



European Foresight Platform

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Future of Cultural Heritage

- Impact of external developments -

Paper incorporating the outcomes of the 18 December 2012 European Policy Workshop,
Brussels

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1 Introduction

“Even before Europe was united in an economic level or was conceived at the level of economic interests and trade, it was culture that united all the countries of Europe. The arts, literature, music are the connecting link of Europe.”

Dario Fo – Italian satirist, playwright, theatre director, actor, composer and recipient of the 1997 Nobel Prize in Literature

Through centuries of intercultural exchanges and creativity, Europeans have created a rich cultural heritage, which has inspired and still inspires many around the world. Our common cultural heritage includes a wide range of tangible cultural artefacts, intangible forms of cultural expression and natural environments that have been preserved and passed on as a legacy from generation to generation. Hence, it has become part of our individual and collective memory, providing retrospective on past developments and achievements, offering reflection on our current identity, and providing a source of inspiration for the future. Therefore, cultural heritage is not a fixed entity, but it is defined by what people nowadays consider as of cultural importance for personal, social, political and economic reasons.

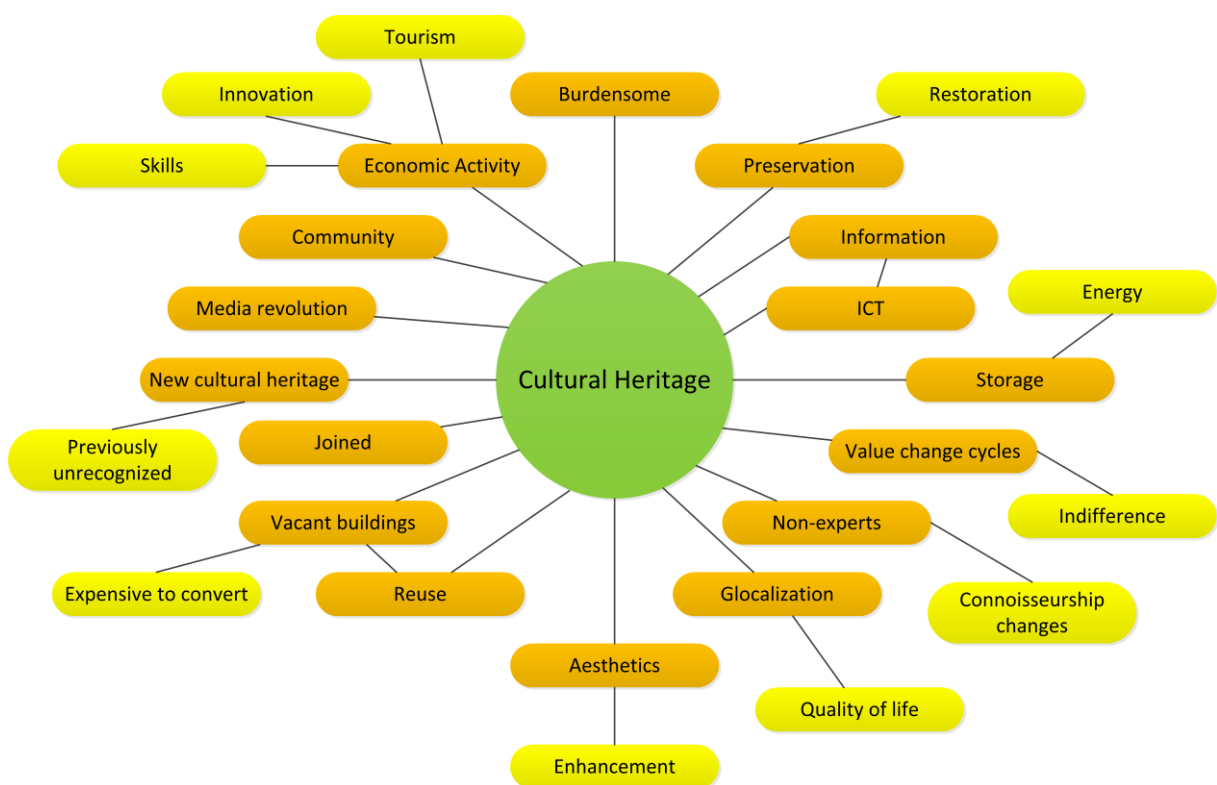


Figure 1: Overview of the workshop participants' associations with cultural heritage

In Europe there is a growing recognition for the value and importance of cultural heritage as both a social and economic resource. It contributes to forming an individual and collective identity, supports social and territorial cohesion, is of great economic importance for the tourism industry, and has potential for defining new types of artistic careers. This importance for society and economy

demands a better protection, promotion and use of our cultural heritage. Europe's cultural heritage is a fragile resource and exposed to many threats. Due to rapid urbanization, economic interests, pollution, climate change, social and political instability and mass tourism the condition of cultural artefacts and environments is deteriorating. Likewise, non-physical cultural heritage is threatened by globalization, which causes more uniform life-styles and the disruption of economic systems. Therefore, the sustainable management of cultural heritage is a major challenge for today and the future.

At the same time, the way of thinking about cultural heritage is evolving and the way cultural heritage is developed, appropriated, enriched, promoted and transmitted is also changing, offering new opportunities. Sources of cultural heritage are increasingly preserved and transmitted digitally and online, offering new ways of sharing, analysing and presenting cultural heritage. Another development is the increase in digital-born heritage, which includes artistic and cultural forms of expression that are only created digitally (e.g. e-culture). In addition, the general public is becoming a more prominent stakeholder in presenting and sharing cultural heritage collections. As a result, these developments increase public awareness of the significance of cultural heritage.

This awareness is also reflected in strategies and policy actions at the EU level. The Lisbon Treaty underscores the importance of cultural heritage and encourages the EU to take actions to preserve its cultural heritage and promote cultural tourism. In the EU framework Programmes cultural heritage in all its facets has always been covered, from more technology oriented research areas (protection and conservation techniques, energy efficiency, digitalisation strategies etc.) to more social sciences and humanities oriented research areas (economic impact of cultural heritage, dissemination strategies, value of e-culture etc.). Also in Horizon 2020, RTD activities in the domain of cultural heritage are part of *Challenge 5 - Climate actions, resource efficiency and raw materials* and *Challenge 6 - Europe in a changing world – Inclusive, innovative and reflective societies*, reflecting both science and technology oriented and social sciences and humanities oriented research questions¹. Apart from the research oriented actions coordinated by DG Research and Innovation, DG Connect, DG Education and Culture, DG Enterprise and DG Regional Policy have programmes related to cultural heritage.

Despite the dynamics in cultural heritage and the awareness at the level of the EU, thinking about the *future* of cultural heritage is not wide-spread. Maybe this is because of the contradiction between the meaning and perception of forward looking activities on the one hand, and cultural heritage on the other hand. Maybe, forward looking and cultural heritage can be considered as an oxymoron, as Domenico Rossetti from DG RTD stated in his presentation². There are only a few foresight oriented initiatives known in this domain. For example, in 2008-2009 the Arts Council of Wales commissioned a study to identify the main trends and drivers that possibly impact Arts in the coming 20 years³. Researcher M. Rhisiart, leading this study for the Arts Council, is also preparing a foresight study as part of the Joint Programming Initiative (JPI) on Cultural Heritage and Global Change. This JPI 'addresses the strong relationships that link cultural heritage, conservation,

¹ Domenico Rossetti, Presentation European Forward Looking Activities at the EFP policy workshop Future of Cultural Heritage, 18 December, Brussels & EC (2012) Cultural heritage research: survey and outcomes of projects within the Environment Theme – From 5th to 7th Framework Programme – 2012 Edition

² Domenico Rossetti, Presentation European Forward Looking Activities at the EFP policy workshop Future of Cultural Heritage, 18 December, Brussels

³ Rhisiart, M. & While, G. (2008). The Future of the arts and culture in Wales within a global context: Trends, Drivers of Change and New Paradigms; <http://www.artscouncilofwales.org.uk/what-we-do/research/latest-research/the-futures-study>

technological innovation and economic development within the dynamic framework of the challenges and competitiveness in an enlarged European Union presented by an increasingly globalised, environmental and security-conscious society.⁴ The JPI provides a framework within which Member States address jointly areas where public research programmes can respond to major societal challenges. The foresight study aims to contribute to developing a strategic research agenda for the JPI.

Although the retrospective nature of cultural heritage might be contradicting the prospective nature of foresight and future studies, future perspectives on relevant trends and drivers of change for cultural heritage in Europe in the coming decades can support strategic thinking and cooperation in cultural heritage policies and management including preservation, promotion and use of cultural heritage sources. The importance of forward looking for the domain of cultural heritage is underscored by the presentation of Riel Miller from UNESCO⁵. He explained to the workshop participants that change is the only constant in an emergent present. Change can come from different sources and can have different impacts. Change can come from inside and outside the domain or system; change can originate from repetition and from difference. The essence of forward looking is that we cannot know what we do not know; we can only open up our mind to anticipate likely and not so likely events. Moreover, forward looking can help changing the mind-set that everything we know about the past and the present and the values we have today will continue in the future. Our values of today may not be our values in the future. We cannot define the value of tomorrow, but with forward looking approaches we can create openness and freedom to explore, imagine, anticipate and to let go. The relationship with cultural heritage is two-way: forward looking helps anticipating the cultural heritage of the future and the ways we can deal with cultural heritage, but cultural heritage offers also our point of reference for thinking about future values and our identity in the future.

Riel Miller distinguishes three levels in future thinking. Level 1 is based on extrapolation and models of current anticipatory assumptions, creating temporal awareness, such as forecasting and exploring STEEP drivers; Level 2 concentrates on rigorous imagining futures; and Level 3 focuses on building strategic scenarios, based on the differences between the imagined futures from level 2 and the present assumptions about the future from level 1. In this EFP workshop we focus on level 1: what trends and drivers can we think of that may be relevant for the future of cultural heritage?

1.1 The Workshop

The European Foresight Platform organized a workshop with experts from the cultural heritage domain to contribute to applying a future perspective on cultural heritage by discussing and anticipating the potential impact of emerging trends and developments on the creation, management, preservation, promotion, use and funding of cultural heritage. To support this discussion and stimulate a dynamic dialogue about possible futures for the cultural heritage domain, trends and drivers of change were identified using the STEEP (Society, Technology, Economy, Ecology and Policy) framework. This inventory was neither predictive nor exhaustive, but it provided the structure for the workshop discussion that was centred around the following topics:

- Which trends and developments are most likely to impact the cultural heritage domain?
- What will be the potential implications?

⁴ Vision document JPI Cultural Heritage and Global Change, <http://www.jpi-culturalheritage.eu/>

⁵ Riel Miller, The Future of Cultural Heritage, Repetition & Difference, Preservation & Transformation, EFP policy workshop Future of Cultural Heritage, 18 December 2012, Brussels

- What are the challenges, needs, uncertainties, options and questions for research following from these implications?

First the participants were asked to brainstorm on relevant trends and developments and sort them according to the following two dimensions:

- the level of uncertainty (certain vs. uncertain)
- the time frame in which they expected this trend to take place (short term vs. long term)

Subsequently, there was a discussion about the potential impacts of these trends on the cultural heritage domain. The workshop participants discussed societal, technological, economic, and political developments. Due to time constraints, the ecological developments were not discussed in more detail. Nevertheless, several ecological developments and the potential implications for the sector are described in this paper.

The outcomes of the workshop have been incorporated in the background paper that was written to provide a starting point for the workshop discussion, resulting in this final workshop paper.

2 The impact of STEEP trends and developments on cultural heritage

This chapter provides an overview of trends and developments in society, technology, economy, ecology and policy (STEER) that might impact the future creation, management, preservation, promotion, use and funding of cultural heritage in Europe. From each perspective relevant trends and developments are described that arose from initial desk research and the expert discussion during the workshop. Based on the insights gained during the workshop discussions, some initial ideas about the potential impact on the cultural heritage domain are described. Together, these different perspectives provide a broad view on the future of cultural heritage.

2.1 Society

This paragraph focusses on the effect of developments and trend in society on cultural heritage. There are several societal trends that will likely influence the way cultural heritage is created, managed, disseminated, and used.

The **aging population** of Europe is a demographic phenomenon that is characterized by decreasing fertility and higher life expectancy, which is likely to be of major significance in the coming decades. Eurostat predicts that the population of working age will decline, while those aged 65 years or over will account for 29.5% of the EU's population by 2060 (compared to 17.4% in 2010).⁶ This results in a steadily decreasing workforce and the growth of retired senior citizens, which will lead to an increased financial burden on those who are working to provide for the social securities of pensioners.

Aging confronts us with a range of challenges for the future. The increase in economically inactive elderly individuals will have repercussions on government expenditures, pensions, the job market, healthcare, social security and the housing market. At the same time the aging population also offers new opportunities. It creates new markets and society is increasingly coming to appreciate the contributions of active elderly people at work, at home, or in their community. The participants in the workshop acknowledged the trend of an ageing society. More elderly people that will stay active until a higher age with more leisure time will probably results in more visits to cultural heritage sites. The workshop participants also indicated that different generations will perceive cultural heritage in a different way and the elderly often have more interest in cultural heritage than younger generations. Moreover, the elderly nowadays may have different preferences in culture and arts than the elderly of the future. For the workshop participants it is clear that changes in demography will have an impact on the creation, dissemination and use of cultural heritage.

International migration plays an important role in European population change. In 2011 around 4% of the total EU population (20.2 million) consisted of immigrants from outside the EU and 2,5% of EU citizens moved to another EU member state.⁷ There are several reasons for people to migrate to a different country, such as a new job or education, reuniting with previously immigrated family members, or to seek refuge from a dangerous situation in the native country. In recent years, the role of international migration has come under increasing scrutiny. It is difficult, however, to predict

⁶ Eurostat, 2012. Population structure and ageing - Statistics Explained. [online]
http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/Population_structure_and_ageing. Accessed on 10 December 2012

⁷ European Commission, 2012. 3rd Annual Report on Immigration and Asylum (2011).

how international migration will develop in the future. On the one hand, prospective shortages of labour due to demographic ageing, might require the migration of both skilled and less-skilled employees to the EU. Asylum policies, on the other hand, are becoming more and more stringent, to reduce pressure on social securities.

Migration has a strong influence on the demographic composition of a country. Migrants are usually relatively young and knowledge migration influences the educational profile and skills of the population. Moreover, international migration increases the cultural diversity of a population and hence there will be a greater diversity of culture providers and consumers, who can invigorate local cultural heritage through new ideas and perceptions. The workshop participants acknowledge the importance of this trend. Multiculturalism will lead to fighting for values; people will always strive to hold to their own values, preserve them and also try to diffuse them. At the same time, multiculturalism will lead to greater diversity of values and greater diversity in forms of culture and arts. This will result in more different types of heritage; the workshop participants stated that this will probably lead to a great redefinition of heritage. Moreover, as workshop participants indicated, there will be a need for new ways of communication and storytelling to transfer the value of cultural heritage in a multicultural society. Multiculturalism will also imply that people can become confused about their identity, but also that they will use various values from different types of cultural heritage in society to construct their own identity.

Furthermore there is a development of increasing **urbanization**. This is the gradual expansion of intensively inhabited areas, caused by population growth, economic conditions and lifestyle changes. Urbanization also indicates the phenomenon that cities play an increasingly important role in the economy of regions and even countries. Since 2007, the majority of the world has lived in a city and the United Nations expect that in 2050 70% of the world population will live in urban areas.⁸ Urbanization does not only lead to the emergence of very large cities with more than 10 million inhabitants (megacities), but also to more and more smaller cities with less than 500,000 inhabitants (minicities). However, the great attraction of cities also has negative effects. Less attractive rural and urban areas shrink, while other natural and cultivated landscapes disappear due to expanding cities. Infrastructure congestion, pollution and crime increase due to the higher concentration of people living in one area. The cost of property in sought-after city centres rises considerably, dividing the city in poor and rich neighbourhoods, thus increasing social tensions. Urbanisation can lead to higher pressure on preserving and managing cultural heritage, because of infrastructure congestion, pollution, crime increase, urban sprawl etc. Workshop participants also indicated that many small towns host important cultural heritage sites. When these towns are abandoned, the costs of preserving these cultural heritage sites will become too high. In addition to the threats to cultural heritage, urbanisation can also lead to the creation of new styles of urban culture and urban art forms, creating new forms of cultural heritage.

Social cohesion is changing in several ways. There is a shift towards more and more **individualization**, which is driven by movements that originated in the sixties, such as secularization, but also by the emergence of mass media and the Internet. Citizens' identity and thus their existence are no longer derived from traditional social groups based on e.g. religion, politics, or social class, and individuals are thrown more upon one's own resources. Individual choices and interests have taken centre stage, and solidarity as the corner stone of society and public services appears to crumble. The workshop participants consider this trend as rather relevant for cultural heritage. They point at the changes in family values. The time people spent with their family doing things together is decreasing; the number of one-person households is increasing. This has implications for the ways cultural

⁸ United Nations, 2011. 2011 Revision of the World Urbanisation Prospects.

heritage is presented, disseminated and used, but it will also influence the general values in society. The workshop participants also pointed at the growing importance of individual and personal experiences and personal development. They expect that this will lead to an increased value of inheritance as well as a greater diversity in heritage. Moreover, it will demand from cultural heritage professionals to develop new ways of presenting cultural heritage, allowing for personal experiences. This is also emphasised by the presentation of Dirk van Delft, Director of the Boerhaave Museum in Leiden, the Netherlands⁹. Raising awareness and attracting visitors benefit substantially from presenting artefacts with their relevant contexts. People have a greater interest in the real thing, accompanied by fascinating stories, offering a real experience based on historical sensation, more than the technical explanation.

In recent years, a trend towards increased **polarization between communities** can be witnessed everywhere: between religious groups, between EU member states, between politicians, between natives and immigrants, between the political elite and 'the people', between rich and poor, between educated and less educated, between citizens and social service providers, and the list continues. This is not necessarily a negative development, as there should be room for opposing and irreconcilable positions in the public discourse. In a positive sense, this might contribute to opinion formation, group formation, an improved sense of identity, emancipation and making problems between social groups discussable. Polarization is harmful, however, when it undermines values and leads to stigmatization, thus affecting people's wellbeing, leading to less participation, undermining social stability, stifling debate, and complicating the decision making process.¹⁰ 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. The workshop participants acknowledge the relationship with cultural heritage. Social exclusion can be the result of and can be further intensified by the impoverishment of cultural possibilities. The workshop participants stated that public access to cultural heritage should be available for all groups in society, not only for the elite. Moreover, social exclusion can also lead to new sources of arts and cultural heritage.

Individualization also leads to new opportunities such as the customization of products and services. And where individualism previously went hand in hand with consumerism and an unbridled desire for more, there is now an opposing trend of **post-materialism**. This leads to a new emphasis on goals such as personal freedom, self-expression and quality of life, which offers a more favourable climate for artistic expressions and cultural heritage policies.¹¹ As said before, this individualism and personalisation asks for new ways of presenting cultural heritage. The sector should sell the experience, emphasise the personal side of cultural heritage, develop new interpretations and allow for personal interaction. Workshop participants emphasised that insider knowledge and personal views will become more important and the public will not only 'consume', but also contribute by offering their own experiences and personal views in relation to the artefacts. Moreover, cultural heritage will increasingly become source for creativity and inspiration for people. Workshop participants also pointed at the growing attention for more sustainable lifestyles. This could impact the activities in the cultural heritage sector to the extent that also in preservation and conservation more sustainable approaches may be chosen; i.e. repairing instead of rebuilding, improving energy efficiency of historical buildings etc.

⁹ Dirk van Delft 'Heritage, the web and the real thing', EFP workshop Future of Cultural Heritage, 18 December 2012, Brussels

¹⁰ Raad voor Maatschappelijke Ontwikkeling (2009) *Polariseren binnen onze grenzen*, Advies No. 46

¹¹ Rhisiart, M. & While, G. (2008). *The Future of the arts and culture in Wales within a global context: Trends, Drivers of Change and New Paradigms*.

In line with the trend of post-materialism many people no longer want more, but they want less and better.¹² We live in a turbulent time, in which huge organizations seem to lose their coherence and traditional social groups are disappearing. But in the search for new social relationships, new cursory collectives are formed, mainly through social media that aim to contribute to a mutual goal. This **self-organizing** behaviour, building on the ambitions and potency of individual people, will become the powerful engine behind future social innovation.

The workshop participants also pointed at the developments in **education, generating knowledge and the changes in skills**. Illiteracy is still present in society and there is a growing tendency of a new illiteracy, meaning the lack of capacity to read thoroughly and to fully understand the meaning. Knowledge tends to be increasingly superficial and volatile and self-taught. Traditional skills and knowledge are disappearing. Related to this is the increasing flexibilisation of labour. People are increasingly self-employed and switch between jobs more often. 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. Moreover, the cultural heritage sector should be aware of the existence of illiteracy (and new forms of illiteracy) and develop new ways of reaching and involving illiterate people.

The workshop participants assessed the following trends and developments according to the level of certainty and the time frame:

<ul style="list-style-type: none"> Differences between generations, not perceiving CH in the same way, different ways of involving 	Uncertain	<ul style="list-style-type: none"> Loss of traditional skills & knowledge Changing lifestyles: unsustainable vs. sustainable lifestyles
Short term		Long term
<ul style="list-style-type: none"> Changing family values, changing family business Personal experiences are important Illiteracy Self-made identities / identity confusion Social exclusion based on impoverishment of cultural possibilities 	Certain	<ul style="list-style-type: none"> New illiteracy, superficial knowledge Self-taught knowledge Personalisation and individualisation Flexibilisation of labour

Figure 2: Overview of assessment of society related trends

2.2 Technology and innovation

This paragraph focusses on the effect of technological developments on cultural heritage. Many recent and future technological advances will permanently influence the way cultural heritage is preserved, managed, disseminated, used and created. This influence will not only be limited to the technology itself, but new customs and business models that originate from new technology may affect cultural heritage as well.

The growing application and use of **information and communication technologies** (ICTs) has a huge impact on daily life. Starting with the wide distribution of the personal computer, followed by graphical interfaces, Internet, email etc. and resulting in a completely new way of social networking and sharing of information. This advance in ICTs drives many innovations, allowing individuals,

¹² Boland, C., et al. (2012). Trendrede 2013.

companies and governments to communicate, share information and fully exploit and enrich the available data in a more efficient, effective, faster, smarter and more sustainable way.

The workshop showed that the internet-based society also offers many new opportunities for the cultural heritage domain to disseminate information, to reach a wider audience, and to access information from faraway places. Raw, unstructured data contained in all kinds of databases are increasingly opened up and shared through the internet. This **open data** development allows cultural collections to become available to anyone via the web and allow for innovative ways of studying, contextualizing and representing. It also provides individuals and organizations with new sources for creativity, as they can use the open data for interpretation and reuse in all kinds of new products and services. As a result, cultural collections are increasingly digitalized and available online. A good example of a large open and trusted cultural heritage platform is the Europeana initiative, which aims to 1) aggregate European cultural content; 2) facilitate cultural heritage knowledge transfer, innovation and advocacy; 3) distribute cultural heritage to people wherever and whenever they want it; 4) engage people through new ways of participation in their cultural heritage.¹³

At the same time, the amount of data is growing very rapidly, turning into an explosion of data. This requires completely new techniques and tools for storing these data, but also for searching, filtering, analysing, accessing and managing these data. Research efforts in this domain of **big data** focus on standards, filters, metadata, innovative storage techniques, advanced data analytics tools, data mining tools, search strategies, semantics, but also protection and security of the data. Artificial intelligence as well as new imaging techniques are used to develop new **pattern recognition tools** to analyse very fast and with high precision large amounts of images, texts etc. for recognizing patterns. This supports searching large datasets, identifying linkages, monitoring and observing changes in artefacts etc.

The development towards an internet-based society is also reflected in more and more artefacts around us. There is a clear trend towards **smart objects**, which increasingly support sensitive interactions with users; enable seamless exchange of data and functions between various platforms (television, telephone, tablet, PC, etc.); and connects people with sensors and the internet. These new smart objects form the foundation for several other technological developments.

Firstly, smart objects allow people to be connected whenever and wherever, thus unleashing the **mobile revolution**. Mobile internet stimulates the increasing and intensive use of **online social media**, such as Twitter and Facebook, facilitating worldwide and real-time information sharing and the mobilization and active participation of many individuals. The mobile revolution also leads to many new services and business models. Regardless of time and place, people can access information and entertainment. Hence, people increasingly use streaming of content (video, music, texts) instead of owning and storing the content themselves. However, the real-time exchange of information and experiences could be a threat to cultural heritage. People can become more unified in their consumption and traditions, reducing the diversity in people and their cultural heritage.

Furthermore, smart objects and future internet technologies enable an **Internet of Things**. Increasingly, not only people will be connected to the internet, objects such as cars, fridges, televisions, water management systems etc. will be connected as well. Combined with sensor technologies, this allows for remote management of the objects and continuous and remote

¹³ 2013, www.europeana.eu

monitoring of conditions and changes, which in the future might improve preservation of culture heritage.

The cultural heritage sector recognizes these developments and intends to develop an **e-infrastructure** to open up and process cultural heritage data. This e-infrastructure will provide a powerful tool for data processing, visualization and cross-sectorial data mining, as well as providing a low barrier medium to interact with the public to both disseminate cultural heritage and receive feedback. This might open up several new business models for the cultural heritage sector. However, the workshop participants also see several downsides of this development. For an e-infrastructure to work, cultural heritage needs to be digitized and it is unclear who is going to digitize and finance this content. Also, when content is put in the online digital database the sense of responsibility and ownership for the cultural heritage might get lost.

The participants expect that several technological trends, such as the development of an e-infrastructure and sustainable technologies, will change the **management of collections**. With more and more collections becoming digitized an overview of digital and online collections will be needed. The e-infrastructure can facilitate the coupling of these databases and local knowledge. Knowing what others are collecting can support curators in the decision making process regarding their own collection: if several other museums already have an extended collection of items, it may not be necessary for yet another museum to start collecting the same objects. This will make collection management more efficient. The participants also had some concerns regarding the use of new technologies in collection management. They were afraid content might get lost when databases are migrated or systems are upgraded. According to them digital collections might only work when they are compatible with future systems. Also, the participants think the role of the curator will change due to technological developments. They outlined two possible scenarios for the curator role: 1) digital systems incorporating the knowledge of the crowd might make human curators obsolete. 2) curators play an important role in digitized future as storytellers about cultural heritage, but they need to become more technology-savvy to cope with all the new technical systems.

According to the participants, many of the previous described technological developments facilitate the **democratizing of cultural heritage**. This offers major opportunities for the cultural heritage domain. Instead of being mere consumers of cultural heritage, the public can be involved in the selection and preservation of cultural heritage. This resembles the **open innovation** and **prosumer** trend in product and service design, which describes the close involvement of external stakeholders such as users/consumers in the design process, making it possible to translate their demands and ideas into new products and services. For cultural heritage this development has two sides, according to the workshop participants. On the one hand, the public will potentially become more involved in their own cultural heritage and a larger target group can be reached. On the other hand, this involvement might result in collecting only those artefacts that are favoured in the public opinion and knowledge about cultural heritage might become superficial. It also raises issues regarding the monitoring of content. Because who will be responsible for curating the content when it is public property?

The democratizing development could also have an impact on the use and dissemination of cultural heritage. Spreading cultural heritage through the internet makes it possible for **mass-customization** and creative use of cultural imagery. New techniques like **3D printing** would even allow flexible production systems and even home-based production of cultural artefacts. This way cultural heritage can be preserved as it becomes part of new concepts and is incorporated by actors using open innovation. This also raises questions about commercial use of cultural heritage imagery. Which

content is available for reuse? Who has access and edit rights? How about copy rights? Democratizing museum collections also raises new ethical issues when human remains are concerned.

The workshop participants also mentioned **3d imaging and other new visualization techniques such as virtual and augmented reality techniques** as opportunities for disseminating and studying cultural heritage. These visualization techniques are used to create computer-simulated environments and artefacts. According to the participants, this would enable new forms of cultural entertainment, like virtual tours and apps which amplify the museum experience, thus potentially attracting a larger audience for cultural heritage. Also, virtualized cultural heritage can be included in other forms of entertainment. For example, historic artefacts or sites can be used in video games. The participants think this development will also impact the type of audience that gets exposed to cultural heritage. An online virtual museum can attract new target groups, which never visited a museum before or which are located on the other side of the world. However, this trend can also exclude people who do not have access to new technologies or are less technology-savvy.

Concerning the preservation of cultural heritage, the participants were discussing two potential impacts of new visualisation techniques. On the one hand new imaging techniques can be a potent tool to make the invisible visible. This means that, in the future, archaeological sites do not necessarily have to be excavated to study them. This development goes hand in hand with a trend towards the use of **non-intrusive technology**, which can be used to find “hidden treasures”, like the painting behind the painting, without disturbing the original artefact or landscape. On the other hand, virtual reality might also distract from the preservation of cultural heritage. Why maintain the real artefact, when there is also a low maintenance virtual object?

Several other technological trends that could change the way cultural heritage is preserved and maintained were identified as well. **Nanotechnology** supports the development of new materials with special functions, such as self-repairing and automatic heating and cooling. **Energy efficient and smart lighting**, allows for automatically adjusting lighting to environmental conditions, using lighting for all kinds of purposes, doing less harm to sensitive objects and saving energy substantially. And **new construction and energy production technologies**, such as heat and cold storage in water, solar panels on rooftops, sustainable lighting systems, and local energy production techniques, are increasingly used on both new and existing buildings to address the need for sustainable and comfortable buildings (energy efficient retrofitting). New construction and energy production technologies can both aid cultural heritage by increasing the lifespan of existing buildings, however it can also hinder cultural heritage preservation by influencing the aesthetics of existing buildings.

Changes in technology often lead to **new business models**. More and more is done online and the new business models can lead to **fully virtual organisations, mobile services, new experience concepts, shared services** and **global sourcing of manpower**. These changed business models can lead to a highly **fragmented value chain** which can be spread out over the entire world. This globalisation can result in larger exchange and fusion of arts and culture, but it can also threaten the conservation of local cultural heritage. A strong counter-development is to pursue **control over the entire value chain**. Even though this can lead to sustaining local cultural heritage influenced by the dominant parties in the value chains, it could also overshadow cultural heritage in countries that have actors in less dominant positions in value chains.

The workshop participants assessed the following trends and developments according to the level of certainty and the time frame:

	Uncertain	<ul style="list-style-type: none">• Digital born heritage (e-heritage)• Danger of superficial knowledge (“wiki-knowledge”)
Short term		Long term
<ul style="list-style-type: none">• Embedded systems• Copyright issues (new policies, creative commons?)• Collection management• Media/mobile revolution• Enhanced/augmented/virtual reality<ul style="list-style-type: none">○ Apps (e.g. 3D archaeology app)○ Virtual tours• Easy access to information: ICT or means to facilitate knowledge transfer among users across countries• Networked heritage• Coupled collection databases (e.g. Europeana)• Energy efficient: sustainability, reuse of energy• Geographical Information System (GIS) analysis• Crowd sourcing of transcriptions -> problems of validation	Certain	<ul style="list-style-type: none">• Smart preservation• New research strategy: DNA/bio-molecular “genesis” of man, animals, plants• E-infrastructure for cultural heritage• Open data/Democratizing<ul style="list-style-type: none">○ Data standards, metadata• Non-intrusive research methods (geomagnetic, radars)

Figure 3: Overview of the assessment of technological trends and developments

2.3 Economy

This paragraph focusses on the effect of economic developments on cultural heritage. Several economic developments are expected to permanently influence the way cultural heritage is preserved, managed, disseminated, used and created.

Since 2007, the world has been experiencing economic hardships. What started as a debt crisis has transformed into a global economic crisis and Europe has been one of the areas most greatly affected by this downturn as it is experiencing the largest economic slowdown. The **Euro crisis** poses a serious threat to the maintenance of culture in countries like Greece, where this is felt the greatest and they have great deal to preserve. Due to the current economic crisis many European nations are experiencing recessions which affect the government budgets. This is translated to a **reduction of public funding**, to spend on such things as supporting the arts and restoring and maintaining historical landmarks. There is also a **reduction of public facilities**, such as museums and parks, due to this budgetary reduction. Museums preserve the historical culture and areas such as parks and other more modern public facilities give room for the current culture to be preserved. The lack of funding for such areas threatens these forms of preservation. A related development is the tendency of governments to step back and to leave more activities and tasks to the market and to the civilians.

The workshop participants acknowledged the importance of the economic crisis for the sector. Budget cuts and a tendency of liberalism means a reduction of public means for cultural heritage activities and a greater appeal to the sector to develop new initiatives. The workshop participants also pointed at another relevant impact: **the growing attention for savings instead of making investments**. People are increasingly saving money, for paying off their mortgages, for their pension and to be prepared for worse times. This may be at the expense of the sums available for private money for supporting cultural heritage activities and investing in art. Also European industry is facing difficult times and this may limit their spending on art and cultural activities as well; companies

belong to the largest private investors in arts and culture. This all will have different implications: the sector will have to make choices concerning its activities, in selecting which cultural heritage to preserve, in developing more economical approaches to preserving (e.g. keeping the knowledge instead of the construction itself), but also in exploring new sources for funding and developing new sources of income. This will require a more entrepreneurial and business-like attitude and more intensive partnerships with the private sector.

Over the past century the **globalisation of economies** has been ever increasing. Opening trade lanes and increased means of transportation has allowed access for countries on other sides of the world to trade and exchange goods, services, as well as immigration of people. Importing goods from around the world opens Europe to the introduction of culturally inspired products. For instance, many consumer trends from the United States, have spread overseas and are also popular throughout Europe. The rise of some emerging economies, including China, Brazil and India, brings other cultural perspectives as well. This allows for merging of cultures as well as people. With globalisation of economies comes outsourcing as well as international recruitment, bringing people from drastically different backgrounds into contact. Such intertwining of people spreads languages as well as stories of tradition from their own countries. Europe is a melting pot for such cultural blending and this can both enrich and threaten the cultural heritage in Europe. In addition to the implications mentioned in relation to multiculturalism (as part of societal trends), workshop participants also emphasised that despite the globalised world, local territory will remain important for construction and preserving identity and shared values. Hence, local cultural heritage will increasingly become important.

Structural economic problems can lead to poverty amongst different populations. The current economic crisis in Europe has led to a large scale **reduction in income** as many people have lost their jobs. People no longer have the same income to spend on leisure activities and are becoming more guarded with their spending. Lower leisure spending limits travel and commercial spending which feed into today's cultural trends and learning. This lower income has also widened the poverty gap in some areas. Workshop participants acknowledged the effects of structural economic problems on income and spending on culture, arts and cultural heritage. They also emphasised that this creates a new mission for the sector, to develop new ways of presenting and disseminating cultural heritage that will preserve public access to cultural heritage and support reaching and involving poorer groups in society as well.

Another important development is the growing attention for personalised services. Society increasingly involves into a **service driven society**. Property and ownership will become less dominant; people will increasingly lease and rent items instead of owning them. This development is very clear in the entertainment industry. People no longer buy music, films or games, but they download it from the internet for free, or have a subscription to a streaming service. This trend may extend to the arts and culture sector as well.

Along with the power of the internet comes an increase in **cybercrime** as well. Cybercrimes are directed at persons, property, and organizations by electronic communication networks and information systems. These crimes extend across country lines and often involve identity theft, breach of data privacy, terrorism threats, infringement of intellectual property, and hacking into websites and networks¹⁴. Stealing intellectual property threatens the credibility of new discoveries and the rightful owner of such informational developments. The ability to assume someone else's

¹⁴ *Impact van trends op de verzekeringsbranche*. TNO 2012.

identity or steal their work threatens the security of new developments and the trust of people in the work of others.

The workshop participants assessed the following trends and developments according to the level of certainty and the time frame:

<ul style="list-style-type: none"> Change in economic balance of power: EU-dominance will diminish 	Uncertain	<ul style="list-style-type: none"> Globalisation vs. protectionism Savings vs. investments
Short term		Long term
<ul style="list-style-type: none"> Poverty / increasing personal debt More with less Budget cuts Liberalism & deregulation 	Certain	<ul style="list-style-type: none"> Globalisation: intangible world: local territory remains important Quality vs. quantity / low cost Personalised services / customisation Service driven society / renting and leasing instead of property

Figure 4: Overview of the assessment of economic trends and developments

2.4 Ecology

The profound impact of man on the earth is becoming more visible and noticeable in almost all places in the world. As a result **climate change** and, in parallel, **sustainable development** are two major challenges the world is facing today.

Since the mid-20th century the climate is changing under the influence of natural factors and the greenhouse effect caused by humans. The IPCC (the climate panel of the United Nations) expects that the sea level and global temperature will keep rising if human activity remains unchecked.¹⁵ This can result in more extreme weather and climate events, which threaten both cultural and natural heritage. This is not only a problem for the far future. The World Monuments Watch List demonstrates that several cultural heritage sites around the world are already experiencing the negative impacts of climate change.¹⁶ As the sea and river levels rise, the water reclaims much of the coastal areas and river banks and with it the historic settlements that have been built on these shores. Changing weather patterns also cause damage to historic buildings that have been designed to endure another type of weather conditions. To cope with the challenges of climate change, governments, organizations and individuals can adopt two responses: reducing greenhouse gas emission to mitigate climate change or adapt to the effects of climate change in the future. However, preservation of cultural heritage is a local activity, whereas climate change is a global threat. Therefore, UNESCO acknowledges the need to adopt a united approach to issues of environmental preservation and sustainable development, resulting in more than 30 programmes dedicated to sustainable development, climate science, adaptation, monitoring and mitigation.¹⁷

Cultural heritage is not only vulnerable to climate change, but it can also provide a source of inspiration to cope with it. The many human-made structures that have survived for centuries offer new ideas for adapting buildings to their natural environment and using local resources. Also, the preservation of historic sites can contribute to a more sustainable mind-set, because it emphasizes the importance of reusing and repairing instead of replacing.

¹⁵ IPCC, 2012. Managing the risks of extreme events and disasters to advance climate change adaptation.

¹⁶ Berenfeld, M.L., 2008. Climate Change and Cultural Heritage: Local Evidence, Global Responses.

¹⁷ UNESCO, 2009. Case Studies on Climate Change and World Heritage.

Another problematic ecologic trend is the increasing **pollution** of our environment. Due to population growth, urbanization, and consumerism nature is giving way to residential areas and pollution is everywhere: soil pollution, water pollution, air pollution, light pollution, noise pollution. This puts great pressure on the environment and leads to decreased biodiversity. Also the effects of air pollution on built cultural heritage is evident. Industrialization has left society with many defaced historic statues and corroded and soiled monuments.

Some potential implications for cultural heritage

- Climate change and pollution are huge threats to the preservation of cultural heritage
- Cultural heritage can be a source of inspiration for developing sustainable constructions
- Climate change and pollution require huge attention and financial means from governments and society. This could lead to less attention, less funding for arts, culture and cultural heritage
- Climate change, pollution and the focus on sustainable development can also inspire the creation of arts and culture.

2.5 Policy

In the European Union there is a trend or call for more **centralized governing**. This European integration is based on the notion that more power will provide the European Commission with more means to strengthen Europe and bounce back from the current economic crisis and prevent or deal with other crisis in the future. One aspect of the European integration will be the increasing number of possibilities the European Commission has to preserve cultural heritage. However, another aspect will be a more unified Europe, with more unified rules in all EU countries and more unified behaviour as a result of this. This can affect local cultural heritage.

A counter movement is the call for more self-government for countries and **renewed independency** by several political parties in many different countries. This political trend calls for countries to abandon the European Union and return to the independent countries as they were before the establishment of the Union. As this is opposing the previously mentioned trend, the results are also contrasting. As the political view is based on chauvinism, there is attention for the preservation of cultural heritage, however as independent countries no longer join forces, several countries will lack the means to successfully preserve their cultural heritage.

The abilities to preserve cultural heritage are also in several ways related to the current economic climate and the effect it has on politics. The current **economic crisis** by itself reduces the means available to preserve cultural heritage. However the effect the crisis has on politics, or from a different view, how the crisis is currently handled by politicians amplify the effect the economic crisis is having on cultural heritage preservation. The current focus of politicians is on numbers and getting budgets balanced. In order to do so, **expenses are being cut** throughout Europe and culture is one of the elements where budgets are being cut drastically. Without the means from the government and with the current financial climate, cultural heritage preservation is under stress. The example here being Greece where maintenance on several ancient buildings is no longer provided, leading to their cultural heritage to be at risk of demise, which ultimately influences their economics as the tourist industry is an important industry.

Driven by the need to restructure the government budgets and to cut public spending, governments increasingly call upon civilians to organise activities themselves that used to be provided by public

service. Governments increasingly **hand-over public tasks to society** and ask from society to take care of these tasks themselves. Especially in the domain of arts and culture, governments cut budgets and expect institutions to explore and use other ways of funding, including crowd funding, public private partnerships, commercial exploitation of collections and so on.

Governments are expecting a more **entrepreneurial approach** to arts, culture and cultural heritage, developing new business models, exploring new markets. It also means that public funding will only become available if institutions can show their added value to the cultural landscape. Uniqueness, but also diversity and reach in audience, entrepreneurship and collaboration with education partners become more important .

The workshop participants think the policy trend towards **privatization** will affect the cultural heritage domain the most in the upcoming years (see also description in section 2.3 on economy). Workshop participants see many challenges because of this development, from organising activities more efficiently to exploring new sources for funding and developing new sources of income. This will require a more entrepreneurial and business-like attitude and more intensive partnerships with the private sector. Nevertheless, they also see several worrying effects of this trend. They sketched a future scenario in which all objects in museum are name tagged by their sponsor. Also they fear collections will become exclusive to the parties that fund them, while it is important to ensure access rights for a broad public to cultural collections. Furthermore when collections become privately owned, it will be difficult to prevent the owners from selling off culturally important parts of collections. Finally, the participants are concerned that privatization will lead to the collection of popular cultural heritage, which has a market value to the private owner. All participants believe that popularity is a very one-dimensional criterion to assess cultural importance and the need to preserve heritage.

The workshop participants assessed the following trends and developments according to the level of certainty and the time frame:

		Uncertain	<ul style="list-style-type: none"> • Unstable • Slow movement towards “democratisation” vs. expert judgement and selection • Education policy: Modernisation of educational system -> new competences and skills for cultural heritage management
Short term			Long term
<ul style="list-style-type: none"> • Agenda 2020: <ul style="list-style-type: none"> ◦ Tool for economic growth and job creation ◦ New jobs -> environment sector -> restoration of building with new methods (energy efficient, green, etc.) ◦ Tourism policy based on heritage -> sustainable • More ICT • Going after visible results • Budget cuts and financial crisis <ul style="list-style-type: none"> ◦ Need to think about reuse • Heritage = tourism opportunity 		Certain	<ul style="list-style-type: none"> • Focus on quantitative outcome measures: <ul style="list-style-type: none"> ◦ Economic value ◦ Instrumentalisation (no goal in itself) • Marine Green Paper – no inclusion of cultural heritage • Agri-Environment -> non-use of land -> restriction for cultural heritage management • Privatisation • Decentralisation • Link with other disciplines (e.g. spatial planning) • Local oriented • European/globalisation: Cultural heritage as tool to build European identity • Short term thinking • From conservation to development • Joint collaboration • Commercial approach endangers less popular objects (e.g. post war “young” heritage) • Ban on materials used in historic technologies (e.g. ship building tar) • Inflation on definition of cultural heritage and age limit

Figure 5: Overview of the assessment of policy trends and developments

3 Concluding remarks

The discussion about STEEP trends and developments that could influence the future of cultural heritage proved to be a fruitful one, identifying several potential drivers of change.

Overall, it can be concluded that the current policy tendency towards cutting budgets in the cultural sector is perceived as an important driver of future change. This is not necessarily a negative development, as it forces individuals, organisations and governments to reflect on and redefine the role and value of cultural heritage in society. It forces stakeholders in the cultural heritage domain to take a more entrepreneurial stance and offers an opportunity to closely involve society in sharing the responsibility for protecting, studying and propagating our cultural heritage, be it either through public-private partnerships, full private funding, crowd funding, crowd sourcing or voluntary contributions in kind. These new collaborations will also raise new questions regarding the criteria used to select which cultural heritage should be protected and conserved: the most vulnerable, the most visited, the oldest, the ones reflecting history's proudest moments, the ones that are most advocated by lobby groups? These issues merit a new public discourse about the value of cultural heritage nowadays and in the future.

In line with this discussion, the role of the EU and national governments in funding and supporting cultural heritage should be reassessed. The participants outlined two main scenarios. In the first, *"more Europe"* supports collaboration across national borders in cultural heritage and supports a unified approach towards the preservation, management and dissemination of cultural heritage. However, this could also lead to more unified traditions and culture. The counter movement of *"less Europe"* will probably result in less means and higher inefficiency in cultural heritage. However, there will probably also be more focus on preserving own traditions and culture, resulting in a more diverse cultural heritage. Participants also point at the focus of EU funding and support for cultural heritage. Traditionally, most EU attention goes to preserving and protecting cultural heritage, but the tendency of privatisation, the increasing digitalisation of artefacts, the internet-based society, and the upcoming creation of digital forms of art and culture may require more attention for other, more social and socio-economic research questions and studies. Examples of such research topics could be new business models, new artistic careers, value of cultural heritage for social and territorial cohesion and quality of life, value of cultural heritage for tourism and creation of new jobs, and identity creation in the digital age.

A third issue that should be considered is the need for new skills in the cultural heritage domain. An entrepreneurial approach requires different skills of the people that work within the domain. New curriculums should be developed within cultural studies to address this future need for entrepreneurial and business skills.

Finally, the participants acknowledge that the future will become more and more digital. This trend is also reflected by the digitalization of culture, resulting in new forms of digital culture. However, it is yet unsure how this digital art and culture will be valued in the future and how this will reflect on our perception and appraisal of real objects. The participants fear more superficial knowledge of cultural heritage due to the internet revolution and the notion that everything needs to be enveloped in entertainment to spark interest from the public. As cultural heritage is about learning, identity and providing reference points for current civilizations, developing flashy forms for presenting artefacts is not enough to make them meaningful. Also in the future, we will need skilful experts and curators, who conduct thorough background studies to put artefacts in their historic context and who can revive this history by enthralling storytelling.

4 Workshop participants

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