p. 31).

2.1.4. The Digital Transformation

Overview

As the world continues to rapidly move towards increasing interconnection with, and development of, multiple digital systems and devices, the future will be marked by advancing technology and the intensification of digital activities. Technological developments in the last decade, which include powerful computers, cheaper and miniaturised solutions such as smartphones, massive optical communication and the Internet, have enabled this move into the 'Information Age.' Coupled with breakthroughs in areas such as robotics, 3-D printing, blockchain technologies, industrial data, advanced manufacturing, artificial intelligence (AI) such as ChatGPT, biotechnology and nanotechnology, wider society faces a considerable shift in daily life that will potentially catalyse deep cultural and social changes (Gunashekar et al., 2021). This may include our relationship to work and personal activities, access to knowledge, information spread and the way we interact in public and private spheres. Furthermore,

global responses to the Covid-19 pandemic have accelerated a forced expansion in the digitalisation of human interaction, e-commerce, online education and remote work (WEF, 2021).

Increasingly, many of these digital developments are also signalled as potential solutions within certain societal issues including inclusion, equity and ageing, with a greater emphasis on their role in combating the climate crisis and other elements of environmental degradation (Degli Esposti & Sierra, 2021). However, when poorly regulated and managed, the digital world also risks creating disruptions and tensions between industries, societies and nations. More recently, digital systems have become core to worldwide economies, built on the infrastructure and investment of private firms with licensing and regulation crucially created by governments. For example, prominent initiatives are seen in the USA and China, with the size of China's digital economy expected to rise from less than 15% of the GDP in 2007 to 50% by 2025. North America's digital transformation market figures are also continuously growing (Zambrini & Rius, 2021, p. 11). This trend will result in the digital being mobilised within political activism and a growing variety of platforms for political engagement. Technological innovation has therefore become the crucible of global competition; potential future paths range from healthy competition between powers under a broad framework of shared standards and breakthroughs, to a decoupled world where technological power is concentrated within blocs (Bradley et al., 2022, p. 20).

Europe is seen as underperforming on its digital potential, with a need to scale up to close the gap. Research will have to be a priority to accelerate digital transformation and AI innovation, as will the development of professional skills to foster and manage these technological advances. Horizon Europe, funded from 2021–27, highlights this as a priority in its next research and innovation framework programme (Zambrini & Rius, 2021, p. 12). Its strategic pillar on 'Global Challenges and European Industrial Competitiveness' aims to boost key technologies and solutions underpinning EU policies and the SDGs (Zambrini & Ruis, 2021).

Possible scenarios of development and counter-trends

One clearly signalled trend is a drastic acceleration in the development of AI with its subsequent impacts on society. Machines developed and run by AI are expected to provide streamlined access to data and information, autonomously

realise set objectives, collaborate with human users, and improve human behaviour and responses, making it a valuable tool in many facets of daily life and work (Heritage et al., 2023). AI will likely be adopted by all industries and transform the workforce by automating routine tasks, leading to general productivity gains while also driving massive innovation that will fuel job growth through a need for greater skill development. Automation in particular will change and challenge current labour market dynamics by destroying some routine jobs and creating other types of work in what is known as job polarisation (Degli Esposti & Sierra, 2021, p. 130). Also predicted is that the self-learning capabilities of AI through learning algorithms may cause a level of uncontrollable technological growth that could ultimately surpass human intelligence. As focus increasingly turns on combating a worsening climate crisis, interest is expected to grow in vast sources of AI technology to help find solutions, e.g., the extraction and application of knowledge about changing climate systems. The potential of the digital transition in this space has also been recognised by the Digital Europe programme; in 2020, it was awarded a budget of 8.2 billion euros to strengthen investments in supercomputing, artificial intelligence, cybersecurity, advanced digital skills and widespread use of digital capacity across economy and society (Zambrini & Rius, 2021, p. 13). The challenge is that today, AI's ecological footprint — including, e.g., the energy required to run servers — is already considerable (WEF, 2021, p. 66).

We are also likely to see more innovations in immersive reality and interactive experiences such as virtual reality (VR), augmented reality (AR), mixed reality (MR), haptics (tactile technology), audio augmentation, gamification and 3-D technology. These technologies will offer new ways to attract and engage users, e.g., in storytelling, and may eventually become ubiquitous in daily life (Springwise Intelligence Ltd, 2018).

> The emergence of new social phenomena linked to the digitally augmented reality where humans interact with intelligent systems has undeniable effects on how socio-cognitive rationality is built and collective action is taken. In fact, this hybrid space is creating a new environment where humankind will co-evolve with AI entities. (Degli Esposti & Sierra, 2021, p. 122)

Digital development will also provoke a change in how we generate knowledge, and the provision of vast sums and breadth of data. The notion of 'Big Data' sits within the concept of the Digital Revolution, with a look towards digital data collection, management and access with greater storage capacities,

enhanced search and data-mining methods, improved user mapping and AI-generated metadata.

> There is a wider range of data available in many formats, including audio, video, computer logs, purchase transactions, sensors, and social networking sites. This has created Big Data, which are large, often unstructured datasets that are available, potentially in real time. Concurrently, new data science techniques are constantly being developed, enabling valuable insights to be identified from this data. (Arup, 2020, 29)

The notion of 'Digital Democracy' may also be picked up as governments increasingly resort to digital platforms to expand citizens' democratic agency, and new forms of digital citizenship emerge. In parallel, there is an expected rise in digital grassroots initiatives (Zambrini & Rius, 2021, p. 148). These encompass a varied repertoire of initiatives where digital innovation not only works to solve problems that affect citizens, but to make spaces for the creation and empowerment of critical persons who are vigilant of the actions of public and private powers. Their value lies in their ability to improve public reasoning processes by creating counter-narratives, democratic spaces and new capabilities for reasoning and mobilisation. These initiatives also create better structural conditions for multi-dimensional human flourishing through the creation of more diversified, decentralised and democratic systems (Zambrini & Rius, 2021, pp. 164–163).

Countering these trends is when digital development risks raising inequality. The most critical short-term threat is the development of a 'digital underclass' (WEF 2021, p. 32). This may be caused by a slew of cultural, social, economic and political issues driving a form of digital inequality that will be perpetually caught in its own cycle unless sufficiently addressed.

> Digital inequality: Fractured and/or unequal access to critical digital networks and technology, between and within countries, as a result of unequal investment capabilities, lack of necessary skills in the workforce, insufficient purchase power, government restrictions and/or cultural differences. (WEF, 2021, p. 89)

This also points to a fundamental failure in technology governance, which currently lacks globally accepted frameworks, institutions or regulations. As a result, different states or groups of states will adopt incompatible digital infrastructure, protocols and/or standards that will further drive inequality (WEF, 2020). The absence of proper regulations also risks increasingly polarised populations finding themselves bombarded with misinformation. This, in turn, can increase the spread of falsehoods and conspiracy theories, and fuel so-called

post-truth politics where hate speech and deliberate manipulation of data is used in, e.g., election campaigns and political speeches. This rise in misinformation poses a fundamental long-term threat to advancing democracy (WEF, 2021, p. 33).

This is coupled with the inevitable rise in threats to cybersecurity. Cyberattacks are already increasing in number, in part fuelled by info-wars, with hackers rapidly developing and adopting effective methods to compromise digital operations and data, including ransomware, phishing/social engineering attacks, Internet of Things (IoT)-based attacks and distributed denial-of-service (DDoS) attacks. Meanwhile, premiums for data protection services are on the rise, suggesting that cybersecurity may be a costly endeavour for organisations.

> The digital nature of 4IR technologies makes them intrinsically vulnerable to cyberattacks that can take a multitude of forms — from data theft and ransomware to the overtaking of systems with potentially large-scale harmful consequences. (WEF, 2020, p. 62)

The dissemination of fake news and other exploitative applications of technology, such as privacy infringement and data selling, will be continually fuelled in part by the private sector's control over most new technologies and digital platforms, which follow profit-driven or surveillance-driven models (Heritage et al., 2023). Public authorities must recognise and protect digital identity as an inherent and unequivocal part of 'private property', with the ethics of the digital human remaining one of the greatest challenges of the 21st century. Without better policy development and regulation, we will increasingly face fundamental questions about the collection, ownership and analysis of data, as well as the nature of surveillance, privacy, accountability, anonymity and memory.

> The generation of digital assets has a strong dependence on technologies controlled by transnational corporation technologies that hold exclusive ownership and use rights over digital asset creation. Their position of dominance threatens present and future individual freedom, by bringing individual and collective liberties into private hands, regardless of democratic control and representation. (Zambrini & Rius, 2021, pp. 142–143)

Thus, most new technology and digital platforms are currently being developed by private firms, where a few large companies have dominance (Big Tech). Further, the data supporting technological advancements, e.g., in AI, are often held by private companies and seldom available in open source. This lack of transparency could increase already persistent 'digital inequalities'. So far,

policymakers have not adequately been able to address these ethical dimensions. A key future challenge lies in aligning the interests of the private sector with public values calling for transparency, privacy, community involvement, co-creation and accountability.

One possible scenario for the future finds technological development attending to greater inclusion and accessibility based on public values, in which marginalised and vulnerable groups are more integrated into technological development processes. This would reduce bias, increase diversity and promote access to technological advancement (WEF, 2021, p. 35). In tandem, concerning copyright and information access, there is a possible trajectory where the global ethics of sharing will be more emphasised within education and policy development, with respect maintained for copyright and authorship citation (Fernández, et al., 2016, p. 576). However, this scenario would require developing strong policies reducing the exploitative dimensions of new technology in favour of inclusion, accountability and accessibility (Heritage et al., 2023). Funding and building strong public digital infrastructure and spaces that are, e.g., open and controlled not by commercial entities but by their users, workers and maintainers, are needed (Keller, 2022*).

Implications for heritage

For years now, heritage has been responding to the impacts of increasing digitisation, as reflected in growing attention on the digital humanities and digital heritage. The digital humanities, multi- and cross-disciplinary in its engagement, present an opportunity to open heritage knowledge and values to new actors and new conversations, both inside and outside of the discipline. This could allow the sector to explore new forms of heritage and associated ways, and produce and validate knowledge that hybridises digital and physical heritage as contemporary culture itself progressively assumes digital or hybrid digital forms. We may also expect to see emerging forms of technology such as AI and VR considered cultural heritage in themselves.

The heritage sector may have a role in countering the spread of misinformation and fake news, by facilitating platforms of intergenerational knowledge exchange and transfer (Giliberto & Jackson, 2022, p. 20). This can preferably be achieved in collaboration with other organisations sharing the same goals, such as Wikipedia and Europeana (more details in Chapter 4). Further, the heritage

sector can contribute to providing strong public digital infrastructure through the work of museums, archives and libraries in making heritage widely accessible through digital platforms built upon transnational networks.

One clear question the sector faces is how to best conserve, preserve and present digital heritage in all its quantity and diversity, with solutions required for storage, digital format compatibility, data accessibility and ownership. Increasingly, institutions are creating digital repositories and pooling together digital collections and resources, accelerated by Covid-19 and further heightened by a sense of urgency around the climate crisis. While digital content management systems are advancing, they still fail to match the level and rate of improvement seen in heritage digitisation technologies such as 3-D technology, photogrammetry, laser scanning, AI, VR, etc. Therefore, a challenge emerges in how to curate and manage these large, semantically incoherent, innavigable collections of information. Robust, transparent frameworks and digital content strategies are needed to prioritise quality over quantity while centring user demand and experience will help minimise amounts of irretrievable content and ensure community representation.

> There is a need for a more strategic and coordinated approach to enable more connections and curated content to be available across multiple digitised collections, across sectors and to improve discoverability for audiences. This change would meet the expectations of audiences, scholars and the museums and archives workforce who expect digital content to be easy to navigate and open for them to enjoy, contribute to, participate in and share (Arup, 2020, p. 29).

Furthermore, as the heritage sector increases its proliferation and presentation of data, it faces the same global challenges to the integrity of digital data, institutional operations and IoT-based functions (e.g., environmental monitoring). This is particularly true in regions with fewer resources to prepare for and respond to these threats. Heritage institutions will need to develop procedures to resist attacks. Data protection may therefore become a key element of heritage management, and further integrated into digital preservation and archive management. Beyond additional investments in more robust cybersecurity systems, this also brings a critical need to ensure adequate staff training and upskilling in the necessary areas to avoid data loss and negligence. Problematically for heritage institutions already facing funding cuts, funding will likely become a significant factor in the ability to undertake these types of upskilling.

> Some of the most powerful applications of digital are far from intuitive, and teams may overlook the potential of technologies they do not understand. Not everyone has to become adept at data analytics or designing user interfaces, but decision makers should share a general understanding of what the major digital technologies are and what they can do. (AAM, 2021, p. 19)

Opportunity also clearly presents itself in how new technology could fundamentally alter and improve more inclusive and accessible means of managing heritage. For example, although AI and its exact impact on heritage require further research, it can potentially serve as a powerful tool in surveying heritage buildings/sites, generating heritage metadata, enhancing visitor experience and improving access to collections; it might also be used to preserve intangible heritage such as endangered languages. Notably, in face of the climate crisis, urban and built heritage can integrate 'smart building' technology to both make these spaces 'greener' and monitor preservation statuses, allowing the retention of key cultural spaces.

Also critical is the potential role of heritage in the development of AI to better serve society. The application of AI to cultural operations is known as AI for Culture, with the reverse being Culture for AI (Heritage et al., 2023). The heritage sector could feed social history and cultural context into AI training and learning systems, best defined through values, which in turn can help train cultural consciousness and bias recognition.

> Value alignment is another of the key requirements put forward for ethical/beneficial AI that requires an AI system to be aligned with our human values. Some of the technical challenges here are: How to formally define values? How to relate values to norms? How to develop a value-driven decision making process? (Degli Esposti & Sierra, 2021, p. 51)

Immersive technologies such as VR, AR and MR will likely see increasing use, most commonly in the museum sector to bring more dynamic and engaging forms of visitor experiences. Other applicable technologies include 3-D experiences, audio augmentation, gaming, holograms and avatars for immersive storytelling and education. A number of sites are also now generating virtual tours of heritage environments, and offering access to entirely digital museum collections; this can engage a larger audience traditionally unable to physically access heritage spaces for a number of reasons, and provide more incentives for digitally literate youth.

Climate impacts also demonstrate anxiety over the loss or irreparable damage to key heritage assets, both tangible and intangible. The ability to digitally store

and preserve at-risk heritage to allow for future — even if simply digital — access, demands greater attention and development. Robust frameworks must be in place to ensure heritage data is protected and fully accessible to relevant communities. In alignment, data collection and data ecosystems for heritage should enable communities the ability to create, curate and sustain their own heritage, particularly in regard to Indigenous and local knowledge systems with troubled histories regarding cultural collection and appropriation without proper protection. Open data and what that constitutes for various communities needs to be critically engaged with on a continuous basis.

2.2. Cross-Cutting Themes: Emerging value systems and responses

2.2.1. Changing and competing values

Overview

There is a trajectory towards a future in which people-centred approaches (Giliberto & Jackson, 2022, p. 20), polyvocality (Heritage et al., 2023), and the recognition and acknowledgement of different knowledge and value systems (Veldpaus et al., 2021, p. 207) are increasingly prioritised in the global arena and within policy development. These shifts will likely emphasise agendas for bottom-up engagement through participatory models and respect for different ways of being in and understanding the world, with a special urgency to include non-western and Indigenous knowledge systems (Rhisiart, 2018, p. 117; Giliberto & Jackson, 2022, p. 19). In tandem, there is an incentive towards decolonisation, where governments in countries with colonial pasts are expected to take important steps to acknowledge and be accountable for centuries of historical injustices towards marginalised and disadvantaged groups. Further, more actions may be taken to address the persistent and lingering effects of colonialism, through global cooperation and solidarity.

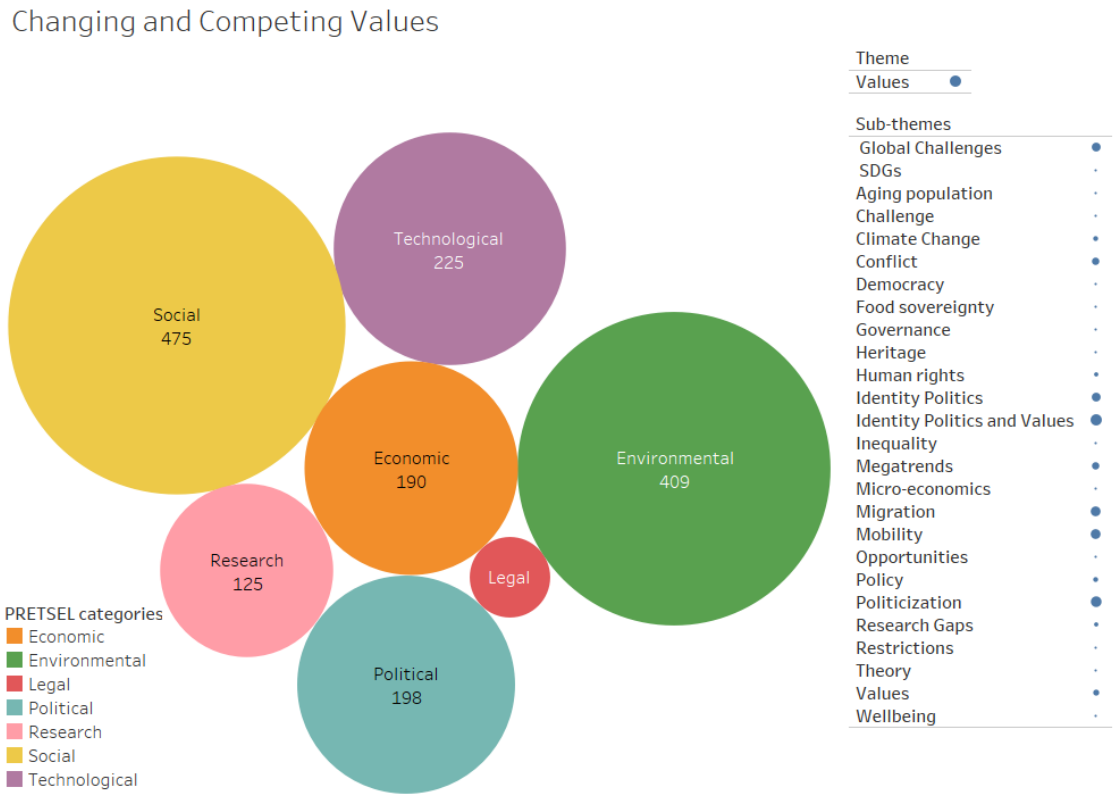

Figure 5 Distribution of text extracts and sub-themes under the theme 'Values' across the PRETSEL Categories.

Possible scenarios of development and counter-trends

The incentive towards decolonisation and global solidarity is expected to meet tensions and criticism in the political arena, including resistance from anticipated waves of nationalism, extremism and populism: 'In challenging the established hegemonic structures and narratives, and particularly in contexts of rising nationalism and populism, decolonial agendas will inevitably provoke a backlash, leading in some parts to repressive legislation, and even violent racist attacks' (Heritage et al., 2023). The rise of extremism and populism poses fundamental threats to social cohesion, participatory approaches and democracy itself.

While the world has always seen conflict, the implications of shifts in world dynamics, power relations, market economies and technological advances, etc., have led to changing values across societies. Also contributing to changing

values are population growth and migration, resulting in societies that are large and diverse. For example:

> Between 2010 and 2020, Europe witnessed a near doubling of the share of the popular vote taken by polarizing political parties. Citizens' protests are on the rise. Liberal democracy faces not only increasing internal tensions but also opposition from rising powers with alternative ideologies. (Bradley et al., 2022, p. 18)

Transnational movements resulting in large diasporic communities will likely place an emphasis on values and identities unbound to the nation-state that relate to global interconnections and hybrid identities (Kisić, 2021, p. 26). Senses of belonging may be experienced in plural, rather than singular, terms; belonging could be seen as dynamic and in movement, more than rooted to a static birthplace (e.g., Högberg, 2016*). In such a way, universalist and top-down agendas may be put under increasing scrutiny to make way for bottom-up approaches to plurality. This potential turn away from universalism may weaken the influence of international organisations in world politics unless they fully embrace polyvocal and inclusive approaches (Heritage et al., 2023).

The climate crisis will likely shape a persistently uncertain future where communities must adapt to and accept change, loss and transformation to a greater extent. Change itself may be prioritised as a value to increase resilience (Holtorf, 2018). Prioritising change requires an understanding of people's values: what they are willing to change and what they are not. Values are often implicit or unstated, but explicitly identifying values can improve adaptation. Even when not possible to preserve valued things or places, identifying those values helps to recognise loss and support grief (e.g., Mcnamara et al., 2018*; Tschakert et al., 2019*; Mach & Siders, 2021, p. 1191*; Shepherd et al., 2022, pp. 34–35).

Implications for heritage

These shifts in values provide many opportunities for the heritage sector to take initiative and act through grassroots initiatives and bottom-up approaches, which will be discussed more fully in Chapter 4. Importantly, this constitutes a fundamental move away from the 'official' perspectives to those of individuals:

> …opening up to multiple interpretations, memory institutions' role shifts from that of being 'guardian of collections' to 'ambassador of cultural values and significance'…The shift of focus from the official view to the perspectives of individuals as both actors and observers of history has generated a culture of participation that evolved beyond academic interest and institutional

> involvement through a proliferation of community-based endeavours. (Heritage et al., 2023)

However, in a future with increased polarisation and extremism, bottom-up initiatives will also be challenged, and heritage itself may sow further division along sectarian lines. Thus, heritage organisations will need to be transparent and open about how heritage and history have been, and continue to be, misused to justify racism, sexism, war and conflict, among other things:

> It is not that now is the moment when we should wipe the slate clean, and stand shoulder-to-shoulder to face the new challenge. Rather, it is the case that our only chance of standing shoulder-to-shoulder, is to work through the histories that have brought us to this. (Shepherd et al., 2022, p. 48)

This calls for the heritage sector to approach its inherent dissonances as a potential resource to work towards social justice and human rights, as it 'opens and enables new forms and kinds of identifications and pluralisations that could be grasped by concepts of dissensus, alliances, conflicts and multitudes' (Kisić, 2021, p. 26). Importantly, it will also pressure the heritage sector to value other forms of heritage beyond what is currently valorised:

> From a heritage perspective, the question of relevance is how do we mobilize the affective power of heritage in support of open, creative and inclusive futures. Arguably, this involves focusing on a different kind of heritage, less concerned with national sites and symbols. For example, this might include the heritage of human rights, the heritage of anti-racism… (Shepherd et al., 2022, p. 47)

2.2.2. Sustainability

Overview

Sustainability, as a cross-cutting theme, points to its relevance and applicability across existing conditions and trends. In its broadest sense, it refers to the capacity for a process, service or resource to sustain itself — as in, be maintained or supported over time. From a social perspective, the concept of time relates to some form of 'legacy' for 'future generations'. The Brundtland (1987*) Report's influence on later definitions of sustainability means that today it is strongly coupled with the concept of sustainable development, understood as 'meeting the needs of the present without compromising the ability of future generations to meet their own needs' (para. 3.27). That said, it is worth highlighting that sustainability is not simply a form of environmentalism, but rather can be seen as

a movement of intergenerational ethics and activism concerned with the equity, equality, rights and wellbeing of humans, as well as nature itself.

Here, we focus largely on social sustainability as part of a holistic approach to reconciling many existing and emerging global challenges and crises. According to the Oxford Institute for Sustainable Development (Colantonio & Dixon, 2009*), social sustainability:

> …concerns how individuals, communities and societies live with each other and set out to achieve the objectives of development models which they have chosen for themselves, also taking into account the physical boundaries of their places and planet earth as a whole…social sustainability blends traditional social policy areas and principles, such as equity and health, with emerging issues concerning participation, needs, social capital, the economy, the environment, and more recently, with the notions of happiness, wellbeing and quality of life. (p. 4)

While little reference was made within the literature review to sustainability or social sustainability per se, clear trends related to inequality, inequity, vulnerability, participation in decision-making processes, and education and/or capacity building were evident (e.g., see EMIS & CEIC, 2021; European Commission, 2022c; Moyano Estrada & García Azcárate, 2021; Bradley et al., 2022). Notable was a call to 'build capacity through training, upskilling and imparting expertise in new knowledge and technologists while revitalising traditional, forgotten skills' (European Commission, 2022c, p. 7).

Possible scenarios of development and counter-trends

There are strong links between advancing equality and equity, and empowering people to support themselves. The consequential successes or failures of empowering communities are further entangled with existing pressures on democracy, responsible citizenship and associated value systems. As the aforementioned megatrends become ever more visible and salient, their consequences reflect the long build-up of tensions and frustrations for many who are not reaping the opportunities afforded to the few.

> [There is] a growing sense that the economic benefits of the era were not being equitably shared…with the risk of corrosive economic and social consequences. For the first time in recent Western history, the assumption that each generation would be better off than the previous generation faltered. Moreover, within advanced economies, wealth and income inequality has risen… [These trends] have sown societal discord in the West, undermining the social contract and

> powering the rise of polarized politics and non-mainstream electoral success (Bradley et al., 2022, p. 12)

These realities are set against the previously discussed setting of mounting tensions between people and institutions (Bradley et al., 2022, p. 18). Should global and local institutions fail to respond and adapt to the strains and fractures of society through equitable distribution of resources and services, it could be difficult to restore social cohesion or to enable a meaningful transformation towards a just and cooperative world. As stated by the WEF (2022):

> Supply chain disruptions, inflation, debt, labour market gaps, protectionism and educational disparities are moving the world economy into choppy waters that both rapidly and slowly recovering countries alike will need to navigate to restore social cohesion, boost employment and thrive. These difficulties are impeding the visibility of emerging challenges…Restoring trust and fostering cooperation within and between countries will be crucial to addressing these challenges and preventing the world from drifting further apart. (p. 5)

'Social cohesion erosion', 'livelihood crises' and 'mental health deterioration' are societal risks increasingly understood as a threat to future pathways (WEF, 2022, p. 7). If equity and equality continue to be ignored, the ongoing 'global divergence will create tensions — within and across borders — that risk worsening the pandemic's cascading impacts and complicating the coordination needed to tackle common challenges including strengthening climate action, enhancing digital safety, restoring livelihoods and societal cohesion and managing competition in space' (WEF, 2022, p. 7). Growing societal fragmentation may easily have geopolitical, economic, environmental and technological impacts if poorly managed, particularly on global youth who are already facing enormous pressures:

> Young adults worldwide are experiencing their second major global crisis in a decade. Already exposed to environmental degradation, the consequences of the financial crisis, rising inequality, and disruption from industrial transformation, this generation faces serious challenges to their education, economic prospects and mental health. (WEF, 2021, p. 8)

Possible scenarios are largely dependent on increasing current and future investments towards the preparedness for many challenges and disasters outlined here (e.g., dire economic and environmental consequences), so as to meaningfully enhance existing infrastructure and systems.

Implications for heritage

The erosion of social cohesion and fracturing of social networks will probably have significant negative impacts on socioeconomic stability and global geopolitical powers. In addition, persistent and real 'public anger, distrust, divisiveness, lack of empathy, marginalisation of minorities, political polarisation' (WEF, 2021, p. 88) and so forth can have huge implications for the relevance and existence of public infrastructure and services, and global social structures.

High levels of uncertainty across all areas of life will impact culture and heritage, as well as their role as either an enabler or disabler of social connectedness. Increasingly, for example, cultural and heritage organisations are grappling with questions of inclusivity and legacies of exclusion. To remain relevant, they will need to provide a larger civic service by creating spaces for meaningful practices promoting inclusivity; intergenerational and cross-cultural dialogue; and enhancing exposure to diverse voices and knowledge systems, promoting lifelong learning. This will be particularly relevant should we see exacerbated inequalities in race, gender, sexuality and class. Further manifestations could play out in both education and work.

Culture and heritage can also facilitate ways of thinking about future scenarios, through the creative industries and alternative visualisations of change, equity, equality and sustainability. 'Rising inequalities among various groupings (race, gender, sexuality, class) and multidimensional poverty (wealth, health, education, employment, attainment) will further reduce disadvantaged peoples' rights of access to culture and heritage' (Heritage et al, 2023, p. 16), and so the sector will need to proactively develop ways in which diverse actors can access culture and heritage. Access here also means accessing diverse ways of being and creating knowledge, rather than just a matter of heritage being physically or digitally accessible. Section 4.1.1 further discusses the contributions of heritage to human rights-based approaches.

2.2.3. Wellbeing

Overview

Of the resources studied, 18 highlight wellbeing as an avenue to shape more desirable futures, through embedding it in future policy and strategy. These indicate a growing emphasis in diverse policy areas on evidencing and

promoting societal benefits framed in terms of wellbeing, or in dimensions closely associated with wellbeing, such as mental health and happiness. It is noteworthy that wellbeing as a theme cuts across all STEEP categories (see Figure 2.2) — as such, in the future it could increasingly be seen as a unifying goal across sectors.

Wellbeing is widely expressed as a goal of nations, appearing in no fewer than 223 national constitutions and acts of 139 countries. It also appears in the *Charter of the United Nations* (1945), the *Universal Declaration of Human Rights* (1948) and in 15 UN human rights declarations, conventions and resolutions dating 1948–2010; within the UN Agenda 2030; and in key documents affiliated to UNESCO Conventions, such as the *Operational Guidelines for the Implementation of the World Heritage Convention* (2021), the *Operational Directives for the implementation of the Convention for the Safeguarding of the Intangible Heritage* (2022), the *Operational Principles and Modalities for Safeguarding Intangible Cultural Heritage in Emergencies* (2022) and the *Operational Guidelines to the Convention for the Protection and Promotion of the Diversity of Cultural Expressions* (2015)[4]. It is also highlighted within the European Green Deal, which aims '…to put sustainability and the well-being of citizens at the centre of economic policy, and the sustainable development goals at the heart of the EU's policymaking and action.' (European Commission 2019).

The concept of wellbeing has deep philosophical roots. In western traditions, it can be traced through enlightenment thinkers such as Hobbes, Locke, Rousseau, Bentham and Mill, to the ancient Greeks including Aristotle, who declared the achievement of 'eudaimonia' (today broadly translated as happiness, or wellbeing) to be the meaning and purpose of life[5]. Considerations regarding the delivery of wellbeing as a goal of economic development have in some ways come full circle in recent years: during the 19th century the mainstream position within economic thought was on the maximisation of overall happiness, in line with Adam Smith's (1759*) *Theory of Moral Sentiments*. However, in the 20th century, maximising economic growth — ultimately expressed through GDP — replaced this as the central objective, with issues of redistribution and wellbeing

[4] Data collected by Ambre Tissot for PhD research, 6 February 2023. Sources: HeinOnline, World Constitutions Illustrated; United Nations Treaty Collection.*

[5] In Aristotelian thought, the concept of eudaimonia relates to the ultimate perfection of our natures, achieved through virtuous acts. Thus, eudaimonia has a broader meaning than our modern concept of happiness as an emotional state, but rather reflects a deeper sense of contentment achieved through living a life of meaning.

viewed as separate from the concern of economists (Frijters & Krekel, 2021, p. 12*). Since the 1990s, a counter-trend has emerged, led by thinkers such as Amartya Sen, Joseph Stiglitz, Thomas Picketty, Jeffrey Sachs, Ha-Joon Chang and many others, to once again establish wellbeing as the central goal of economic development. Sen, in his seminal work *Development as Freedom* (1999*), notably described this in terms of 'the expansion of the "capabilities" of persons to lead the kinds of lives they value — and have reason to value' (p. 18). Crucially within Sen's 'capabilities approach' a person's wellbeing is determined by having choice as to what matters to them, and access to an enabling environment through which they can achieve their potential (Dalziel et al., 2018, p. 13*). Hence wellbeing economics seeks to:

> …improve individual and social wellbeing rather than prioritising economic growth, as is reducing inequalities of income, wealth and power. This is arguably a return to the philosophical roots of economics rather than a complete paradigm shift. (Heritage et al., 2023)

In recent years, wellbeing as a term is becoming more commonplace within general public discourse[6]. In turn, it is also increasingly emphasised by governments and local authorities not just as a far-off vision, but as an actual basis for framing policy in diverse areas such as health, environment, culture and economy. That said, in these spheres, the use of wellbeing for framing policy is still largely an emerging practice, and critical uncertainties remain regarding how this trend may evolve in the future. It is also important to note that while increasing numbers of nations are adopting national wellbeing frameworks to monitor progress, a unified definition of wellbeing and a framework of its recognised dimensions is lacking (Heritage et al., 2023; Lodovici et al., 2022).

Within the literature reviewed, distinct trends emerge regarding wellbeing in relation to policy, practice and research. This is seen by greater emphasis on wellbeing in health, social, environmental and economic policies (Olmos Aranda & Venegas Calerón, 2021; Delgado & Moros, 2021; Gunashekar et al., 2021; European Commission, 2022a; Fernández et al., 2016); the promotion of wellbeing through arts and culture projects, and cultural institutions (European

[6] References to wellbeing within English-language books increased more than threefold between 2000 and 2019, and have likely further grown following the Covid-19 pandemic (see Google Ngramm: https://books.google.com/ngrams/graph?content=wellbeing&year_start=2000&year_end=2019&corpus=en-2019&smoothing=3).

Commission, 2022b; Stegmeijer & Veldpaus, 2021; Arup, 2020); and growing research evidencing linkages between heritage and wellbeing (Heritage et al., 2023; Lodovici et al., 2022; Arup, 2020).

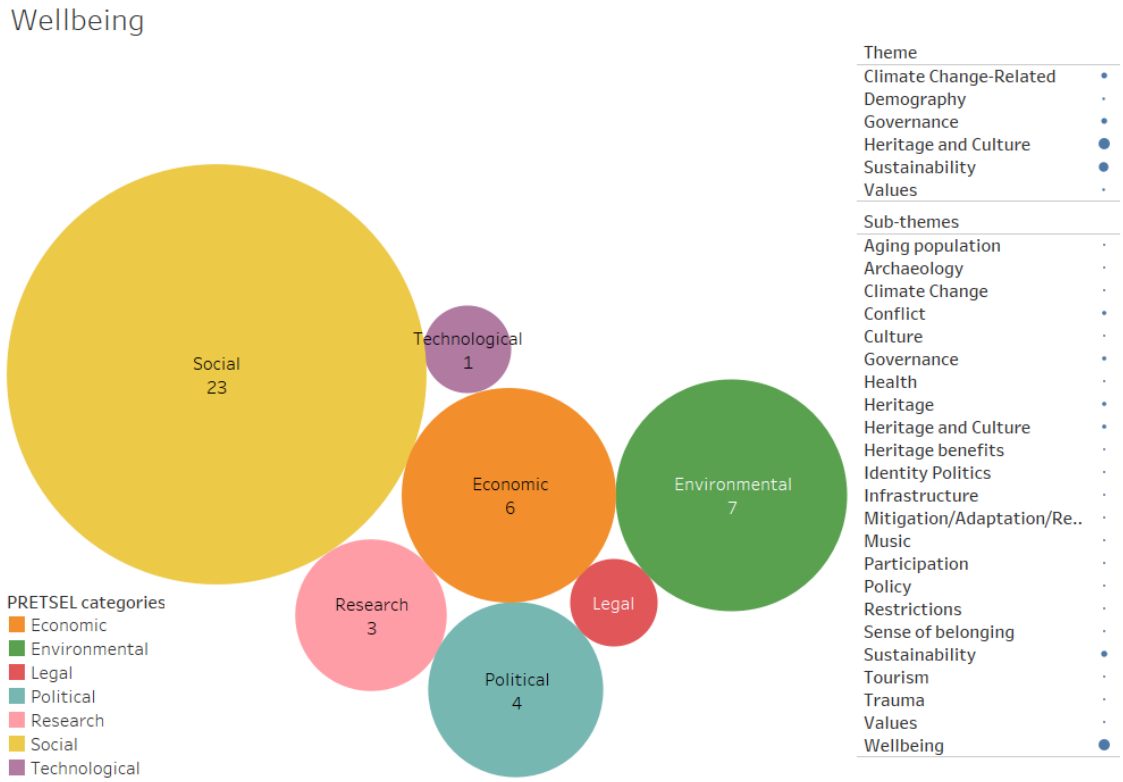

Figure 6 Distribution of text extracts under the sub-theme 'Wellbeing' across the PRETSEL categories.

Possible scenarios of development and counter-trends

The growth of wellbeing as a central theme of diverse policy areas may continue as climate change and growing disillusionment with the inequalities produced by free-market economics fuel increased public demands for governments to prioritise welfare and sustainability. Possible counter-trends to this may emerge, fuelled by tightening economic conditions, deregulation, political instability and the erosion of democracy. However, the possible reversal of development gains made over the last century may in turn stimulate greater academic and political consensus around the need for economies of wellbeing as a critical component

of good governance. More than this, it will take a fundamental shift in policy thinking and practice:

> …getting used to thinking more in wellbeing terms will take time and is a matter of evolution. It will require more training of analysts and policymakers in the basic lessons, data, and methodology of wellbeing. It will involve trial and error with methods and with the various ways in which knowledge can be generated and retained. It will need more research and preferably a gradual move towards a more experimental, self-learning bureaucracy. (Frijters & Krekel, 2021, p. 415*)

Already in the area of health, a greater focus on wellbeing is coming to the fore as part of a broader approach that looks beyond the treatment of disease. In the future, as failing healthcare systems struggle to cope with the needs of ageing populations, for reasons of both efficacy and cost a shift may take place towards medical pluralism, by which academic medicine is increasingly supplemented through other sectors such as culture to promote healthy lives (Delgado & Moros, 2021). This is particularly relevant as poor diets, lifestyles and antibiotic overuse may compromise the health of future elderly populations, such that while people may live longer, they may do so in increasingly poor health. To combat this trend, healthcare systems may orient towards preventive medicine in which individuals' cultural and social capital are seen as central active resources for maintaining health (Delgado & Moros, 2021, p. 214). This may also be coupled with increasing recognition and openness to the potential for diverse cultural health practices to contribute to future academic medical research, and a wider role for cultural heritage within this (Delgado & Moros, 2021, p. 214). Similarly, with regard to the environment, there is evidence of a greater linking of environmental health and wellbeing (Begoña García & Jordano, 2021, p. 92), and recognition of the cultural dimensions within this.

Implications for heritage

In the future, a growing emphasis on the delivery of societal wellbeing as an outcome of heritage operations is likely within cultural policy and strategy, as well as greater use of heritage within other policy areas such as health and the environment. While wellbeing lacks an internationally recognised definition and associated suite of indicators, in terms of heritage certain key areas of contribution are recurrently cited:

- target groups: ageing populations; the young; marginalised communities

- key dimensions: mental health (depression, autism, dementia); social inclusion; trust

Wellbeing at present is typically most closely related with health, in particular mental health:

> With an estimated 2 million adults projected to suffer from mental health issues [in England] by 2030, there have been several recent studies examining the positive contribution the historic environment can make to improving health and wellbeing. An Inquiry by the All-Party Parliamentary Group on Arts, Health and Wellbeing found that cultural engagement reduces work-related stress and leads to longer, happier lives. (Arup, 2020, p. 6)

Indications for a growing role for culture and cultural heritage in public health are given by the increasing use of heritage within social prescribing schemes (Historic England, 2021*). The experience of the COVID-19 pandemic also dramatically highlighted the importance of social cohesion and culture to facilitate public health measures, through engendering a sense of shared social responsibility and care for others.

Yet, a more holistic understanding and use of wellbeing as a concept are growing. Recent work by the ESPON HERIWELL project has endeavoured to establish a conceptual framework for examining the linkages between heritage and wellbeing, in which societal wellbeing is defined in terms of three dimensions: '…quality of life, focusing on the personal, individual sphere of life; societal cohesion, focusing on a more collective dimension; and material conditions, focusing on the economic dimension at the individual and community levels' (Lodovici et al., 2022).

Thus, heritage will likely be linked to greater dimensions of wellbeing, driven in part by increasing interest from within the heritage sector, and from other sectors. Notably, within the resources studied concerning policy areas outside heritage, references to wellbeing also highlight its cultural dimensions — hence indicating the potential for greater cross-sectoral collaboration.

Trends towards greater political, economic and social instability may see heritage increasingly instrumentalised for peace and social cohesion, particularly at the European level:

> At a time when the EU is facing pressing challenges — including armed conflicts and humanitarian crises in neighbouring regions, migration, threats to democracy and to the EU legal framework and integrity (including Brexit),

> terrorism, populism and economic difficulties — cultural heritage should continue to serve as an anchor for peace and a vector for well-being and development. (Fiorentini et al., 2021, p. 107)

Shifts in diverse policy areas towards wellbeing may be advantageous for heritage, in emphasising policy goals more aligned with the essential nature of heritage benefits. Nevertheless, the effects of global economic shocks — such as those of the Covid-19 pandemic, fuel price and interest rate rises — coupled with climate change impacts will likely result in a contraction of public budgets in the future, and with this, funding for heritage:

> Culture is often the first department or sector to suffer from funding cuts, since it is often regarded as a non-critical sector…The sector generates significant income for the economy and has an important role in the health and wellbeing of citizens. Importantly, the sector needs to continue to raise awareness of this significant role and be resilient and 'bounce back' rapidly to shocks and stresses. (Arup, 2020, p. 12)

A deepening cost-of-living crisis may also result in a lack of public support for heritage investment, which may be seen as a luxury. As public and political demand mount to broaden access to often-exclusionary heritage benefits, future heritage investment will be predicated on evidencing its societal wellbeing impacts. Greater transparency concerning who benefits and how may constitute an essential responsibility towards public accountability (Heritage et al., 2023). This may produce a paradigm shift in heritage management towards evidencing and promoting wellbeing:

> …what we choose to measure matters as it drives policy focus and actions. Thus, the more efforts are made to evidence and use heritage as a source of wellbeing and sustainable development, the more it will be so. (Heritage et al., 2023)

3. Building Resilience through Heritage

This chapter outlines identified possible opportunities of action through which heritage could help shape responses to the emerging megatrends and cross-cutting themes discussed above, to drive more positive futures. This chapter takes an inductive approach that connects the megatrends presented above beyond just Foresight to wider discussions within the field of cultural heritage. Thus, references to other sources than those included in the literature review will be made, when relevant. The chapter is structured around the following themes: Addressing inequalities, Reducing societal tensions, Centring sustainability and wellbeing, Reimagining learning, Evidencing impact and Using anticipation.

3.1. Addressing inequalities

3.1.1. Human rights-based approaches

Cultural heritage has always been strongly linked to issues and concerns related to justice and equity. With rising inequalities fundamentally challenging basic human rights — such as the rights to dignity, fairness, equality, respect and independence — continuous efforts will be needed to identify and promote practices contesting the suppression of voices and rights of marginalised groups. This includes unjust, discriminatory treatments of diverse cultures, heritage and knowledge systems, and the ways in which these intersect with other global challenges such as the climate crisis and ongoing patterns of inequity via colonialism, gender inequality, LGBTQIA+ suppression and industrialisation (Shepherd et al., 2022).

Those involved in culture and heritage can bring essential insights and types of toolkits that can better explain, explore and address historic inequalities and injustices. Particularly critical is acknowledging where heritage itself is culpable of perpetuating pre-existing inequalities. One such way that heritage can and must contribute is through a transition towards a human rights-based approach or people-centred approach, which emphasise pluriversality and decolonial practices. This focus in turn could provide ways to recognise and include under-

represented perspectives, acknowledge and address historic and systemic injustices, and build trust and pathways of recognition for marginalised groups.

Essentially, it is critical to privilege local, Indigenous, marginalised and/or non-western voices, knowledge, values and practices through grassroots community-based actions. Such initiatives that prioritise partnerships and co-created solutions across all community levels are needed to build community resilience and meaningful cooperation, whether at a local, national, regional or international level. Placing the fulfilment of human rights front and centre within heritage conservation goals is essential, as fulfilling cultural rights helps realise other rights and needs.

However, barriers to inclusion from meaningful involvement by diverse actors include rigid participation structures, inaccessible funding programmes, inflexible policy cycles and timeframes, and lack of awareness and training. Efforts to diversify representation must include active awareness of these barriers in order to dismantle them. Limited mechanisms and competencies across government departments also create obstacles that prevent local communities from accessing and communicating with upper levels of government (Morel et al., 2022). Failure to centre solutions around an acknowledgement of these challenges also risks further marginalising communities and hastening vulnerabilities. Concepts of heritage collection, conservation, management, interpretation and governance will need to be revisited to correct dominant frameworks and elitist attitudes; only then can alternative perspectives that emphasise co-development and co-creation be fairly incorporated — a step above mere simple integration. Fundamental and significant systemic change will be needed in policies, practices, and education and staff recruitment (Heritage et al., 2023; Rees, 2017*).

3.1.2. Acknowledging and recognising different knowledge systems

Fundamental to a human rights-based approach is thus a greater recognition of diverse knowledge systems. The collaborative co-design, co-production and equitable sharing of intelligence, skills and practices across knowledge systems by the communities of research, practice and policy can both better inform initiatives for future challenges and further develop resilience to absorb suspected future system shocks (Orlove et al., 2022; Morel et al., 2022).

Heritage, therefore, plays a crucial role in helping develop, refine and implement guidelines that ensure ethical, collaborative engagement across diverse knowledge systems, not only for heritage organisations but across sectors. These guidelines could help avoid problematic approaches that treat traditional and Indigenous knowledge systems — including key cultural narratives — as static, monolithic instruments of singular use, or that disengage such systems from their original contexts (Levac et al., 2018*). International organisations such as UNESCO, ICOMOS, IUCN and ICCROM can help platform and recognise the need for a wider diversity of knowledge and perspectives. However, concerted efforts are needed to critically review existing approaches and how they consider various issues — such as free, prior and informed consent; intellectual property rights; tenure rights; recognition of customary norms and law; acknowledgement of Indigenous sovereignty (Morel et al., 2022) — as is continuous development to address emerging issues effectively and inclusively.

Greater inclusion of Indigenous and local knowledge systems will likely require organisational capacity building at local, regional and national levels. Open lines of communication between Indigenous Peoples and local communities will be needed between research organisations, public bodies and institutions responsible for decision-making and policy development. Potential challenges include insufficient capacity and expertise to ensure support for these co-productive initiatives in ways that do not disadvantage communities; this also demands funding as a necessary element of community resilience. Nevertheless, heritage bodies have an opportunity to offer critical platforms for helping pursue these requirements and communicate their importance.

3.1.3. Empowering communities and flattening hierarchies

Participatory heritage research and practice can empower stakeholders such as local communities and Indigenous Peoples, as heritage work helps us understand the past and the diverse interpretations, values, frameworks and management systems that exist across today's communities. Heritage, here, has been credited for its capacity to address long-standing issues of injustices. Much of this drive from the sector was in itself a reaction to discriminatory, dismissive and racist research and practice carried out by 19th- and 20th-century historians, archaeologists, and cultural and/or heritage organisations. In an effort to leave

behind this legacy, archaeology and heritage studies have increasingly focused on the ethical implications of the past, including questions of ownership of, e.g., one's past, the narrative, its interpretation and representation, the values associated with it, and of course material culture. In this shift, archaeology and heritage researchers and practitioners have gained valuable skills, knowledge and methodologies that recognise that 'communities have rights to their heritage and are owed something in return for scholarly, governmental, and corporate exploitation of their patrimony' and their ways of living (Gould, 2018, p. 3*). The sector has spearheaded this area, and can thus contribute significantly to other sectors such as global environmentalism, development studies and public policy work by ensuring the promotion of cultural pluralism and inclusion.

This includes its contribution to empowering communities and flattening hierarchies through recognising culture and heritage as central dimensions to policy and practice. Culture is now understood as the 'fourth pillar' to sustainable development, an idea promoted since the 1995 Our Creative Diversity Report of the World Commission on Culture and Development (WCCD, 1995*), and has since been advocated as critical to embed in all public policy. Yet, the culture and heritage dimension to sustainable development is yet to be fully realised, at least in practice.

There is 'increasing awareness that the protection and promotion of cultural diversity are vital to universal human rights, fundamental freedoms along with securing ecological and genetic diversity' (Nurse, 2006, p. 33*). With the recognition of diverse knowledge systems, and the need to embed human rights-based approaches into heritage research and practice far from complete, much more work needs to be done in terms of ensuring all cultures are equal:

> [In] sustainable development discourse western science is viewed either as the cause or the solution to the problem…[while] particularly non-western knowledge is either seen as 'backward' and problematic or romanticized as 'sacred wisdom' and therefore valued for its future value. So that when we speak of the promotion of cultural identities, cultural pluralism, cultural industries and geocultures as key elements of the fourth pillar of sustainable development it refers to a need to redress the global imbalance in the cultural arena. (Nurse, 2006, p. 36*)

Whilst it is important to continue to engage in critical studies in relation to heritage, there are pathways in which heritage research and practice can provide the necessary approaches and tools to work across industries, sectors,

groups, organisations and communities in a way that respects diverse actors and recognises diverse values. It has the potential to bridge the sciences with the arts, humanities and social sciences in a meaningful way through co-creation and providing a people-centred approach to all stages of the process whether that be research, practice and policy.

3.2. Reducing societal tensions

3.2.1. Acknowledging dissonance and embracing change

In order to proactively face increased diversity, transnational movement and climate disasters, it will be instrumental for the heritage sector to acknowledge dissonance (Stegmeijer & Veldpaus, 2021) and embrace change (Holtorf, 2018*). Acknowledging the dissonance intrinsic to heritage means recognising that even heritage deemed 'neutral' or 'safe' can be embedded with latent conflicts, silenced voices and epistemic injustices that need to be recognised and addressed. In addition, heritage dissonance need not be seen in itself as a problem, but rather as an opportunity to activate heritage to correct urgent societal concerns. This demands scrutiny of heritage practices and the assumptions that underpin them, to open up the heritage sector to a greater understanding of different experiences:

> Acknowledging dissonance can help question the often strictly policed heritage narratives, practices and place delineations that are followed in heritage planning, and their rootedness in discourses of ethnicity, nation, centre–periphery, class divisions, gender relations and migrations, among others… [to] enable us to notice, learn from and deal with the different ways of being, using, remembering, feeling and responding to and in place. (Veldpaus et al., 2021, p. 206)

Embracing change in the heritage sector refers to approaching change in cultural heritage as inevitable, and even as a means to increase community resilience. Just as with dissonance, the heritage sector may need to reevaluate its approach to the change and transformation of heritage, seeing it as a potentially positive value rather than solely as a negative one (DeSilvey, 2017*; Harrison et al., 2020*; Tonejc, 2022, p. 154):

> The question is not whether some [heritage] is gone, together with the times that are gone, but how much of it has developed and adapted to new realities. Cultural heritage is significant in society because it promotes cultural resilience

> — precisely through the way, often highly evident, in which it has been able to adapt and develop in the past. (Holtorf, 2018*)

In embracing change, it is possible that intangible heritage will play a more significant role due to its mutability. Shepherd et al. (2022) discuss how some have highlighted

> …the resiliency benefits for displaced persons of their 'intangible heritage' — songs, ritual, and forms of sociality that would previously have been practiced in lost place-based 'tangible heritage' of homes, neighborhoods, and landscapes. The 'ephemerality' and 'flexibility' of this intangible heritage…means that it can help forge new meanings and community, in and with new host communities. (Shepherd et al., 2022, p. 20)

In sum, there is an imperative to give greater recognition of the value of heritage for people to absorb, adapt to and accept transformation and loss, which will in turn build resilience. Acknowledging dissonance and embracing change requires a reevaluation of heritage values and practices, and subsequent shifts in priorities and resources so that these values can fulfil their potential.

3.2.2. Strengthening social cohesion through good governance

Arguably, in terms of achieving the UN Agenda 2030, Goal 17 is the most critical. It focuses on partnerships — which can be facilitated by better understandings of legacies, communities, historical allegiances and tensions — all of which heritage research and practice can contribute to. The SDGs, themselves

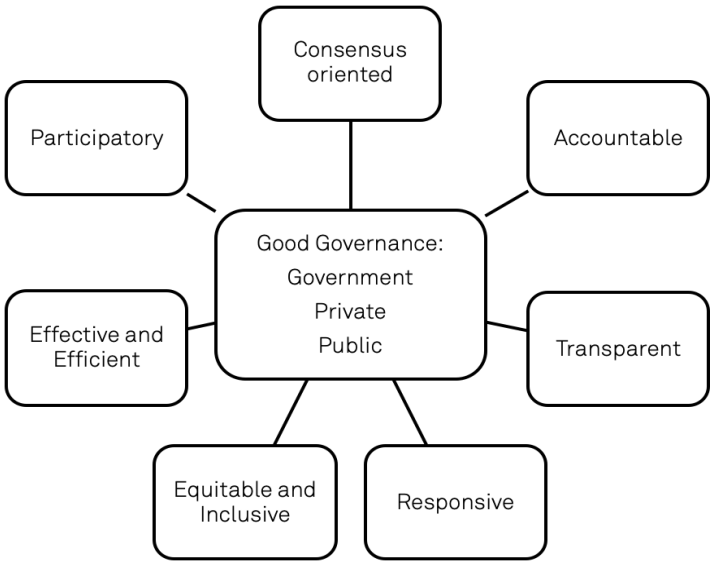

Figure 7 Characteristics of good governance, after UNESCAP, 2009

developed through partnership and successful collaborative governance, champion this idea of collaborative governance as the means for implementing all goals and targets. Without strong, inclusive and integrated partnerships at all levels, the document highlighting global challenges, and mechanisms to address these, simply falls apart.

Governance is a management mechanism and system that approaches policy integration through partnerships, whether that be across sectors, industries or organisations. Strong governance is needed any time a group of people come together to accomplish an end goal. Participatory methodologies used in heritage research and practice, including awareness of the need to practise inclusive, people-centred approaches, can act as an enabler to good governance. Interpretations of what it comprises rest on three dimensions: authority, decision-making and accountability. Each of these dimensions relates to power and power dynamics, well-understood work associated with heritage and of particular relevance to heritage/land/water management concerns. These dimensions have a strong role in determining who has power, who makes decisions, how other players make their voices heard and how accountability is rendered. In this way, governance can be understood as the overall process of both integrating and managing wider society. Similarly, heritage research, practice and policy can be understood as processes for enhancing the inclusion and recognition of diverse systems and values. Understanding the intersections between good governance and approaches to heritage is invaluable for tackling global challenges more efficiently.

That said, good governance within democratic societies can be understood as convening a wider plurality of voices, or stakeholders, to decision- and policy-making processes. It drives a culture of participation in accessible, creative and innovative ways. This was also noted as a key challenge in Moyano Estrada and García Azcárate's (2021) report on sustainable global societies:

> Challenge I: 'Democracy, governance, and participation in scenarios of social and political plurality.' Addresses the involvement of civil society in decision-making processes, analyzing the new forms of participation that emerge in modern democracies (referendums of popular initiative, participatory budgets, telematic administration...) and that give rise to new forms of governance. (p. 100)

The heritage sector, in its scrutiny of the past, is suited to better understand opportunities and barriers related to community engagement, community

empowerment and practices that explore new forms of participation and recognition across knowledge systems. Often, existing signs of social erosion or fragmentation are associated with historical processes (e.g., industrialisation, globalisation, colonisation): these signs can be better addressed through embedding heritage research and practice into wider socio-economic considerations. The heritage sector needs to better understand the interventions at which uses of heritage are appropriate when thinking about good governance, with a particular focus on social sustainability.

3.2.3. Facilitating platforms for connecting and listening

In line with building social cohesion through good governance, the heritage sector must work more actively through grassroots initiatives and bottom-up approaches to strengthen a sense of local ownership. This work should aim to enable communities themselves to instigate positive transformative change on a local level. Here, the heritage sector can play a key role as facilitators of intergenerational and intersectoral knowledge transfer (Giliberto & Jackson, 2022, p. 20). Here, the heritage sector would benefit from collaborating with other organisations sharing common goals, such as Wikipedia, Europeana, Internet Archive and Creative Commons. It is vital that these initiatives are firmly based on human rights-based approaches, as highlighted above, applying heritage towards greater social justice and gender equality.

As facilitators, the heritage sector can create vital platforms to connect people and communities, centring listening to understand stories and perspectives (Heritage et al., 2023). By so doing, the heritage sector can work towards flattening established hierarchies between 'experts' and 'non-experts', providing spaces for different forms of knowledge and expertise to be recognised and included in decision-making:

> Rather than primarily focusing upon collecting and caring for objects and places, heritage actors and institutions can serve a more meaningful role in society as community advocates by facilitating platforms of connecting and listening…These initiatives would aim to facilitate active, free and meaningful engagements with the aim to enable communities themselves to instigate transformative change. (Heritage et al., 2023)

Collecting and caring for heritage can help in the very processes of facilitating platforms for connecting and listening. However, this would demand a shift in perspectives. Rather than orienting towards end results and final outcomes, focus

must pivot towards socially meaningful processes of collaborative engagement in heritage through participatory models (Rhisiart, 2018, p. 117). Further, any kind of agenda and goal of such engagements need to be carefully and jointly developed with the communities involved:

> …collecting is a social process and not a mere physical accumulation of objects. Through knowledge exchange competencies and skills are developed. The very process of collecting has the potential to make communities more cohesive by fostering intergenerational communication and activating a reflexive relationship with the local environment. (Rindzevičiūtė, 2022, p. 17)

In sum, the heritage sector needs to reorient itself towards becoming facilitators of connecting and listening. This work must be approached from the bottom up and through the inclusivity of different forms of knowledge, values and expertise.

3.3. Centring sustainability and wellbeing

3.3.1. Enhancing holistic thinking regarding nature and culture

Indigenous and certain local communities have long understood nature as cultural, with long histories of environmental and social justice movements that sought to redress the legacies of colonialism and Indigenous dispossession, as well as protect key landscapes (Levac et al., 2018*; Whyte 2017*, 2020*, 2021*). Increasingly, this holistic nature–culture view has been picked up in Eurocentric discourse as part of mounting awareness of the current climate crisis and global environmental degradation (e.g., Harrison 2015*; Harrison & Sterling, 2020*; Harvey & Perry, 2015*). This is reflected in a conscious shift towards green attitudes and behaviours that aim to reduce emissions and waste meaningfully, and moves beyond adjusting existing consumption patterns towards rethinking operations from a circular economic perspective. Circular economic methods do not typically feature within heritage management at present, but there are indications that these may garner increasing interest. Critical heritage discourse has also a well-established and traced history of debating the merits of this divide, alongside consideration of multi-species justice, human rights and eventual legislative change (Fitz-Henry, 2022*; Harrison et al., 2020*).

While in theory, we are seeing greater acknowledgement of the need to better integrate natural and cultural heritage for more holistic management

approaches, there are still siloing fundamental challenges for governance purposes. Only recently has this relationship between cultural and natural environments been increasingly recognised and addressed by organisations such as UNESCO, ICOMOS, IUCN and IPBES. However, an opportunity arises in championing Indigenous and local communities' role in designing, managing and implementing positive change in the greater understanding and conservation of natural cultural heritage, as well as creating resilient pathways and landscapes. Many Indigenous Peoples and local communities are deeply connected with nature and conceive the human–nature relationship as equal and interconnected. Highlighting these interconnections will be critical for evidencing heritage's crucial and under-recognised role in sustainable ecosystem management and other sustainable mainstream practices. The heritage sector is particularly positioned to contribute to climate change adaptation. While the inputs of science and technology are key for driving innovation in climate adaptation approaches, culture and heritage should be an element of decision-making on sustainable building and infrastructure priorities and developments; land use management and governance; agriculture and food security resource efficiency and carbon sequestration; ruralisation/urbanisation and Ecosystem-based Adaptation (EbA) (Morel et al., 2022). Diverse stakeholders will also need more self-determination and local autonomy in these processes.

In short, those involved in culture and heritage, including those who understand the past and the role of diverse actors and groups, can better inform the integration of traditional practices and management for green and blue infrastructure. For example, natural heritage can capture traces of past biodiversity as 'wild' biodiversity declines, serving as documentary evidence of what has been lost, but also potentially contributing to improved biodiversity management.

Furthermore, heritage is well positioned, as a vehicle of societal values and actions, to further communicate nature as culture, which could drive greater environmental awareness and actions. As places of memory and learning, museums and other heritage organisations have a unique social and moral status that can be leveraged to educate and inspire pro-environmental attitudes and behaviours (e.g., Eid & Forstrom, 2021*; Hamilton & Ronning, 2020*; Newell, 2020*). Particularly in climate action spaces, museums are increasingly mobilising narratives and discourse of future impacts and realities, and recognising waste

and consumption as our heritage, shaping challenging questions about how to embrace and tackle these realities for the benefit of humanity's future. This will likely include greater acceptance of the inevitability of heritage loss. As heritage maintenance becomes more costly and/or impracticable, decisions must be made about what heritage to protect and abandon. Dialogue is critical with affected communities to raise awareness and facilitate meaningful community participation.

Finally, as we take more holistic views of heritage, there will be greater opportunity to initiate cross-sectoral engagements with other initiatives more traditionally seen within the environmental sector including — as described in the European Cultural Heritage Green Paper — climate mitigation in mobility, agriculture and clean energy (Potts, 2021*). Cross-functional teams of practitioners, experts and stakeholders in culture and heritage practice, including climate scientists, practitioners, activists and policymakers, will be key. This could help shape formal links with more government-friendly initiatives, and also help develop technologies and adaptive practices for heritage conservation. Included in this should be stronger engagement and cooperation with disaster risk management, which will become significantly more complex due to the increased frequency, severity and unpredictability of extreme weather events. Heritage will be ever more vulnerable to the hazards of disasters, but natural heritage in particular is still often not captured within disaster risk assessments.

3.3.2. Contributing to sustainability

Many parts of the world recognise climate breakdowns across communities, even if not officially marked as a climate emergency. Each sector, whether through compliance or moral obligation, is looking for ways to address climate change, whether through understanding the risks and implications to their own organisation, ways to respond and build resilience, or contributing towards climate action. UN campaigns such as the Race to Zero or the Race to Resilience highlight the need for each sector to rally leadership and define ways in which each can develop a robust roadmap or carbon reduction plan with meaningful targets. The culture and heritage sector must also address these issues, and develop ways in which it can become sustainable in its operations, services and resources.

Additionally, as previously outlined, heritage is strongly implicated in the bridging of nature and culture, and in the significance and value that communities place on them. Returning to the 'modalities' introduced earlier — issues of identity, heritage management, and heritage studies (Shepherd et al., 2022) — heritage can contribute in various ways.

In terms of the first modality, both tangible and intangible heritage have capacities to empower communities through promoting human rights, social cohesion, placemaking and forging senses of identity across communities. Notably, heritage can also trigger conflict, so understanding such tensions and sensitivities can help towards resolution and reconciliation. Next, for heritage management, the capacity to learn from the past and from living heritage is highly relevant for sustainability. In the first instance, the wider sector needs to recognise its own impact on the environment through environmental impact reporting, and ways in which the culture and heritage sector can move towards decarbonisation:

> In the short term, [environmental impact assessments of heritage operations] will probably comprise simple reporting of energy consumption and carbon costing of staff travel by organisations. The longer term may see a migration towards ecosystems approaches for more realistic assessment of the wider impacts of heritage operations, in order to identify and make meaningful changes to cut emissions and waste. (Heritage et al., 2023)

There is much to do here, as the complexity of what this means could extend to exploring: ways in which heritage tourism could be more sustainable without negatively impacting reliant communities; people-centred pathways to decarbonisation across heritage and culture organisations; and ways to work across diverse knowledge systems, in recognition of existing sustainable landscape and water heritage management systems that warrant inclusion within local, national and/or international planning. Finally, heritage studies as research should feed into enhancing understandings and practices across the first two modalities.

Whilst wider considerations as to how heritage as a resource, service, asset or study can contribute towards social, environmental and economic sustainability, it equally needs to respond to legislative, if not moral, obligations to move towards net zero across Europe. This move forms part of a greater response to addressing climate change, and ways in which heritage and learning from the past play a significant part in urban and rural mitigation, adaptation and

resilience. Placing greater priority on evidencing and enhancing environmental and social impacts is key for building sustainable heritage futures.

3.3.3. Wellbeing as a goal for heritage

Hand in hand with centring sustainability within heritage practice, it is important to make more explicit how this contributes to current and future wellbeing as a higher goal. Sustainability and wellbeing are inherently interlinked, as it is neither possible nor desirable to achieve one without the other. That said, they are not equivalent. While sustainability has been typically defined in the terms of meeting needs as per the 1987 Brundtland report (see 3.2.2 above), the UN Agenda 2030 goes significantly beyond this in its vision for achieving the 'full realization of human potential' (UN, 2015, p. 2*) — in other words, as described by Sen, wellbeing. Thus, sustainability can be considered the essential pathway towards achieving wellbeing for all:

> For sustainable development to be achieved, it is crucial to harmonize three core elements: economic growth, social inclusion and environmental protection. These elements are interconnected and all are crucial for the well-being of individuals and societies. (UN, 2019*)

In addition to its innate link with sustainability, wellbeing is essentially founded on people-centred approaches — as seen in Sen's (1999*) 'capabilities approach', as it is predicated on people being enabled to make their own decisions regarding what matters to them. Here, too, the concept notably spans both the individual and the collective. On the one hand, it is about how we as individuals feel about our lives — our life satisfaction or happiness — and on the other, it's about our collective wellbeing and how we function as societies (Lodovici et al., 2022). In Sen's (1999*) approach this is explicit when he describes wellbeing as about persons being able to 'lead lives they value — and have reason to value':

> …persons make their own judgements about what constitutes a valued kind of life, but judgements must be supported by reason. Thus, Sen does not identify wellbeing with satisfying individual preferences, or with the unreflective preferences of groups of individuals. Instead, his formulation highlights the value of contested and dynamic processes of communal reasoning, particularly in determining how public policy can contribute to enhanced wellbeing. (Dalziel et al., 2018, p. 10*)

Here too, wellbeing economic models could offer new opportunities to explore people's preferences concerning their heritage, and express what heritage does for them in better terms — the greater part of heritage outcomes being non-

monetary and overlooked in traditional cost-benefit assessments (Sagger et al., 2021*; Heritage et al., 2023; Lodovici et al., 2022). Hence this may provide ways to support the very processes of communal reasoning that Dalziel et al. refer to, and which should underpin evidence-based policymaking.

Overall, wellbeing is quite a difficult working concept, effectively connecting sustainability, people-centred approaches and human rights, and bridging both academic and public discourse. Lamentably, terminologies used within academic debates, despite the conceptual precision they may afford, rarely deliver much when it comes to wider communication beyond professional spheres. Yet, wellbeing is readily understandable by and resonant with the public.

Given the strong linkages already established between heritage and wellbeing (see section 3.2.3 above), and the opportunities these offer for providing meaningful evidence of heritage impact, it makes sense to frame the goals of heritage in such terms. The adoption of a 'wellbeing approach' to heritage, however, should not be seen as an alternative to people-centred and rights-based approaches, but rather a useful augmentation that serves to articulate more clearly their desired outcomes. Finally, as wellbeing connects across diverse areas such as health, education, and the environment etc., framing desired heritage outcomes in such terms reaches out to broader policy areas and would support efforts to embed heritage within these.

3.4. Re-imagining learning

3.4.1. Co-creativity and lifelong learning

The future will likely become more co-creative (Lodovici et al., 2022), in which policy must be designed in a way that involves people in every step of the process, building upon the knowledge and skills distributed across society (Miller, 2018, p. 117). The heritage sector has the potential to take initiative and lead the way forward, as heritage has strong affective and emotive dimensions that create powerful engagement and commitment (Smith, 2020*). However, the degree of involvement depends upon issues such as accessibility and a sense of ownership of the narrative (Lodovici et al., 2022, p. 13). One vital challenge for the future is to ensure equal access to heritage for children and youth, regardless of social background.

Reorienting towards co-creativity and participation in an ageing society will entail expanding the role of learning (Nosarzewski & Garrido Luzardo, 2018, p. 132) — including formal, informal and non-formal learning — and involving lifelong learning (Moyano Estrada & García Azcárate, 2021, p. 176). Furthermore, learning must extend beyond a mere focus on knowledge acquisition to also emphasise new attitudes, values, behaviours, skills and creativity. Learning must be seen as a constantly evolving, multi-directional process that dismantles dichotomies between experts and non-experts (Heritage et al., 2023). Co-creative practices will blur or even dissolve boundaries between learners and teachers, and centre exchange, dialogue and understanding. In a Foresight exercise that engaged educators in imagining new forms of education, one metaphor for the preferred future was 'we are all learners' (Inayatullah, 2020, p. 6).

In a 2015 Foresight exercise within UNESCO's Futures Literacy Laboratories (FLL) framework, 40 participants from the field of non-formal education were asked to imagine two different scenarios for 2040: a probable and a preferred future. They developed the following ideas on the future of education:

> …the most consistent view about the two futures was the blurring boundary between formal and non-formal education. This referred to the assumptions that teaching and learning can take place anywhere, anytime, and that many forms of technological advancements in education…could narrow the capacity gaps between learners and teachers. (Aceron, 2018, p. 206)

One key message here is the possible narrowing of capacity gaps between teachers and learners within a more flexible, informal, and self-directed system where learning can occur in many different forms and spaces. This is highly relevant for the heritage sector, which primarily engages with non-formal and informal learning. The heritage sector is thus incentivised to apply technological advancements in education to proactively engage with co-creative approaches to learning. This can serve many vital needs in the future, for instance in relation to dementia. This was highlighted in a scan report from ICCROM's Horizon Scan:

> …digital recreation of the heritage of contemporary and recent times has become a prioritized field since it is a period which people themselves can personally relate to and is therefore ideal for countering dementia and creating affective experiences…Focus is seldom upon using heritage to trigger or wake memories, but to let participants co-create their own memories… (Heritage et al., 2023)

In sum, co-creativity may be a game changer that can transform learning into a multi-directional and transformative process, which can inform heritage policy, empower communities, flatten hierarchies, enhance the wellbeing of an ageing population and promote senses of local ownership.

3.4.2. Developing skills, competencies and capabilities

To address an anticipated skills gap (Arup, 2020; EMIS & CEIC, 2021) related to a gradual decline of traditional crafts and knowledge, the heritage sector will have to fully embrace emerging technological tools to develop a wider, more flexible range of skills and capabilities, where learning is not limited to specific ages or spaces (Miller, 2018, p. 132; Moyano Estrada & García Azcárate, 2021, p. 176). The need for a more flexible education system and its connection to technological advancement has been highlighted:

The growing pace of technological change will mean that educators must work to facilitate students' ability to be adaptable and prepared for the unknown. Students will need to learn to be ready for new jobs but also to be flexible as the employment landscape continues to change…It seems likely that the technical skills of a professional heritage specialist will look different by 2045. (Arup, 2020, p. 20)

To think creatively about how the heritage sector may need to change its approach to learning, inspiration is found in a Foresight exercise in Australia, where one future scenario reimagining education was:

The purpose of education would be the co-teaching and training for emerging jobs and careers. Principals expected that students would not have a one job-career but seventeen or so jobs…Teachers would work with students to develop their lifelong learning pathways — becoming not factory bosses, but life gurus, making the transition from 'the lecturer' to the 'knowledge facilitator'. (Inayatullah, 2020, p. 10)

Imagining teachers as 'knowledge facilitators' rather than 'lecturers' aligns well with the opportunity for the heritage sector to be a facilitator of connecting and listening, as outlined above. Furthermore, changing heritage values require new approaches to heritage education. Fundamental skills and capabilities for the future will be intricately connected to proactively facing the anticipated megatrends: e.g., strengthening resilience and adaptability in the face of the

climate crisis, facilitating intergenerational platforms of knowledge transfer and exchange, increasing transparency and accountability through human rights-based approaches, and enhancing long-term futures thinking, to mention a few vital areas. A more resilient heritage sector demands continuous adaptation of its educational focus, scope and format to a changing reality: 'resilience not only refers to an institution's capacity to recover in times of difficulty such as the one posed by the Covid-19 pandemic; it also refers to the willingness and commitment to adapt in the face of ever-changing circumstances' (Debono, 2021, p. 164).

Therefore, the development of new training models and approaches is required to meet the anticipated shifts of values and needs:

> …heritage professionals/institutions will likely broaden their roles with new ways of collecting, conserving, managing and presenting heritage. This suggests that there is a need of new training models which embrace a greater diversity of approaches and new flexible skills and competences to better adapt to the changing and expanding values of heritage. (Heritage et al. 2023)

The development of digital skills will be essential in a progressively digital future (Debono, 2021). Furthermore, digital tools open up novel opportunities for teaching and facilitation, e.g., 'the possibility of using holograms, with the teacher moving from the classical lecture and lectern to the facilitator and knowledge navigator' (Inayatullah, 2020, p. 7). However, in a job-polarised future where routine work currently carried out by humans could be largely replaced by AI (Degli Esposti & Sierra, 2021), it will be critical to clearly identify how to complement emerging technology with 'human skills':

> …education will need to adapt and take advantage of technological change. Online services will create more avenues for learning and increasingly the ability to integrate learning at home. Education will also need to identify how to complement technologies, such as artificial intelligence, with 'human skills'. (Arup, 2020, p. 20)

The field of cultural heritage is well-equipped to provide valuable insights about humanity in a world of AI and smart data. After all, heritage is deeply connected to personal and social memory, pertaining to identity, practices of care and senses of belonging. Tangible and intangible heritage can 'help us understand and express what it is to be human' (Heritage et al., 2023). Abstractly, this constitutes a form of knowledge and understanding that will likely become increasingly significant in the future, and where the heritage sector can provide a valuable contribution.

In sum, the heritage sector must find more flexible forms of education and competence development, in a future where people may switch career paths more regularly throughout their lifetimes. Furthermore, intergenerational knowledge exchange may be vital as populations age and certain traditional skills and crafts disappear. Structures must be found for agile, co-creative and future-oriented educational formats that can quickly adapt to changing needs and values.

3.5. Evidencing impact

In view of the outlined economic and social trends, and the pressing need for all sectors to contribute to sustainability, it is increasingly imperative that heritage both delivers societal and environmental benefits, and evidences them. In effect, beyond reporting its green credentials, the heritage sector will also need to define more explicitly what it delivers in terms of people's wellbeing (Heritage et al., 2023). This should be viewed not as an additional obligation on heritage but as an opportunity, since efforts to evidence these impacts will bring greater recognition of heritage as integral to health and societal wellbeing.

First and foremost evidencing heritage benefits will require a paradigm shift within the sector, to consciously orient efforts beyond the conservation and management of heritage towards improving quality of life in concrete terms. This will mandate not just an outcomes-orientated mindset within heritage practice, but one in which the importance of impact measurement is recognised — i.e., where evidencing results is not seen as a chore obstructing more important work, but as integral to improving services.

This is important both for championing heritage in an environment of increasing pressures and economic constraints, and for greater accountability concerning benefiting parties. More transparency is needed around the latter to address inequalities, especially as it is well known that the primary beneficiaries of heritage are often those already better off:

> The multivariate pan-European analysis shows that tangible heritage has a greater impact on wellbeing in those regions with better socio-economic conditions and greater participation and engagement in heritage. (Lodovici et al., 2022, p. 12)

Such public accountability is not only a moral imperative but also vital to restoring trust in institutions:

> The link between rising inequality and falling trust in institutions may not be causal. Nonetheless, a narrative is increasingly circulating that the economic benefits of society are captured by elites, enabled by reinforcing institutions. (Bradley, et al. 2022, p. 21)

To do this, better ways of articulating and evidencing heritage impacts are needed. At present, the sector lacks a sufficient evidence base and tools for demonstrating impact — a deficit that is widely recognised but remains unresolved (Lodovici et al., 2022). Also clear is that no single approach or tool is sufficient. Rather, a range of diverse methods combining the qualitative and quantitative are requisite to communicate clear, compelling narratives regarding what matters to people and how heritage improves lives, as well as economic arguments to support these claims (Heritage et al., 2023; Lodovici et al., 2022).

Possible opportunities lie in the development of new economic tools that broaden the scope of current approaches to cultural capital assessment, which incorporate a wider range of societal wellbeing markers. In this regard, wellbeing-augmented cost-benefit analyses that capture non-monetary benefits (such as positive impacts on mental health and social cohesion), overlooked in traditional cost-benefit analyses, could provide a way forward (Frijters & Krekel, 2021*). These cross-over effects are already recognised in sectors such as the environment (Pascual & Macías, 2021, p. 92), and should be seen more widely as currency for heritage.

Supported by the social sciences, inclusive ways of collecting diverse viewpoints and suitable frameworks for assessing these are also needed, to gain richer, more nuanced and more relevant insights on which to base heritage policies. It is also worth noting that greater awareness of the wider societal benefits of heritage also assists in the recognition of complementarities between different policy areas:

> Knowledge of wellbeing helps recognize probable complementarities between different policies of different institutions, such as the link between air quality (affected by policies of many different departments and decision units) and mental health. (Frijters & Krekel, 2021, p. 155*).

Thus, evidencing wellbeing outcomes would not only provide more compelling arguments for heritage funding but would also enable the sector to partner more effectively with other sectors to maximise these impacts. This would also yield distinct policy advantages. In the future, it is likely that policy twinning — whereby

the capacity of different policy areas to reinforce each other is reinforced, will become more emphasised as a way to deliver essential services, and more widely the achievement of the Sustainable Development Goals (European Commission. 2022a, p.1). A turn to wellbeing could:

> …consider factors not fully traded in markets: the existence values of cultural heritage, the bequest values and the option values of heritage. In other words, the total economic value of heritage. It implies an improved and more holistic valuation of cultural heritage in economic policy and decision making. It means the soft power of heritage is counted; it enables the exploration of the value of culture to society now and in the future. (Heritage et al., 2023)

Hence investing in heritage versus other areas becomes not a zero-sum game, but rather win-win.

3.6. Using anticipation

Responses to a possible future of increasingly unilateral, populist and nationalistic agendas that focus on global cooperation, trust and solidarity will be key for a more resilient and sustainable future. Nationalist agendas tend to be driven by short-term goals and solutions, which stand in opposition to global challenges such as the climate crisis. Tellingly, a systematic review of existing Foresight scenarios on future environments found a category of scenarios imagining situations of 'chaos' that were characterised by a 'failure and lack of anticipation by governance, [which is] leading the world into spirals of negative synergies generating more or less widespread conflicts and at worst, mankind almost disappearing' (Lacroix et al., 2019, p. 8). In the most recent edition of the WEF's (2022) Global Risks Report, the tension between short-term and long-term concerns is singled out: 'Short-term domestic pressures will make it harder for governments to focus on long-term priorities and will limit the political capital allocated to global concerns' (p. 18). Informed long-term thinking and anticipation are thus crucial to forge a future of greater global collaborations, where common challenges are jointly and proactively addressed.

Strategic Foresight should therefore be a top priority for facing major global challenges, importantly in the heritage sector as well, since heritage is deeply embedded in these issues. Nevertheless, Foresight is still underdeveloped within the heritage sector, despite its fundamental orientation towards the future (Holtorf & Högberg, 2022*).

It is worth highlighting that there is help and support to get started in Foresight. A range of techniques have been developed and tested, and there are resources available in Open Access where some of these techniques are detailed concisely, for example by the UK Government Office for Science (2017*). However, the resources are seldom explicitly oriented towards the heritage sector, and much more work is needed in that area. The UNESCO Chair on Heritage Futures, at Linnaeus University, offers some free training resources, but no toolkits or handbooks[7].

Overall, capacity-building initiatives for Foresight are needed within the heritage sector, where global organisations such as ICCROM, ICOMOS and UNESCO can take the lead. Such capacity-building initiatives would be oriented towards raising awareness about the need for Foresight within the heritage sector, enlarging the understanding of what Foresight is and what it can do, and on providing concrete tools and resources for engaging with Foresight in and through heritage.

[7] https://lnu.se/en/research/research-groups/unesco-chair-on-heritage-futures/

4. Foresight for Cultural Heritage: current state of the art

This chapter examines methodologies reported by the literature reviewed for this report[8] to observe how Foresight and future-oriented research in the heritage sector (and adjacent disciplines) is being undertaken. This exercise can inform future Foresight research for heritage by drawing inspiration from innovative research designs, identifying gaps in the current body of literature and highlighting opportunities for new research. This analysis looks at the reviewed studies' methodologies across several parameters: sector, geographic scale, time horizon, foresight technique, general research method and stakeholders. It begins with an overview of methodologies used in Foresight studies before turning to those studies that did not explicitly use Strategic Foresight, examining how these studies do or do not engage with Foresight methods. The final section of this report speaks to what is missing from the current body of research, offering some direction for future Foresight studies in the heritage sector.

For the purposes of this chapter on methodologies, the ICSM CHC *White Papers I–III* (2022) are considered as a single source, as are all 14 volumes of the CSIC *Scientific Challenges* (2021). This is because the reports in each grouping were organised by the same organisation and reported identical, or nearly identical, methodologies — considering them as separate documents would thus distort the findings of this analysis. This accounts for the disparity between literature counts in previous sections of the report and in this chapter, which considers a total count of 35 sources. Of the 35 total sources, 18 studies explicitly engaged with Strategic Foresight methods. Figures 4.1–3 show the scope of the research in terms of sector and geography for Foresight and non-Foresight studies.

[8] This chapter primarily focuses on the methodologies explicitly reported within the content of the reports and articles reviewed. However, studies were not always clear about the methods undertaken, which required some research beyond the content of the report (e.g., publisher webpage).

Sector	Sub-sector	Foresight	Non-Foresight
Heritage	General	3	1
	Museums	3	
	Heritage & Climate Change		4
	Nuclear Heritage		2
	Heritage & Wellbeing		1
	Research	1	1
	Conservation	1	
	Historic Environment	1	
	Protection and Management	1	
	Total	10	9
Non-Heritage	Digital transitions & Emerging Tech	1	
	Foresight	3	
	International Studies	1	
	National Planning & Societal Challenges	1	
	Arts & Wellbeing		1
	Economic & business issues	2	3
	Economic Freedom & Government Spending		1
	Human Migration and Mobility		1
	Macro-economics & Company reseach		1
	National Planning &Societal Challenges		1
	Total	8	8
Grand Total		18	17

Figure 4.1. Distribution of reviewed studies according to sectors and sub-sectors, for Foresight and non-Foresight literature.

		Foresight	Non-Foresight
Global	Global	8	9
	Global & Regional	2	1
	Global & Country	2	2
	Total	12	12
Regional	Regional	2	3
	Regional & Country	1	1
	Total	3	4
Country	Country	3	1
	Total	3	1
Grand Total		18	17

Figure 4.2. Geographic scope of the Foresight and non-Foresight literature. N.B. Sources could have both a global scope and a particular focus on a region or country.

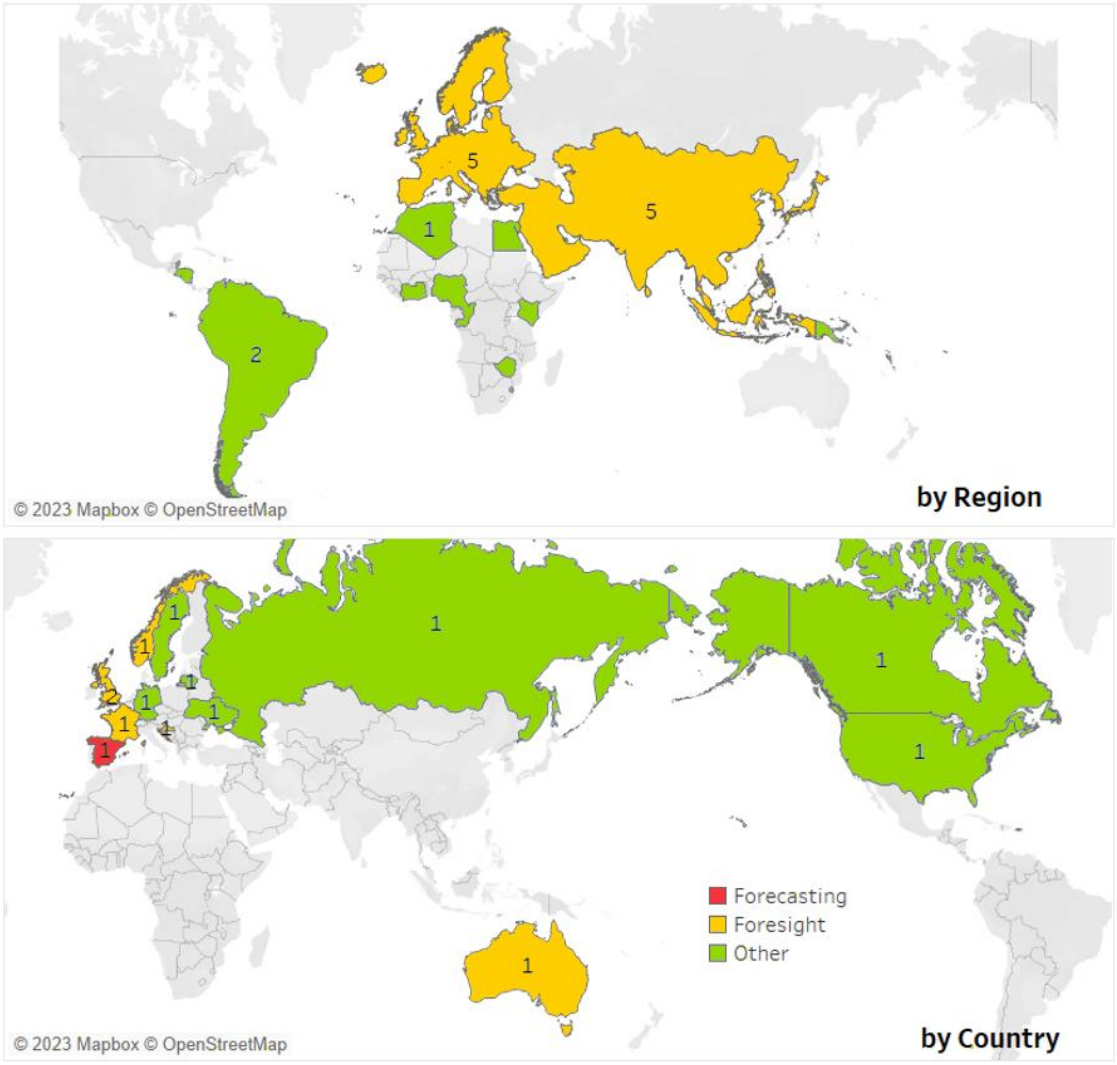

Figure 4.3. Geographic scope of the reviewed literature by (a) region and (b) country, showing the relevant number of studies.

4.1. Foresight research methodologies

The identification of a specific time horizon is generally characteristic of Foresight research, and this describes how far into the future a study intends to look (Vecchiato, 2012, p. 395). Studies can look out to anywhere from the short term — up to 1 year — to the long term — 15+ years — although Foresight typically engages with possible futures in the mid- to long term (Paliokaitė et al., 2014, p. 166). While time horizons defined by the studies in this review ranged from 4 to 79

years out from the time of the research, the vast majority defined horizons between roughly 10 and 30 years (see Fig. 4.4). Just one study (Arup, 2020) looked out to two distinct time horizons, analysing the trajectories of potential trends in both 2030 and 2045.

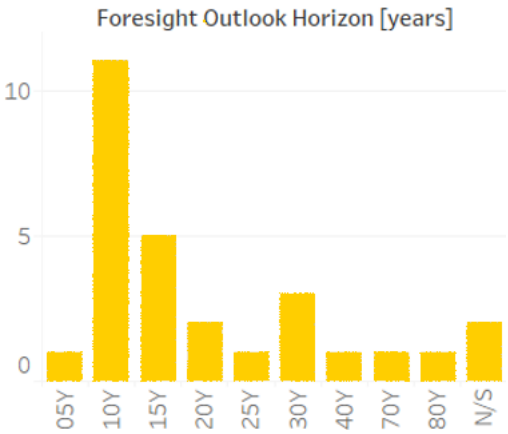

Fig. 4.4. Time horizons identified in the Foresight studies reviewed.

4.1.1. Foresight techniques

Several studies incorporated more than one Foresight technique into their research, each of which could be approached in a multitude of ways. Figure 4.5 describes the frequency with which each Foresight technique was used; many studies used more than one method.[9]

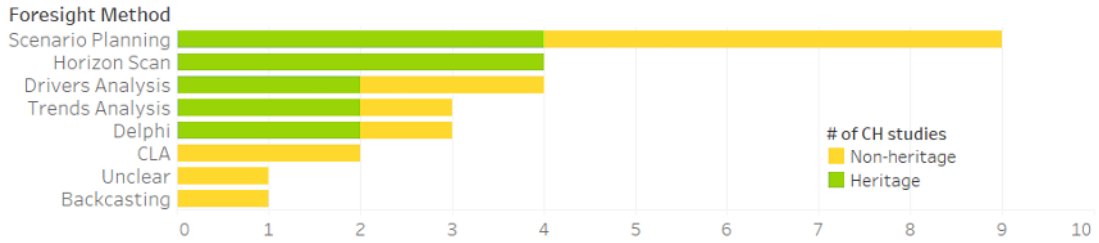

Figure 4.5. Foresight techniques used in the reviewed literature.

[9] Key features of the following techniques are synthesised in UK Government Office for Science (2017), Heritage et al. (2023), and Inayatullah (1998).

- Scenario Planning: Scenario Planning emerged as a preferred technique, and studies often paired it with other techniques such as Driver Analysis or Delphi. Some studies identified using a specific variation of Scenario Planning, including Miller's (2007) Hybrid Strategic Scenario Method and Dator's (2009) framework of four types of scenarios: Growth, Constraint, Collapse, and Transformation. In the main, Scenario Planning followed a consensus model guided by probable (or in some cases, preferred) trends agreed upon by participants of the study. Singularly, Pauget et al. (2021) introduced a 'breakthrough' scenario based on expert dissensus, expanding possible futures to one deemed improbable by experts in the present. Finally, Lacroix et al. (2019) engaged with Scenario Planning through a systematic literature review and analysis of existing Foresight scenarios on the future environment.
- Horizon Scanning: All four studies that used Horizon Scanning were internal to the heritage sector, and adopted either a PESTLE or STEEP framework. Most incorporated expert/stakeholder workshops. To identify trends in advance of workshops, one study (Arup, 2020) conducted a literature review and another (Heritage et al., 2023) produced scan reports describing potential trends. Notably, Historic England's study (Arup, 2020) also described an impending final phase, in which the priority trends identified in the Horizon Scan would be reviewed and updated in Q1 2022 and 2023.
- Driver Analysis: This technique was often paired with complementary Foresight techniques, e.g., as a preliminary step to Scenario Planning. Driver Analysis was typically undertaken through expert workshops or discussions, although one study (JPI CH, 2013) also used a meta-analysis of academic and 'grey' Foresight literature to identify additional drivers. Two of the four studies reported positioning drivers along a STEEP framework (or STEEG — Geopolitical).
- Trend Analysis: This was paired with Driver Analysis, Horizon Scanning and Backcasting, and was realised through expert workshops and/or literature reviews. Trends were identified and assessed according to one or more of the following: level of uncertainty, timeframe, impact and influence. Two of the three studies analysed trends along STEEP.
- Delphi: Of the three Delphi studies in the reviewed literature, one (Pauget et al., 2021) used a classical two-round Delphi that probed potential future constraints for museums through expert questionnaires, supplementary

interviews, and a feedback seminar. The other two conducted Real-Time Delphi studies using the Millennium Project's Real-Time Delphi System within its online Global Futures Intelligence System (GFIS).

- Causal Layered Analysis (CLA): The creation of scenarios was guided by consideration of the four levels of CLA: litany, systems, protagonists and metaphor.
- Backcasting: One study (European Commission, 2022a) used Backcasting, taking defined goals of the twin green and digital transitions as a desired starting point and assessing potential technological developments that could help realise them.
- Unclear: WEF (2021) included a postscript describing some wildcards in the global risks sphere: less well-known, but potentially high-impact, 'frontier' risks. Here, Foresight was reported to be used, but beyond expert consultation, a specific Foresight technique was not identified.

4.1.2. Research methods

This classification looks at the types of general research methods — not specific to Foresight research — that were adopted in the literature reviewed, to gain further insight into how Foresight techniques are being approached. Figure 4.6 shows the distribution of Foresight studies that used each research method; most studies employed more than one.

- Workshops, discussions & meetings: Most studies convened stakeholders and/or experts, digitally or otherwise, in group meetings and workshops. Workshops in particular were commonly used in Scenario Planning, Horizon Scanning and Trend/Driver Analysis.
- Literature review: Literature reviews were frequently conducted as an initial step of the Foresight process to gather existing intelligence on trends. However, one study's (Lacroix et al., 2019) primary contribution was a review and analysis of existing Foresight Scenario studies.
- Interviews: Expert and stakeholder interviews were used in tandem with workshops and questionnaires for Delphi and Scenario Planning.

Participatory online platform: As previously noted, two studies used the Millennium Project's GFIS for aggregating intelligence and conducting Real-Time Delphi studies.

Survey: Two studies used surveys and questionnaires: one for experts in a Delphi study (Pauget et al., 2021) and the other, a public survey to inform Scenario Planning (Gunashekar et al., 2021).
Data collection: Debono (2021) reported using data collection to gather intelligence on trends to inform Scenario Planning. This involved gathering data on trend scenarios and their potential growth, through desk-based research.
Case studies: Case studies were used once to describe applications and results of Futures Literacy Labs – Novelty around the world (Miller, 2018).
Unclear: AAM (2021) offers four mini-scenarios of possible futures, but does not specifically disclose how these were drafted.

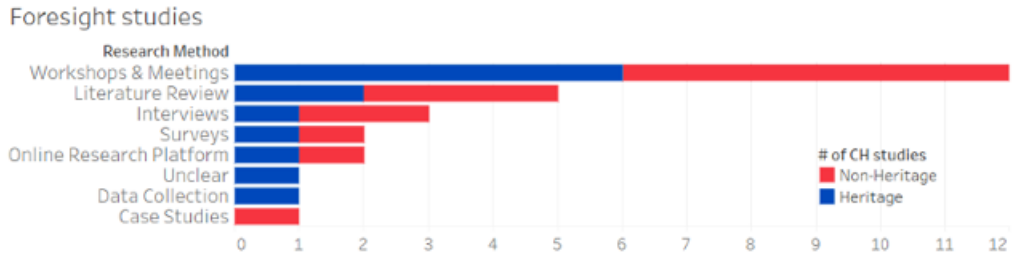

Figure 4.6. General research methods used in the Foresight studies reviewed.

Stakeholders

Stakeholder involvement within the reviewed research was classified into three categories: Expert-based, Cross-sectoral and Multistakeholder (see Fig. 4.7).

- Expert-based: Expert-based studies include both those studies that only specified engagement with experts, and those that did not speak to the stakeholders involved. For the latter, this lack of mention is assumed to indicate that the research was conducted only by professional researcher(s) and/or with expert collaboration. Most Foresight studies, and all but one study in the heritage sector, engaged only with experts.

- Cross-sectoral: Cross-sectoral studies were those that involved collaboration between experts and/or other stakeholders from two or more sectors. Cross-sectoral collaboration can refer to cooperation across different industrial sectors or disciplinary areas (heritage, environment, health, etc.), or across institutional sectors (public, private,

non-profit, government, etc.). In the main, studies in the reviewed literature that introduced collaboration across industrial or disciplinary sectors dealt with multidisciplinary topics — e.g., European Commission (2022a) concerns the nexus of the green and digital transitions and therefore engaged experts in environment and technology. Most of them also involved collaboration between stakeholders from different institutional sectors, including academia, business/industry, non-profits, intergovernmental organisations, government, and the private and public sectors. No Foresight study for cultural heritage engaged with stakeholders explicitly outside the heritage sector.

- Multistakeholder: This category aggregates Foresight studies that explicitly indicated that multiple stakeholders were involved in part or all of the research, including those that reported using participatory methods. Closer scrutiny reveals that indications of multiple stakeholders and participatory processes in fact implied varied levels of inclusion. Some studies listed multiple categories of stakeholders besides experts who were involved in the research, including members of a professional organisation, funders, civil society, students and youth. Two studies reported engagement with the broader public. At the same time, two studies that stressed a 'participatory' approach or a 'wide range of stakeholders' appeared to be speaking primarily of the participation of experts and practitioners from multiple institutional sectors — describing approaches more akin to cross-sectoral than participatory. Only one heritage Foresight study reported engagement with multiple types of stakeholders (ICON, 2021). One innovative, standout methodology is found in the Millennium Project's State of the Future report (2017), which employed GFIS, an online collective intelligence system that engaged paying subscribers in gathering information on 15 global challenges (for more on this platform, see Glenn, 2015).

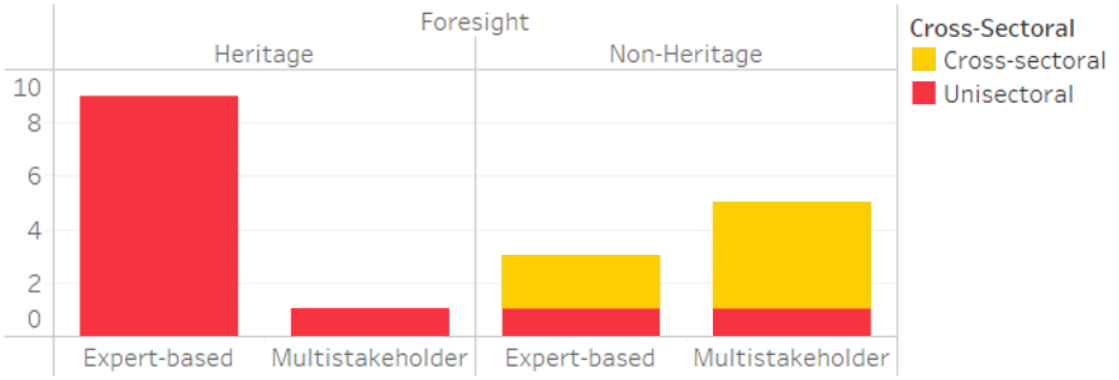

Figure 4.7. Stakeholder involvement in the Foresight studies reviewed (i.e. expert-based vs. multistakeholder studies). Heritage, non-heritage, and cross-sectoral studies are indicated.

4.2. Non-Foresight research methodologies

4.2.1. Research methods

The strength of the literature review that has informed this report is its breadth of scope, which extends to literature from numerous sectors beyond cultural heritage and employs a variety of research methods to gain insight into the future. Given that Strategic Foresight is still new to many fields — including heritage — 17 additional future-oriented studies that did not explicitly use Foresight methods supplemented the intelligence gained from the Foresight literature discussed above. Figures 4.8–9 show the distribution of studies in terms of research methods employed and stakeholders involved. Notably, under the multistakeholder studies, the *ICSM CHC White Papers* (2020) and Giliberto and Jackson (2022) explicitly identified the involvement of local and Indigenous communities — engagement not explicitly seen in the Foresight studies reviewed.

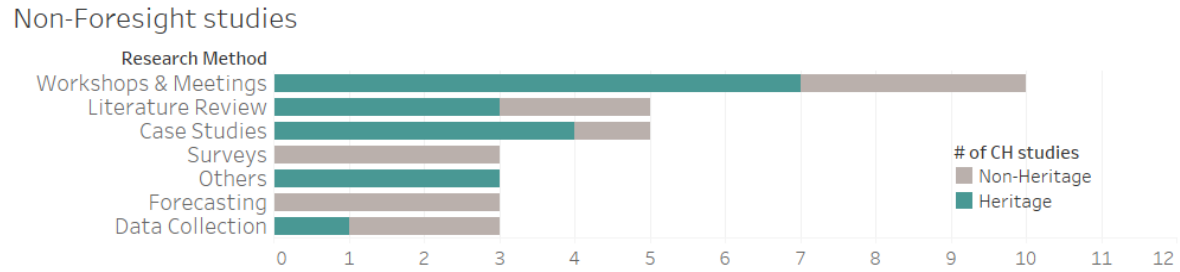

Figure 4.8. General research methods used by the non-Foresight studies reviewed.

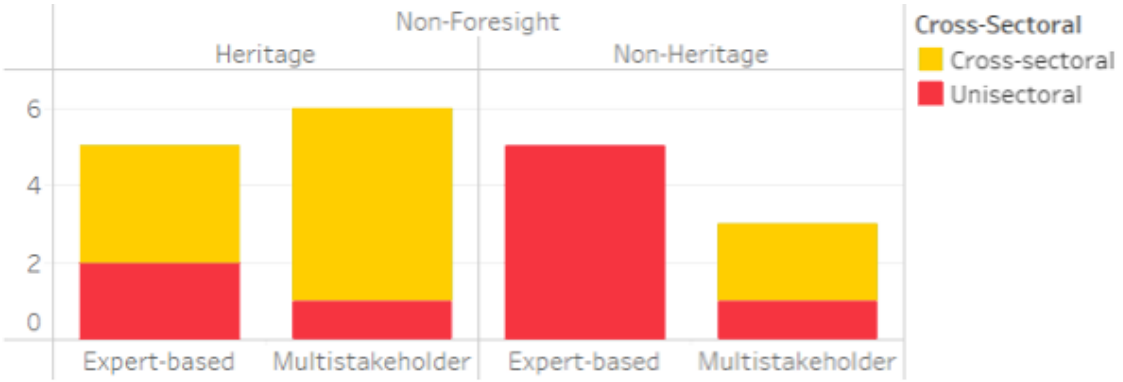

Figure 4.9. Stakeholder involvement in the non-Foresight studies reviewed (i.e. expert-based vs. multistakeholder studies). Heritage, non-heritage, and cross-sectoral studies are indicated.

As with the Foresight studies, the non-Foresight studies typically engaged with more than one research method. Interestingly, some of these studies adopted certain methodologies and terminology that veered towards Strategic Foresight without being explicitly so. Most notably, the four editions reviewed of the WEF's *Global Risks Report* (2016, 2020, 2021, 2022) were informed by various iterations of the Global Risks Perception Survey (GRPS), which asked respondents to assess global risks across a time horizon of 10 years in terms of factors such as likelihood, immediacy, impact, severity and regionality. This exercise is loosely reminiscent of Foresight Trend Analysis, and the evaluation criteria of trends echo some used by Hines et al. (2018) — including likelihood, timeliness, impact and relevance — and Heritage et al.'s (2023) Horizon Scan — including likelihood, timescale, significance and distribution.

Moreover, some iterations of the GRPS posed questions aimed at identifying drivers of these trends/events, as well as detecting blind spots and shocks. While this informal analysis of drivers and novel futures also echoes Foresight praxis, save

for a chapter and postscript in the 2016 and 2021 editions that explicitly cited Foresight methods, the GRPS is not associated with any established Foresight technique, nor is it named as an exercise of Strategic Foresight at all.

This pattern was observed in the inverse as well — a couple of studies associated the term 'foresight' with their research, but closer scrutiny suggested it was possibly invoked in its more colloquial meaning. For instance, the first volume of the *CSIC Scientific Challenges* described its research as a 'foresight exercise', but otherwise lacked indication that Strategic Foresight methods were actually used by the researchers in its compilation (Moyano Estrada & García Azcárate, 2021, p. 12). Likewise, while the EMIS and CEIC's (2021) *Foresight 2022* offers little insight into the methodology used in compiling its articles, it claims to draw on 'past and current events to form expectations about the future, and provide a forward-looking perspective on key issues and development' (p. 2) — which describes forecasting over Foresight. In sum, these observations show not only that Foresight studies may not always be as they seem, but also that Foresight terminology and approaches may be permeating more general research that looks to the future.

4.3. Foresight research gaps and opportunities

4.3.1. Foresight research in heritage

First and foremost, this review emphasises the lack of a substantial body of Foresight research for cultural heritage. Despite a demonstrated need for Foresight in the heritage sector (Holtorf & Högberg, 2022), the literature review found only 10 Foresight studies to date that concerned the future of heritage. In order to better anticipate and shape the future, we need to see a greater quantity of Foresight studies probing the future of the heritage sector and its various subdisciplines (conservation, research, digital heritage, heritage and wellbeing, etc.).

4.3.2. Types of Foresight techniques employed

While still few in number, we have seen heritage research adopt Foresight techniques such as Scenario Planning, Driver/Trend Analysis, Delphi and Horizon Scanning. At the same time, a number of other Foresight techniques have yet to be adapted to cultural heritage, including Futures Wheel, Axes of Uncertainty, Visioning and Change Progression Method. To strengthen heritage Foresight,

heritage organisations should be encouraged both to replicate these tried-and-tested studies and to apply a greater diversity of Foresight techniques to their research.

The policy, development and other sectors have made available a number of Foresight toolkits that present catalogues of Foresight techniques that may be applicable to heritage (see, e.g., UK Government Office for Science, 2017; Roche, 2019; UNDP Global Centre for Public Service Excellence, 2018). The Center for the Future of Museums (2022) has even released a toolkit that offers an overview of Strategic Foresight and four foundational tools. However, the production of a comprehensive futures toolkit tailored to the heritage context could offer practical guidance and impetus for heritage organisations to initiate their own Foresight research using a spectrum of Foresight tools.

4.3.3. Cross-sectoral Foresight research

While several Foresight studies outside of the heritage sector integrated cross-sectoral collaboration, the research reviewed tended more often than not towards unisectoral, unidisciplinary approaches. Cross-sectoral, transdisciplinary Foresight research can be challenging and demands creative thinking on the part of participants, as well as skilful, flexible facilitation (Rasmussen et al., 2010). Nevertheless, this collaboration is critical to Foresight research to tap into intelligence on trends external to, but nevertheless impactful on, the heritage sector. Moreover, external stakeholders can bring new perspectives and observe patterns that may be overlooked by internal stakeholders (Heritage et al., 2023, p. 51). Future Foresight research for heritage should imperatively aim to be cross-sectoral and transdisciplinary.

4.3.4. Participatory Foresight research

At the moment, Foresight research in the heritage sector is overwhelmingly expert based. Some studies in this review highlighted participatory processes involving multiple stakeholders, but this analysis found certain claims of multistakeholder engagement to fall short of participatory and open research processes. Studies that reported participatory or multistakeholder processes also largely applied these in only select elements of their methodologies. However, closed Foresight research involving only experts or few stakeholders face certain limitations in their success. Foresight research that fails to account for multiple

perspectives threatens to produce largely homogeneous futures. Moving forward, we need heritage Foresight research that practices open, collaborative and co-creative approaches engaging a diversity of stakeholders, including — or especially — those traditionally excluded from knowledge creation processes: citizens, youth, local communities, and Indigenous Peoples.

Fortunately, examples of innovative participatory Foresight techniques and their application can be found in other sectors. Ende et al.'s (2022) toolbox of participatory Foresight methods for climate resilience demonstrates how classical Foresight techniques can be modified to increase stakeholder participation. These are tools that can certainly be adapted to the heritage context. Within the reviewed literature itself, the Millennium Project's (2017) GFIS is distinguished as an innovative, open-source, collaborative platform for Foresight research, in which subscribers can access information and resources, add comments, contribute to discussions and apply to review content. Several other studies have shown Web 2.0 software as a critical tool that harnesses gamification, crowdsourcing, social media interaction, etc., for open Foresight (see, e.g., Schatzmann et al., 2013; Raford, 2015; Miemis et al., 2012; Dunagan, 2012). Heritage Foresight research should take advantage of these tools and techniques that are available for replication.

5. Participatory Workshop

5.1. The workshop

On 4 April 2023, an interactive stakeholder workshop was organised online by the task leader OCW, together with , and , with the assistance of . The purpose of the workshop was to enrich the initial findings of the present study with the perspectives of diverse stakeholders active within the heritage sector. At the workshop, participants explored the possible implications of future change and opportunities for the heritage sector, including how these might play out in their contexts.

The Task 2.1 team members submitted names of candidates for participation, many of whom were invited to join the workshop. To ensure broad diversity of participation, the workshop was also publicly announced through the Heritage Research Hub and ICCROM's website, with a Google sheet linked for people to register their interest. In total, 84 people from 24 countries inside and outside Europe (including overseas territories) participated in the workshop, Participants joined from museums, universities, research institutes, (national) libraries, public and private conservation agencies, heritage network organisations and heritage tourist venues, as well as ministries, research funders and private companies. The pool of participants was also diverse in terms of age and experience, ranging from students and postdoctoral researchers to senior staff and emeritus professors.

5.1.1. Workshop structure

To engage the participants effectively, the workshop consisted of two sets of five breakout sessions, followed by a plenary session to share thoughts. Additionally, a digital Conceptboard was set up according to the themes of the Foresight study and participants were invited to add their thoughts, suggestions and ideas to the board throughout the workshop. The Conceptboard was open until two days after the workshop to allow participants to add more information, or to be inspired by others' suggestions.

The first set of breakout sessions was organised according to the STEEP framework that formed the basis of the Foresight study: Societal, Technological, Economic,

Environmental and Political. In these sessions, participants explored key drivers of future change and their implications for cultural heritage. The second set of breakout sessions aimed to explore possible opportunities for action through which heritage could help shape more positive futures. These were organised into 5 areas of potential action: Evidencing Impact, Wellbeing, AI and Culture, Sustainability and Resilience, and Lifelong Learning. The outcomes of the breakout sessions were recorded on the Conceptboard.

After the first set of breakout sessions, American economist and director of the UN Sustainable Development Solutions Network Jeffrey Sachs delivered an inspirational speech on the future of heritage and sustainability. Indeed, various participants connected with ideas discussed by Sachs during the second round of breakout sessions. At the end of the programme, participants engaged with each other on some of the ideas emerging from the breakout sessions, and thoughts on the workshop itself.

5.2. Workshop results

The plenary transcript, breakout room Conceptboards and relevant chat comments were imported to NVivo and coded abductively along the STEEP framework to draw out the various themes that emerged from the workshop discussions. Themes that traversed STEEP categories were also registered. Ultimately, this thematic analysis found the workshop discussions to complement the results of the Foresight literature review quite well, with many ideas raised by the workshop participants echoing, or adding insightful nuance to, concepts discussed in previous chapters of this report — likely due in part to the predetermined breakout session themes meant to complement the themes of the report. To avoid redundancy, the contents of this chapter succinctly focus on the more novel insights emerging from the workshop, while the codebook in Annex III presents all themes discussed.

5.2.1. Societal

Participants in the workshop emphasized increasingly changing and fluid heritage values. As a result of widespread migration and displacement, heritage may become less geographically anchored and more dispersed and movable across borders, e.g., transnationally. This will put demands on the heritage sector to find new meanings and connections in and through heritage that respond to

changing interests, needs and values. The sector may need to reconsider and redefine concepts used to understand heritage as well, including what community involvement entails and how it is achieved. Further, new approaches to preserving and collecting heritage are required with a greater push towards recognizing multivocal heritage values over Eurocentric and universal ones, enacting participatory models and including diverse stakeholders. Of course, this relates to who has the authority to define what heritage is — the role of heritage expertise must be reconsidered, in which exclusionary practices are scrutinised and corrected. Instead, trust and credibility will need to be re-established through more inclusive and bottom-up practices.

5.2.2. Technological

There was a consensus that data repositories for heritage need to be accessible and sustainable, with digital preservation and open access becoming priorities so that data can more easily be shared among heritage professionals and the public. Furthermore, recognising that digitisation provides an opportunity to document and interact with a greater diversity of cultural heritage, digitised materials and collections must be representative. Participants also acknowledged that digital inequalities are rising globally, so the digital divide must be addressed with building digital skills being key. A number of ethical issues were considered, including the intellectual ownership of digital material and heritage as an area that will need greater engagement within policy development. The heritage sector can also contribute to developing and contributing to digital public infrastructure built upon civic values, and might be open access, transparent and controlled by its users rather than by commercial entities.

It was highlighted that the separation between the digital and the physical may become increasingly blurred in the future. People may increasingly switch between digital and physical in a seamless and integrated way, rendering a strict division between the two to be seldom beneficial. Thus, the heritage sector may need to view the digital and physical aspects of heritage as complementary rather than opposing or as substitutes. Digital twins — virtual models designed to accurately reflect a physical object, often connected by sensors updated in real-time — were brought up as a possibility for the heritage sector. For example in heritage conservation, digital twins might increase accessibility and provide solutions to deal with and manage heritage loss and transformation.

AI was widely discussed during the workshop. One participant noted that the heritage sector will need to 'become friends' with AI, as AI is here to stay. There is potential for AI to be used in various cultural heritage functions, e.g., within digital preservation, but it will also require that heritage professionals are trained with the necessary skills to harness its potential. Participants raised that heritage could contribute to developing a more ethical AI, as it can bring complexity, provide bias training, the value of emotions and a human-centred approach. Cultural heritage knowledge could even help develop AI as a resource within Disaster Risk Management.

5.2.3. Economic

The effects of an increasingly uncertain economic outlook are likely to compound existing funding inequalities, with local and intangible heritage losing out twice over: first, as limited public funds are preferentially directed towards high profile national projects; and second, as private sector investments favour visual forms of heritage that can be commercialized for their aesthetic value. Thus, while efforts to sustain heritage through public/private sector collaborations may leverage some investment, these are less likely to benefit marginalized and local communities. In counterbalance, repositioning cultural heritage as a social good (in line with a post growth wellbeing agenda) will require heritage professionals become generalists versed in policy and ecosystem services approaches. This is already happening to some extent post Covid lockdowns, with some museums emphasizing mental health as a key area of focus. Here, many participants saw opportunities for the use of heritage within public health services (for example through social prescribing schemes), but at the same time emphasized the need for research to evidence health benefits.

5.2.4. Environmental

Participants considered various responses to foreseeable climate change impacts on heritage. First, in reassessing the carbon footprint of heritage activities, participants discussed a life cycle approach to evaluate environmental and social impacts at every stage of heritage management, including conservation treatment and tourism. How can inefficient conservation practices, which typically assume periodic treatments, be reimagined to

become more sustainable? Also stressed was the importance of proactively making explicit the potential and actual positive contributions of heritage to the environment. As people want to sustain what they find relevant and valuable, the heritage sector must also showcase its contributions to other fields such as social/economic development and urban planning with measurable and comparable impact indicators for decision makers. Participants considered gauging levels of societal trust and cultural confidence (as measured by the degree of value placed on local heritage), as well as systems thinking in measuring impact through the Triple Bottom Line (people–planet–prosperity) and life cycle approaches.

Discussions around resilience reflected on the inevitable change and loss of heritage in the foreseeable future, and how this might be managed. A significant task facing the heritage sector is learning how to accept loss, determine what to save and manage grief. Loss is an important notion for heritage that requires further unpacking, considering that (the threat of) loss in itself is often exactly what surfaces appreciation for the value of heritage. We might even look for creative reuses of 'lost' heritage, for instance by reusing submerged areas for economic development. Moreover, seeing that change is inherently unavoidable to heritage, participants considered how we might move away from defensively protecting heritage against threats, to dynamic management of change that meets environmental demands and changing societal interests. The sector should adopt a narrative in which changes are part and parcel to heritage, and which places focus on retaining continuous and common heritage values. Heritage care reimagined can be an intergenerational tool to find pathways to resilience and drive positive change.

5.2.5. Political

Participants commented that the political trends identified in the source literature used for the study reflect the pre-Ukraine situation, and there is a need to consider the possibly altered geopolitical trajectories. In counterbalance to the polarizing effects of heritage and its potential misuse for divisive political purposes, participants commented on the need to use heritage to mediate and unify. Emphasizing embodied social values that transcend political lines can stimulate empathy, reflection, and facilitate mediation, especially in face of difficult histories. However, to address an increasingly charged political reality, future heritage professionals may need training (potentially with inputs from

social and political sciences) to better respond in face of malign political revisionism.

5.2.6. Evidencing impact

Within the important discourse of evidencing heritage impacts, participants recognised a need for careful prioritisation of which heritage impacts to aim for and measure, which must be meaningful to the sectors, policymakers and audiences we wish to reach and partner with. Beyond a call for more research into methodologies, tools and skills needed to evidence impact, participants stressed that impact assessments must be planned proactively with a view to theory of change and futures awareness. Impact assessments must be flexible to account for unplanned impacts and events in the work done; they must also consider how to ensure the sustainability of the positive impacts of heritage projects, including keeping facilitators and decision makers accountable.

5.2.7. Lifelong learning

For a sector deeply implicated in lifelong learning, participants nominated a need to reflect on heritage institutions' role in informal learning and what skills and knowledge they wish to impart—perhaps best in relation to fostering critical reflection and personal development. Within this scope, heritage institutions must consider how they are embedded in the greater trend towards digital learning platforms and immersive technologies. Finally, recognising that the educational value of heritage derives from co-creative community involvement and inclusive dialogue, participants proposed that heritage education could entail, e.g., learning schemes co-designed with community stakeholders, interactive courses involving fieldwork and co-interpretation of heritage that brings together diverse perspectives.

5.2.8. A holistic approach to heritage

A common thread throughout the workshop discussions pertains to how we generally approach heritage in our sector. Participants called for a more holistic view to heritage and its practice, which reflected a keen awareness of the embeddedness of cultural heritage within broader systems. Participants discussed the various dichotomies and divisions often present in heritage discourse—including tangible/intangible, digital/physical and cultural/natural—

and considered that heritage should rather be viewed as an integral form with diverse dimensions. Likewise, trends and occurrences discussed in relation to heritage might actually be seen as part of heritage, rather than simply actors upon it. Finally, in addition to a need for greater cross-sectoral and transdisciplinary collaboration across heritage initiatives and research, participants pressed for an international outlook that focuses on connecting the global to the local and moving the entire sector, rather than individual organisations or regions, forward.

5.2.9. The value of Foresight

The workshop closed with an interactive session using the software Mentimeter to gather inputs on the value of Foresight and engage in an open discussion. Thirty-eight participants responded to the Mentimeter questions. Most participants found the participatory and collaborative nature of the workshop valuable and appreciated the practice of discussing important concerns for the future of heritage together with others in an open-minded setting.

When asked whether the workshop made the participants think of the future in a different way than before, 22 answered 'yes' and 14 answered 'no'. Importantly, the workshop was not a Foresight exercise, and perhaps a different approach may have been required to substantially change mindsets concerning the future. Several participants mentioned during the discussion that it would have been valuable to invite participants from outside the heritage sector as well to provide more novel perspectives and angles, highlighting the benefit of a multi-sectoral approach.

For the question 'Do you think the heritage sector would benefit from engaging more with Foresight?', 38 participants — all who participated in the Mentimeter — answered 'yes', signalling unanimous agreement that the heritage sector should work more with Foresight. The next question asked, 'Would you be interested to work with Foresight at your institution?' Here, most respondents indicated interest: 31 participants answered 'yes', while just three answered 'no'. The final question asked respondents what they would need to start working with Foresight at their institutions, to which the most common answer was 'time'. Other common responses included: 'methodology', 'funding' and 'collaboration' (Figure 5.1).

Figure 5.1. Results from the Mentimeter question: 'What would you need to start working with Foresight at your institution?'

Concluding Thoughts

Heritage as a catalyst for change

Cultural heritage is deeply intertwined with major future challenges facing society. Not only is it impacted by global megatrends such as the climate crisis and the Digital Revolution, but heritage can also contribute to a more sustainable, equitable and just future. This demands that the heritage sector be proactive in response to emerging trends and set out clear visions and long-term strategies that are adaptable and resilient.

Heritage can make us better prepared to deal with the unexpected and uncertain. Through the way heritage continuously has transformed and adapted throughout times, it tells important stories of living with change. This is a value in heritage that has the potential to make people better equipped to be able to understand, respond, accept and deal with transformation and change in their own lives. Thus, one significant value of heritage lies in its ability to increase resilience in the face of uncertain futures. By approaching heritage dissonance as a potential means towards transformative dialogue — in which past injustices are acknowledged and addressed — heritage can be a vehicle for more inclusive and just futures. The heritage sector needs to be openly transparent about past and present injustices, including how heritage may have been, and continue to be, misused to further discriminatory or intolerant attitudes such as racism, classism, sexism and conflict. This is only possible if the heritage sector better assesses its positionality within its wider context, and embraces decolonial agendas and practices.

Heritage can empower local communities, by working bottom-up through a people-centred and human rights-based approach. A possible future of increased polarisation, inequality and extremism demands that the heritage sector actively works towards greater social cohesion, equity and justice. Bottom-up, grassroots initiatives can provide a path towards recognising and including under-represented, marginalised and subaltern groups in decision-making processes — an essential step towards greater social justice. To promote bottom-up engagement, the heritage sector can serve as facilitators that centre listening to stories and perspectives, connect people and communities, and aim to dismantle hierarchies.

Co-creativity can be a game-changer for reimagining learning towards increased wellbeing and participation. It becomes essential to adopt a more dynamic, flexible format for education and capacity-building that emphasises lifelong learning, adapted to the changing needs of society including an ageing population who may live active lives longer. By integrating a co-creative approach to learning, the heritage sector can contribute to empowerment, wellbeing and a sense of local ownership.

Heritage can provide valuable perspectives and knowledge concerning what it means to be human in an increasingly digital future in which many jobs may be replaced by AI and machines. The heritage sector will need to stay current with new technological advancements to continuously increase accessibility and enhance digital learning and participation. The heritage sector must also take initiative in contributing to the development of ethical considerations within AI — a key challenge for the future. Culture for AI highlights an opportunity for the heritage sector to explore how human values can inform AI development that is both more ethical and more sensitive to a diverse range of human values and needs.

Heritage can play its part in changing the way we conceptualise success. A potential scenario of deepening global economic instabilities, widening poverty gaps and reversals of development gains, finds an urgent need to reorient economic policies away from continual growth towards regenerative models. Foundationally, heritage can reduce consumption by adopting business models founded on social impact and circular economics. But beyond this, the heritage sector can clearly articulate and evidence how cultural participation — and its non-monetary values — can help solve societal challenges to promote a new paradigm that views success holistically and orients economic innovation towards sustainability, inclusive wealth and wellbeing.

The sector can reorient the goals of heritage towards the bigger picture and make clear who benefits and in what ways. Heritage is a common good. However, there is a need for greater transparency and accountability regarding who benefits and how, particularly in the case of public funds investment. Novel ways to evidence wider social impacts and improved quality of life must be developed to trace flows from heritage investments. Models of evidencing societal value should not only show who benefits from heritage and in what ways, but also who does not benefit, and why not. Such transparency and

accountability are vital for overcoming exclusionary practices and broadening the societal value of heritage.

Embedding heritage into policy reform

In the future, sectors will need to work together to deliver services in the face of constrained public budgets and deepening social needs, which in turn will require cross-cutting approaches to policy development. Heritage could play a more active role in this by supporting other sectors such as health, environmental protection, technology, transport and planning. As seen in the body of literature examined for this study, there is already evidence of greater awareness of the role of culture within these areas.

Heritage can be used to support cross-cutting policies. There is an urgent demand for more holistic approaches to policy development with integration between sectors to achieve shared goals. Using heritage as a cross-cutting issue across policy areas could help to promote this paradigm shift in policy thinking. However, this will also require a fundamental shift in how heritage expresses its goals and potential, and articulates its outcomes. Structured dialogues with governance bodies responsible for wider policy development will be key to gaining recognition of the potential for culture and heritage to support diverse ends.

Heritage can help promote inclusive and participatory policy development. Operationalising such policy reform will require active steps to join heritage and other sectors to recognise mutually desired ends. This demands that heritage looks towards where it can usefully augment other policy areas. However, it also requires that this is done through inclusive and participatory means. Here, increasing access to heritage and greater devolvement of heritage decision-making is key as a fundamental means of enhancing cultural participation.

Knowledge gaps

For more proactive engagement with the future, research is vital to provide the necessary knowledge and tools to enable heritage to be a catalyst for change. However, this demands that research is oriented towards questions relevant to a future in which people will understand, appreciate and perform heritage differently. Below we highlight some areas where this could be usefully explored.

But beyond this, we need to see changes in the ways research is undertaken, and the knowledge systems from which it draws. Critically, the ability of heritage to address future challenges will fundamentally require the recognition and inclusion of diverse knowledge systems and the capacity to work across them. Such inclusion will help avoid problematic, narrow responses to traditional and Indigenous knowledge systems that are disengaged from their environmental, cultural, and historic contexts. Co-design, co-management and equitable sharing of information by communities of research, practice and policy across knowledge systems are important ways to achieve this. Such broadened horizons will be critical in addressing the following points.

There is a need to valorise more inclusive, multivocal and transnational forms of heritage for the future that are less bound to the narrow, exclusionary borders of the political nation-state. The future will not only hold changes to the external environments in which the field of heritage operates, but it will also change how we understand, valorise and practise heritage. Heritage must be more inclusive for the future to meet emerging trends of polarisation and extremism. Currently, we know very little about what that may mean for heritage management, and how it can affect current priorities and strategies — this requires further research.

We need to find inclusive, transparent and sustainable solutions for letting go of heritage and managing heritage loss. Heritage is about managing change, which requires an acceptance of loss and transformation. Change itself is described as a significant value of heritage. We need to better understand how heritage management can find sustainable and long-term forms for managing transformation, enabling conversations about sustainable and unsustainable heritage practices and ways of life, and addressing valorisation processes to ensure more inclusive forms of heritage, as highlighted above.

The sector should look out beyond the scope of heritage towards a broader and more integrated horizon, in order to understand the changing roles, and potential, of heritage. We need to be more attentive to how emerging shifts in value systems will demand different practices of managing, communicating and practising heritage today. This relates to central issues such as agendas on decolonisation and sustainability; holistic thinking regarding nature and culture; a turn towards local, Indigenous and marginalised voices; and a drive for enhancing wellbeing. This will demand broader cross-sectoral research that

integrates heritage policy with economy, health and law, among other disciplines.

More Foresight is needed to explore how heritage can decisively shape a more desirable, sustainable and just future. Beyond how heritage can prepare to reactively weather change, Foresight initiatives should explore how heritage can have proactive impacts upon emerging trends to lead the change. Forecasting alone cannot prepare the heritage sector for the unexpected, nor induce the rigorous and constructive creativity needed to imagine alternative futures. Thus, more Foresight which involves a diversity of stakeholders and looks across sectors to trace links to major global challenges, is urgently needed for heritage. Foresight can inform understandings of what changes are possible, so we can act and develop strategies accordingly.

There is a need for more heritage in Foresight. Save for those explicitly concerning heritage, heritage was largely absent from the reviewed Foresight studies. To embed heritage within broader Foresight exercises, the sector must clearly articulate the benefits of heritage across sectors through common interests, and how it can contribute to shaping a more sustainable and just future. Here, cross-sectoral collaborations that can help embed heritage in all forms of policy will be particularly important (see 5.2). Thus, the heritage sector must find more efficient and transparent ways of understanding, articulating and evidencing heritage values, and how these values connect to broader societal changes.

Final words

Culture and heritage are at the heart of all communities. They are the foundation of our identity and our wellbeing. They empower people to be champions of their own lives and livelihoods and consolidate a sense of belonging that both encourages meaningful social and political participation and enables good governance. More than this, they are expressions of diversity that stretch far beyond national boundaries, forming the fabric that binds together wider global societies.

Understanding diverse histories and narratives is a powerful and empowering tool that, if used appropriately, can provide meaningful foundations to shape and transform communities towards sustainability. This includes enhancing availability and access to opportunities to address global and local-based challenges

whether they be social, political, economic or environmental, and increasing future consciousness and long-term thinking through Foresight.

In closing, the world is facing unprecedented challenges, and no single community — be it scientific, governmental, social or cultural — can address these major problems on its own. We have neither the systems in place nor the tools to tackle these challenges unless we work in partnership. In building partnerships through culture and heritage to seize the opportunities outlined above, we find a yet untapped potential to move towards more cohesive, inclusive and fair futures. That said, there is much to be done.

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Annexes

Annex I: Summary of organisations represented in literature review

For greater transparency concerning the diverse interests represented in the review, this annex lists the organisations and initiatives that produced the reviewed literature.

Intergovernmental bodies:

European Commission: EU's politically independent executive arm responsible for proposing new European legislation, as well as implementing decisions of the European Parliament and Council of the EU. *[References: European Commission, 2022a; 2022b; 2022c]*

European Union Institute for Security Studies (EUISS): EU agency charged with analysing foreign, security and defence policy issues, and assisting the EU and its member states implement the Common Foreign and Security Policy. *[Reference: Dreyer & Stang, 2013]*

ICCROM: Intergovernmental organisation that works globally to promote the conservation of cultural heritage through initiatives in conservation training, information, research, cooperation and advocacy. *[Reference: Heritage et al., 2023]*

UNESCO: Specialised UN agency that aims to promote peace and security through international cooperation in education, sciences, culture, communication and information. *[References: Aceron, 2018; Inayatullah, 2020; Miller, 2018; Nosarzewski & Garrido Luzardo, 2018; Rhisiart, 2018]*

United Nations High Commissioner for Refugees (UNHCR): UN agency mandated to aid and protect refugees, forcibly displaced communities and stateless people. *[Reference: UNHCR, 2021]*

Public bodies:

Historic England: Public agency of the UK government charged with protecting England's historic environment. With Arup: Private global consulting firm that aims for the sustainable development of the built environment. *[Reference: Arup, 2020]*

Ministry of Education, Culture and Sport, Spain (now Ministry of Culture and Sport): Governmental ministry charged with the promotion, protection and dissemination of Spanish heritage, arts and culture. *[Reference: Argerich Fernández et al., 2016]*

Research Council of Norway (RCN): Government agency under the Ministry of Education and Research that funds research and innovation, advises ministries on research policy and broadly aims to increase the quality of Norwegian research. With Rand Europe: European arm of RAND Corporation, a not-for-profit policy research organisation. *[Reference: Gunashekar et al., 2021]*

Spanish National Research Council (CSIC): Public agency of the Spanish government that works to promote, coordinate, develop and disseminate scientific and technological research. *[References: Begoña García & Jordano, 2021; Bovolenta et al., 2021; Charco & Martí, 2021; Costa & Schödel, 2021; Degli Esposti & Sierra, 2021; Delgado & Moros, 2021; Herrera & Esteban, 2021; Lara López & Léger, 2021; Montoliu José & Rada Iglesias, 2021; Moyano Estrada & García Azcárate, 2021; Olmos Aranda & Venegas Calerón, 2021; Pascual & Macías, 2021; Serra Alfaro & Pérez Coll, 2021; Zambrini & Rius, 2021]*

Non-governmental organisations:

Center for the Future of Museums (CFM): Aims to help museums navigate the future landscape through monitoring trends and providing resources for museums and their communities. An arm of the American Alliance of Museums, a US non-profit organisation that advocates for and connects the museum field. *[Reference: AAM, 2021]*

European Foresight Platform (EFP): Network-building programme run by a consortium of European research institutes and supported by the European Commission that worked to develop a global network of communities and

professionals to share knowledge about Foresight, forecasting and other future studies methods. *[Reference: Koers et al., 2012]*

Fraser Institute: Canadian public policy thinktank that aims to measure and communicate the impacts of government policies on the lives of Canadians. *[Reference: Gwartney et al., 2022]*

ICOMOS: International professional organisation dedicated to the conservation of the world's monuments and sites. With International Co-Sponsored Meeting on Culture, Heritage and Climate Change (ICSM CHC): International meeting organised by intergovernmental, professional and governmental bodies in both heritage and environment. Aims to highlight intersections of cultural heritage and climate change, and the need to address culture and heritage gaps in global climate science and climate change responses. *[References: Morel et al., 2022; Orlove et al., 2022; Shepherd, 2022; Simpson, 2022]*

Institute of Conservation (ICON): Professional organisation of conservation professionals in the UK, which works to represent and support conservation practice. *[Reference: ICON, 2021]*

The Millennium Project: Global participatory thinktank that aims to improve thinking about the future to inform present-day decisions. *[Reference: Glenn et al., 2017]*

World Economic Forum (WEF): Not-for-profit international organisation serving multinational companies to shape public and private global, regional and industry agendas. *[References: WEF, 2016; 2020; 2021; 2022]*

Private firms:

ISI Emerging Markets Group: Global private firm that provides macroeconomic, business and industry intelligence on emerging markets around the world. *[Reference: EMIS & CEIC, 2021]*

McKinsey Global Institute: Institutional arm of global private consulting firm McKinsey & Company that provides business and economics research to inform management and policy decisions. [*Reference: Bradley et al., 2022]*

Research initiatives:

CultureForHealth: Project implemented by a consortium of local and regional governments, intergovernmental partnerships, NGOs and cultural networks aimed at growing awareness among EU policy-makers, health practitioners and cultural sector professionals of the role of culture and the arts in improving health and wellbeing. *[Reference: Zbranca et al., 2022]*

HERIWELL: Research initiative of ESPON, an EU-funded programme providing research to public authorities responsible for designing territorial policies. Aims to develop a pan-European methodological framework on the impacts of cultural heritage on society, including wellbeing, social inclusion, etc. *[Reference: Lodovici et al., 2022]*

Joint Programming Initiative on Cultural Heritage (JPI CH): Joint research initiative driven by Member States in the EU and associated countries, under an instrument launched by the European Commission. Assembles national research funding organisations, ministries and research councils to promote the protection of cultural heritage. With JPI Connecting Climate Knowledge for Europe (JPI Climate): Joint research initiative driven by Member States in the EU and associated countries, that aims to coordinate and fund climate research for post-COP 21 Climate Action. *[References: Ballard et al., 2022; JPI CH, 2013a; 2013b]*

Nuclear Cultural Heritage: From Knowledge to Practice: Arts and Humanities Research Council (AHRC) research networking project that ran between 2018 and 2022, which explored the emerging field of nuclear cultural heritage and aimed to establish links between national and international nuclear heritage researchers, the heritage sector and the nuclear sector. *[References: Rindzevičiūtė, 2019; 2022]*

PRAXIS: Arts and Humanities for Global Development: Project that aims to consolidate learning across projects of the Global Challenges Research Fund (funded by AHRC) to amplify their impact and policy relevance, and to champion the contribution of Arts and Humanities research in responding to development challenges. With CRITICAL: Cultural Heritage Risk and Impact Tools for Integrated and Collaborative Learning: Project that works to develop methods for inclusive risk assessment and research-based capacity development, to benefit researchers in Low and Middle Income Countries,

heritage/cultural organisations and local policymakers. *[Reference: Giliberto & Jackson, 2022*

Annex II: Codebook for literature review

MAIN PRETSEL CATEGORY USED	Code (sub-themes)	Sub-Theme Definition	When to Use	When not to use
Economic	Economic Recovery	This theme is related to post-pandemic recovery and includes subjects such as the post-pandemic push towards green energy and growth in the 'build back better' context.	When extract specifically contextualises any social changes or transitions to the post-pandemic rhetoric.	If the term 'recovery' is not included.
Economic	Tourism	This theme relates to any reference to tourism.	When the extract prioritises any of the concepts/principles outlined in the sub-theme definition.	If the extract is dominated by another existing sub-theme.
Economic/Social	Sustainability	This theme is complex and wide-ranging — but largely relates to social sustainability rather than environmental sustainability (which would fall under the climate	When extract directly refers to sustainability or when it encompasses themes understood under social sustainability e.g. human rights, fair	If the extract focuses on identity politics, values, transitions or climate change related themes, use other sub-theme categorisations.

		change related sub-theme). This theme would include education, loss of skill, and capacity building. It also includes human rights, fair labour practices, living conditions, health, safety, wellness, diversity, equity, work-life balance, empowerment, community engagement, philanthropy, volunteerism, and more.	labour practices, living conditions, health, safety, wellness, diversity, equity, work-life balance, empowerment, community engagement, philanthropy, volunteerism, and more.	
Environmental	Climate-Change Related	This theme encompasses anything related to climate thinking, practices, and action (including mitigation, adaptation, resilience); anything environmentally related e.g., agriculture, food and resource securities and sovereignty, biodiversity or	When there is any reference that is climate change or environmental related. Often, environmental related comes off the back of climate change concerns, or for more earlier literature, this backs	If it is not the main theme of the extract.

		land use and management.	this off natural disasters.	
Environmental	Social Change/Transitions	This theme is used when extracts relate to change, transitions, and any considerations for how research can be used to understand or shape social change/transitions.	When the extract prioritises any of the concepts/principles outlined in the sub-theme definition.	If the extract is dominated by another existing sub-theme.
Legal	Policy	This theme is used if the extract directly relates to policy production and development, reform, decision-making or any other policy.	When the extract prioritises any of the concepts/principles outlined in the sub-theme definition.	If the extract is dominated by another existing sub-theme.
Political	Governance	This theme includes references to organisations, institutions, or companies and their strategies, governance, or other areas for consideration e.g., funding and access to resources. It also includes policy and	When referring to governance structures at organisational, local, national or international levels.	If the term does not relate to the concept of governance.

		development e.g. local development, urbanisation, wider considerations about access to resources that might relate to governance systems.		
Politics	Identity Politics & Values	This theme includes politicisation of social processes including identity. It also includes values and value systems. It also relates to the movement of peoples and mobilities.	When the extract prioritises any of the concepts/principles outlined in the sub-theme definition.	If the extract is dominated by another existing sub-theme.
Politics/Economics	Megatrends	This theme is widely used and includes any extract that highlights or discusses what is understood as a global trend (megatrend), or challenge. These might include climate change, inequality, digital	This umbrella theme should be used when the extract is identifying any of the sub-themes *as a global (mega)trend or challenge*.	If the extract discusses any of the sub-themes in detail without acknowledging them as a global trend or challenge.

		development and many of the sub-themes used here.		
Research	Research	This theme relates to any extract that directly relates to research considerations.	When the extract prioritises any of the concepts/principles outlined in the sub-theme definition.	If the extract is dominated by another existing sub-theme.
Research/ Economics	Language	This theme is used when there is any direct link to definition and language.	When the extract prioritises any of the concepts/principles outlined in the sub-theme definition.	If the extract is dominated by another existing sub-theme.
Social	Demography	This theme includes extracts that discuss workforces, ageing population, or other demographic concerns.	If it includes any of the themes outlined in the definition.	If it is not the main theme of the extract.
Social	Heritage & Culture	This theme includes anything related to: archaeology, heritage, placemaking, the built environment, memory, heritage-related research gaps, nature and culture	If the extract has heritage and/or culture as its driving concept.	If the extract is dominated by another existing sub-theme.

		discussions. It also includes more culture-focused topics such as art, music, health, and dance.		
Technological	Digital Development	This theme includes anything that discusses the digital revolution: it can refer to inclusion and access, social changes due to digital development or advances; innovation related to digital technology.	When digital development and technology are the main theme in the extract.	When other sub-themes prioritise the messaging of the extract, e.g. the context is prioritised by another concept.

Annex III: Code for workshop transcript and concept board

STEEP	Name of Code	Description	Refs	Files
1 SOCIETAL	**1.1 Changing societies & values**		0	0
	1.1.1 (Dis)Connections to heritage	Increasing disconnection between communities and their CH, which may not reflect their changing values and financial needs. CH sector needs to find new meanings and connections based on changing interests. Need to strengthen common values in CH.	8	3
	1.1.2 Fluid identities & heritage	Besides new CH arising from new communities, migration, refugees, displacement, destabilization of CH may mean CH is increasingly movable and dispersed across borders; CH and identities are more fluid, less geographically anchored, including to their regions of origin. People may increasingly take on other CH/identities.	8	5

	1.1.3 Redefining heritage & its concepts	In light of changing society/values, need to reconsider and redefine concepts we use in talking about CH, including CH meanings, community, collections, social media, interpretation, etc. Various considerations including who has authority to define CH meanings.	11	3
	1.2 Multivocality & inclusion	Greater push towards multivocal CH values and inclusion of diverse stakeholders in CH management, interpretation, etc. Traditional Eurocentric universal CH value systems being challenged, and broadening of CH values needed. CH sector needs to promote diversity and inclusivity of values, particularly with potentially greater social stratification and division.	11	6
	1.2.1 Redefining heritage authority	Greater scrutiny over CH professionals/experts and often exclusionary values they have traditionally championed. Need to redefine role of heritage expertise and reestablish trust and credibility through inclusive practices.	6	4
	1.2.2 Inclusion of local communities	Community involvement and representation important for wellbeing and empowerment. Local CH dimension in contrast with global mentality. Communities need ownership over defining, creating, managing, and interpreting their CH; work of CH professionals must fundamentally support these aims.	14	5

2 TECHNOLOGICAL	**2.1 Harnessing digital tools for heritage work**		0	0
	2.1.1 Digital systems	CH data repositories must be accessible among CH professionals (necessary training must be provided). Digital tools should be used to allow CH professionals to document and share their work with others, with digital persistence in mind; federated systems based on open standards are important.	7	1
	2.1.2 AI as tool	Potential for AI to be used in various CH functions. Need for training and readiness in the sector ("becoming friends with AI"), and collaboration with other sectors more active with AI.	8	3
	2.1.3 Digital literacy	Need to train CH professionals with the skills to be able to instrumentalize AI and digital tech.	6	3
	2.2 Digital preservation	Digitization of CH as preservation: What do we choose to preserve? Questions over ownership, accessibility, storage. Need for strong, searchable metadata and considerations of quality and longevity of digital formats. AI as tool for digital preservation.	9	2
	2.2.1 Digital twin	Digital twins as opportunity, potentially including in repatriation/restitution.	3	1
	2.2.2 Inclusive, representative digitization	Digitization allows greater documentation/interaction with diversity of CH, but need to make sure digitized materials/collections are representative.	2	1

	2.2.3 Relationship bw digital & physical	Relationship between physical and digitized CH: Digital as substitute for physical? Continuing desire to engage with physical? Impact on value/authenticity of both physical and digital? Relationship between digital and material conservation? Integrated approach in which digital and physical aspects of CH are not separated and viewed as complementary.	7	2
	2.3 Ethics & tech	Need to consider impacts of using AI for CH on human cognitive development and relationships, and to produce ethical framework for AI use. Need to support digital public infrastructure based on civic values.	3	2
	2.3.1 Digital sobriety	Concept of digital sobriety and digital carbon footprint of CH sector.	5	1
	2.3.2 Digital divides & access	Increasing digital inequalities mandates an approach to digital development that aims to move the whole sector forward, including SME institutions; focus should be on putting resources into realistic, practical technologies. Bridging digital divides in society: libraries can teach public digital skills Broad accessibility (including searchability) of digitized CH collections and resources is crucial.	16	5

	2.3.3 Intellectual ownership	Increasing issues of intellectual ownership: as digital information is shared, issue of orphaned materials removed from their sources (copyright laws have not evolved). Who owns digitized objects? Ownership of digital identities by private social platforms—need for independent digital identities.	4	1
	2.3.4 Culture for AI	Potential for CH sector to contribute to ethical AI through training data. CH to bring complexity, bias training, emotional value, human-centered approach to AI. AI can contribute to DRM through CH knowledge.	7	2
3 ECONOMIC	**3.1 Tighter heritage budgets**	Shrinking budgets expected for future, caused by wartime economy, prioritization of other policy areas, making CH operations difficult. Shrinking CH workforce which will require professionals to become generalists. Need to think about how to increase funding to support CH.	6	4
	3.1.1 Public funds focus on national heritage	Shrinking public funding for CH may prioritize national focus, potential re-nationalizing of CH narratives. That said, more local CH sites (already underfunded) may not be as impacted by shrinking budgets.	4	2
	3.1.2 Need for legislation and awareness	Need for awareness and legislation to publicly fund CH that also focuses on community benefits.	6	2

	3.2 Commercialization & Privatization of heritage	Expected trend of CH becoming increasingly commercialized as private sector takes over to compensate for lack of funding, often with effect of marginalizing local communities. CH increasingly focuses on profit, business growth, and marketing. CH increasingly reduced to its aesthetic value.	10	2
	3.2.1 Opportunities & Silver linings	Commercialization may focus more on material CH, and intangible CH may be less affected. Commercialization may also hold opportunities as a means to sustain CH, a start for creative collaboration between public and private sectors.	6	3
	3.3 Social economy	Growth of social economy that also emphasizes production of social and environmental services coinciding with acceleration of repositioning of CH as something to be used for social good. Increasing focus on how CH contributes to social rights, sustainability, community benefits, etc. CH professionals may become generalists that are versed in policy and social economy.	7	2
	3.4 WELLBEING	CH needs to be repositioned as part of beyond-GDP/wellbeing view of wealth. CH as something so fundamental to our wellbeing, but often not recognized as such until it's lost. Necessary to consider environmental wellbeing as part of the human one.	10	4

		Recognizing how CH can be detrimental to wellbeing. (Many comments here are quite general.) Strong need for evidence and collaboration (see also to 4.2.1 and 6.2.1.1).		
	3.4.1 Mental health	Mental health as one key aspect of wellbeing, with links increasingly drawn between CH and mental health benefits especially after Covid lockdown. Museums are shifting towards mental health focus. Seeing greater "social prescribing" and recognition of CH within public health sector, but a great need for more collaboration here. Need to evidence health impacts of CH through research to convince health sector.	8	4
	3.4.2 Social cohesion	Impacts of CH on social cohesion as another facet of wellbeing debate. CH contributes to wellbeing through sense of belonging within society etc., but when CH is exclusionary, it is detrimental to wellbeing.	5	2
	3.4.3 Access to & participation in heritage	Wellbeing impacts of CH are only realized when CH is accessible. Important to lower barriers of accessibility and expand participatory, co-creative involvement in various parts of CH operations, which can foster positive feelings of empowerment.	7	3

	3.4.4 Awareness & policy	Need for research and evidence and awareness to convince other sectors and policymakers of CH relevance to wellbeing.	6	2
4 ENVIRONMENTAL	**4.1 Climate change impacts**	Foreseeable CC impacts include conflict/war, habitat loss, coastal erosion/sea level rise, and migration as a result; leading to material decay, abandoned or destroyed CH, intangible CH becoming disconnected to region of origin. Need for CH impact assessments	8	3
	4.2 Showcase heritage contributions to environment	Make explicit the (potential and actual) positive contributions of CH to environment. Showcase relevance and value of CH generally, because that will make people want to sustain it. Emphasis on decision makers and policymakers as audience. See also 6.2	8	3
	4.2.1 Measurement	Measuring levels of societal trust, cultural confidence as sustainability indicators. Find impact indicators for CH that are measurable and comparable for decision-makers: adopting Triple Bottom Line and Life-cycle approach.	6	2
	4.3 Sustainable heritage practices	CH sector needs to adopt environmentally friendly practices and aim for carbon neutrality, including for conservation treatments and tourism. Adopt life cycle approach to evaluate social/environmental impacts at each stage of CH intervention/management.	10	4

	4.4 RESILIENCE		0	0
	4.4.1 Confronting loss	The CH sector will face losses of tangible and intangible heritage, and must make decisions of what to keep, adapt, and let go. Loss itself impacts value of CH. Ways to manage loss and grief are needed. Comment about how submerged urban areas may be re-used for economic development—aka even "lost" CH may not be totally lost.	9	4
	4.4.2 Managing change to heritage	Change is unavoidable to CH, so move away from defensive protection of CH against threat to dynamic management of change that meets environmental demands and changing interests; focus on preservation of values. Seeing change (e.g., climate change) as part of CH, not just something that acts on it.	7	4
	4.4.3 Heritage for managing societal change	CH itself as tool and lesson for adaptation in face of change and uncertainty, and pathway to sustainability and resilience. Need to shift mindset and narrative around CH from its protection to using CH to address threats and drive positive change in contexts of, e.g., DRM, migration, technological developments, sustainability.	11	5

	4.4.4 Intergenerational thinking	Need for intergenerational dialogue and mobilizing all generations; working on training and enabling youth, and making use of efforts of older generations; need to shift language according to audience.	7	6
5 POLITICAL	**5.1 Ukraine comments**	Executive summary reflects pre-Ukraine situation. Need to consider wartime economy, changed geopolitics, changing value systems (not sure if this part is connected to the Ukraine comment).	5	1
	5.2 Polarization & contestation		0	0
	5.2.1 Contested heritage & Decolonization	Conflictuous CH and narratives coming to fore in intensified geopolitical situation and needs to be managed. Greater numbers of heritage interpretations increase contestation. Destabilization of colonial and other (e.g., communist) monuments in public spaces (digital twins as possible solution); social divisions from backlash against decolonization.	8	5
	5.2.2 Political misuse of heritage	In polarized environment, CH used for ideological argumentation; greater malign revisionism in which politicians "hijack" CH meanings for ideological ends. CH professionals need to be able to respond and defend against this. Potential trend also of re-nationalizing CH.	9	3

	5.2.3 Negative heritage	Recognition that heritage is not always a common good, and can be controversial, divisive, and traumatizing.	5	3
	5.3 Heritage to mediate & unify	Need to instrumentalize CH to address polarization by: strengthening and broadening social values through CH that go beyond political lines; viewing CH as an exercise in empathy, reflection, and mediation, especially in face of difficult histories; preventing misuse of CH; continuing cultural exchanges; producing CH projects for connecting people; and capitalizing on CH impacts on social cohesion, interculturally. Digital tools may help.	13	6
	5.3.1 Training heritage professionals	CH professionals should be trained on politics of CH, so they can act as "first responders" in face of malign revisionism.	4	1
6 OTHER	**6.1 LIFELONG LEARNING**			
	6.1.1 Formal vs. informal education	Formal education: integrating CH courses into school/university curriculums. Informal education: Broader trend could see greater move away from formal learning towards informal (digital) learning; CH primarily deals with informal learning, personal development, and critical reflection. Need to think	6	3

		about what skills and knowledge CH sector should aim to impart, and how institutions can have a role.		
	6.1.2 Digital education	Trend of greater digitization in learning with development of learning platforms and immersive technologies. Need to think about how CH institutions are embedded in this.	4	2
	6.1.3 Co-creativity	Educational value of CH comes from interaction and involvement with the community. CH education could mean interactive courses involving fieldwork etc.; co-interpretation of CH that brings together diverse perspectives; and learning schemes co-designed with community stakeholders. CH education can be transformational, enhance wellbeing, and help people establish personal connections to CH.	12	3
	6.2 EVIDENCING IMPACT	See also 4.2		
	6.2.1 Prioritizing impacts	Not possible to measure everything, so need to prioritize which CH impacts to aim for/measure, and for what reasons. Measured impacts must be meaningful to sectors and audiences (including policymakers) we want to work with. Also make	12	2

		explicit the work that's already being done that shows the value of CH. How to grapple with the narrative that we have to measure impact for the sake of justifying funding for CH?		
	6.2.1.1 Wellbeing	Evidencing the impacts of CH may be about assessing wellbeing impacts and connecting to wellbeing measures. (See also 3.4).	3	1
	6.2.2 Contexts	Important to consider different cultural contexts when thinking about assessing impact. People may have different aims and ways of thinking.	6	2
	6.2.3 Tools & measurement	Need research into methodologies, tools, and skills to evidence impact.	4	2
	6.2.4 Flexibility	Impact assessments must be flexible to account for unplanned impacts and occurrences, and must respond on the practical side to the actual work done.	5	2
	6.2.5 Sustaining impacts	Need to consider how to ensure sustainability of positive impacts, and accountability for facilitators and decision makers.	2	2
	6.3 Holistic approach	Over and over again across the concept boards/breakout room summaries, there were calls for a holistic approach to CH, which I thought reflects an		

		awareness of CH as being embedded and connected within broader systems.		
	6.3.1 Holistic thinking	Several comments about a need for a holistic approach to CH: CH as an integral concept with different dimensions like tangible/intangible, etc. Climate change as part of CH rather than something that acts on it. CH aiming for environmental wellbeing as a part of human wellbeing. Digital and material aspects of CH not as separate but integrated.	9	7
	6.3.2 Cross-sectoral, interdisciplinary partnerships	CH is implicated across STEEP. As such, many calls for greater interdisciplinarity in the CH sector, in AI/tech, education, sustainability, public health, and CH Foresight. Culture/creative sector seen as distinct form CH sector, but there may be opportunities in closer collaboration. Partnerships between the private and public sectors for funding. That said, need for research/evidence tailored to different audiences to showcase relevance of CH to their domains.	22	11
	6.3.3 International collaboration	Call for collaborations between regions and nations facing similar issues to find shared solutions and share resources. IGOs have important role. Need for an international outlook as CH increasingly transcends	9	5

		borders. Focus on moving the entire sector forward worldwide rather than individual organizations.		
	6.3.4 Miscellaneous	Need for connections between regional and local. Potential of groupings of funding coming from small institutions, communities, individuals to fund CH activities.	2	2
	6.4 Heritage profession	Considering that the workshop was mainly attended by CH professionals, they had things to say about how the CH profession might change, which are collated here.		
	6.4.1 Redefining heritage expertise	Need to look at what skills and expertise are required from CH professionals now and in future. What is the role of the CH expert given scrutiny over CH authority? More generalized (vs. technical) skills in policy, social economy, etc.	9	6
	6.4.2 Adopting sustainable practices	CH professionals need to adopt environmentally friendly practices and aim for carbon neutrality, including for conservation treatments and tourism. CH should take visible leading role in sustainability.	9	4
	6.4.3 Digital upskilling	CH professionals need training in digital skills and the tools to harness potential of digital technologies and	6	3

		AI. See also 2.1 on the sorts of digital tools that CH professionals might put to use in their work.		
	6.4.4 Training in mediating between differences	CH professionals should be trained on politics of CH, so they can act as "first responders" in face of malign revisionism. Need skills as facilitators/mediators	6	3
	6.5 Research	One comment in the "Research" board on concept board.	1	1
7 FORESIGHT	**7 FORESIGHT**	Chat comments and transcript excerpts to complement Mentimeter results.	5	2

Annex IV: Workshop Organization & Materials

The success of the workshop can be attributed the input of the participants, and the meticulous planning, attention to detail, and tireless efforts of the organizing team. We wish to express our warm appreciation to all:

Organizing team

Alison Heritage (ICCROM)
Vania Virgili (ISPC-CNR)
Irazú López Campos (ISPC-CNR)
Merel Groentjes (NOW)
Marieke van Ommeren (RCE)

Technical support

Shangyun Shen (FSP)

Moderators

Irazú López Campos (ISPC-CNR)
Gustav Wollentz (NCK)
Alison Heritage (ICCROM)
Katherine Warren (AHRC-URKI)
Miruna Găman (FSP)

Notetakers

Giuseppe Zoppo (FSP)
Elodie Cazenave (FSP)
Amy Iwasaki (ICCROM – consultant)
Eva Roëll (RCE)
Merel Groentjes (NOW)

Workshop materials

Here included are the materials developed for the workshop:

- Workshop program overview
- Methodology and context
- Driver cards
- Guide for moderators

The ARCHE Foresight Workshop. Insight into the Future

Tuesday, 4 April 2023, From 14:00 to 18:00 (CET)

Online Workshop

Registration link

13:30-14:00 ONLINE VIRTUAL ROOM OPENING FOR PARTICIPANTS

14:00-14:15 OPENING SESSION

Welcome. Alison Heritage, ICCROM

Workshop Methodology and 1st breakout Session Intro. Irazú López Campos, ISPC-CNR

14:15-15:00 BREAKOUT SESSION 1: Drivers of Change Shaping Our World

Parallel sessions:

1.1 Social: Changing Societies. Moderator: Irazú López Campos, ISPC-CNR

1.2 Technological: The Digital Transformation. Moderator: Gustav Wollentz, NCK

1.3 Economic: Global Economics and Policy. Moderator: Alison Heritage, ICCROM

1.4 Environmental: The Climate Crisis. Moderator: Katherine Warren, AHRC-UKRI

1.5 Political: Shifts in Geopolitics. Moderator: Lucilla Spini, ISPC-CNR

15:00-15:15 COFFEE BREAK

15:15-16:00 PLENARY

15:15-15:30 **Outcomes of Breakout Session 1**. Moderators chaired by Alexandre Caussé, FSP

15:30-15:45 **KEYNOTE: Cultural Heritage and SDGs**. Jeffrey Sachs, Director of the Center for Sustainable Development at Columbia University and President of the United Nations Sustainable Development Solutions Network.
Introduced by Vania Virgili, ISPC-CNR

15:45-16:00 **2nd breakout Session Intro**. Irazú López Campos, ISPC-CNR

16:00-16:45 BREAKOUT SESSIONS 2: Building Resilience through Heritage

Parallel sessions:

2.1 Evidencing Impact. Moderator: Lucilla Spini, ISPC-CNR

2.2 Wellbeing. Moderator: Alison Heritage, ICCROM

2.3 AI and Culture. Moderator: Gustav Wollentz, NCK

2.4 Sustainability and Resilience. Moderator: Katherine Warren, AHRC-UKRI

2.5 Lifelong Learning. Moderator: Irazú López Campos, ISPC-CNR

16:45-17:00 COFFEE BREAK

17:00-18:00 PLENARY

17:00-17:30 **Outcomes of Breakout Session 2 and Panel Discussion**. Moderators chaired by Alexandre Caussé, FSP

17:30-17:50 **Open Discussion with Participants**, chaired by Gustav Wollentz, NCK

17:50-18:00 **Closing Remarks** by Merel Groentjes (NWO), Alison Heritage (ICCROM), Vania Virgili (ISPC-CNR), and Alexandre Caussé (FSP)

The ARCHE Foresight Workshop. Insight into the Future

Tuesday, 4 April 2023, From 14:00 to 18:00 (CET) – Online Workshop

METHODOLOGY AND CONTEXT: Engaging with the Discussion

The interactive workshop engages diverse stakeholders and aims to enrich the first findings of a peer-reviewed Foresight for Heritage study undertaken by ICCROM.

It is a component of the ARCHE project. It aims to uncover future trends and challenges for cultural heritage research and innovation in order to convey ARCHE's Strategic Research and Innovation Agenda (SRIA) for cultural heritage in Europe.

The workshop is the outcome of a cooperative team effort between numerous institutions, including the Dutch Research Council (NWO) as the task leader, the National Research Council of Italy-Institute of Heritage Science (ISPC-CNR), the International Centre for the Study of the Preservation and Restoration of Cultural Property (ICCROM), the Arts and Humanities Research Council of the UK Research and Innovation (AHRC-UKRI), and the Fondation des Sciences du Patrimoine (FSP).

Before the workshop, participants have been provided with preparatory materials and instructions on how to participate actively in the discussions. Below is a summary of the shared **Preparatory Materials**, a description of the interactive digital tools used (the **Conceptboard**) and an overview of the themes and issues that participants in the various breakout sessions are expected to contribute to (the **BREAKOUT SESSIONS**).

The Preparatory Materials

Participants have been provided with **executive summary of the Foresight for Heritage study** undertaken by ICCROM, along with a slide deck with some background information, and '**driver cards**' with a summary for each theme. Participants are encouraged to look through the cards and reflect on how the drivers and possible counter-trends listed might play out, and what their possible implications for heritage might be in their area of expertise. We ask you that they reflect on a 15-year horizon, envisioning the potential situation in c. 2038. Although the workshop cannot cover all of these topics, the materials will serve as a stimulating starting point for the discussions.

The Conceptboard

During the workshop, an interactive Conceptboard is being used. This is an online whiteboard

where participants are encouraged to leave their ideas, suggestions, comments, questions, and visions for the future of heritage by writing them on digital 'sticky notes'. The Conceptboard remains open for 48 hours after the workshop, in case participants have more ideas or wish to get inspired by the comments of others. The Conceptboard has a dedicated space for each of the breakout sessions, as well as for two themes from the Foresight study that are currently not included in the workshop (Research & Legal). There is also a space that can be used for any additional themes or topics that participants feel are important to discuss.

The Breakout Sessions

Each workshop participant has been assigned to the breakout sessions, taking into account as much as possible their stated preferences and/or background. It has not been possible to place everybody in their preferred sessions, and that not all disciplines have been easy to connect with the breakout session topics. Nonetheless, valuable contributions can still be made by participants even if the topic is not their area of expertise. The Conceptboard is available for participants to share their thoughts on any of the other breakout session themes, and it is encouraged to do so. Moderators will guide the conversation during the breakout sessions, while notetakers will input ideas and remarks directly into the Conceptboard. During the breaks, participants will have the opportunity to supplement these notes with their own.

BREAKOUT SESSION 1: Drivers of Change Shaping Our World

In the 1st breakout session, we will explore key drivers of change and their potential impact on cultural heritage. These are organised according to a STEEP (Societal, Technological, Environmental, Economic and Political) framework, which forms the focus of the five parallel discussion groups.

In our discussions, we will consider the nature of possible future changes, and what implications these may have for heritage, looking out over a 15-year horizon (i.e. the possible situation in c. 2038). In the face of future change, what new needs might heritage serve, what challenges could it face, and what new roles might it take on?

1.1 Social: Changing Societies

Our societies are changing on account of widespread and largescale demographic shifts that are already underway. In this session, we will reflect on the nature of these changes, and how they might impact cultural heritage in the future, and what new roles it may be required to take on. How might the communities of the future consider heritage, and how will they engage with it, what needs will they have of it – and what implications might this have for the ways in which we care for it?

1.2 Technological: the Digital transformation

Technological development is moving ever more rapidly, impacting the ways in which we live, work and interact. In this session we will explore how future technologies and in particular the digital sphere might affect our notions of cultural heritage and ways of interacting and caring for it, and what possible new challenges and roles for heritage may arise.

1.3 Economic: Global Economics and Policy

The global economic outlook seems increasingly uncertain, with likely shocks ahead, fuelled by climate change and political tensions, affecting the future stability of our economies. From many quarters calls are increasing for a paradigm shift in policy thinking, away from models predicated on growth towards regenerative economics and wellbeing. What implications might such possible wider economic developments hold for heritage?

1.4 Environmental: the Climate Crisis

The climate crisis is the defining challenge of our era. However, its potential impacts for heritage are in many ways not certain. In this session, we will consider how climate change might affect cultural heritage and heritage institutions, and what possible new challenges, obligations, and roles this might bring.

1.5 Political: Shifts in Geopolitics

Global geopolitics have enormous influence in shaping the world we live in, particularly in determining collective responses to the major challenges of our time. At this moment, the world is experiencing a particular moment of flux, with likely deep and long-term changes to power dynamics, and differing styles of governance and citizen engagement. At the same time, local and group politics are also evolving, and play an increasing role in the political discourse. In this session, we will consider how the politics of the future might impact heritage, and the political roles it might play.

BREAKOUT SESSIONS 2: Building Resilience through Heritage

The 2nd breakout session will explore possible opportunities for action through which heritage could help shape responses to the emerging challenges discussed in the 1st session. These are organized into 5 areas of potential action: Evidencing Impact, Wellbeing, AI, Sustainability and Resilience, and Lifelong Learning, which are the focus of the five parallel discussion groups.

In our discussions, we will consider in light of the possible future changes and implications for heritage discussed in session 1, what opportunities for action might emerge – again looking out over a 15-year horizon (i.e. to the possible situation in c. 2038). In the future, what key opportunities might emerge through which heritage can help to build more sustainable and equitable futures?

2.1 Evidencing Impact

What kinds of impact might the heritage sector seek to deliver in the future, and how important will it be to evidence these impacts? In this session we will explore, the nature of these possible impacts, how they might be evidenced, and importantly, what potential opportunities evidencing impact could present, for both heritage and the communities it serves.

2.2 Wellbeing

Wellbeing is a strongly emerging topic, as a transversal issue that cuts across many policy areas. In this session we will consider, how heritage might contribute to wellbeing in the future? What

might a 'wellbeing approach' to heritage look like, and what potential opportunities might this bring?

2.3. AI and Culture

The potential future role of AI in human lives, and the need for public values based technologies is much discussed at present. Here, we refer to the application of AI to cultural operations as 'AI for Culture' – with the reverse being 'Culture for AI'. In this session we will explore what opportunities both of these dimensions might present for heritage, and what new roles for heritage might evolve. How might heritage contribute to shaping more equitable digital futures?

2.4 Sustainability and Resilience

In this session we will consider how heritage might contribute to sustainability and resilience in the future. Given the likely impacts of the climate crisis, what opportunities might emerge through which heritage can contribute to sustainability and resilience in the future, and what new roles might heritage take on?

2.5 Lifelong Learning

In the future, education systems will need to adapt and evolve to meet new challenges. In this session we think about the future of learning, as a vital resource for creativity and resilience. To help shape more co-creative futures, in which lifelong learning supports society as it changes, what might be the future roles for heritage?

Driver cards

DRIVERS of CHANGE	POSSIBLE COUNTER TRENDS	
Shifting demographics, health, and value change • population growth, then decline • ageing populations • increasing mental health challenges • transnational migration • depopulation of rural and other areas • increasing growth of urban centres • value change	New approaches to health and engagement, learning, new values, policy diversification • people living longer active lives • lifelong learning, new education models • local participatory decision making • transnational identities • policy twinning – whereby policies in diverse areas are linked to enhance impact	

Possible implications for heritage

- skills gap in arts and crafts
- new roles involving the elderly, the young and the marginalised (mental health, inclusion)
- shift in focus towards intangible, changeable, future-oriented heritage
- supra-national identities challenge national notions of heritage
- increasing use of heritage and heritage spaces for cultural transmission, intercultural dialogue, and learning
- new policy roles in areas outside heritage (e.g. health, education)

DRIVERS of CHANGE	POSSIBLE COUNTER TRENDS	
Technological innovation and corporations • digital intensification • new ethical and security concerns • digital divide - inequalities in access and digital skills • job replacement and new job creation by technologies • remote working, gig economy 'precariat'	Regulation, ethics, public values • AI for culture, culture for AI • extended reality (AR, VR) • digital citizenship • public-values based technologies • open source, open access • Internet fragmentation – the 'splinternet'	

Possible implications for heritage

- increasing digitised and born digital content
- digital tools (AI and VR) as cultural heritage
- digital content management (semantic incoherence; data integrity, security)
- heritage institutions: staff training and upskilling; pooling of digital data
- new tools for preserving heritage and public engagement
- new educational roles: learning through heritage
- public values: promoting people centred AI through heritage
- new IP rights issues around cultural collection and cultural protection

DRIVERS of CHANGE	POSSIBLE COUNTER TRENDS	
Climate change and its impacts • extreme weather events, sea level rise • biodiversity loss • resource shortages (food, water security) • loss of habitat and livelihoods • transnational migration • new conflicts	Mitigation, adaptation and resilience • emerging technologies, renewable energies • increased cooperation between states • hazard mitigation, adaptation • community empowerment & resilience	

Possible implications for heritage

- in the face of unavoidable change, heritage management shifts towards managing loss
- new forms of heritage may arise through adaptation to new climate-based norms
- heritage increasingly serves as a record of lost biodiversity and landscapes
- increasing recognition of different knowledge systems and their contributions to climate change responses
- environmental impact reporting may become standard and carbon intensive activities are penalised
- cultural dimensions are integrated into future planning of risk prevention, mitigation and adaptation

DRIVERS of CHANGE	POSSIBLE COUNTER TRENDS	
Global markets and economic policies • rising wealth inequality • global financial instability • growth stagnation • inflation, commodity shortages • decreasing public budgets	New economic models ('beyond growth') • rising interest in regenerative and circular, economics • wellbeing economics as a basis for policy • public/private social impact financing • increasing emphasis on evidencing impact	

Possible implications for heritage

- reduced public funding streams for heritage
- reduced revenue streams from services (tourism, ticket sales)
- increasing demand for heritage institutions to evidence their impact
- increasing emphasis on wellbeing impacts through heritage
- development of new tools for evidencing cultural capital value (non-market value)
- heritage business model innovation to deliver social impact may become increasingly important

DRIVERS of CHANGE	POSSIBLE COUNTER TRENDS	
Shifts in global geopolitics and styles of national governance • shifts in world order & new alliances replace 'western/non-western' dichotomies • new conflicts • divergent geopolitical trajectories and decreasing multilaterism • increasing authoritarianism and erosion of human rights • diminishing Eurocentricity • rising nationalistic populism	Pluralism, coordination, diversity and inclusion • increased awareness among states of shared challenges and solutions (SDGs) • proactive coordination and constructive action among states • decolonisation • calls for greater inclusivity, diversity and participatory governance • recognition of rights and perspectives of minority &/or marginalised groups • youth disillusionment in democratic processes	

Possible implications for heritage
• political tensions may result in heritage becoming more contentious & impacted by conflicts. • heritage may increasingly be used as a tool of soft power. • heritage may become more politicised for divisive and polarizing purposes. • cultural rights of marginalised groups may diminish. • Eurocentric 'universal' heritage ideals may be replaced by a greater plurality of knowledge and approaches

Guide for moderators

Many thanks for agreeing to support the ARCHE *Insight into the Future* workshop as moderators, we are extremely grateful to you. This document aims to give some further information to help orient you before the workshop.

Workshop structure

In addition to plenary sessions, the workshop will comprise two break out sessions, each with five parallel discussion groups.

- Session 1 will explore key drivers of future change and their potential implications for cultural heritage. These are organised according to a STEEP (Societal, Technological, Environmental, Economic and Political) framework, which form the focus of the five parallel discussion groups.

- Session 2 will explore possible opportunities for action through which heritage could help shape more positive futures. These are organized into 5 areas of potential action: Evidencing Impact, Wellbeing, AI, Sustainability and Resilience, and Lifelong Learning, which are the focus of the five parallel discussion groups.

The discussion groups

Below is a table detailing the assigned moderators and notetakers for each discussion group. Please take a look to see which groups you will be leading.

	Moderator	Notetaker
SESSION ONE		
Changing Societies	Irazú López Campos	Giuseppe Zoppo
Digital Transformation	Gustav Wollentz	Elodie Cazenave
Economic developments	Alison Heritage	Amy Iwasaki
The Climate Crisis	Katherine Warren	Eva Roëll
Shifts in Geopolitics	Miruna Găman	Merel Groentjes
SESSION TWO		
Evidencing Impact	Alison Heritage	Amy Iwasaki
Wellbeing	Irazú Lopez Campos	Giuseppe Zoppo
AI and Culture	Gustav Wollentz	Elodie Cazenave
Sustainability and Resilience	Katherine Warren	Eva Roëll
Re-imagining Learning	Miruna Găman	Merel Groentjes

Each group discussion will last 45 minutes.

Due to the high level of interest in the workshop, we may have as many as 10-15 participants per group (we will not know the precise number until the workshop). We appreciate this is not ideal for in depth conversations but hope nevertheless it will be possible to capture a good diversity of perspectives.

Given the extremely limited time during the session, we ask that you endeavour to keep introductions as short as possible. A good way to handle this may be to dispense with preliminary introductions and just to ask participants when they first speak, to mention their name, organisation and country.

Please try to ensure that everyone gets a chance to speak. It is therefore good to encourage people to keep their contributions as short as possible, so that everyone can get to speak at least once.

As this is a *Foresight* workshop, it is important to encourage people to think creatively beyond usual horizons. **All ideas are welcome in this exploration**. We are not trying to predict what might happen, but rather explore different possible futures.

A couple of practical points

In the plenary feedback sessions, you will be asked to summarise the group discussions. To help you do this, you will be assisted by a notetaker, who will capture the conversation using sticky notes on a concept board. The concept board is quite easy to navigate around, and we will share a link to give you a chance to try it out in advance.

For **session 1**, on the concept board you will find a slide, which summarises a number of key drivers of change, and possible counter-trends. It is not necessary (or possible even!) to discuss all of the topics listed on this slide. Rather, it is intended to provide a starting point just to kick start the conversation. We suggest that you focus in on the slide at the start of the conversation, just to introduce the session, and then move it to one side as people get talking, so that people can instead see main question, and the sticky notes as they are being created.

For **session 2**, the composition of the groups will be changed – so will be a mix of people who have discussed different themes during session 1. Again, to save time, encourage people to give their name, organisation and country when they first speak, rather than doing introductions. We hope that by this time people will be warmed up and engaged, so for this session, there is no starting slide – just the main driving question. It would be good to focus in on the board so that people can see the main question and the sticky notes as they are created.

Information about the topics and questions

For each discussion group, a short summary paragraph (drawn from the foresight study *Executive Summary*), together with a key question for each group, is given below. Please take a look to familiarise yourself with the topics for your groups.

SESSION ONE

<u>Changing societies</u>

The world population is expected to grow until 2050, putting pressure on social, environmental, political and economic infrastructure. This may lead to an unsustainable expansion of already overpopulated areas while many rural areas may experience depopulation. The world population is also expected to get older with increased life expectancy. People may spend more years in ill health,

and age-related diseases, such as dementia, may become more common. An ageing population will demand new ways to structure education to emphasise flexibility and lifelong learning. There may be increased transnational migration and movement, mostly from the Global South to the Global North, largely induced by the climate crisis, wars and conflict, creating progressively more heterogeneous societies.

Among the implications for heritage, is a risk that traditional skills, knowledge and crafts may disappear. However, an ageing population may also result in greater numbers of elderly visitors to heritage sites, who play a more participatory role in contributing to the meanings and social contexts of heritage, often on a voluntary basis. As such, heritage may contribute to hindering the development of age-related diseases. Heritage will need to be managed and valued in a way that reflects the increasingly heterogeneous nature of society. In the main, heritage may be considered less tangible, immutable, past-oriented and place-specific, instead moving towards the intangible, changeable, future-oriented and transnational.

Question for the group:

Thinking about possible societal changes in the future:

How do you see these issues affecting heritage in the future (c. +15 years)?

The digital transformation

The future will likely be marked by advancing technology and the intensification of digital activities, leading to an increasingly interconnected world in which technological innovation is the crucible of global competition. Potential future paths range from healthy competition between powers under a broad framework of shared standards and breakthroughs, to a decoupled world where technological power is concentrated within blocs. One signalled trend is a drastic acceleration in the development of AI, with it becoming an invaluable tool in many facets of daily life and work. Further, AI will likely replace some routine jobs while creating new types of work in what is termed job polarisation. Digital transformation risks raising inequality, and the increasing development of a 'digital underclass'.

We are likely to see more innovations in immersive reality and interactive experiences. These technologies may eventually become ubiquitous in daily life, and essential tools within the heritage sector. Furthermore, emerging forms of technology will likely come to be considered cultural heritage in themselves. Heritage has a critical potential role in the development of more ethical AI which can better serve society. Robust frameworks are needed to ensure heritage data is both protected and accessible, enabling communities to create, curate and sustain their own heritage.

Question for the group:

Thinking about the ways in which technologies might develop in the future:

How do you see these issues affecting heritage in the future (c. +15 years)?

Global economics and policy

The economic paradigm centred on free markets that has dominated policymaking for over 40 years, while generating prosperity has produced vast inequalities in wealth, income, health, and power. As an economic model based on ever-increasing consumption, many argue this has encouraged an unsustainable, wasteful, and degenerative global economy. Currently, rapid inflation is being felt across governments, businesses, and communities in most countries. Ongoing trends of widening income gaps and concentrated wealth may become more apparent. Over the next 15 years, this may drive greater inequality, political instability, and conflict, although the effects of these may be differentially distributed, with developing countries impacted to a greater extent than those with more developed economies.

Such developments may have profound implications for heritage, hitting two primary funding sources. Firstly, budget allocations may increasingly suffer as governments funnel public funds towards other crucial areas. Meanwhile revenue from tourism may be vulnerable to further destabilising catastrophes and impacted by policies to achieve net zero. As public budgets tighten, heritage may have to compete harder to gain support and provide evidence of its socio-economic and environmental impacts to justify investment. A shift towards regenerative and wellbeing economic policies may offer advantages in recognising goals more suited to heritage impacts.

Question for the group:

Thinking about possible economic developments in the future:

How do you see these issues affecting heritage in the future (c. +15 years)?

The climate crisis

Climate change and environmental degradation will have a major impact on the world in the coming centuries, challenging presumed certainties and expected lifestyles. The effects of the climate crisis are already being felt by millions. Future scenarios and counter trends depend on the recognition of, and accountability to, the causes of climate change. One possible scenario involves the engagement of emerging technologies as instrumental in achieving the UN SDGs. Another points to civil unrest, due to the disruption of water and food supplies, agricultural production, economic supply chains and diplomatic relationships across regions. However, hope can be found in strategies that enhance collaboration and empower communities through necessary investment, resources and services to adequately respond to climate change.

The implications for heritage are far-reaching, affecting the value systems and foundations of how heritage is identified, understood, managed and practised. Some possible implications are: widespread heritage loss, but also creation of new forms of heritage through adaptation to new climate-based norms; increasing employment of heritage and diverse Indigenous and traditional knowledge systems within climate change responses; rethinking heritage management and decision-making; and integration of cultural dimensions into future risk prevention, mitigation and adaptation plans.

Question for the group:

Thinking about the ways in which the climate crisis might develop in the future:

How do you see these issues affecting heritage in the future (c. +15 years)?

Shifts in geopolitics

Many studies are highlighting the shaping of new geopolitical alliances, not reducible to traditional dichotomies such as that of "Western" and "non-Western", and the expansion of value systems beyond Eurocentric world views.

These shifts in the global arena are potentially forming divergent geopolitical trajectories for the future, that could be marked by decreased multilateralism between states in favour of more unilateral and nationalist agendas. This could hinder global cooperation in tackling common challenges. So-called middle-powers may have an important role to play to build global solidarity. Youth disillusionment is flagged as a major risk for the future, connected to economic instability. In a scenario of increased unilateral and authoritarian agendas among states, there is a risk that populism and political extremism will weaken liberal democracies.

The material also pinpoints possible counter trends, including an increased awareness among states of shared challenges and solutions. Anticipation and long-term thinking are signalled as critical instruments for proactivity and global solidarity. A possible implication for heritage is that it may become more politicised for divisive and polarizing purposes. Thus, it will be essential to centre heritage around social justice and equity and employ heritage for more accessible, inclusive and sustainable futures. This will require people-centred, community-based and participatory approaches.

Question for the group:

Thinking about possible political shifts in the future:

How do you see these issues affecting heritage in the future (c. +15 years)?

SESSION TWO

Evidencing impact

Placing priority on evidencing and enhancing environmental and social impacts is key for building sustainable heritage futures. Beyond reporting its green credentials, the heritage sector will need to evidence what it delivers in terms of sustainability, and wellbeing. This requires a paradigm shift to consciously orient efforts beyond the conservation and management of heritage towards improving quality of life and the environment. It also requires change with regard to impact measurement, such that evidencing results is not seen as a chore obstructing more important work, but as integral to improving services. Greater transparency is needed regarding who benefits from heritage, to surface and

address inequalities. Such public accountability is not only a moral imperative but also vital to restoring trust in institutions.

To do this, better ways of articulating and evidencing heritage impacts are needed. Also clear is that no single approach or tool is sufficient. Rather, a range of methods combining the qualitative and quantitative to communicate compelling narratives regarding what matters to people and how heritage improves lives, as well as hard evidence to support these claims. Possible opportunities lie in the development of tools that incorporate a wider range of societal wellbeing markers, broadening current approaches to cultural capital assessment. Greater awareness of wellbeing outcomes could help pinpoint complementarities between different policy areas, enabling cross-sectorial partnerships to maximise impacts. Hence investing in heritage versus other areas becomes not a zero-sum game, but rather win-win.

Question for the group:

What kinds of impact might heritage have in the future,
and what is needed to evidence these impacts?

Wellbeing

Wellbeing is a rising topic within policy, practice and research, as evidenced by its increasing emphasis in health, social, environmental and economic policies; arts and culture projects; and research on heritage and wellbeing. This trend may continue, with growing public, political and academic consensus around the need to secure quality in life in the face of global challenges. However, counter trends, fuelled by tightening economic conditions, deregulation and political shifts may emerge, compounded by a lack of shared definitions and tools for measuring wellbeing, and ways of embedding it within policy practice. Yet, a more holistic understanding and use of wellbeing may grow.

A shift towards wellbeing may be advantageous for heritage, in emphasising policy goals more aligned with the essential nature of its value. As wellbeing is founded on people making decisions regarding what matters to them, it also offers opportunities to explore people's preferences concerning heritage and provide meaningful evidence of heritage impact. In turn, this may stimulate greater interest in heritage from other areas, such as health and the environment, stimulating cross-sectoral collaboration. Key policy dimensions may centre on

issues of mental health, social inclusion and trust, focussing on the elderly, the young, and marginalised and underserved communities. In the future, heritage investment may depend on evidencing wellbeing impacts, and in turn heritage management may shift towards evidencing and promoting wellbeing.

Question for the group:

How might heritage contribute to wellbeing in the future, and what is needed to make this happen?

AI and Culture

The future role of AI in human lives, and the need for public values based technologies is much discussed at present. Here, we consider both the application of AI to cultural operations and the potential contribution culture can make to more equitable digital technologies. In this session we will explore what opportunities both these dimensions might present for heritage, and what new roles for heritage might evolve. Digital technologies present an opportunity to open heritage knowledge and values to new actors and new conversations. Parallel with innovation in immersive reality and interactive experiences to attract and engage users, we may also see technology such as AI and VR considered cultural heritage in themselves. New technologies may offer more inclusive and accessible means of managing heritage, with AI serving as a powerful tool in surveying buildings/sites, generating metadata, enhancing visitor experience and improving access to collections, and preserving intangible heritage such as endangered languages. Notably, urban and built heritage can integrate 'smart building' technology to make spaces 'greener'.

Also critical is the potential role of heritage in the development of AI to better serve society, contributing to the development of ethical considerations within AI — a key challenge for the future. 'Culture for AI' highlights an opportunity for the heritage sector to explore how human values can inform AI development that is more ethical and sensitive to a diverse range of human values and needs. Here, heritage can provide valuable perspectives and knowledge concerning what it means to be human in an increasingly digital future. The heritage sector will need to stay current with new technological advancements and work to increase accessibility and enhance digital learning and participation, and overcome inequalities.

Question for the group:

How might heritage contribute to equitable digital technologies in the future, and what is needed to make this happen?

Sustainability and resilience

Beyond addressing the challenge of climate change, sustainability is a growing intergenerational ethical movement, concerned with the equity, equality, rights and wellbeing of humans, and of nature. Clear trends in sustainability were evident in the review, related to inequality, inequity, vulnerability, participation in decision-making processes, and education and/or capacity building. Advancing equality and equity are significant in empowering people to support themselves. Institutions play a key role in this through promoting equitable distribution of resources and services, to instigate a meaningful transformation towards a more just and cooperative world.

Heritage can make a greater contribution to sustainability, as part of the wider response to addressing climate change through offering heritage-based solutions for mitigation, adaptation and resilience. While science and technology are driving innovation, cultural heritage should feature within areas such as sustainable building and infrastructure development; land use and water management; food security and carbon sequestration. This requires greater recognition of the potential contributions to be made by different forms of heritage, particularly Indigenous and traditional knowledge and natural heritage, and likewise including these within disaster risk reduction plans. However, to remain relevant, the heritage sector will need to promote sustainability in all its forms, embracing inclusivity, intergenerational and cross-cultural dialogue.

Question for the group:

How might heritage contribute to sustainability and resilience in the future, and what is needed to make this happen?

Lifelong learning

An anticipated skills gap and ageing populations will require the expansion of education towards lifelong learning, including formal, non-formal and informal

learning. Further, learning may need to be more firmly oriented towards co-creativity. Co-creativity can help blur or even dissolve boundaries between learners and teachers, allowing exchange, dialogue and understanding to take centre stage. Emerging technological tools may help develop a wider and more flexible range of skills and capabilities, in line with lifestyles where career paths are switched more frequently. It will be essential not to limit learning to specific ages or spaces.

Necessary skills, competencies and capabilities for the future will be intricately connected to proactively facing the anticipated megatrends. The development of digital skills will be crucial to addressing the digital divide. Further, digital tools open novel opportunities for innovation in teaching and facilitation. In a future where many routine jobs may be replaced by AI, it will be vital to identify how emerging technology can be complemented with "human skills". Cultural heritage is well-equipped to provide valuable insights on what it means to be human, which can contribute to develop a more ethical AI that is sensitive to human needs and values.

Question for the group:

How might heritage contribute to life-long learning in the future, and what is needed to make this happen?

Screenshot of Conceptboard with sticky notes from participants

Annex V: Foresight study peer review

The foresight study was peer reviewed by four experts from different fields. The Task 2.1 project partners provided names of candidates with expertise on (1) foresight and horizon scanning studies; (2) future and emerging technologies and innovation; (3) cultural and heritage studies; and (4) heritage and climate. A selection was then made to ensure geographic and gender diversity.

Reviewers were asked three questions:

- Is the scope of the foresight analysis sufficiently comprehensive?
- Is the foresight analysis sufficiently reasonable, i.e., evidence based/robust?
- Is the foresight analysis formulated in a way that makes its findings broadly usable?

There was also room for additional remarks.

An opportunity of meeting with the authors of the Foresight study to discuss the uptake of the peer review reports was offered and taken up by two out of four reviewers. The reviewers were on the whole positive about the quality of the report and offered several concrete suggestions for clarification or improvement of certain arguments. These suggestions have been taken up to further strengthen the foresight analysis. We gratefully acknowledge the contributions of the peer reviewers and thank them warmly for their time and expertise.

General Overview of Reviewer Feedback & Uptake

Answer to review 1

Review 1 suggested that we should give a sense of the kind and quantity of the material that could not be reviewed due to time constraints. We added more information about the limitations and biases in the material, related to language constraints and geography, in chapter 1. We have also expanded upon the limitations of the Foresight methods employed within the reviewed literature.

It was also suggested that we explain how we define heritage and the heritage sector. We choose to apply the concept as defined in the Faro convention, which was added in the introductory chapter. Reviewer 1 asked for a summary of the findings and recommendations at the beginning. We have added an executive summary.

Answer to review 2

Reviewer 2 wanted more engagement with academic work in the field of strategic foresight. Therefore, we added more information on Strategic Foresight as an academic field, related to journals, university courses and networks.

Reviewer 2 also asked how we strictly we wanted to limit ourselves to Strategic Foresight in relation to other future-oriented fields. In the introduction, we are now positioning Foresight within a wider context of future oriented research. We make clearer how Foresight is connected to other future-oriented fields. We also explain why we sometimes refer to adjacent fields within anticipation studies, e.g. in order to create synergies and to maintain a critical approach.

Reviewer 2 also wondered whether there was a quality threshold for material chosen, as we seemed to take all Foresight reports of equal weight. The selection was based on relevance for the field of heritage and the scope of the study. We used studies that came from recognized institutions and actors in the field, and from peer-reviewed articles and volumes. We now clarify this in the introduction. Many different foresight techniques were used in the reviewed literature, participatory as well as expert driven, which is highlighted in the chapter detailing the reviewed literature. We have now added a section in the methodology where we clearly highlight the limitations of the material and the biases in the material. Furthermore, we underline that the futures anticipated should not be taken at face value. When presenting the findings, we use the words "may", "likely" and "possibly" to indicate that the future is not certain. Further, we try to reveal different scenarios and counter trends to show that the future can develop in many ways.

Reviewer 2 suggested that we make it clearer when we draw upon the literature under review, when we draw upon external sources, and when it is our own opinions. As a response, we have now clearly indicated references with a ***** when we are drawing upon sources not included in the literature review, within the chapters presenting the findings. This increases transparency. In chapter 3, Global shifts, we are building upon the reviewed literature, while in chapter 4, Building resilience, we are connecting the findings from the reviewed literature to larger trends within the field of cultural heritage. Thus, we work in a more inductive way in chapter 4, where links and broader connections are made. We have included statements to this effect when introducing the relevant chapter,

for example this has been more thoroughly explained when introducing chapter 4, to clarify our own approach in relationship to the reviewed literature.

For increased transparency, we are now including a summary of the different organisations producing the reviewed literature, to outline different interests.

Answer to review 3

Reviewer 3 suggested that we add more information on how forgotten traditional knowledge can be of contribute to solve the climate crisis, which we added in the section on the Climate Crisis, building upon the EU OMC report "Strengthening Cultural Heritage Resilience for Climate Change: Where the European Green Deal Meets Cultural Heritage".

Reviewer 3 also asked for more information on so-called compound events e.g. long drought periods and heat waves, or heavy precipitation and hurricanes. We added more information on these events.

In response to reviewer 3, we also expanded upon the need for accessibility to education for children and youth regardless of social background, in Chapter 4.

Answer to review 4

Reviewer 4 asked us to expand upon the issue of copyright and access to information. We were also asked to write more on the role of accessible digital public infrastructure in contrast to digital infrastructure owned by Big Tech. We added more information on this in Chapter 3.

Overall, reviewer 4 asked for more focus on Big Tech in the chapter on global trends. We did so by referencing Keller 2022, European Public Digital Infrastructure Fund White Paper, in the section on the digital transformation, where the value in infrastructure and spaces that are open and under the control of their users, workers and maintainers are emphasized, in contrast to those digital spaces owned and controlled by commercial entities. We also wrote more on the potential role of heritage institutions (museums, archives and others) to provide accessible public infrastructure for all ages.

Further, we elaborated on the benefit of collaborating with organisations whose missions are aligned with heritage organisations, including Wikipedia and others, as suggested by the fourth reviewer.

Annex VI: Review of research past and present

Introduction

'There is much to be done' are the concluding words of the main document 'Foresight for Heritage' (Wollentz et al., 2023: 79). That is indeed the case, but much has already been done and/or is happening now. Past, present and future research are intertwined, and one cannot look forward without giving some attention to the present and its past. This section attempts to do just that: To offer a recap of past cultural heritage research funded by the JPI Cultural Heritage (JPI CH), to glance at ongoing research and identify possible connections to future cultural heritage work.

ARCHE emerged from the JPI CH collaboration and therefore it is fitting to look at research projects made possible through the JPI CH. This annex consists of two parts: The first offers a recap of the research projects funded by the JPI CH between 2013 and 2023, while the second part highlights Future and Emerging Technology (FET) and Innovations. Both serve to supplement the study 'Foresight for Heritage'.

First, we briefly look back on research projects funded by JPI CH in the last decade, identify a number of trends, then focus on recently funded projects, and look forward to new possibilities. The political, strategic and societal potential of cultural heritage, as discussed in the foresight study, is embedded in some of the (recent) projects funded by JPI CH. They are good examples of how this potential of heritage might work in future studies.

Since its initiation the JPI CH has launched seven calls that resulted in the funding of 61 projects, in which 316 partners were involved[10]. Below is an overview of this impressive achievement where each call and its funded projects are briefly described. Subsequently, a number of projects that exemplify certain ongoing research trends are highlighted.

[10] https://www.heritageresearch-hub.eu/homepage/joint-programming-initiative-on-cultural-heritage-homepage/jpich-calls/

Recap JPI CH research projects 2013-2023

Recap JPI CH research projects 2013-2017

The first JPI CH call was a Pilot call in 2013 that aimed at establishing common processes and assessment criteria. It enabled researchers from different countries to create effective collaborative networks and build on common transnational research topics in cultural heritage[11]. Ten projects were funded and ran between 2013 and 2016. Two of those projects were themed around landscape: CHeriScape[12], and Historic Urban Core (Shuc). Two others focused on developing a conceptual and methodological framework for cultural heritage value assessment (H@V) and summarizing the state of knowledge and experience and developing a methodology for the value of protection, preservation, modern use of heritage (SMART Value). The other six project were grounded in research on tangible cultural heritage such as artefacts, buildings, masonry structures, paintings, ancient concrete, and movable tangible cultural heritage (ArCo, Emerisda[13] KISADAMA, LeadArt, Redmonest and Tangible). This call was foundational in its nature.

The second call in 2014 was the 'Heritage Plus Joint Call' that resulted in the funding of 16 research projects, which ran between 2014 and 2018[14]. This call was "*designed to generate new, research-based knowledge to promote the sustainable use and management of cultural heritage to meet societal challenges and contribute to the development of the society*."[15] The focus was mainly on tangible cultural heritage research, while not excluding the interlinked aspects of intangible and digital heritage. So far, this call yielded the largest number of JPI CH funded projects, with diverse topics and research emphases reflective of the rich field of cultural heritage studies.

These projects can be arranged along a number of themes: The first is the conservation of (in)tangible buildings and artefacts which is central in the two projects CHANGES and CMOP. CHANGES looked into achieving new inclusive local models to support Preventive Conservation, Maintenance and Monitoring,

[11] https://www.heritageresearch-hub.eu/call/first-pilot-call/
[12] See selected research projects below.
[13] https://www.emerisda.eu
[14] https://cordis.europa.eu/project/id/618104/reporting
[15] https://www.heritageresearch-hub.eu/call/heritage-plus/

to benefit private owners and managers of historic properties with a cost-effective and improved quality of protection of built heritage[16]. CMOP, Cleaning Modern Oil Paints, developed new cleaning systems for 20th and 21st century oil paintings, and disseminated this knowledge via web platforms, seminars, conferences and a documentary for the general public. The cleaning systems have been introduced via existing courses and workshop seminars aimed at practising conservators and conservation students and thus offering practical solutions to current and future conservators[17]. Although their subject matter differs, CHANGES and CMOP share the desire to develop (cost) effective tools for conservation that can be used outside the project consortium.

Three projects can be grouped based on accessibility and (re)use of cultural heritage: HIMANIS, EuroMagic and EnDOW. HIMANIS has made 199 medieval manuscripts important to European history and identity accessible[18]. A combination of computer science, humanities and cultural heritage institutions enabled technology to generate new, research-based knowledge from historical manuscripts (Ibid). Not the written word but images were at the centre of EuroMagic, the project that addressed the sustainable preservation of European heritage of lantern slides and provided guidelines for its (digital) documentation. The third project involved in accessibility of cultural heritage was EnDOW. A project that trained volunteers to examine whether a literary or cinematographic work really lacks a traceable author and to put it online for the benefit of all.'[19] EnDOW bridges the world of art, culture and law, making digitization of orphan works possible after a communal diligent search is done by members of the EnDOW community consisting of volunteers (Ibid.). EnDOW is also one of two projects from this call with a legal component related to heritage. Where EnDOW is concerned with the practicalities of law, such as copyrights, Heuright is more theoretical and has provided a theoretical reconceptualization of the right to cultural heritage[20]. This research focused primarily on tangible

[16] https://www.nwo.nl/en/researchprogrammes/jpi-cultural-heritage/projects-heritage-plus, http://www.changes-project.eu/wp-content/uploads/2017/02/CHANGES-Project-Summary.pdf
[17] https://www.heritageresearch-hub.eu/project/cmop/
[18] https://eadh.org/projects/himanis, http://himanis.huma-num.fr/app/, https://www.heritageresearch-hub.eu/project/himanis/
[19] https://diligentsearch.eu/the-aim-of-endow/
[20] https://www.heritageresearch-hub.eu/project/heuright/

cultural heritage but also included the interlinked aspects of intangible and digital heritage[21].

Then there are projects that (further) develop or deploy innovative technologies for safeguarding (archaeological) landscapes and heritage properties environmental threats: ChT2, Clima[22], PROTHEGO and REFIT. ChT2 aimed to produce a replicable methodology and 3/4D technology useful to researchers and non-academic stakeholders to use in safeguarding structures and landscapes[23]. Clima explored how webGIS and remote sensing can be useful tools to monitor, protect and manage Archaeological landscapes from environmental risks[24]. PROTHEGO contributed to a more comprehensive picture of sites affected by geohazards and applies novel space technology based on radar interferometry (InSAR) to monitor monuments and sites in Europe on the World Heritage List[25]. Institutional support and governance are reinforced through knowledge and innovation, thus strengthening disaster preparedness at heritage properties in the future[26]. REFIT explored how communities understand and experience cultural landscapes and recognized that the ecology, heritage and wildlife of these landscape are intertwined with each other and their economic value[27]. The project integrated frequently neglected stakeholders (rural SMEs, ecologists, NGOs) in the presentation and management of cultural landscapes demonstrating the emancipatory potential of heritage in including 'marginalized' voices (Wollentz et. al, 2023:59).

Another project that also deals with safeguarding cultural heritage but without the technological component is HeAT (Heritage and Threat). This project is more people oriented and its planning included both global and local voices, bringing multiple views and vocabularies to the consideration of heritage issues. By including Syrian/Iraqi, English, Polish, Romanian, Italian, Danish and Chinese perceptions and vocabulary of heritage, HeAT accelerated the development of a global language of heritage that went beyond the focus on global threats to

[21] https://www.heritageresearch-hub.eu/project/heuright/
[22] See section 2 Future and Emerging Technology and Innovation, p. 13.
[23] http://cht2-project.eu/
[24] http://www.clima-project.eu/, https://www.heritageresearch-hub.eu/project/clima/
[25] https://sgi.isprambiente.it/prothego/project.html
[26] *Ibid*.
[27] https://www.heritageresearch-hub.eu/project/refit/

heritage from a European Perspective[28]. In a way HeAt anticipated the 'shift away from dominant value systems across the West' (Wollentz et al., 2023:11) and worked to achieve cross-cultural exchanges and to pool European and non-European expertise in cultural heritage and its intrinsic threats[29]. HeAT fits within the human rights-based approaches discussed in chapter three of 'Foresight for Heritage' (Wollentz et al., 2023:34).

Within this second call there was also a focus on intangible lived (traditional) cultural heritage expressed through food, music, dance or a combination of these in the research projects Gastrocert, Heritamus and CHIME. Gastrocert explored how the development of local gastronomy can help protect rural heritage values, and how entrepreneurial culture can enhance locally produced food as a value-added touristic experience. Calabria in Italy, the Girona province of Catalonia, the Highlands of Scotland and Jämtland in Sweden were included in the research to develop and support greater critical understandings of gastronomic heritage as a means of boosting business competitiveness and balancing the fragmentation of local livelihoods caused by globalization (Sjölander-Lindqvist, 2021:188). CHIME uses 'jazz and improvised music as a lens through which to explore key issues in heritage research, drawing on the music's unique and complex relationship to concepts of high and low culture, tradition, innovation, authenticity and (non)-European identity.'[30] Heritamus studied Portuguese Fado and Spanish Flamenco, secured historical recordings, and worked with stakeholders' community on producing tools and field-research[31]. Among these projects Gastrocert stands out for its explicit focus on sustainable economic value of heritage. Surprisingly, one of its findings was that the entrepreneurs showed a strong desire to contribute to development, based on an aspiration to strengthen local community spirit and livelihoods (Sjölander-Lindqvist, 2021:191). Entrepreneurs built competitive advantage by relating to natural, cultural and social worlds, and by reproducing collective memories, cultural heritage and socially binding frameworks (Sjölander-Lindqvist, 2021:194). The workings of these projects offer examples of how (in) tangible cultural heritage embodies multiple dimensions: food/dance/music, taste, culture,

[28] https://ccrs.ku.dk/research/centres-and-projects/heat/
[29] https://www.heritageresearch-hub.eu/project/heat/
[30] https://chimeproject.org/about/
[31] https://www.heritageresearch-hub.eu/project/heritamus/

economy, sustainability but also long-term communal wellbeing (Wollentz et al., 2023:29-33,39).

Last but not least, two projects centred on landscape heritage: one focused on understanding heritage landscape planning (Pich) while another (EuWather) examined specific landscapes, namely European waterways heritage. Pich is a research network in the field of spatial planning and heritage that seeks to understand the complex relationships and processes within planning and governance institutions, as well as how they interact with the citizen's understanding of places related to the historic urban core, sites of industrial transformation, and the broader landscape heritage[32]. EuWather created the platform "Waterways Explorer" to promote knowledge and rehabilitation of the cultural heritage of minor waterways and historic canals in Europe. The goal was to reconnect communities with the cultural heritage of their canals and rivers and to develop new opportunities for eco-tourism and outdoor recreation as an engine for sustainable development[33]. One of the ways they continue to do this is by helping citizens set up digital waterways' heritage tours, offering them a guidebook and educating them to the usage of digital tools such as izi.travel and ArcGIS online[34].

This second JPI call has generated very interesting and compelling research that reflects the vastness of the landscape of cultural heritage. The most notable emerging trend, regardless of the nature of the projects and their subject of study, is the emphasis on 'communities'. The different consortia have involved people from outside academia at different stages of their studies: E.g., ENDOW has formed its own community of volunteers whom they have trained to examine orphan works and make them available to the general public; ReFIT has brought together different stakeholders to communicate about what their landscape means to them, enhancing a more inclusive holistic approach to cultural landscape. HeAT did something similar, but on a more global level. Gastrocert worked on a local, communal level with various stakeholders towards sustainable deployment of shared heritage. The same is true of EuWather, but with blue

[32] https://planningandheritage.wordpress.com/about/, https://www.heritageresearch-hub.eu/project/pich/
[33] http://www.waterwaysexplorer.org/
[34] http://www.waterwaysexplorer.org/wp-content/uploads/2017/12/20170829-Waterwaysexplorer_manual-developing-digital-waterways-heritage-tours2.pdf

heritage and eco-tourism. Funding for these projects may have ended, but established partnerships are still generating impact through continued work.

The third and fourth JPI calls were both initiated in 2017: 'Heritage in Changing Environments' and the 'Digital Heritage Joint Call'. Within 'Heritage in Changing Environments' five projects were funded: CareMsoc, Extinct, Consech20, Homee and Wet Futures. CareMsoc used contextualized participatory practices in which local people worked with archaeologists to make new discoveries about the village where they live[35]. Extinct explored different ways to present past, present and future extinctions and developed best practices for how to display extinctions in museums and galleries. To this end, interactive workshops, art-as-research practice and narrative analyse were used[36]. Consech20 sought to develop innovative approaches to the preservation and protection of 20th-century heritage concrete buildings from ever-changing urban influences, taking into account both technical and social aspects[37]. Homee[38] was also concerned itself with urban heritage, but with a different focus. The project studied five European heritage rich cities and asked how to reintegrate mega-events into the urban historic fabric while promoting positive synergies with urban heritage and cultural landscapes. Homee brought together leading research centres working in the field of cultural heritage preservation and mega-event planning, in close contact with key institutions and policy officials who are already or will be directly responsible for mega-events planning and implementation in Europe, in order to improve urban and cultural planning tools for mega-events in heritage-rich cities. Wet Futures focused on a variety of key wetland areas which represent some of the most important and typical in the Netherlands, the United Kingdom and Ireland, in order to create a framework for wetland heritage management and communication which can serve as a model for development across countries and regions throughout Europe.

'Digital Heritage Joint Call' states that 'Digital Heritage is an important emerging field of inter-disciplinary research in which a wide range of digital methods are applied to the creation, exploration, study, understanding, interpretation, presentation, dissemination of tangible and intangible heritage, whether

[35] See highlighted projects below.
[36] https://www.heritageresearch-hub.eu/project/extinct/
[37] https://consech20.eu/, https://www.heritageresearch-hub.eu/project/consech20/
[38] https://www.heritageresearch-hub.eu/project/homee/

digitized or born-digital. It also includes the use of digital methodologies for the conservation and protection of heritage and for promoting the community engagement with, and use of, heritage.'[39] Within this call eight projects were funded and ran between 2017 and 2021: ARCH, CADEAH, DigiConflict, DigiDogon, DReaM, Read IT, HOME and SCHEDAR. The ARCH project used Linked Open Data technology to establish an overarching platform for the study, curation, archiving and preservation of the monetary heritage of the ancient world[40]. CADEAH looked at a more recent European history (Cold War and Migration in Europe) and explored as it were, the second life of cultural heritage, new forms of curation and appropriation by users—including sharing, reviewing, commenting, downloading, creating playlists, remixing and recirculating heritage. Thus, the main objective of the project was to examine the cultural work and significance of such emerging practices of appropriation of digitized audio-visual heritage[41] and to offer insights into how digitalized historical heritage is being (re)used in shaping narratives of both European past, present and future identities. A more critical sound about digitization of cultural heritage can be found in the DigiConflict project, which argues 'Even though digital heritage maintains the potential to increase cohesion across nations and social groups, it is equally used to cement elite power structures, define what counts as cultural heritage, and determine whose cultural heritage is worthy of preservation.'[42] Thus, highlighting the ethical and legal implications of the digitization of private memories and photographs, DigiDogon is the only project dealing with non-European intangible heritage, the digitalization of the prophetic song cycle in Dogon Mali which is part of the intangible cultural heritage in Mali. The project aimed to initiate processes and institutions that can keep the heritage alive, independent of traditional[43].

Two projects focused on languages: DReaM and READD-IT. DReaM archived non-copyrighted linguistic material and improving access to information on the world's languages for the benefit of researchers, students, policymakers, various organizations and the general public, and added metadata and computational tools developed to search for information within the texts[44]. Read-IT also

[39] https://www.heritageresearch-hub.eu/call/digital-heritage-joint-call/
[40] *Ibid*.
[41] https://cadeah.sites.uu.nl/publications/
[42] https://gtr.ukri.org/projects?ref=AH/S000119/1
[43] https://www.nwo.nl/en/researchprogrammes/jpi-cultural-heritage/projects-digital-heritage
[44] *Ibid*.

combined digital humanities and computer sciences in language heritage. This project is 'essentially an "enabler": State-of-the art technology in Semantic Web and information systems will provide a versatile, end-users-oriented environment through which scholars and ordinary readers can retrieve information from a vast amount of community-generated digital data leading to new understandings of the circumstances and effects of reading in Europe.'[45] They do this for the period 18th-21st-century reading culture in Europe.

Historical manuscripts are the focus of HOME, History of Medieval Europe, which builds on the success of HIMANIS (funded in 2014 see p. 75). This project brought together computer science (UPVLC, A2iA, Telkia), humanities (IRHT) and cultural heritage institutions (NACR), plus a network of research and cultural heritage institutions (ICARUS as an associate partner) to not only produce technology for generating new research-based knowledge from historical manuscripts, but also to implement a user- and research-friendly environment for fostering a meaningful experience for scholarly research and discovery[46]. Finally, there is SCHEDAR, a project that works to preserve the intangible cultural heritage of (traditional) dance through motion data. SCHEDAR uses 'Innovative state-of-the-art multisensory Augmented Reality technology to enable direct interaction with dance, providing new experiences and training in traditional dance which is key to ensure this rich culture asset is preserved for future generations.'[47] SCHEDAR focuses on long-term preservation and enabling (re)use of dance as an intangible cultural heritage.

The fifth call, in 2019, was titled 'Conversation, Protection and Use Joint Call' and yielded ten projects which ran between 2020 and 2023: SHIELD, WOODPDLAKE, F-ATLAS, PROCRAFT, PHE, CURBATHERI, EHM, StAr, IRIS and CRYSTINART. SHIELD stands out for its explicit security element, designing and building an artificially intelligent Unmanned Aerial System (UAS) to patrol archaeological and heritage sites using the latest technologies in imaging techniques, live data streaming, decentralized on-board processing, Machine Learning, and flight data management. With the ultimate goal of developing a new tool specifically tailored for its integration into thematic policies and strategies for the protection

[45] https://readit-project.eu/about-the-project/, https://www.heritageresearch-hub.eu/project/read-it/
[46] https://www.heritageresearch-hub.eu/project/home/
[47] https://www.schedar.eu/about/, https://www.heritageresearch-hub.eu/project/schedar/

of cultural heritage, implemented by relevant stakeholders, such as the departments of Antiquities and the police Corps[48]. The main objective of WOODPDLAKE is to assess the effect of climate change and extreme climate events on the conservation and protection of pile dwellings in Mediterranean lakes. F-ATLAS aims to assess the current state of the Italian-Portuguese-Spanish Observance Franciscan network, define an "Atlas" of documentation and knowledge for conservation, protection and promotion of this scattered cultural heritage, and develop new strategies for layered experiences through ICT and innovative methods[49]. PROCRAFT connects the various actors of the operational chain from recovery to exhibition of WWII aircraft wrecks. Scientists and associated partners (museums, associations, conservators, State representatives, mediators) from Italy, Czech Republic, and France, representing all actors in this heritage chain, will combine and leverage their joint expertise and capabilities[50]. PHE, the "Past Has Ears" project, explores how through measurements, research, and virtual reconstructions, the acoustics of heritage spaces can be documented, reconstructed and experienced for spaces both existing and altered states[51].

CURBATHERI, Curating Sustainable URBAn Transformations through HERItage, proposes an approach in which historical transformation is a value to be preserved. The project examines how "the deep city" (as a planning concept akin to "the green city" and "the smart city"), represented by the fragmented (remains, ruins, archaeological) traces of different time-layers constitutes valuable heritage for preservation and use in cities[52]. EHM pursues virtual reconstructions of medieval artistic heritage -architecture with mural paintings- that are as close as possible to the original at different times, integrating historical-artistic knowledge and the diachronic perspective of heritage, as a tool for researchers, restorers and heritage conservators and to improve the visitor's perception and experience[53]. StAr project - Development of Storage and assessment methods suited for organic archaeological artefacts –The project

[48] https://www.heritageresearch-hub.eu/project/shield/, http://shield.cyi.ac.cy/
[49] https://www.f-atlas.eu/, https://www.heritageresearch-hub.eu/project/f-atlas/
[50] https://www.heritageresearch-hub.eu/project/procraft/
[51] https://www.heritageresearch-hub.eu/project/phe/, http://pasthasears.dalembert.upmc.fr/doku.php/phe
[52] https://www.niku.no/en/prosjekter/curbatheri/, https://www.heritageresearch-hub.eu/project/curbatheri/
[53] https://ehemproject.eu/, https://www.heritageresearch-hub.eu/project/ehem/

stems from the need for chemical-physical stabilization strategies of archaeological finds (mainly wood and leather), for long period of time (up to several months) in the waterlogged state, i.e., under pre-treatment conditions, without compromising the archaeological and scientific evidence they contain. Different methods of controlling storage conditions are tested on archaeological wooden and leather objects (Ribechini et al., 2022:1).

IRIS researches and develops a 'living heritage' approach to advance socially and environmentally sustainable conservation and promotes the 'protection through use' of upland environments and adjacent rural areas including knowledge of historical processes and land use practices[54]. IRIS supports collaboration between local institutions and communities and ensures effective and diverse participation in its endeavours (Ibid.). Lastly, this call resulted in funding for CRYSTINART, Crystallization damage at the Interfaces of Artworks, which aims to develop an integrated approach to understanding, modelling and analysing the decay mechanisms of layered artworks due to salt crystallization. This project goes beyond phenomenological understanding and breaks open an entire new area of conservation research: combined experimental and computational research in multi-layered component systems[55].

More recent projects: From 2020 onward

In 2020, the sixth JPI CH call took place, 'Cultural Heritage, Identities & Perspectives: Responding to Societies Joint Call' and six projects were funded. Some of these projects are still ongoing (2021-2024). They all aim to contribute to an inclusive heritage, both in a European or a global context. Four of the six of these projects focus on marginalized European local heritage that needs either a (re)definition or a (re)valuation, including an alignment of expectation of various actors. The projects OLIVE4ALL, RCL: ICH, NuSPACES, and CULTIVATE, despite their different research topics, all have in common this critical approach aimed at empowering marginalized (in)tangible cultural heritage. OLIVE4ALL centres on the study of olive heritage and makes visible this neglected rural heritage and its associated stakeholders and communities. RCL: ICH focuses on cultural events to study the interaction between minority and majority cultures

[54] https://iris-jpi.eu/the-project.html, https://www.heritageresearch-hub.eu/project/iris/
[55] https://crystinart.com/project, https://www.heritageresearch-hub.eu/project/crystinart/

and how minority narratives remain resilient when faced with challenges inherent in the dynamics between center and periphery, highlighting the importance of intangible cultural heritage. NuSPACES, on the other hand, investigates the creation of nuclear cultural heritage and is almost at the opposite end of the spectrum from CULTIVATE, the project that deals with UNESCO biosphere reserves and their co-creation.

The other two of the six projects, DeCoSEAS and PICCH focus more on global identity heritage themes by addressing the issue of decolonisation. DeCoSEAS is concerned with the decolonisation of heritage curation related to Southeast Asian sound archives. This is done by improving access to this heritage, transferring authority to stakeholders and diversifying the dialogue on this particular heritage. PICCH takes a somewhat different approach, exploring "how archival material created in a 'colonial mind-set' can be re- appropriated and re-interpreted critically to become an effective source for the 'decolonization of the mind' and the basis for a future inclusive society." These projects enable polyvocality by involving not only academics but also communities of origin, ethnic minorities and civil society stakeholders in general. Both projects are embedded in reflexive or critical heritage that seems to be a new formative chapter in field of heritage scholarship that offers new research opportunities (Waterton & Watson, S. 2015, 2; Wollentz et al., 2023:33).

JPI CH's seventh and most recent call was the 2022 'Cultural Heritage, Society and Ethics Joint Call'. This call invited researchers to address current conceptual frameworks and foster the emergence of new ones. Two complementary themes were to be addressed: The first examines the tension between how cultural heritage can contribute to the development of sustainable experience-based economies without being compromised and, at the same time, how to promote the non-utilitarian value of cultural heritage in the context of its increasing commercialization. The second theme explores the relationship between cultural heritage, democratic values, and politics in a historical perspective, with a particular emphasis on the construction of conflicting narratives resulting from the use and misuse of cultural heritage, and on the contribution of cultural heritage to sustainable and ethical behaviours and policies. The call resulted in the funding of six projects: ArcHeritage, CUMET, DECOPE, HerInDep, MalLHoC

and PERCOL. As these projects have only recently started, not much information is yet available on them[56].

Based on the information that was available on ArcHeritage and PERCOL, one could say that ArcHeritage fits within the first theme of the call, which addresses the tension between contributions of cultural heritage to sustainable experience-based economies without being compromised. ArcHeritage examines the wider story of three iconic artefacts in Arctic (reindeer antler, the conical tent, and the mammoth and walrus ivory) and the relationship between indigenous producers, consumers, and the marketplace, and explores the artefacts' transformation into heritage objects and their material and symbolic movement through national and international commodity chains[57]. In contrast, PERCOL is situated in a living political context in which the social, cultural and political value of archiving LGBTQ+ lives and experiences are contested. This makes PERCOL an interesting case to explore the (historical) relationship between cultural heritage, democratic values and politics with focus on conflicting narratives and use and misuse of cultural heritage. The project will use the history of Europe's queer and trans archives to model innovative strategies for the preservation and conservation of LGBTQ+ cultural heritage. The project aims to map as fully as possible the growth and spread of LGBTQ+ archives and collections across Europe since the rise of the modern gay rights movement in the 1970s. It will compare the workings of these collections, including their relationship to forms of state support, the conceptions of LGBTQ+ history they promote locally, nationally, and internationally, and the alternative models of archiving some embody[58].

Concluding remarks

Heritage as an empowering 'force' for local communities is closely linked with co-creativity as a game-changer (Wollentz et al., 2023:59). Looking back at the funded research project there is a clear increase in attention for participatory approaches be it archaeological (Care Msoc), blue heritage (EuWather),

[56] ArcHeritage and PERCOL are an exception as their description were published on the Dutch Research Council website.
[57] https://www.rug.nl/research/arctisch-centrum/projects/upcomming-projects/archeritage?lang=en, https://www.abdn.ac.uk/socsci/research/archeritage-1279.php
[58] https://www.nwo.nl/en/news/2-dutch-projects-awarded-international-programme-cultural-heritage, https://www.historici.nl/postdoctoral-researcher-in-artistic-participation-in-queer-and-trans-counterarchives/

conservation and (re)use (Consech20, ENDOW) or cultural landscapes (Gastrocert, CHIME). Academics are more and more involving lay people, non-academic stakeholders and local communities in their research practice. This trend of inclusiveness is expected to increase and contribute to cultural, social and economic sustainability. However, attention should be paid to translating these local developments to the regional, national and global levels.

Related to this, is the need for transparency in the heritage sector about past and present injustices. We have seen that DeCoSEAS and PICCH are both set up to rectify some of those injustices. They approach the decolonisation agenda from two interesting practices: DeCoSEAS enables access to Southeast Asian archives while PICCH investigates the possibilities of de-colonising the mind by critically re-reading archives created with a colonial mind-set.

One of the challenges of cultural heritage listed in the foresight study is the question of dealing with loss and letting go. The relevance of this question becomes especially apparent when looking at the subfield of heritage concerning threats to and protection of heritage sites/landscapes/artefacts and so forth. Relevant research projects include HeAT and projects that (further) develop or deploy innovative technologies in safeguarding (archaeological) landscapes and heritage properties from environmental threats, like ChT2, Clima , PROTHEGO and REFIT. How do we decide what to preserve and what to let go? Are investments in financial and human capital for heritage preservation justifiable for long term sustainability? These are complex questions that must be addressed with attention to ethics. The example of Extinct, the project funded in the third JPI call, shows that CH institutions can play an important role in how societal loss is displayed and narrated.

All things considered, there is indeed much more to be done and cultural heritage continues to be both an interesting field of research and a catalyst for positive societal changes.

Selected research projects

CHeriScape (2014-2016)

Title	CHeriScape- Cultural Heritage in Landscape
Instrument	JPI CH, Pilot Call (2013)
Coordinator	Graham Fairclough; Newcastle University (UK)
In brief	The CHeriScape network was landscape-focused but designed to use dialogues between researchers and practitioners to explore the advantages and benefits of bringing together the two ideas of heritage and landscape and to identify new approaches to heritage using modern integrative and multi-disciplinary concepts of landscape (Fairclough et al, 2020:31).To this end, the project adopted a strong societal and people-centred approach to decision-making and planning, framing its ideas within the context of the European Landscape Convention (2000) (and therefore also the HUL recommendation from UNESCO), the Faro Convention on the Value of Cultural Heritage to Society (2005), and the ESF/COST Science Policy Briefing 'Landscape in a Changing World' (Ibid.). 'One possible insight from CHeriScape is that landscape is almost the only thing in Europe's diverse, plural societies divided by ideology, politics, class, faith, race and self-identity that everyone must actually share' (Fairclough et al, 2020:35) making this part of cultural heritage a concrete starting point for enhancing pluriversality that arises from a people-oriented approach (Wollentz et al., 2023:34).
Website	https://cheriscape.eu/

ChT2 (2015-2018)

Title	ChT2- Cultural Heritage through Time

Instrument	JPI CH; European Commission, Heritage Plus Joint Call (2014)
Coordinator	Politecnico di Milano (IT)
In brief	The main aim of the CHT2 project is to merge heterogeneous information and expertise to deliver enhanced four-dimensional (4D) digital products of heritage sites. CHT2 is working on the full integration of the temporal dimension, its management and visualization, for studying and analysing Cultural Heritage structures and landscapes through time.' The project consists of three case studies: City centre of Milan (Italy), Reconstruction of the ancient Roman circus and neighbourhood in the city center of Milan; Hadrian's wall and its landscape (UNESCO site UK) and medieval walls of Avila (UNESCO site Spain). The UK team managed to secure additional funds for a follow up PhD research "Assessing and predicting natural environmental impacts on cultural heritage landscapes: a case study on Hadrian's Wall". One of the conclusions from the work on 4D reconstruction and visualisation of cultural heritage is that 'representing the relationship between time and space provides a powerful mechanism to visualize and communicate design intent, that can be useful not only to study and analyse our past, but also to foresee possible risks in the future.' (Rodríguez-Gonzálvez et al., 2017:615).
Website	http://cht2-project.eu/

CHIME (2015-2018)

Title	CHIME- Cultural Heritage and Improvised Music in European Festivals
Instrument	JPI CH; European Commission, Heritage Plus Joint Call (2014)
Coordinator	University of Salford (UK)

In brief	CHIME explores the uses and re-uses of different types of heritage through the study of jazz and improvised music festivals, and examines how changing relationships between music, festivals and cultural heritage sites renegotiate established understandings and uses of heritage. The researchers 'use jazz and improvised music as a lens through which to explore key issues in heritage research, drawing on the music's unique and complex relationship to concepts of high and low culture, tradition, innovation, authenticity and (non-)European identity.' These 18 festival sites 'demonstrate how cultural heritage remains contested and how festivals directly feed into these debates; between top-down and bottom-up interpretations of heritage, probing what counts for heritage in different cultural settings, and asking questions about the relationship between dominant and minority cultures' (Whyton, 2016: Foreword). CHIME shows how subaltern voices might find their way into cultural heritage studies.
Website	https://chimeproject.org/

CareMsoc (2018-2021)

Title	Care Msoc- Community Archaeology in Rural Environments - Meeting Societal Challenges
Instrument	JPI CH: Heritage in Changing Environments (2017)
Coordinator	University of Lincoln, Lincoln (UK)
In brief	Care Msoc used community test pit excavation (TPE), a co-produced participative approach which integrates lay and expert knowledge and resources giving communities an equal, democratic hand at all stages from finding sites for excavation through carrying out the excavations to exploring the outcomes. Community TPE connects local rural communities to their own local subaltern heritage by involving local people working with archaeologists to make new discoveries about the

village they live in. These methods were pioneered in the UK where volunteers, involved as co-producing partners in community test pit excavation programmes, have gained new skills, interests, connections and aspirations. The method has been used in three other countries: Czech Republic, Netherlands and Poland. These outcomes raise educational aspirations, improve social mobility and community self-esteem, strengthen social cohesion and increase opportunities for fulfilling locally-based post-work activity, mitigating the impact of public sector funding cults while also protecting heritage. In short Care MSoc shows how heritage work may increase wellbeing and simultaneously empower marginal communities facing challenges such as ageing and urbanisation.

OLIVE4ALL (2021-2024)

Title	OLIVE4ALL- Olive Heritage for Sustainable Development: Raising Community Awareness of Living Heritage.
Instrument	JPI CH, 'Cultural Heritage, Identities & Perspectives: Responding to Societies Joint Call' (2020)
Coordinator	Avignon University/Centre de Norbert Elias (FR)
In brief	OLIVE4All is based on the idea of raising awareness of sustainable development through heritage. OLIVE4ALL highlights the processes of patrimonialisation and of constitution of communities around the olive tree, questioning the concept of heritage. It looks at how carefully developed forms of mediation based on narration, sensoriality and digital technology can succeed in raising awareness among stakeholders and audiences far removed from heritage. OLIVE4ALL will develop specific tools to help local stakeholders dialogue, network, and integrate (food) heritage into the development of their territory with attention to sustainability. The multinational (France, Greece and Portugal) context of Olive4All and the tools that are being designed and

	implemented to help local actors to dialogue, network and integrate olive heritage in the development of their territories represent the most distinctive aspect of this project (ITC, 2022:186).
Website	https://olive4all.hypotheses.org/the-project

PERCOL (2023-)

Title	PERCOL: Perverse Collections: Building Europe's Queer and Trans Archives
Instrument	JPI CH: Cultural Heritage, Society and Ethics
Coordinator	Maastricht University (NL)
In brief	"Perverse Collections' (PERCOL) asks: how can a critical and nuanced understanding of the evolution of Europe's LGBTQ+ archives be used by scholars, queer and trans community members, and GLAM (Galleries, Libraries, Archives, Museums) sector workers to forge sustainable strategies for protecting LGBTQ+ history? And in what ways might this have transformative potential for cultural heritage politics and policy more broadly? To this end, the project will map the growth of Europe's queer and trans archives, from the 1970s to the present; it will comparatively explore the workings of these collections, including their relations to forms of state support, the understandings of LGBTQ+ history they promote locally, nationally, and internationally, and the alternative models of archiving some embody.
Website	https://olive4all.hypotheses.org/the-project

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Annex VII: Future and Emerging Technologies and Innovation

European Collaborative Cloud for Cultural Heritage (ECCCH)

Following a preliminary stakeholder survey in November 2021, and the publication of an ex-ante impact assessment, the European Commission announced on June 21st, 2022 ambitious plans to set up a pan-European research infrastructure for cultural heritage. Known as the European Collaborative Cloud for Cultural Heritage (ECCCH), the initiative aims to foster large-scale transdisciplinary collaboration between cultural heritage professionals and facilitate the digitization of art, artefacts and historical documents.

The ECCCH aims to provide researchers and professionals in the field with cutting-edge technologies and tools to support their efforts to research, preserve, conserve and restore Europe's cultural heritage. It will also offer researchers digital workspaces to share their datasets and results, fostering collaboration and knowledge-sharing within the cultural heritage community. The data, protected by advanced encryptions, will be stored under European jurisdiction.

At the European Research and Innovation Days (28-29 September 2022) participants were asked to provide feedback and suggestions. Subsequently, the European Commission conducted an online survey in order to reach a wider number of stakeholders. The survey was available from September 30th until November 4th, 2022, and received a total of 1081 submissions. Its aim was to gain a better understanding of the diversity of stakeholders, their needs and challenges, as well as to interest and encourage potential users in becoming part of the future community of practice.

The survey shows that the two main challenges in the field are a lack of funds and a lack of digital skills among staff. Other concerns include the data harmonization and standardization necessary for the interoperability of systems, the quality of data itself, legal implications (intellectual property rights), the ecological impact of digitization and its environmentally harmful infrastructure, and the lack of awareness that historical biases, exclusions and discriminations

are being reproduced in digital collections. Many respondents were unclear how the ECCCH would relate to other initiatives such as Europeana, the European Open Science Cloud (EOSC), the Common European Data Space for Cultural Heritage and Clariah. Also, the need for language accessibility via a multilingual platform and the development of a glossary of shared terminology from national languages and different disciplines were stressed.

In terms of logistics, the survey found that the successful implementation of the ECCCH within the cultural heritage sector requires up-to-date IT equipment and stable broadband internet. Additionally, training on the platform's IT tools must be provided. To meet these needs, the survey recommends utilizing resources from various European funding sources (Horizon Europe, Digital Europe, Creative Europe, European Social Science fund and others).

On March 15th, the 'A Cloud for All' event aimed to kickstart a community of practice of cultural heritage specialists. A number of issues that came out of the survey (capacity building for IT skills, intellectual property rights, building a community of practice) were discussed. As a result, more than 1200 heritage experts signed up to become part of the Cultural Heritage Cloud Community.

Under the Horizon Europe programme, the European Commission launches several calls for proposals in 2023 and 2024, for which a budget of 110 million Euro has been made available. The first two calls opened on January 10th of 2023.

Foresight analysis related sections

Section 3.1.4 – The digital transformation

Section 4.1.2 – Acknowledging and recognizing different knowledge systems

Section 4.1.3 – Empowering communities and flattening hierarchies

Section 4.2.3 – Facilitating platforms for connecting and listening

Gamification

Gamification refers to the application of game design elements and mechanics outside of game environments to enhance user engagement and experience. For example: incorporating rewards, points, badges, achievements, levels, and

leader boards in a mobile app can enhance the museum experience. Gamification has gained popularity in the heritage sector, museums in particular, since about 2010, and studies of the topic have significantly increased since 2015.

There are many potential benefits to using gamification. Through gamification, exhibits can be more interactive and engaging, and encourage visitors to spend more time exploring and learning. By incorporating game elements such as challenges and quests, gamification can help visitors retain information and enhance their learning experience. However, gamification is not only about education but also about entertainment. It can increase visitor satisfaction and encourage visitors to return in the future. In terms of logistics, gamification can also be used to collect data on visitor behaviour and engagement, which can help inform choices on future exhibit design and programming.

Besides these potential benefits and opportunities, there are also challenges. Designing an effective game requires careful reflection on the target audience, and educational and entertainment aims. It also requires specialised technical expertise to design an effective game. Poorly designed games can distract visitors from learning and engaging with cultural heritage content and/or result in a negative experience. Inclusivity and accessibility can also pose challenges, gamification may not be accessible to all visitors because of disabilities or lack of compatible devices (many games come in the form of apps). Games should also take into account socially sensitive issues and avoid the perpetuation of historical stereotypes or misinformation. Finally, gamification raises ethical concerns when it comes to the collection and use of visitor data, which should be handled according to local privacy laws and with respect for visitor privacy.

In terms of research in this field, the terminology is not always clear. There is an overlap in the use of terms such as gamification, serious games, game-based learning, add-on games, and edutainment. For instance: gamification involves the incorporation of game elements in a non-game context, with a focus on entertainment. Serious games, on the other hand, are fully-fledged games designed primarily for educational purposes. However, in practice these concepts are used interchangeably. Also, research in this field has concentrated more on the design of (serious) games, with comparatively less attention paid to the effects of gamification compared to traditional communication methods.

Although gamification and related strategies have been applied in the cultural heritage sector for well over a decade, the rapid technological advancements and developments in digitization suggest that these applications, and associated research are still in its early stages.

Foresight analysis related sections

Section 3.1.4 – The digital transformation

Section 4.2.3 – Facilitating platforms for connecting and listening

Section 4.3.2 – Contributing to sustainability

Relevant research projects

Mementoes

Title	Mementoes: iMmersive gamEs for Museums as vehicles to Engage visiTOrs in Empathetic reSponses
Instrument	Preserving and enhancing cultural heritage with advance digital technologies - HORIZON-CL2-2021-HERITAGE-01-04
Duration	2022-2025
Coordinator	Ethniko Kentro Erevnas Kai Technologikis Anaptyxis, Thermi Thessaloniki, Greece
In brief	"Harnessing technologies such as virtual and mixed reality to provide highly personal experiences that demonstrate empathy is becoming more widespread. The EU-funded MEMENTOES project will design three immersive video games each intended for a real (rather than virtual) museum. The museums are recognised internationally as Sites of Conscience – places of memory that remember and preserve even the most traumatic memories to allow visitors to make connections between the past and its power to create positive change. The games will address visitors' demands and instil in the general public a

greater appreciation for museums engaged in memorialisation – the process of creating public memorials – and transitional justice."

EPIC-WE

Title	EPIC-WE: Empowered Participation through Ideating Cultural Worlds and Environments: youth imagining, creating and exchanging cultural values and heritage through game-making
Instrument	Games and culture shaping our society - HORIZON-CL2-2022-HERITAGE-01-09
Duration	2023-2026
Coordinator	Aarhus University, Denmark
In brief	"EPIC-WE introduces cultural game jams, culture- and value-sensitive game-making and games through and for culture as a novel approach to empower young people as co-creators of European culture and shapers of their own futures in society, cultural institutions (CHIs) and creative industries (CIs). The backbone of the project is the EPIC-WE helix ecosystem - a transferable framework where youth, CHIs, CIs and higher education institutions (HEIs) cooperate as actors in the ecosystem. Together EPIC-WE engage in cultural games jams to create games through and for culture inspired by cultural heritage."

GREAT

Title	GREAT: Games Realising Effective and Affective Transformation (societal and cultural domains)
Instrument	Games and culture shaping our society - HORIZON-CL2-2022-HERITAGE-01-09

Duration	2023-2026
Coordinator	DIPF Leibniz-Institut für Bildungsforschung und Bildungsinformation, Frankfurt am Main, Germany
In brief	"[T]he GREAT project will generate new knowledge of the actual and potential impact of games on European society and new understandings of the innovative uses of games to support the social engagement of citizens. Leveraging the central role of games in contemporary culture, it combines academic studies and practical experimentation with novel applications of games. Using collaborative design and citizen science methods, it brings together researchers with expertise in the areas of games, data analytics, and policy in an integrated investigation, articulated by case studies of the use of games in facilitating dialogue between citizens and policy stakeholders (policymakers, policy implementers, political parties, campaigning organisations and affected citizens)."

LoGaCulture

Title	LoGaCulture: Locative Games for Cultural Heritage
Instrument	Games and culture shaping our society - HORIZON-CL2-2022-HERITAGE-01-09
Duration	2023-2026
Coordinator	Institudo Superior Tecnico, Lisbon, Portugal
In brief	"Locative Games are in the process of entering the mainstream, in cultural heritage they can improve access by offering alternative experiences and widening audiences, they can aid in preservation by managing footfall and focusing digital assets, and they can increase engagement and allow visitors to see their heritage in new ways. However, existing design

approaches and infrastructures for locative heritage are bespoke and poorly integrated with existing visitor structures. There is also a lack of guidelines on what is ethically desirable in these digitally mediated spaces, and how designers might mitigate against unintended consequences or abuses. This is a barrier to the widespread adoption of locative heritage applications and means that more complex experiences are currently not sustainable in the wider sector. LoGaCulture will change this by bringing together the leaders in digital locative games, in collaboration with some of Europe's most significant cultural institutions, to enable a new generation of locative cultural heritage games through proposals for design guidance, validated ethical frameworks, and an open, extensible, and reusable set of technologies."

Culturati

Title	Culturati: Customized Games and Routes for Cultural Heritage and Arts
Instrument	Europe's cultural heritage and arts – promoting our values at home and abroad - HORIZON-CL2-2022-HERITAGE-01-02
Duration	2023-2026
Coordinator	Bilkent Universitesi Vakif, Ankara, Turkey
In brief	"CULTURATI aims to build an inclusive cultural-educational ecosystem with visitor and capacity management by using digital solutions and cutting-edge technologies to (1) enhance and support collaboration between CCIs, and citizens to promote Europe's culture, values, and interests, (2) increase accessibility, awareness, and understanding of cultural heritage and arts, (3) preserve cultural heritage by preventing deterioration due to overcrowding and sustain valuable resources (4) enhance the audience experience through customized games, and routes by optimizing the number of

people on the venue or site-based CCIs, ensuring social distancing between them in case of a pandemic."

Generative AI – ChatGPT & AI Image Generators

ChatGPT

On 30 November 2022, OpenAI launched ChatGPT 3.5, an Artificial Intelligence (AI) chatbot that applies advanced Natural Language Processing (NLP) to engage with users. It is capable of generating text (articles, poetry, satire, fiction and even computer code) and can be used for text completion, summarization and categorisation. Also, it can answer questions and generate human-like responses in a conversational setting. Within the first week the system had amassed one million users.

The initial version of the GTP (Generative Pre-trained Transformer), a language generating model, was released in June 2019. The system is now evolving rapidly: the fourth iteration was launched on March 13th 2023. It can process eight times more words at once than its predecessor, its responses are said to be more accurate, and the software can now also understand images. ChatGPT 4 can now also reliably reproduce answers in 26 different languages.

The ChatGPT AI systems generate responses based on a vast dataset from the internet. However, this also represents their primary limitations: ChatGPT can only generate content based on this dataset, which had a knowledge cut-off date of 2021, and it is bound by the biases inherent in the source material. As a result, it cannot provide information on recent political developments or technological advances, and can produce responses that are incorrect, nonsensical or perpetuate racist and misogynistic prejudices (GPT 4 is better 'trained' to avoid this).

OpenAI is facing stiff competition: On February 6th, 2023, Google introduced its own conversational AI service called Bard, which is based on their Language Model for Dialogue Applications (LaMDA). Contrary to ChatGPT, Bard is connected to the internet and can therefore give up-to-date responses. It also supports over twenty programming languages, where ChatGPT 4 supports only three). A day later, on February 7th, Microsoft announced a new AI-powered

version of their search engine Bing. Microsoft, an early and heavy investor in OpenAI, has integrated the AI chat (which runs on ChatGPT 4) alongside the traditional Bing search results. Both systems have been plagued by start-up problems but are continually being updated and improved as users are putting them to the test. The competition between these tech giants will likely continue to drive rapid developments in this field.

These AI language generator systems can be very useful tools for the cultural heritage sector. In addition to helping to generate social media and web content, it can provide answers to questions about archaeological sites and museum collections, test visitors' knowledge on past events and offer virtual assistance on-site. It can assist with the digitization, transcription, and translation of historical documents, as well as aid in research and cataloguing efforts. In the ex-ante impact assessment for the European Collaborative Cloud, it is foreseen that AI and NLP could play a role in bridging linguistic diversity in Europe, for example by helping to translate metadata and educational material and building a common thesaurus.

While the use of language models like ChatGPT can be beneficial, there are also serious concerns about the technology as it is currently available, and how it may develop in the near future. The lack of transparency on the training data and model architecture, coupled with the fact that only a handful of Big Tech companies have the resources to operate the immense server parks required to train models and process massive data sets is a major concern. Other issues include copyright, perpetuation of misinformation, amplification of prejudice, and privacy protection.

Already, students are using ChatGPT to write their papers, forcing educators to rethink their teaching methods. Religious communities are setting up specialized religious chatbots (for instance HadithGPT, GitaGPT) to answer theological questions and provide spiritual guidance, which poses its own challenges. The technology has also sparked an ongoing debate on the creative process and the livelihoods of writers and artists. While some argue that these tools undermine the value of artistic creation and lead to job losses, others see them as a means to inspire imaginative thinking and push creators to set higher standard. As these technologies continue to evolve rapidly, it is important to have ongoing, nuanced discussions about their ethical implications and potential impact on the creative industries and the heritage sector.

AI Image Generators

OpenAI introduced its image generator software DALL-E in January 2021. Currently, DALL-E2 is available. There are many other AI image generators, including Nightcafe, DreamStudio AI, Artbreeder, DeepDream Generator, Jasper, Shutterstock, and Photosonic, each with its own features. These programmes have similar issues to the language generate systems in that they are limited to their source dataset and the biases, styles and stereotypes therein.

Artists and creators are concerned that their work has been part of the source data of such image generators, and can therefore be used without their consent, correct attribution or compensation. In fact, this is already happening: a song called 'Heart on my Sleeve', supposedly by artists Drake and The Weeknd but in reality generated by AI, went viral. It garnered millions of views and was shared on music streaming platforms before being taken down due to copyright infringement issues. And this is just one example. Worries about future copyright claims has led Getty Images to ban the upload and sale of AI generated images and they do not stand alone. Copyright and ownership questions related to generative AI are complex, depend on individual circumstances and local legislation, and need to be part of the conversation around this new technology.

Another critique is that AI image generators devalue the creative process and undercut the livelihoods of graphic designers and artists. Generative AI aims to mimic human processes of acquiring knowledge and experience, and now also of human creativity. This calls into question the nature of that creativity, of art and by extension of cultural heritage as a product of human imaginative endeavours.

On the other hand, AI image generators can be used to enhance creativity (concepting). Some early adopters now call themselves AI artists and are selling their work on platforms like Adobe Stock (items must be labelled as made by AI). Commercial applications are evolving along with the technology. Furthermore, websites are experimenting with the protection of original art works from copy right infringements: ArtStation, an online marketplace for digital artists, mainly working in video game design, film and comics, now offers a 'NoAI tagging' feature on its website in response to concerns from users. When projects are tagged with 'NoAI', the platform will assign an HTML meta tag toexplicitly disallow the use of that content by AI systems.

AI image generators can, if used with caution and with full understanding, be a great resource for the cultural heritage sector. They can help to devise ways to engage the public by visualising the past, illustrating the present and offering a vision for the future. As the technology advances, legal and ethical concerns need to be part of the conversation, while not losing sight of the opportunities generative AI has to offer the creative industry and the cultural heritage sector.

*After this text was finalised, the European Commission published a brief: *Artificial Intellingence in the context of cultural heritage and museums – Complex challenges and new opportunities* (May 2023), full reference in the literature overview:
https://www.europarl.europa.eu/RegData/etudes/BRIE/2023/747120/EPRS_BRI(2023)747120_EN.pdf

Foresight analysis related sections

Section 3.1.4 – The digital transformation

Section 4.4 – Re-imagining learning

Relevant research projects

Repertorium

Title	Repertorium: Researching and encouraging the promulgation of European repertory through technologies operating on records interrelated utilising machines
Instrument	HORIZON-CL2-2022-HERITAGE-01-02
Duration	2023-2025
Coordinator	Universidad de Jaen, Spain
In brief	"Combining a novel digitisation tool that leverages AI and Deep Learning solutions to perform Optical Music Recognition and Music Information Retrieval across multiple music datasets opens valuable solutions to problems affecting music businesses while efficiently preserving and rendering accessible European musical heritage. Thus, it is possible to provide cost-effective

solutions for immersive streaming and virtual reality experiences by leveraging Sound Source Separation and Spatial Audio technologies."

Premiere

Title	Premiere: Performing arts in a new era: AI and XR tools for better understanding, preservation, enjoyment and accessibility
Instrument	Preserving and enhancing cultural heritage with advanced digital technologies - HORIZON-CL2-2021-HERITAGE-01-04
Duration	2022-2025
Coordinator	Athina-Erevnitiko kentro kainotomias stis technologies tis piroforia, ton epikoinonion kai tis gnosis, Greece
In brief	"Captivating audiences around the world, the performing arts are hailed as a platform for creativity and expression. With a focus on dance and theatre, the EU-funded PREMIERE project aims to modernise the field by using advanced digital technologies that will support the whole life-cycle of performances. Project work will lead to the development and validation of a comprehensive ecosystem of digital applications, powered by leading-edge artificial intelligence, extended reality and 3D technologies, to meet the needs of communities involved in the main stages of the life cycle of performing arts productions. Ultimately, project work will enhance the understanding, preservation and enjoyment of and accessibility to performing arts."
Website	https://premiere-project.eu/

Scene

Title	Scene: Searchable multi-dimensional data lakes supporting cognitive film production & distribution for the promotion of the European Cultural heritage
Instrument	Increase the potential of the international competitiveness of the European filmmaking industry – HORIZON-CL2-2022-HERITAGE-01
Duration	2023-2026
Coordinator	Ethniko kentro erevnas kai technologikis Anaptyxis, Greece
In brief	"The SCENE project has been majorly designed to offer the means for a modern & globally competitive, European filmmaking industry, by building upon two solid pillars, i.e. semantically cognitive AI technologies and the (in) tangible European Cultural assets, always with respect to the European values & policies regarding the human and its environment […] it will enable a smart & privacy-preserving interaction channels between industrial stakeholders & the audience, that will allow not only for pro-active sensing of the audience's preferences in the pre-production phase, but also for the early identification of the most matching advertisement & distribution channels during the distribution phase, as well as the insightful matching & recommendation between films & individuals."

NFTs

NFT stands for 'non-fungible token', which is a unique digital tag that is attached to a digital file (video, animation, image, meme, music, tweets, etc.). They are registered on blockchain, so that ownership can be traced. In this way, people can own the 'original' of a digital file and buy or sell it. As with a physical artwork, the artist/creator can still retain the copyright and reproduction rights. Contrary to traditional artworks, however, other internet users can still make screenshots of the item, or right-click on it to save a copy of the file on their own device. Some

NFT marketplaces include a feature whereby artists/creators get paid a percentage each time their NFT is traded.

NFT's are a kind of spin-off of Bitcoin, which is a form of digital currency that relies on blockchain technology to support peer-to-peer transactions. In 2012 there was an experiment called Coloured Coins, which were made of small denominations of Bitcoin and could represent multiple assets. This system had too many flaws to be workable, but it opened up possibilities of attaching other assets to a blockchain. In October of 2016, memes featuring a frog character were registered on a website called Counterparty, which were followed by Cryptopunks on the Ethereum platform a few months later. By October 2017, NFTs had entered mainstream media and culture by means of CryptoKitties, a blockchain-based virtual game that allowed players to adopt, raise, and trade virtual cats. Some virtual cats were so popular that they sold for well over $100.000,00 apiece.

The years of 2018 and 2019 saw a massive growth of NFT applications. All kinds of items were traded, like virtual plots of land or virtual clothing. Some NFT games and projects worked together on interoperability, meaning that items earned or bought in one game could be transferred into another game. Currently there are many NFT marketplaces, such as: OpenSea, Rarible, Nifty Gateway, Solana and SuperRare, where a wide range of NFT items are being bought and sold.

When the art community discovered the possibilities offered by NFTs, a new craze ensued. According to CryptoArt, to date (February 2023) almost 3.9 million NFT artworks have changed hands, for a total of almost 2 billion Euro, with its biggest peaks in the spring and fall of 2021. The adoption of NFTs by American celebrities like Snoop Dog, Ellen Degeneres, Paris Hilton and Jimmy Fallon has fuelled their popularity and made them a part of mainstream culture (and likely drove up prices). One of the most famous sales to date is a work called 'Everydays: The First 5000 Days' by Mike Winkelmann (artist name: Beeple). From May 2017 onwards, Winkelmann posted a new artwork online every day, and these collectively form 'Everydays'. It was auctioned off at Christie's for $69,346,250.00 in March of 2021. More recently, on February 10th 2023 the Centre Pompidou in Paris announced the acquisition of a number of works for its "new media" collection, which include its first NFTs. These works were produced by crypto art, the plastic arts, net art and generative art.

NFTs use the same blockchain technology as cryptocurrencies, which are known to consume a lot of electricity and thereby generate substantial amounts of greenhouse gas emissions. Back in 2021 it was estimated that the average NFT carbon footprint is about the equivalent of a month's worth of electricity for somebody living in the European Union. NFT artists are aware of the problem and are attempting to address it. Winkelmann, for instance, aims to work carbon neutral by investing the income from his NFT art in renewable energy sources and conservation projects. Blockchain platforms have been aware of the problem, but the implementation of countermeasures or alternatives has been slow. However, in the fall of 2022, Ethereum, one of the largest players in the field of cryptocurrency and NFTs, switched to from 'proof of work' (which involved energy-intensive data mining) to 'proof of stake' as a way to validate the blockchain and earn tokens. By this measure, Ethereum is expected to reduce its electricity use and carbon dioxide emissions by more than 99%. This is an encouraging development.

NFTs could be transformative for the cultural heritage sector, if used responsibly and ethically. To list just a few of the possibilities: They can create unique digital records of cultural heritage objects, establish ownership and provenance, and serve as fundraisers for the preservation and maintenance of cultural heritage sites. NFTs can also engage younger audiences, for instance through the use of collectibles in (serious) games and help avoid the spread of misinformation by providing a tag of authenticity from reputable sources. In conclusion, if the cultural heritage sector can navigate the potential ethical and practical issues surrounding NFTs, the technology has the potential to revolutionize the field and open up new avenues for preservation, education and engagement.

Foresight analysis related sections

Section 3.1.4 – The digital transformation

Relevant research projects

DAFNEplus

Title	DAFNEplus: Decentralized platform for fair creative content distribution empowering creators and communities though new digital distribution models based on digital tokens

Instrument	Cultural and creative industries as a driver of innovation and competitiveness - HORIZON-CL2-2021-HERITAGE-01-03
Duration	2022-2025
Coordinator	Universidad Politécnica de Madrid, Spain
In brief	"Non-fungible tokens (NFTs) are taking the creative industries by storm. Irreplaceable and unique in scope, NFTs are purchased over blockchains and give consumers access to exclusive content. The advantage of NFTs is that creatives and users are part of a distributed cultural and artistic community. The EU-funded DAFNEplus project seeks to establish novel distributed autonomous organisations and/or communities around NFT and digital tokens, with decentralised governance. Cultural and creative industries could foster innovation and competitiveness. It will do this by using the technology to define new revenue and business models, helping cultural and creative industries expand their reach and open up new distribution channels without rules imposed by intermediaries."
Website	https://dafneplus.eu/

Space and Heritage

Back in 1976, before the European Space Agency (ESA) had any missions in operation, they initiated the Earthnet programme which was to provide the technical and operational means to access and make use of Earth Observation (EO) data. As part of Earthnet, a huge, decentralised archive was set up, comprising the data of various Landsat, National Oceanic and Atmospheric Administration (NOAA) and other missions overseen by Europe and partners in the United States and Japan.

Since then, many missions have come and gone, and technological advances in data management and the internet have been considerable. In 2008 ESA approved the Long-Term Data Preservation Programme (LTDP) in Earth Observation, which was extended in 2012 to cover all ESA space data. The goal

was to preserve EO space data sets, ensure accessibility and usability, and to advance a common approach among international partners for the long-term preservation of the data.

Today ESA Heritage Missions includes the data of more than 45 observation satellite missions that are no longer operational. The Heritage programme is set up to guarantee long term mission data preservation, to provide data accessibility and usability, to work on data improvement and continuity with current and future missions and to develop long term data series for trend analysis and the monitoring of environmental changes. The programme promotes the sharing of data, services and technology with scientists and policymakers within Europe, but also with international space agencies and other global organisations.

Currently the data is of particular interest to research long-term trends in climate change, sea levels, surface temperatures, melting ice, earthquakes and volcanic eruptions, atmospheric composition, deforestation, and urban mapping. Information on energy and natural resources, environmental impacts, topography, ground- and surface water, weather events, ocean waves and many other things is also available. Some of the source material can be downloaded directly after logging in, while other data requires a formal request from ESA (processing is sometimes expected to last two days, sometimes between four to six weeks).

Additionally, on 24 January 2023, ESA launched the new Copernicus Data Space Ecosystem, which succeeds to the Copernicus Open Access Hub. The hub provided complete, free and open access to data currently gathered by the Sentinel-1, Sentinel-2, Sentinel-3 and Sentinel-5P satellites, and will continue in operation until September 2023. The Copernicus Data Space Ecosystem offers advanced features for data visualisation and processing, and includes data from the Copernicus contributing missions. The system allows users to search for data from a specific date or time period, download individual images, and work with large datasets in the cloud. It also provides the ability to generate time-lapses that showcase visual changes in specific regions over time.

The cultural heritage sector stands to greatly benefit from these datasets, particularly in light of the crucial role cultural heritage can play in not just adapting to changing climate conditions, but also potentially mitigating the

impact of climate change. These datasets can also prove useful in disaster risk management, as they facilitate the monitoring of cultural heritage sites and provide detailed mapping of areas that have been affected by natural or man-made disasters. Overall, the ability and utilization of these datasets could have significant positive implications for the preservation and protection of cultural heritage.

Foresight analysis related sections

Section 3.1.2 – The climate crisis

Section 3.1.4 – The digital transformation

Relevant research projects

CLIMA

Title	CLIMA: Cultural Landscape Risk Identification, Management and Assessment
Instrument	JPI CH: Heritage Plus Joint Call
Duration	2015-2018
Coordinator	Università degli Studi della Tuscia, Viterbo, Italy
In brief	"CLIMA has addressed the design and development of a multi-task platform, combining advanced remote sensing technologies, both from satellite and ground-based, with GIS application for mapping and long-term monitoring of archaeological cultural landscapes in order to identify changes due to climate change and anthropic pressures."
Website	http://www.clima-project.eu/

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