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1 - Report on Drivers of Change and the Future of Cultural Heritage

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PP	Restricted to other programme participants (including the Commission Services)	X
RE	Restricted to a group specified by the consortium (including the Commission Services)	
CO	Confidential, only for members of the consortium (including the Commission Services)	

Contents

Introduction

The Joint Programming Initiative, *Cultural Heritage and Global Change: a new Challenge for Europe*, is developing a Strategic Research Agenda (SRA) for the field of cultural heritage, with a horizon of 10-20 years. Foresight and futures methods are widely used to support the process of developing research policies and strategies. One of the activities to inform and define the SRA is a Foresight Study on Cultural Heritage. This report is an output of the Foresight Study: Report on Drivers of Change and the Future of Cultural Heritage.

This report analyses a range of drivers of change ('drivers') across several thematic areas:

- People, culture, values and society
- Science and technology
- Environmental Change
- Economy

Although the drivers may have a strong orientation towards one of the categories, they are presented individually within the report. Many of the drivers are relevant for two or more categories.

These drivers were identified through a meta-analysis of Foresight literature and exchanges with experts engaged in the JPI. The presentation of the drivers analysis takes the following form:

- Description
- Evidence and Signs of Change
- Potential Significance and Implications
- References and Further Reading

A range of sources was used to compile this report – both academic and grey literature. The main sources used are listed in the Bibliography.

The Drivers Report has been designed to provide analysis and support to the more participatory elements of the Foresight Study – the Futures Literacy Scenario Workshops and the Real-Time Delphi Study.

The Internet of Things and 'Smart' applications

1. Description

The first wave of the Internet enabled end-users to access information and to interact with people in new ways. There is immense interest in the next generation of the Internet and the type of benefits, services and business models that it might bring. One of the key aspects of the next generation of the Internet is the embedding of the technology into our everyday environment – in the fabric of buildings, and in objects around us. A number of terms have been coined to capture the essence of this emerging model, including The Internet of Things (IoT), Smart applications, machine to machine communications, web of data, ubiquitous technology/computing, ambient intelligence, and pervasive computing.

A recent OECD report provides a useful set of definitions on these terms:

- 'The term "Internet of Things" is mainly associated with applications that involve Radio Frequency Identification (RFID). These make use of so called tags, tiny chips with antennae that start to transmit data when they come in contact with an electromagnetic field. They are passive communication devices, in contrast to active devices, that can transmit because they have access to a power source like a battery.
- The term Machine to Machine communication (M2M) describes devices that are connected to the Internet, using a variety of fixed and wireless networks and communicate with each other and the wider world. They are active communication devices. The term is slightly erroneous though as it seems to assume there is no human in the equation, which quite often there is in one way or another.
- The term embedded wireless has been coined, for a variety of applications where wireless cellular communication is used to connect any device that is not a phone. This term is widely used by the GSM Association (GSMA).
- The word Smart is used in conjunction with various words such as Living, Cities, Metering, Grids, Water Levy and Lighting to describe a variety of applications that make use of inexpensive communication to improve the delivery of services'[1].

Notwithstanding these nuances, we will use the terms that have gained currency in research, business and policy, The Internet of Things, and Smart applications.

One group of authors has summarised the IoT as follows:

> 'The basic idea of this concept is the pervasive presence around us of a variety of things or objects – such as Radio-Frequency IDentification (RFID) tags, sensors, actuators, mobile phones, etc. – which, through unique addressing schemes, are able to interact with each other and cooperate with their neighbors to reach common goals'.[2]

[1] OECD (2012), "Machine-to-Machine Communications: Connecting Billions of Devices", OECD Digital Economy Papers, No. 192, OECD Publishing. http://dx.doi.org/10.1787/5k9gsh2gp043-en

[2] Luigi Atzori, Antonio Iera & Giacomo Morabito, 'The Internet of Things: A survey', *Computer Networks* 54 (2010) 2787–2805, p2787

The key building blocks for building the IoT are wireless sensor networking technologies and Radio Frequency Identification Tags (RFIDs).[3]

Miorandi *et al* (2012) summarise the main system-level characteristics of the Internet-of-Things as follows

1. 'Anything communicates: smart things have the ability to wirelessly communicate among themselves, and form ad hoc networks of interconnected objects.

2. Anything is identified: smart things are identified with a digital name: relationships among things can be specified in the digital domain whenever physical interconnection cannot be established.

3. Anything interacts: smart things can interact with the local environment through sensing and actuation capabilities whenever present'.[4]

The integration of the IoT with Internet infrastructure – such as the 'cloud' – is considered a key element of developing services that are of value to users.

According to IDTechEx[5], the enabling technologies for the IoT are

- Passive RFID
- Printed/Chipless RFID
- Active RFID
- Real Time Locating Systems
- Wireless Sensor Networks
- Proposed software architectures

2. Evidence and signs of change

There has been recognition of the importance of the IoT – in business, policy and research. Some estimates suggest that, by 2020, there will be 50 billion mobile wireless devices connected to the Internet worldwide, with the number of devices potentially rising to 500 billion – 'this raises many important issues for stakeholders to consider. Economies and societies will be increasingly intermeshed with devices that continuously communicate with each other and provide information to users'[6].

Within its list of six 'Disruptive Civil Technologies', the US National Intelligence Council anticipates that ''by 2025 Internet nodes may reside in everyday things – food packages, furniture, paper documents, and more... popular demand combined with technology advances could drive widespread

[3] Daniele Miorandi , Sabrina Sicari, Francesco De Pellegrinia & Imrich Chlamtac, 'Internet of things: Vision, applications and research challenges', *Ad Hoc Networks* 10 (2012) 1497–1516, p1500

[4] Daniele Miorandi *et al*, *op.cit.*p1502

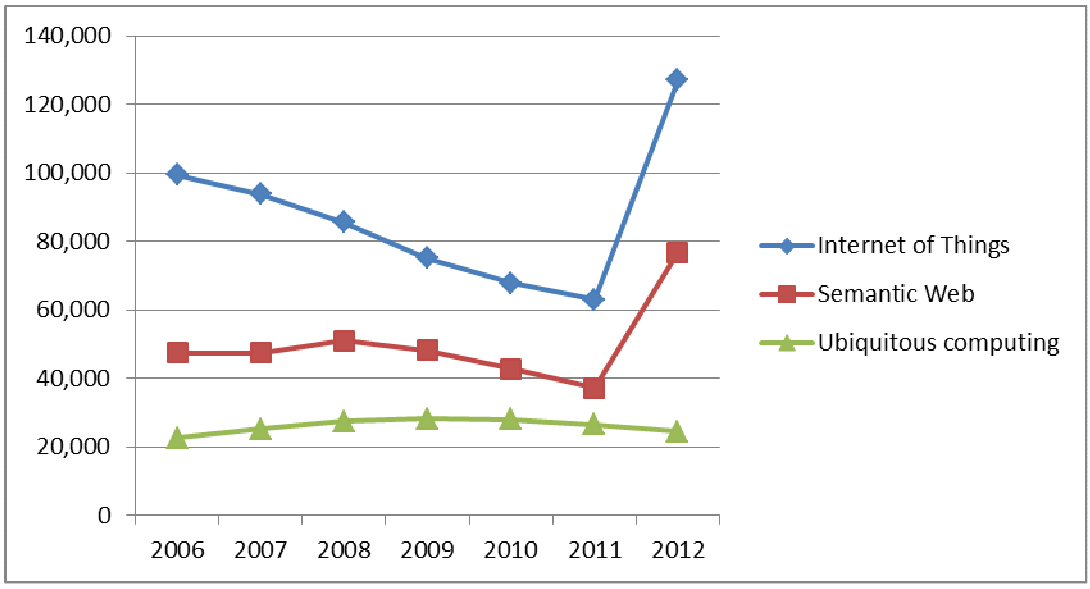
[5] IDTechEx The Internet of Things: Location Based Context Aware Opportunities 2013-2023 http://www.idtechex.com/research/reports/the-internet-of-things-location-based-context-aware-opportunities-2013-2023-000327.asp

[6] OECD report *op.cit*, p.7

diffusion of an Internet of Things (IoT) that could, like the present Internet, contribute invaluably to economic development". [7]

The adoption of RFIDs – as a key underlying technology – is a signal of change. Research undertaken by IDTechEx highlights the growth in the value of the RFID market – which increased from $6.51 billion in 2011 to $7.67 billion in 2012. In retail, 1 billion RFID labels will be sold in 2012 (the total number of tags sold will increase from 2.93 billion in 2011 to 3.98 billion in 2012.[8]

Search results for key terms (Google Scholar Citations)



The terms, 'Internet of Things', 'Semantic Web' and 'Ubiquitous Computing' have been in use for several years. The search results for the Internet of Things and Ubiquitous Computing (above) indicate a decrease in the incidence of terms between 2006 and 2011 – but both have spiked significantly in 2012. It is not clear why this is the case.

An indicator of the growing interest in the IoT is the range of research initiatives that have been supported, for example

- The European Union has developed a strategic research agenda for the Internet of Things[9];
- Within the EU's Framework Programme 7, there is a focus on 'Internet-Connected Objects' and the European Research Cluster on the Internet of Things[10]
- The National Science Foundation, USA, launched a Cyber-Physical Systems programme in 2008 to cover a range of possible applications, including smart electric grids, smart transport, smart medical technologies and smart manufacturing, aimed at introducing systems able to merge computational and physical resources.

[7] National Intelligence Council, Disruptive Civil Technologies – Six Technologies with Potential Impacts on US Interests Out to 2025 – Conference Report CR 2008-07, April 2008, <http://www.dni.gov/nic/NIC_home.html>.
[8] http://www.idtechex.com/research/reports/rfid-forecasts-players-and-opportunities-2012-2022-000322.asp RFID Forecasts, Players and Opportunities 2012-2022
[9] Internet of Things: Strategic Research Agenda, September 2009. <http://ec.europa.eu/information_society/policy/rfid/documents/in_cerp.pdf>.
[10] http://www.rfid-in-action.eu/cerp

- The US President's Council of Advisors on Science and Technology published a report in 2010, 'Designing a digital future: federally funded research and development in networking and information technology', which provided support for further investment in Cyber-Physical System

Miorandi *et al* (2012) state that IoT technologies will have applicability in many areas including

- Environmental monitoring
- Health-care
- Inventory and product management
- Workplace and home support
- Security and surveillance.

The Internet of Things and Cultural Heritage

There are many initiatives and research projects that connect the Internet of Things with cultural heritage. The following are examples:

- Smart City Museum and Park Arena, City of Genova, Italy – 'blending...the city's natural and cultural heritage with safety and security in urban spaces. This approach draws on and integrates Future Internet technologies (such as augmented reality services for the appreciation of cultural heritage) with networks of video-cameras used to monitor public spaces'.[11]
- The Intergenerational Interpretations of the Internet of Things project is funded through Horizon Digital Economy Research – EPSRC grant # EP/G065802/1 (UK Research Council). It has been exploring 'Object memory' models and infrastructure, which contain historical records and metadata on all sorts of objects.[12]
- Linking of user-generated stories – including text and video – to objects via QR codes is being explored by the 'Tale of Things' project.

3. Potential significance/implications

The Internet of Things and the development of smart applications are widely regarded as an emerging paradigm – where Internet and mobile technologies are put to use to link people, data and objects in myriad ways. For some technological experts, 'The Internet-of-Things may represent the next big leap ahead in the ICT sector. The possibility of seamlessly merging the real and the virtual world, through the massive deployment of embedded devices, opens up new exciting directions for both research and business'.[13]

[11] Hans Schaffers, Nicos Komninos, Marc Pallot, Brigitte Trousse,Michael Nilsson, Alvaro Oliveira, 'Smart Cities and the Future Internet: Towards Cooperation Frameworks for Open Innovation' in The Future Internet, Springer Berlin, 2011, pp431-446

[12] Coughlan, Tim; Brown, Michael; Houghton, Robert and Lawson, Glyn (2012). Exploring new connections between the physical and digital for future heritage interpretations. In: CHI 2012 Workshop: Heritage Matters, 5-10 May 2012, Austin, Texas.

[13] Miorandi et al, 2012. P.1513

For cultural heritage, the potential implications of the Internet of Things appear to be significant mainly in the following Priority Areas[14]:

- **Protection**: linking sensors with Internet architecture facilitates the safeguarding of cultural heritage resources. The Internet of Things has a role on the physical conservation and monitoring of artefacts. Specifically, the two key areas supported by IoT technologies are (1) environmental monitoring, where 'a role is played by the ability of sensing, in a distributed and self-managing fashion, natural phenomena and processes (e.g., temperature, wind, rainfall, river height), as well as to seamlessly integrate such heterogeneous data into global applications'; [15] and (2) Security and surveillance (less invasive solutions and ambient sensors to detect potential environmental damage). One of the growth areas is anticipated to be Wireless Sensor Networks (mesh networks), which 'will eventually enable the automatic monitoring of forest fires, avalanches, hurricanes, failure of country wide utility equipment, traffic, hospitals and much more over wide areas, something previously impossible. It has started already with more humble killer applications such as automating meter readings in buildings, and manufacture and process control'.[16]

- **Access** and **Interpretation** – ***the Internet of Things is a means of bringing cultural heritage to life***.

  The second major implication for the future of the area is how the socialisation or social embedding of the Internet of Things could bring cultural heritage to life. Contemporary examples, such as the Tale of Things and the Intergenerational Interpretation of the Internet of Things projects, provide emerging models for dynamic and layered interpretation of cultural heritage by individuals and communities. The 'things' or artefacts of cultural heritage could be the subjects of new forms of interpretation – with user and linked data providing new meanings and experiences. The cultural heritage Internet of Things could radically redefine the relationship between subject and object, and provide an array of interpretive lenses through which cultural heritage can be viewed.

  Some of the researchers that have explored these themes in their work have put forward the view that, 'A plurality of linked media, events, places, people and objects have always informed heritage practices. New technologies can widen participation and opportunities for creative interpretation if they are designed with an appreciation for individual and social behaviours.'[17]

Possible Research Implications

- Need for understanding (e.g. ethnographic) of emerging practices of IoT technologies and cultural heritage
- Social, anthropological and other research on how IoT and related technologies create new meanings and interpretation for cultural heritage

Risks

[14] Categorisation of Priority Areas included in the Strategic Research Agenda
[15] Miorandi et al 2012
[16] IDTechEx, 'Wireless Sensor Networks 2012-2022', September 2012
http://www.idtechex.com/research/reports/wireless-sensor-networks-2012-2022-000314.asp
[17] Coughlan et al 2012, *op. Cit.*

- Security risks, e.g. ‘‘to the extent that everyday objects become information security risks, the IoT could distribute those risks far more widely than the Internet has to date”.[18]

- Data confidentiality, privacy, trust

4. References and further reading

- Luigi Atzori, Antonio Iera & Giacomo Morabito, ‘The Internet of Things: A survey’, *Computer Networks* 54 (2010) 2787–2805, p2787

- Coughlan, Tim; Brown, Michael; Houghton, Robert and Lawson, Glyn (2012). Exploring new connections between the physical and digital for future heritage interpretations. In: CHI 2012 Workshop: Heritage Matters, 5-10 May 2012, Austin, Texas.

- European Union, Internet of Things: Strategic Research Agenda, September 2009. <http://ec.europa.eu/information_society/policy/rfid/documents/in_cerp.pdf>.

- Daniele Miorandi , Sabrina Sicari, Francesco De Pellegrinia & Imrich Chlamtac, ‘Internet of things: Vision, applications and research challenges’, *Ad Hoc Networks* 10 (2012) 1497–1516

- National Intelligence Council, Disruptive Civil Technologies – Six Technologies with Potential Impacts on US Interests Out to 2025 – Conference Report CR 2008-07, April 2008, <http://www.dni.gov/nic/NIC_home.html>.

- OECD (2012), “Machine-to-Machine Communications: Connecting Billions of Devices”, OECD Digital Economy Papers, No. 192, OECD Publishing. http://dx.doi.org/10.1787/5k9gsh2gp043-en

- Hans Schaffers, Nicos Komninos, Marc Pallot, Brigitte Trousse,Michael Nilsson, Alvaro Oliveira, ‘Smart Cities and the Future Internet: Towards Cooperation Frameworks for Open Innovation’ in The Future Internet, Springer Berlin, 2011, pp431-446

- David Siegel, *Pull: The power of the Semantic Web to transform your business*, Portfolio 2009

- Jonathan Zittrain, The Future of the Internet and How to Stop it, Penguin Books, London, 2008

[18] National Intelligence Council, *op.cit.*

Gamification , serious games

1. Description

Definition of gamification (noun) (Oxford Dictionaries):

> *the application of typical elements of game playing (e.g. point scoring, competition with others, rules of play) to other areas of activity, typically as an online marketing technique to encourage engagement with a product or service: gamification is exciting because it promises to make the hard stuff in life fun*[19]

The concept of gamification is founded on the human inclination to play games – where there are elements of competition, attaining certain levels of achievement, and so on. Gamification uses the principles of game-design in a range of applications to make them more engaging and fun – to motivate people and to change behaviours. The growth of Internet and mobile technologies has enabled the development of gaming and gamification.

Gamification has become an important concept in the world of marketing, particularly to engage people with companies, products, services in ways that build affiliations/loyalty and revenues. Although gamification has had a strong commercial push, it is also considered significant for social purposes.

A company that develops gamification applications, Bunchball, provides the following summary of some of the game mechanics, game dynamics and types of participation generated.[20]

Game mechanics	Game dynamics	Driving different types of participation
Points	Reward	Watching videos
Levels	Status	Listening to audio
Challenges	Achievement	Viewing photos
Virtual goods and spaces	Self-expression	Opting in to email communication
Leaderboards	Competition	Creating content
Gifts and charity	Altruism	Answering questions
		Taking quizzes
		Sharing personal info
		Rating products
		Voting on content

[19] http://oxforddictionaries.com/definition/english/gamification
[20] Bunchball. http://www.bunchball.com/sites/default/files/downloads/gamification101.pdf

Etc

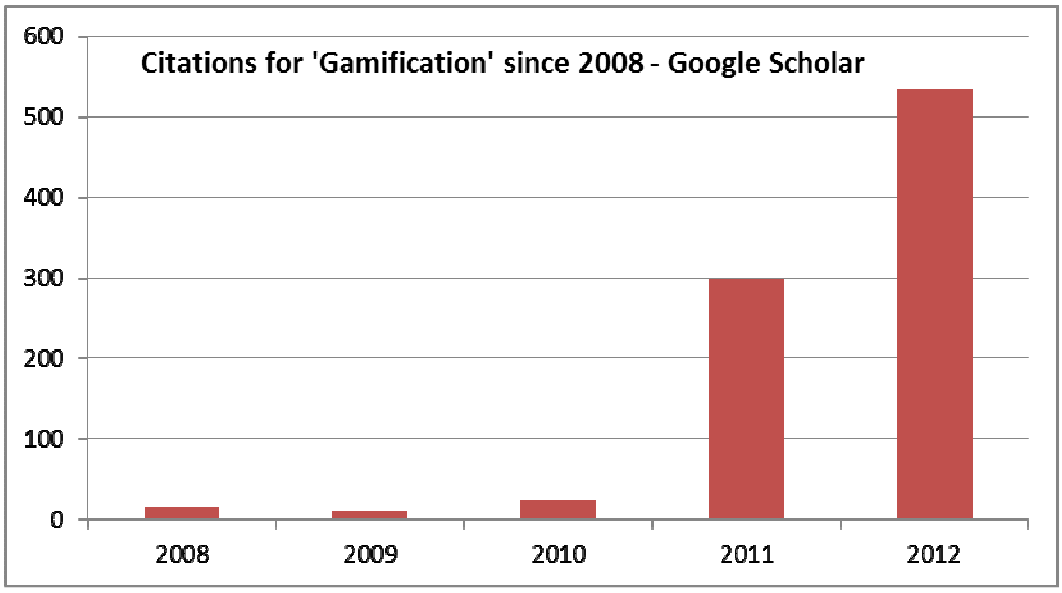
According to Gartner, the three key ingredients for successful gamified applications are

- Motivation – extrinsic rewards/weak intrinsic rewards;
- Momentum – sustained engagement through getting the mechanics right;
- Meaning – providing rewards that are meaningful for participants.[21]

2. Evidence and signs of change

Literature search

The term, 'gamification', is relatively new but it is appearing increasingly in scholarly literature. The table below illustrates the sudden growth of interest in the concept measured by the number of citations by year 2008-2012.



Impacts in different areas

Gamification has already been significant in the following areas:

- **Education and learning**: the power of games and gamification has been recognised in the fields of education and learning. It has been said that gaming and gamification can help in three key aspects of learning: curiosity, imagination, and a sense of play. A recent book by Douglas Thomas and John Seely Brown argues that gaming and social gaming – including Massively Multi-Player Online Role-Playing Games (MMPORGs) – have the capacity to transform the learning environment. With social games, "learning happens on a continuous basis because the participants are internally motivated to find, share, and filter new information on a near-constant basis".[22]

  One celebrated example of the gaming approach to learning is Quest to Learn, a school opened in New York City in 2009 with a new model for curriculum and learning – based on gaming and game

[21] http://www.gartner.com/it/page.jsp?id=1844115
[22] Douglas Thomas & John Seely Brown, *A New Culture of Learning*, CreateSpace, 2011

design. The approach is based on inquiry-based learning and content explored dynamically through games, interaction and collaboration.

The book written to share the Quest to Learn experience captures the key principles of the new model of learning:

> *Game designers traffic in the space of possibility. They define systems that define rules and thus give rise both to play and to a sense that anything is possible...The design of Quest to Learn thus began with an inquiry into the idea of possibility.*
>
> *What, for example,...might be made possible for kids if we found of a way to conceive of school as just one kind of learning space within a network of learning spaces that spans in school, out of school, local and global, physical and digital, teacher led and peer driven, individual and collaborative?*
>
> *What might be made possible for teachers if their creativity around how to engage kids were deeply valued and they were supported with resources – such as collaborating with game designers – to really understand what engagement around learning can look like?*[23]

- **Commercial applications**

Many companies are already using gamification techniques to engage with people – both clients and employees. Gartner predicts that 70 per cent of the Forbes 2000 companies will have gamified applications by 2014.[24] It also predicts that more than 50 percent of organizations that manage innovation processes will gamify those processes.[25]

For example, Samsung created 'Samsung Nation' in November 2011, which integrated gamification applications within its website. As a result, its website has received 66% more visitors, who collectively have submitted 309% more comments."[26]

A recent feature in the magazine for the marketing profession, *campaign,* asked two experts the following question: 'Some people are predicting that, ultimately, everything will be gamified – from brand engagement to education/learning to healthcare. What do you think?'

The answers of the two marketing experts point to the expected diffusion of gamified applications, their benefits and the generational/demographic driver at work (of Generation Y):

> *Generation Y often champions platforms, products and services because they are gamified. And mainstream marketing campaigns are beginning to successfully deliver gamified elements* (Jerry Lloyd-Williams).
>
> *It's likely that gamified elements will be more prevalent as brands, services and organisations look to ensure they have a robust CRM strategy that maximises engagement with end-users* (David Atkinson).[27]

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[23] Katie Salen, Robert Torres, Loretta Woolzin, Rebecca Rufo-Tepper& Arana Shapiro, *Quest to Learn. Developing the School for Digital Kids*, Cambridge, MA, MIT Press, 2011
[24] http://www.gartner.com/it/page.jsp?id=1844115
[25] http://www.gartner.com/it/page.jsp?id=1629214
[26] CFO Apr2012, Vol. 28 Issue 3, p32
[27] Is gamification the next big thing in marketing? Campaign (UK) 1/20/2012, Issue 3, p25

- **Public and Social Applications**

Physical exercise/health: Zamzee is a game based on physical exercise and moving – addressing social concerns around obesity and ill-health, and the projected rise of these over the next decades. https://www.zamzee.com/

Recycling: Recyclebank is a gamified application for encouraging greater levels of recycling.

https://www.recyclebank.com/join/earnpoints

3. Potential significance/implications

Gamification has emerged and grown quite rapidly in recent years. Applications have been developed for commercial and non-commercial purposes. Industry experts predict that gamification will become mainstream in the business world by 2015; there is a view that "Gamification could become as important as Facebook, eBay or Amazon".[28]

What could this mean for cultural heritage? It could be significant for the priorities of **Access** and **Interpretation** in the following aspects:

- **Education and learning:** there is a growing movement that is seeking to innovate and make progress in formal learning environments – described by KnowledgeWorks as a shift from schooling to learning[29]. This reflects broader changes in learning and educational environments. Gamification offers new opportunities and challenges to the processes of interpretation.
- **Generation Y:** gamification has been described as a '**concept that is easy to understand conceptually but hard to imagine practically if you're over 30'**.[30] There is a demographic and generational dimension in the shift to gamification-type applications – particularly with the influence of Generation Y. Much has been written about the different values and expectations of Generation Y – their attitudes to life and work.[31]

Possible research implications

- Gamification as a component of new approaches to learning and interpretation
- Social gaming cultural heritage interpretation

4. References and further reading

- Jorge Simões, Rebeca Díaz Redondo & Ana Fernández Vilas, 'A social gamification framework for a K-6 learning platform', *Computers in Human Behavior,* Available online 5 July 2012

[28] Brian Burke, Vice President Research, Gartner (2012) http://www.gartner.com/it/page.jsp?id=1844115
[29] KnowledgeWorks, http://knowledgeworks.org/
[30] Business Travel News 1/23/2012, Vol. 29 Issue 1, p26
[31] Nicole Lipkin & April Perrymore, Y in the Workplace: Managing the "Me First" Generation, Career Press, 2009

- Knowledge Works, 2020 Forecast: Creating the Future of Learning, http://futureofed.org/2020forecast/

- Gamification Summit – a site with information on global conferences and events http://www.gsummit.com/

- Nicole Lipkin & April Perrymore, *Y in the Workplace: Managing the "Me First" Generation*, Career Press, 2009

- Douglas Thomas & John Seely Brown, *A New Culture of Learning*, CreateSpace, 2011

- Katie Salen, Robert Torres, Loretta Woolzin, Rebecca Rufo-Tepper& Arana Shapiro, *Quest to Learn. Developing the School for Digital Kids*, Cambridge, MA, MIT Press, 2011

Big Data

1. Description

Definition of big data (noun (Collins Dictionary))

> *data held in such large amounts that it can be difficult to process*

'Big Data' refers to the rapid growth of data that has resulted from more automated collection methods and greater capacity for storage and processing[32].

Digital data, in particular, is said to be growing at an increasing pace, with some estimates suggesting 60% growth per year, equivalent to around 1.2 billion terabytes, compared to 287 exabytes in 2007[33]. Indeed this growth is said to be exceeding available storage at a rapid rate.

The potential benefits resulting from better management and analysis of big data area also said to be significant. Indeed it has been estimated that public service efficiency could be boosted by up to £16 billion to £33 billion a year – equivalent to £250 to £500 per head of the population in the UK[34].

The collection and use of big data is evident in a range of sectors. Governments, for example, have long collected large volumes of data on citizens through public services in area such as health, welfare, passports, driving licenses and taxation[35]. Large companies such as Wal-Mart have also collected substantial volumes of data on customer behaviour, over a long period.

While there is widespread recognition of the big data concept, there is no agreed definition of what constitutes big data (e.g. a specific number or range of scale of terabytes). In this respect what is considered 'big data' varies depending on the sector and organisation managing it.

According to the McKinsey Global Institute research, key sectors positioned to take advantage of big data are the information, finance and insurance and government sectors – based on value potential[36]. Arts and entertainment, however, fall someway behind these sectors despite making higher than average use of IT.

2. Evidence and signs of change

Evidence of change is highly visible in the area of new technology development. Here advances are being seen in the growing use of sensors for gathering data automatically (e.g. RFID), mobile phone applications, and web analytics. These technologies are expected to continue producing large volumes of easily recorded data.

Innovations in data storage, such as the cloud hosting (backed up by substantial investment in data centres) are also leading to new mechanisms and increases in data storage. New analytical software

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[32] NESTA (2010) 'Big Data: The power and possibilities of Big Data'
[33] NESTA (2010) 'Big Data: The power and possibilities of Big Data'
[34] Yiu, C. (2012) The Big Data Opportunity: Making government faster, smarter and more personal') Policy Exchange. Available from: http://www.policyexchange.org.uk/images/publications/the%20big%20data%20opportunity.pdf
[35] Ibid.,
[36] McKinsey Global Institute (2011) ' Big data: The next frontier for innovation, competition, and productivity'

tools are also emerging to cope with big data[37] as well as growing potential to harness unstructured (qualitative) forms of data.

In predicting the future pace of innovation Moore's Law[38] (that the number of transistors that can be placed on an integrated circuit will double every two years) suggests that the pace of technological change is likely to increase further.

Education and learning

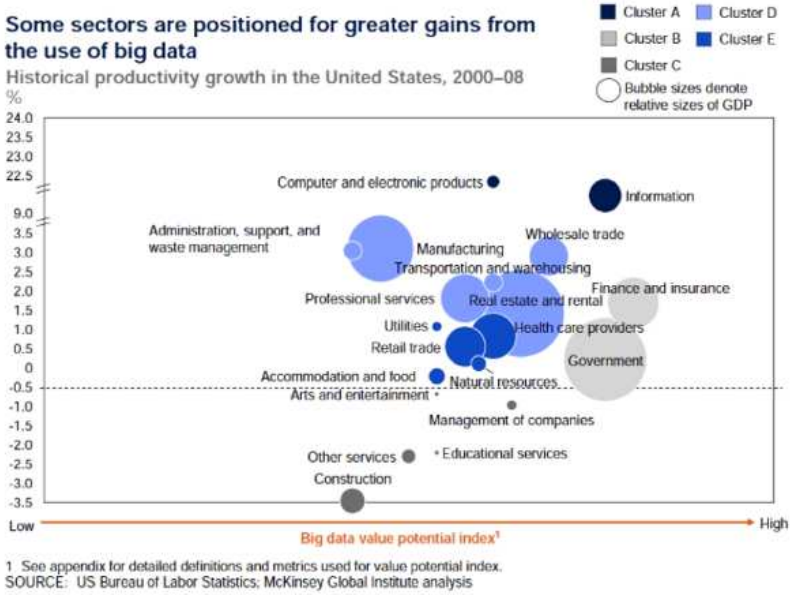
'Data is useless without some intelligence being applied. Data is part of a continuum that extends to insight and then to knowledge only when intelligence and context are applied.'[39]

The power of big data has been recognised by academia – as illustrated by citations analysis. Big data is seen both a challenge for analysis, but also an opportunity for greater understanding.

A number of UK research councils, for example, have recently funded a new storage environment providing 7.8 petabytes (PB) of storage and an additional 19.5PB of backup capability is to of UK users of the HECToR (High-End Computing Terascale Resource) supercomputer.

Commercial

The information management sector has grown significantly in recent years, and has been characterised with growing specialisation and concentration. Indeed the industry is estimated to be worth more than $100 billion and growing at almost 10% a year, roughly twice as fast as the software business as a whole.



Sophisticated quantitative analysis is being developed in many other sectors. Retailers, for example, have been at the forefront of using customer data to better tailor their offer to the needs of customers.

The financial sector has also long sought to use large volumes of data to design strategies and products. For example, Farecast, a part of Microsoft's search engine Bing, can advise customers whether to buy an airline ticket now or wait for the price to come down by examining 225 billion flight and price records. The same idea is being extended to hotel rooms, cars and similar items. Personal-finance websites and banks are aggregating their customer data to show up macroeconomic trends, which may develop into ancillary businesses in their own right.

Public services

[37] Bridgwater, A. (2012) 'What big data did next', Available from: http://www.computerweekly.com/blogs/cwdn/2012/09/what-big-data-did-next.html

[38] Keyes, R.W. (2006). "The Impact of Moore's Law". *Solid State Circuits*. Available from http://www.ieee.org/portal/site/sscs/menuitem.f07ee9e3b2a01d06bb9305765bac26c8/index.jsp?&pName=sscs_level1_article&TheCat=2165&path=sscs/06Sept&file=Liddle.xml

[39] NESTA (2010) 'Big Data: The power and possibilities of Big Data'

Calls for governments to open up their data are also growing in many countries. In the UK there are widespread calls for the government to open up public data sets, based on the principles of being: 'easy to access and free at the point of delivery, without restriction on use or reuse'. Such openness is seen as a key element of building a nation's digital economic infrastructure.[40]

In 2012, the Obama administration announced the Big Data Research and Development Initiative, which explored how big data could be used to address important problems facing the government.[41]

3. Potential significance/implications

The exponential growth of big data has significant implications for the arts and cultural heritage sector. Firstly, data storage, processing power and cloud services continue to make large scale data analysis more and more accessible. Digital archiving in the sector is likely to grow exponentially, and the importance of formats and capacity will need to evolve significantly in parallel with the growth in data from existing sources, but also new areas such as crowd sourcing of data[42].

It is now possible to analyse unstructured data – through natural text or photographs – rather than only structured, coded information. This presents significant opportunities for the sector in both capturing new sources of data, and conducting new forms of analysis.

There are many more opportunities to capture data, from sensors in phones and RFID tags in products, as well as a greater social acceptance of contributing manually entered data to social services[43].

Despite these opportunities a number of key challenges exist, notably the difficulties in protecting revenue streams from digital media, with an ever 'computer savvy' consumer base. This area has seen a huge growth in 'piracy' and investment by music companies and the like to enforce digital rights. Such developments have brought into question traditional structures and business models within the entertainment business and it is likely that further development in this area will continue in the future.

The move towards big data further suggests that the skills required to understand and analyse complex are evolving. The Chief Economist of Google, for example, has noted that statisticians will be in high demand in the next ten years, based on their *'…ability to take data—to be able to understand it, to process it, to extract value from it, to visualize it, to communicate it*[44]*'*

Possible research implications

Big data has significant implications for the research landscape and practices in cultural and media heritage. The opportunity for cultural heritage is one of digitising content and securing preservation of originals. The challenge, however, is how to make best use of massive databases of materials, ranging from digitized books, newspapers, and music to transactional data such as web searches, sensor data, or cell phone records. This, it has been claimed, will require research to explore new computationally based research methods[45].

Risks

[40] Economist (2010) 'Data data everywhere', February 25th Source: http://www.economist.com/node/15557443?story_id=15557443

[41] http://www.whitehouse.gov/sites/default/files/microsites/ostp/big_data_press_release.pdf

[42] American Association of Museums, (2012), '*TrendsWatch 2012, Museums and the Pulse of the Future*'

[43] NESTA (2010) 'Big Data: The power and possibilities of Big Data'

[44] NESTA (2010) 'Big Data: The power and possibilities of Big Data'

[45] Council on Library and Information Resources, (2012) 'How does big data change the research landscape', found at: http://www.jisc.ac.uk/news/stories/2012/06/digging.aspx

- Privacy and data use aspects – evidence of an increasingly obtrusive world?
- Piracy – managing digital rights and protecting revenues
- Quality aspects – volume does not guarantee quality. Big data technologies alone are not, however, a silver bullet for transforming the, public sector. Underlying data issues like quality, standards and bias still need to be recognised and addressed.
- Data overload - dangers of spotting patterns and trends in huge data sets

4. References and further reading

- Council on Library and Information Resources, (2012) 'How does big data change the research landscape', found at: http://www.jisc.ac.uk/news/stories/2012/06/digging.aspx

- Economist (2010) 'Data data everywhere', February 25th, Available from: http://www.economist.com/node/15557443

- McKinsey Global Institute (2011) 'Big data: The next frontier for innovation, competition, and productivity', May. Available from: http://www.mckinsey.com/insights/mgi/research/technology_and_innovation/big_data_the_next_frontier_for_innovation

- NESTA (2010) 'Big Data: The power and possibilities of Big Data'. Available from: http://www.nesta.org.uk/library/documents/Hot_Topics_Big_Data_v5.pdf

- Craig, T. and Ludloff, M. (2011) 'Privacy and Big Data', O'Reilly Media, Inc, USA.

- Franks, B. (2012) 'Taming The Big Data Tidal Wave: Finding Opportunities in Huge Data Streams with Advanced Analytics', Wiley and SAS Business Series 49.

- American Association of Museums, (2012) '*TrendsWatch 2012, Museums and the Pulse of the Future*'

Interoperability

1. Description

Definition of interoperability (noun) Collins Dictionary

> *the ability to share data between different computer systems, especially on different machines*

The concept of interoperability refers to the ability of diverse systems and organisations to work together. The term is often used in an information and communication technology (ICT) systems context (as per the definition above), but can also be used in the sense of broad social, political, and organisational factors that impact system to system performance.

In developing these definitions further a number of dimensions of interoperability have been identified[46]:

- *Technical*: technical interoperability, as noted above, refers to the linking of computers and services and enabling independent systems to exchange of information (e.g. interfaces, data integration, presentation, accessibility and security)
- *Semantic*: semantic interoperability refers to the ability to exchange, understand and act on information and knowledge across different languages and organisational and individual cultures
- *Organisational*: organisational interoperability involves defining the necessary goals and processes to promote collaboration between organisations that wish to exchange information but have different internal structures and processes
- *Legal*: legal interoperability is about developing the appropriate legal framework in different jurisdictions to enable secured access to and processing of information transferred electronically

Interoperability is seen as both a prerequisite for and a facilitator of the efficient management and delivery of services, and is identified as a key factor in driving efficiency and the reduction of costs. Others seen interoperability as central to innovations that have the potential for broad benefits for societies that foster it in areas such as public administration (e.g. eGovernment, healthcare etc.), business (supply chains etc.) and third sector bodies.

2. Evidence and signs of change

Commercial

In the area of IT a number of models are emerging. These range from open to more closed models. Web service providers such as Google and Facebook, for example, have sought to establish an open Application processing Interface (API) allowing others to utilise their underlying software codes without any need for cooperative agreement. Such models are consistent with wider approaches

[46] http://ec.europa.eu/information_society/activities/health/policy/interoperability/index_en.htm

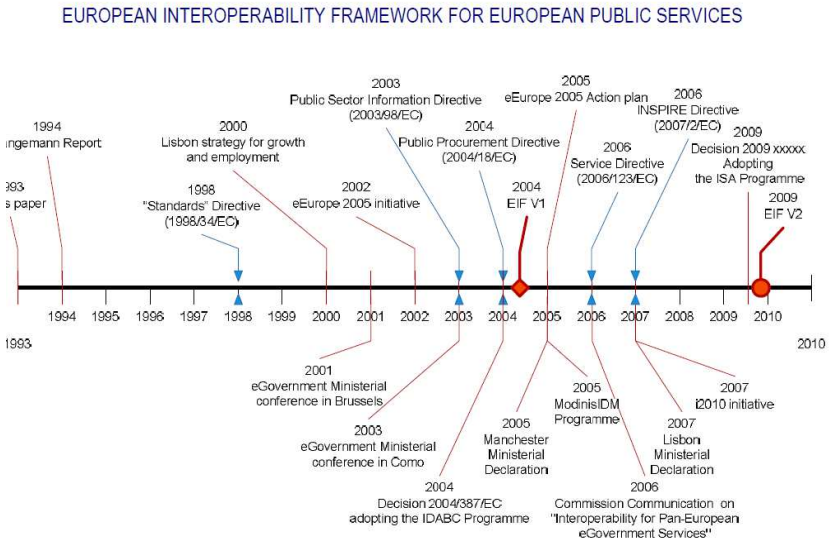
towards open innovation implemented by companies such as P&G[47], and are said to open up greater innovation potential.

In contrast, other organisations have adopted more closed approaches associated with attempts to protect digital rights of music and other media products. Proponents of such approaches question the ability of open models to effectively harness value for IP rights holders.

Public services

Change is also evident in public services, where the move towards eGovernment is strengthening the focus on interoperability. While much of this activity has been developed within national government spheres, the experience of the European Commission illustrates the growing attention given to cross-border interoperability.

The European Commission (EC) sees this form of interoperability - across borders - as a key political priority for future public services, with the potential to have a high impact on business and citizens[48]. To this end the EC has established a wide range of interoperability frameworks and initiatives, as illustrated by the figure below.



Timeline on EU initiatives related to Interoperability

The EC's programme of Interoperability Solutions for European Public Administration, for example was introduced in 2009, and supports the delivery of electronic public services and ensures the availability, interoperability, re-use and sharing of common solutions.

In the area of healthcare moves can be seen towards sharing patient data across devices and organisations. This is being driven drives towards organisational efficiency and service improvement, as well as the introduction of new technologies.

Such trends are bringing a stronger focus on ensuring that systems and technological devices are able to interact effectively. Examples here can be seen in the cooperative efforts to design eHealth systems in the US among providers (e.g. hospitals), payers (such as insurance companies) and suppliers (IT companies); a key objective is to ensure that services are well connected.

[47] Procter & Gamble Connect and Develop, found at: http://www.pgconnectdevelop.com/

[48] http://www.bigwobber.nl/wp-content/uploads/2009/11/European-Interoperability-Framework-for-European-Public-Services-draft.pdf

Developing common standards is key to achieving interoperability, and requires proactive engagement of all the main stakeholders implicated in or impacted by the implementation of eHealth solutions[49].

Other examples can be seen in the area of defence, where interoperability is brought into focus in cross-border, defence network activity across member states.

Such efforts have long been associated with bilateral agreements, requiring information exchange across command and control functions. This has been a key requirement for allies, and broader coalitions such as NATO. Interoperability, however is becoming increasingly important in all aspects of defence administration, and is driven by the needs for both greater effectiveness, better efficiency and political considerations (cost saving, timeliness of critical information exchange etc.)[50].

3. Potential significance/implications

The growing focus placed on interoperability of ICT systems has significant implications for the arts and cultural heritage sector. Such technologies are important in the context of the sector's desire to make available resources (e.g. collections) available through the web to increase their reach and availability; integration has become an imperative.

These trends are characterised by a growth in the amount of digitisation of content in areas such as museums, libraries, archives, archaeological sites and audiovisual repositories, and highlight the need to create interoperability amongst existing resources, as the basis for enhanced value.

In Europe many projects have been undertaken to facilitate the integration of cultural institutions, including unified integration and common access points. While such efforts have focused on knowledge retrieval, concepts such as the Semantic Web open up the potential for innovative solutions in areas such as standards, data models and representation methods, efficient implementation tools and techniques, search and retrieval mechanisms, evaluation techniques[51].

4. References and further reading

- Fresa, A. (2012) 'A data infrastructure for digital cultural heritage: characteristics, requirements and priority services', TELDAP 2012 Conference, 22nd February. Available from: http://www.digitalmeetsculture.net/wp-content/uploads/2012/02/INDICATE-DC-NET-Taipei-TELDAP-2012.pdf

- Gasser, U. and Palfrey, J. (2007) 'Breaking Down Digital Barriers: When and How ICT Interoperability Drives Innovation', Berkman Publication Series, November. Available from: http://cyber.law.harvard.edu/interop

- Gasser, U. and Palfrey, J. (2012) 'Interop: The Promise and Perils of Highly Interconnected Systems'. Basic Books.

- Literature Review: Preservation, Migration and Interoperability of Digital Libraries http://shenzi.cs.uct.ac.za/~honsproj/cgi-bin/view/2010/lumpa_munyaradzi.zip/CopyArch_munyararadzi_lumpa/downloads/Literature%20Review_LMPMUS001.pdf

[49] http://ec.europa.eu/information_society/activities/health/policy/interoperability/index_en.htm
[50] http://www.eng.auburn.edu/users/hamilton/security/spawar/1_Interoperability_Introduction_and_Overview.pdf
[51] http://www.arts-humanities.net/event/semantic_web_reasoning_cultural_heritage_digital_libraries_swarch_dl

Virtual Reality and Augmented Reality

1. Description

Virtual Reality (VR) refers to the creation of computer-simulated environments – those that simulate the real world and those that invent imaginary worlds. The term, 'virtual reality', has been in use since the latter half of the 1980s.[52]

In his book on VR, Howard Rheingold describes an experience where a person is 'surrounded by a three-dimensional computer-generated representation, and is able to move around in the virtual world and see it from different angles, to reach into it, grab it and reshape it'[53].

One key ingredient of VR is 'for the user to have influence on this virtual environment'[54] i.e. that there is feedback and interaction.

Some key elements of VR

- 'Most VR development has been visual – through computer screens and stereoscopic (goggles) and other displays
- Other sensory VR developments include
  - Sound via headphones or speakers
  - Haptic – force feedback for tactile applications
- Virtual environment (VE): a 3D computer-generated world seen from a first-person point of view, where the viewpoint is under the real-time control of the use
- Immersive VE: has more realistic sensory outputs than typical desktop 3D graphics; usually appears to surround the user in space'.[55]

VR is used for a range of purposes, for example, commercial, educational, training and skills, gaming and entertainment. One of the academic journals in the field lists some of the main fields where research on VR (and its application) is undertaken:

- Business and Commerce
- Defence and Military
- Education and Training
- Entertainment and Gaming
- Fashion,
- Heritage
- Medicine
- Telecommunications
- Visualisation

[52] The term has been in use since 1987 according to the Webster Online Dictionary
[53] H. Rheingold, *Virtual Reality*, Summit, New York, 1991
[54] http://www.utwente.nl/ctw/opm/research/design_engineering/Virtual%20Reality/01_Introduction_to_Virtual_Reality.doc/
[55] York University Canada https://www.cse.yorku.ca/course/4471/local/4471_W13_Slides_01.pdf

Augmented reality (AR) is defined as 'an enhanced version of reality created by the use of technology to overlay digital information on an image of something being viewed through a device (as a smartphone camera); also: the technology used to create augmented reality'[56].

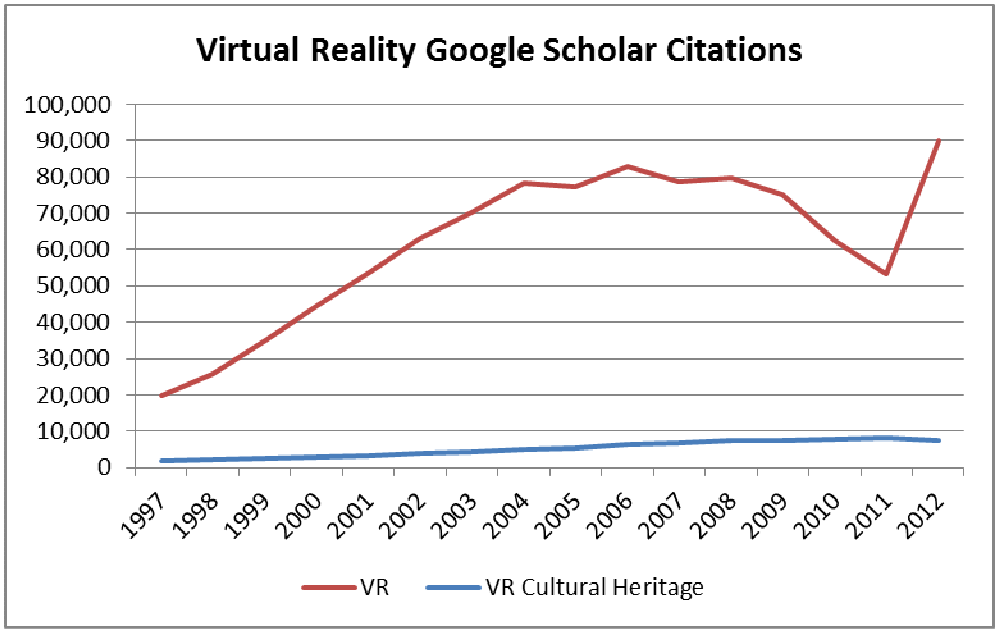
It has also been described as 'a live, direct or indirect, view of a physical, real-world environment whose elements are augmented by computer-generated sensory input such as sound, video, graphics or GPS'.[57]

VR and AR are established concepts and practices in the field of cultural heritage. 'Virtual heritage' has been coined to describe activities that combine cultural heritage and virtual reality[58].

Milgram and colleagues in Kyoto developed a Reality-Virtuality continuum: between the two ends of the continuum of virtuality and reality there is a Mixed Reality (MR), which consists of AR and Augmented Virtuality (AV)[59].

2. Evidence and signs of change

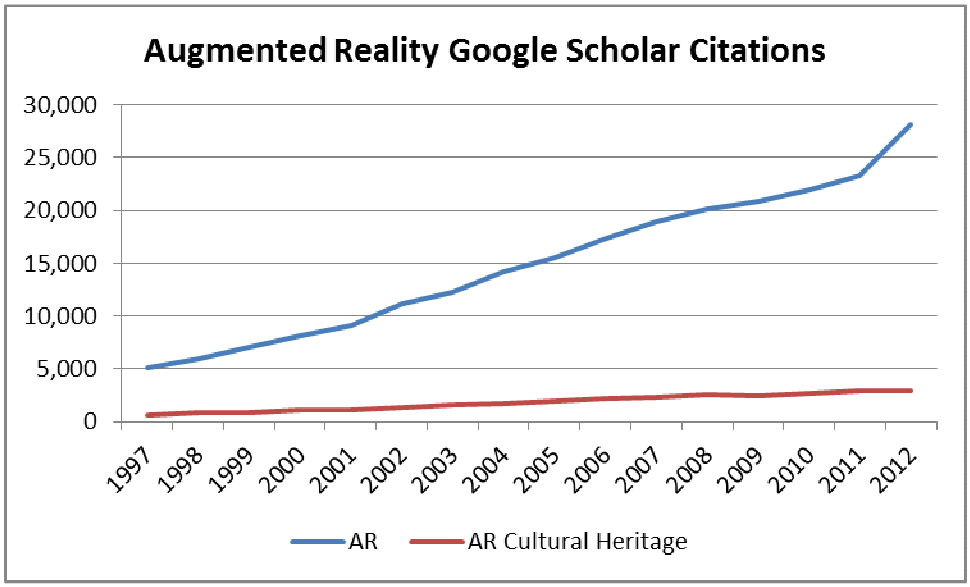
Using scholarly citations as a measure or proxy, there has been a significant growth in VR since the 1990s (over 90,000 in 2012 compared with approximately 20,000 in 1997). For 'VR and Cultural Heritage' there has also been steady growth in citations, from 1,690 in 1997 to 7,550 in 2012).



Citations for AR have grown significantly in the period from 1997 (5,990) to 2012 (28,100). Citations for 'AR and Cultural Heritage' have grown – from 670 in 1997 to 2,880 in 2012.

[56] Merriam Webster Online Dictionary
[57] http://mashable.com/category/augmented-reality/
[58] M. Roussou, 'Virtual Heritage: From the Research Lab to the Broad Public, *Virtual Archaeology*, 2002

[59] P.Milgram, H.Takemura, A.Utsumi, F. Kishino, 'Augmented Reality: A class of displays on the reality-virtuality continuum', SPIE Vol. 2351, Telemanipulator and Telepresence Technologies, 1994



Examples of VR and AR in Cultural Heritage

- Interactive digital narrative and real-time visualisation of 19th century Italian theatres[60]
- Genius Loci, a spatial augmented reality performance based on 3D data and historical hypotheses in a church, Villeneuve-lès-Avignon (Gard, France)[61]
- Development of mobile AR educational game for smartphones, Sutton Hoo/British Museum, UK[62]:

> [it] *assists the visitors to explore the site following a game play scenario that encourages them to find objects that have been excavated at the site, understand what they are, what their use was and finally decide if they were offerings to the Dead King. The application allows augmenting the physical site with the objects that were found at Sutton Hoo. This application aids visitors' understanding of the site and its history via an engaging and playful game that connects the site with the British Museum where the objects that have been excavated from the site are exhibited.*[63]

[60] V Valtolina, S., Franzoni, S., Mazzoleni, P. and Bertino, E., 2005, 'Dissemination of Cultural Heritage Content through Virtual Reality and Multimedia Techniques: A Case Study', in Proceeding of the 11th International Multimedia Modelling Conference (MMM 2005)

[61] Favre-Brun, A.; Jacquemin, C.; Caye, V.; , "Revealing the "spirit of the place": Genius Loci, a spatial augmented reality performance based on 3D data and historical hypotheses," *Virtual Systems and Multimedia (VSMM), 2012 18th International Conference on* , vol., no., pp.103-108, 2-5 Sept. 2012

[62] A.Angelopoulou,D.Economou, V. Bouki, A. Psarrou, L. Jin, C.Pritchard,F. Kolyda, 'Mobile Augmented Reality for Cultural Heritage', Mobile Wireless Middleware, Operating Systems, and Applications
Lecture Notes of the Institute for Computer Sciences, Social Informatics and Telecommunications Engineering Volume 93, 2012, pp 15-22

[63] http://www.westminster.ac.uk/__data/assets/pdf_file/0020/142490/Project-11-Sutton-Hoo-project_new.pdf

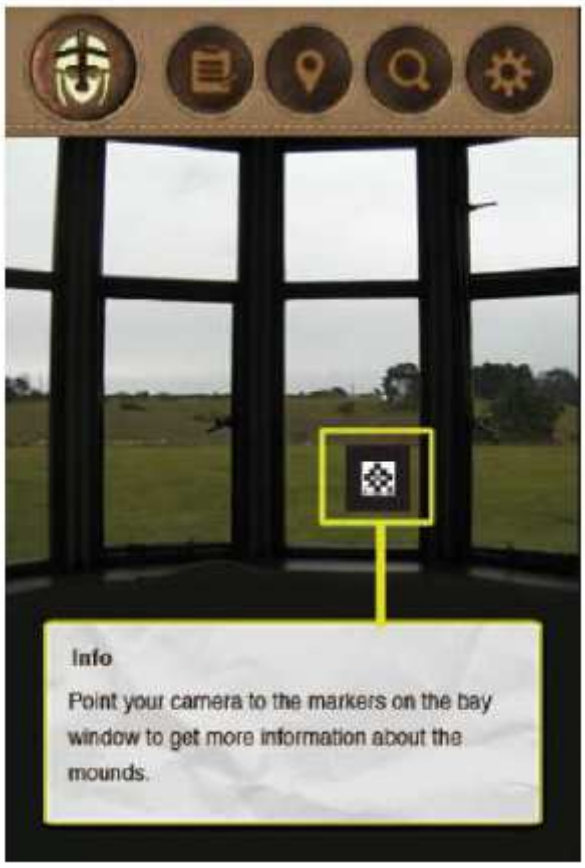


Image: Mobile AR application and game – Sutton Hoo (University of Westminster)

- VR and AR applications – visualisation and interaction with reconstructed underwater sites[64]
- Culture Clic is an augmented reality mobile application for cultural heritage and tourism in France (http://www.cultureclic.fr/)

Google's Project Glass

Project Glass is an initiative by Google to develop wearable technology – eyewear – with an augmented reality display function. It will enable wearers to view information about their surroundings with the assistance of GPS, a camera, motion sensors and a screen. The Project Glass glasses will be operated through users' tilting and head movements,

Google is aiming to have Project Glass glasses on sale in the market by the end of 2014.

http://www.google.com/glass/start/what-it-does/

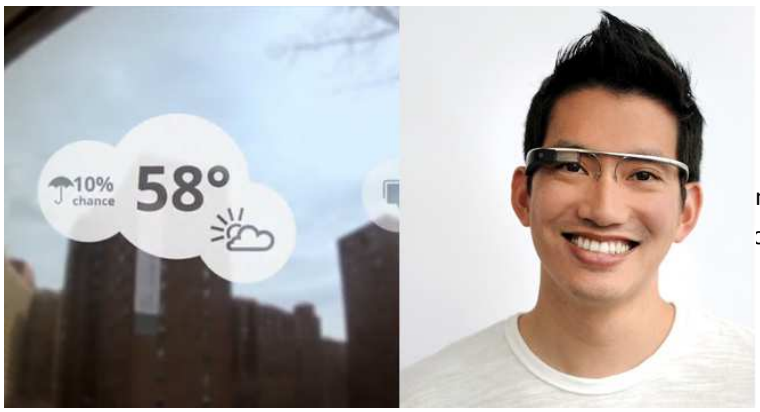


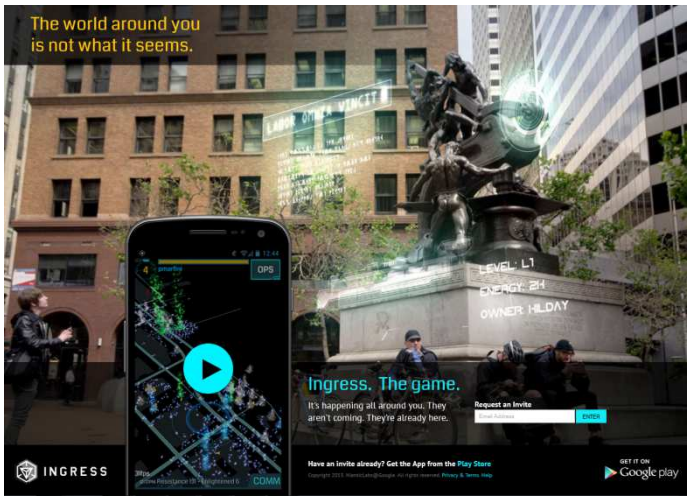
Photo: Google

nd augmented reality for cultural computing and
ogical sites', Virtual Reality, November 2011,

Gaming and the games industry are key drivers for new technologies and new applications of AR and VR

Augmented Reality Gaming – or Augmented Gaming

Example: Ingress is an example of augmented gaming launched in November 2012. It is a massively multiplayer online role-playing game. The game is centred around two factions (the Enlightened and the Resistance) who have opposing stances on what to do with a new energy discovered in the world. The gameplay consists of hacking portals or sites that are accessible on augmented maps (using smartphones). It is currently in closed beta version and has been developed by Niantic Labs, a spin-off of Google.



www.ingress.com

Virtual Reality Headset for Gaming

Virtual reality headsets are one of the prospective innovations in the gaming industry.

Example: Oculus Rift is a VR headset for gaming developed after a successful campaign on the Kickstarter crowdfunding site (where it raised $2.4 million) [65]. The slogan of the company is that it is 'immersive virtual reality technology that's wearable and affordable'. It has technological capabilities that make it attractive for gaming development:

- Immersive stereoscopic 3D Rendering
- Massive field of view

[65] http://www.oculusvr.com/company/

- Ultra low latency head tracking

3. Potential significance/implications

The cultural heritage field is already familiar with VR and AR technologies. Further developments in AR and VR – enabled by improvements in rendering, tracking and processing speed – could transform users' experience of cultural heritage. AR and augmented gaming could be significant enablers for cultural heritage, especially if AR becomes more embedded and habitual in daily life (the model of Google's Project Glass). The availability of everyday wearable AR technology, which uses head tracking and Brainwave AR, would redefine the potential for engaging with cultural heritage.

AR and gaming applications offer potential for new kinds of research and data collection – where cultural heritage uses provide information, views and preferences on their environments. New applications, such as Ingress, provide a 'gold mine' of information[66]. Cultural heritage could benefit from exploiting knowledge and data generated through generic applications as well as those that are developed in a bespoke way for the field.

4. References and further reading

- A.Angelopoulou,D.Economou, V. Bouki, A. Psarrou, L. Jin, C.Pritchard,F. Kolyda, 'Mobile Augmented Reality for Cultural Heritage', Mobile Wireless Middleware, Operating Systems, and Applications, Lecture Notes of the Institute for Computer Sciences, Social Informatics and Telecommunications Engineering Volume 93, 2012, pp 15-22
- M.Haydar, D. Roussel, M. Maïdi, S. Otmane, M. Mallem, 'Virtual and augmented reality for cultural computing and heritage: a case study of virtual exploration of underwater archaeological sites', Virtual Reality, November 2011, Volume 15, Issue 4, pp 311-327
- M. Gutierrez, A. Vexo and D. Thalmann, Stepping into Virtual Reality, Springer, 2008
- F.Liarokapis, S. Syliaou, D.Mountain, 'Personalizing Virtual and Augmented Reality for Cultural Heritage Indoor and Outdoor Experiences' Paper in 9th International Symposium on Virtual Reality, Archaeology and Cultural Heritage (VAST), 2008
- P.Milgram, H.Takemura, A.Utsumi, F. Kishino, 'Augmented Reality: A class of displays on the reality-virtuality continuum', SPIE Vol. 2351, Telemanipulator and Telepresence Technologies, 1994
- H. Rheingold, *Virtual Reality*, Summit, New York, 1991

[66] http://www.newscientist.com/article/mg21628936.200-why-googles-ingress-game-is-a-data-gold-mine.html

- María Dolores Robles-Ortega, F. Feito, J. Jiménez, R. Segura, 'Web technologies applied to virtual heritage: An example of an Iberian Art Museum', Journal of Cultural Heritage, Volume 13, Issue 3, July–September 2012, Pages 326–331

- M. Roussou, 'Virtual Heritage: From the Research Lab to the Broad Public, *Virtual Archaeology*, 2002

- Valtolina, S., Franzoni, S., Mazzoleni, P. and Bertino, E., 2005, 'Dissemination of Cultural Heritage Content through Virtual Reality and Multimedia Techniques: A Case Study', in Proceeding of the 11th International Multimedia Modelling Conference (MMM 2005), available at http://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=1385994

- Virtual Heritage Portal: www.virtualheritage.net

Superfast Broadband

1. Description

The age of Superfast Broadband is imminent and backed by governments and government organisations throughout the world. The Economist Intelligence Unit argues that "*Superfast broadband will help foster new ways of working and better collaboration … will supercharge home entertainment… make the lives of patients (especially the elderly) and their doctors easier …, will give students and teachers access to an array of learning opportunities previously closed off to them. At some point, society will look back at 2012 and wonder how it ever coped with the clunky speeds of the day*." [67]

Broadband Delivery UK (BDUK) has defined Superfast Broadband as having a potential headline access speed of greater than 24 megabytes per second (Mbps) with no upper limit.[68] However, others add the arrival of 4G mobile networks and fibre technologies into this definition.[69] With this in mind, the term Next Generation Broadband is also often used in this context.

As the Economist Intelligence Unit notes further: "*In the view of the government and several experts, superfast broadband will not only deliver jobs and growth, but also fundamentally alter how healthcare, education and other public services are delivered*"[70]. Accordingly, governments are increasingly committing to providing the infrastructure required to reach large parts of their populations with time horizons between 2020 and 2030.

For example, the European Commission's Digital Agenda for Europe commits Pillar IV of its activity to developing fast and ultra-fast internet access. It notes: "*New services … need much faster internet access than generally available in Europe… Europe needs download rates of 30 Mbps for all of its citizens and at least 50% of European households subscribing to internet connections above 100 Mbps by 2020*"[71]. The UK already has a commitment for superfast broadband to have 66% coverage of the UK population by 2014[72]. Similarly, the US National Broadband Plan states in Goal 1 and 3 respectively that: "*At least 100 million U.S. homes should have affordable access to actual download speeds of at least 100 megabits per second and actual upload speeds of at least 50 megabits per second*."[73] and "*Every American should have affordable access to robust broadband service, and the means and skills to subscribe if they so choose."*[74]

It is widely recognised therefore that "*universal availability and widespread use of high-speed broadband services will be fundamental to the future international competitiveness [of all countries and institution], as well as to social cohesion*." [75]

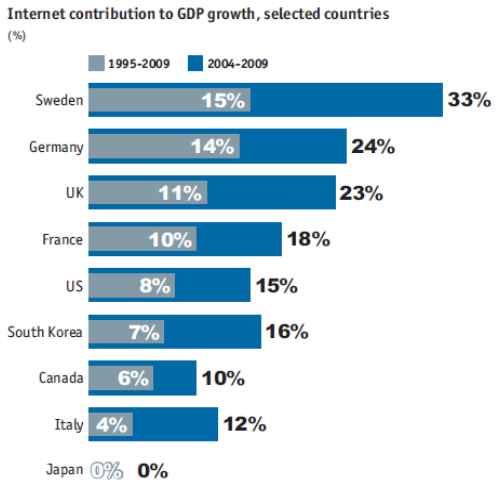
2. Evidence and signs of change

[67] Economist Intelligence Unit (2012), "Superfast Britain? Myths and realities about the UK's broadband future" p.22
[68] Department of Culture, Media and Sport – glossary of terms: http://www.culture.gov.uk/what_we_do/telecommunications_and_online/8129.aspx
[69] Economist Intelligence Unit (2012), "Superfast Britain? Myths and realities about the UK's broadband future" p.4
[70] ibid., p.3
[71] EU Digital Agenda, A 2020 initiative, found at: http://ec.europa.eu/digital-agenda/en/our-goals/pillar-iv-fast-and-ultra-fast-internet-access
[72] Dini P., Milne C., Milne R., (2012) 'Department of Media and Communications: Costs and Benefits of Superfast Broadband in the UK' p.2
[73] Federal Communications Commission (2010) 'Connecting America: The National Broadband Plan', found at: http://www.broadband.gov/download-plan/, p.25
[74] ibid., p.26
[75] Dini P., Milne C., Milne R., (2012) 'Department of Media and Communications: Costs and Benefits of Superfast Broadband in the UK' p.2

As noted above, governments are engaged in the race to ensure that their nations are well equipped for engaging with the emerging digital age. Superfast broadband provision and access will play a key part in that. As the Broadband Commission for International Development notes: "*A growing number of countries now have a national broadband plan, policy or strategy in place, with some 119 countries having a policy in place by mid-2012. Broadband is also becoming more affordable around the world, although it remains out of reach in many countries.*"[76] However, there is some uncertainty regarding the evidence for the impacts of Superfast Broadband to date - the London School of Economics highlights the fact that superfast broadband is "*too new for there to be much evidence of its effects on the market economy and society as a whole.*"[77]

In terms of economic impact, by virtue of the evidence presented by the current improvements in broadband speed, it is probably safe to assume that next generation broadband will have a significant impact on the economies of all countries across the globe.

One study suggests that a country's GDP increases by 1% for every 10% increase in total broadband penetration and that each doubling in speed of broadband connectivity increases GDP by 0.3%, implying that a quadrupling of broadband connectivity speeds would yield a 0.6% boost to GDP[78]. A study focused on Germany claims that the investment made in constructing the infrastructure in order to ensure that 75% of German households have access to connections higher than 50Mbps and that Fibre to the Home (FTTH) connections are available to 50% of all households by 2020 will create 541,000 job-years and will lead to an additional cumulative GDP of €33.4 billion over the decade.[79]



Source: McKinsey Global Institute (2011) "Internet matters: The Net's sweeping impact on growth, jobs and prosperity"

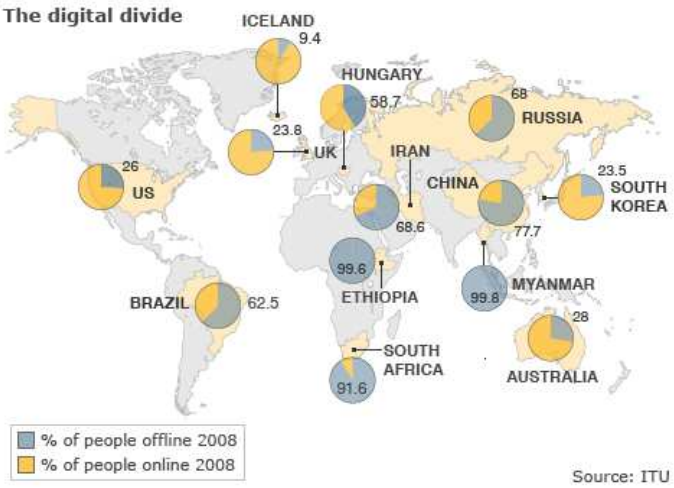
Rather than hard evidence, it is largely expectations about growth, previous experience of the current generation of broadband and the expected potential of new applications enabled by broadband, which lies behind the enthusiasm for superfast broadband[80]. This factor alone is likely to drive government commitments to superfast broadband provision for all.

However, a key challenge – the need to provide access to and enable people to make effective use of broadband – remains and is couched in terms of a digital divide. The digital divide can be considered in terms of skills i.e. the need for basic training in e-skills for everyone at work and at home to avoid

[76] Broadband Commission for International Development (2012) "Broadband: State of Broadband 2012" p.4
[77] Dini P., Milne C., Milne R., (2012) 'Department of Media and Communications: Costs and Benefits of Superfast Broadband in the UK' p.1
[78] Ericsson and Arthur D Little (2011)"*The need for speed*" quoted in Economist Intelligence Unit (2012), "*Superfast Britain? Myths and realities about the UK's broadband future*" p.5
[79] Katz, Raul. 2012. "Impact of Broadband on the Economy." quoted in SQW (2013) "UK Broadband Impact Study: Literature Review" p.7
[80] Dini P., Milne C., Milne R., (2012) 'Department of Media and Communications: Costs and Benefits of Superfast Broadband in the UK'

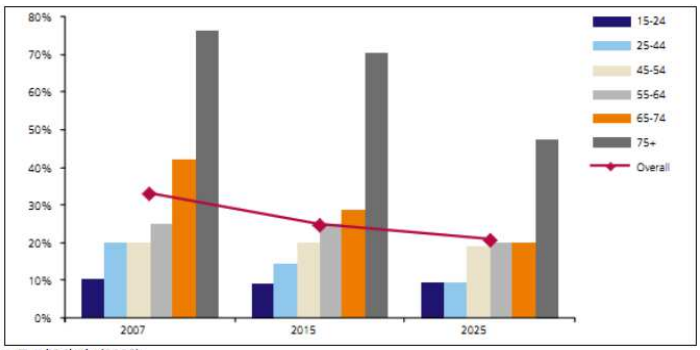
being left behind by the increasing pervasiveness of superfast broadband services.[81] But it may also be considered in terms of nations and their capacity.

The digital divide was highlighted as an issue and formalised in its description in the Millennium Development Goals by the United Nations. This recognises that the ubiquity of broadband services was far from complete. While the digital divide has narrowed, it has far from disappeared as was highlighted in the Millennium Development Goals Summit in New York in May 2010[82]. Furthermore, between the most switched on countries, such as Sweden, to the poorest nations in Africa there is some evidence of a widening gap between those with access to technology and those without.[83]



Source: International Telecommunications Union (ITU) via BBC website: http://news.bbc.co.uk/1/hi/technology/8568681.stm[84]

Certain groups in the Digital Divide experience either voluntary exclusion or involuntary exclusion. For example, current estimates in the UK suggest that there remain up to 8.7 million adults in the UK who have never used the Internet (ONS, 2011b)[85]. For some this is due to voluntary exclusion – i.e. people who typically say they see no need or place for the Internet in their lives. This group is often characterised as being *"older age groups, [who] have completed their education and work, have acquired most of the durable goods that they want, and are comfortable with their habits."* This group resents being forced online, for example, by the withdrawal of offline alternatives to services that they use.[86]



Source: FreshMinds (2008).

Figure 2.4: Projections for non-users of the Internet to 2025

Source: Dini P., Milne C., Milne R., (2012) 'Department of Media and Communications: Costs and Benefits of Superfast Broadband in the UK' p.30

[81] Dini P., Milne C., Milne R., (2012) 'Department of Media and Communications: Costs and Benefits of Superfast Broadband in the UK'
[82] UN Secretary-General message to the Plenipotentiary Conference of the International Telecommunication Union (ITU) in Guadalajara, Mexico, October 2010: http://www.un.org/News/Press/docs/2010/sgsm13158.doc.htm
[83] BBC News (2010) 'World wakes up to digital divide' last accessed: 28th February 2013 - http://news.bbc.co.uk/1/hi/technology/8568681.stm
[84] BBC News (2010) 'World wakes up to digital divide' last accessed: 28th February 2013 - http://news.bbc.co.uk/1/hi/technology/8568681.stm
[85] ONS (2011b). Internet Access Quarterly Update 2011 Q2. found at: http://www.ons.gov.uk/ons/dcp171766_229469. pdf.
[86] Dini P., Milne C., Milne R., (2012) 'Department of Media and Communications: Costs and Benefits of Superfast Broadband in the UK, p. 27

Those who are involuntarily excluded are those who experience specific barriers to access such as cost, lack of skills or confidence or disability. Each of these groups poses a key challenge to thinking about superfast broadband and its application.[87]

From a social and cultural perspective, the skills gap in access to superfast broadband-supported content is a key challenge for the technology and its application in the future.

Boston Consulting Group has estimated that, for small to mid-size companies, the biggest barrier to growth is often a lack of sufficient digital skills not the cost of broadband access or its speed.[88] For more than just businesses however, the digital skills divide is a key challenge and the gap between those with internet access and those without remains wide, and may grow wider.[89]

However, beyond the social and cultural challenges of the digital divide, superfast broadband offers dramatic new possibilities in terms of social and cultural opportunity in terms of online interaction with services, content and user experience. As NESTA in the UK argues "*as online applications, services and networks become more powerful, so do the potential benefits from pervasive high-bandwidth internet access*"[90].

Some of these potential benefits include: cloud computing which will enable greater collaboration between users including businesses and individuals; improvements in the digital distribution of high-quality content and media that will open up new creative and commercial opportunities for content owners and providers; and, innovative social media and platforms will enable people to collaborate with each other more easily regardless of the distance.[91]

Regardless of the challenges, it remains true that the way we interact with the internet will change as a result of faster speed and the ubiquity of the devices that connect us. The Broadband Commission puts forward this vision:

> *"Our ultra-connected future will build on converged Next-Generation Networks (NGN), while embracing broader concepts of embedded intelligence, automated Machine to Machine (M2M) traffic, and the 'Internet of Things'… In our future networked world, we shall enjoy high-speed connectivity on the move, roaming seamlessly between networks, wherever we go – anywhere, anytime, via any device. Today, the stellar growth of mobile means that many people now access the Internet via a mobile device. By 2020, the number of connected devices may potentially outnumber connected people by six to one, transforming our concept of the Internet, and society, forever… [I]n the future, the digital divide … may no longer describe disparities in access, but instead denote disparities in speed and functionality – or more specifically, what people can do with their mobile devices Indeed, the handset may become relatively less important, as more and more people will use their mobile device as a portal to the content and apps available in the online world."*[92]

Finally, it offers these key trends in the way that our high-speed future will be shaped and how it will impact users:

- Real-time status updates for objects, as well as people, in a growing 'Internet of Things';

[87] ibid., p. 27
[88] "Superfast broadband: Is it really worth a subsidy?", Robert Kenny and Charles Kenny, February 2011; quoted in in Economist Intelligence Unit (2012), "*Superfast Britain? Myths and realities about the UK's broadband future*" p.9
[89] NESTA (2008) 'Getting up to speed: making super-fast broadband a reality' Policy Briefing, January 2008 p.2
[90] NESTA (2008) 'Getting up to speed: making super-fast broadband a reality' Policy Briefing, January 2008 p.2
[91] ibid., p.2
[92] Broadband Commission for International Development (2012) "Broadband: State of Broadband 2012" p.6-10

- Using location-based services and Global Information Systems (GIS) in many different ways in our lives – for example, to summon taxis, avoid traffic jams, track late buses or stolen cars, locate friends – and ourselves;
- Apps 'pushing' out information to users, rather than users searching for and 'pulling' in information;
- Sharing our likes and dislikes, resulting in targeted advertising, as well as search results tailored to our personal preferences;
- Better access to healthcare or government services and job opportunities;
- Collaborative crowd-sourcing in authorship, project management, funding relief efforts, generating encyclopaedia or news reporting;
- 'Collaborative consumption' or the outsourcing of tasks or household chores for a price;
- Changes to our notions of privacy, or even the demise of privacy?
- Converged cross-platform malware, as well as converged services;
- Storing data in the cloud – you need never again be dependent on your physical device. [93]

Impacts in different areas

To some extent, with the pace of change so rapid and the new ways of applying faster, more streamlined broadband ever-changing, highlighting the impact in different areas is challenging.

Increasingly, there is **the need to be 'always-on'** in terms of communication. The use of mobile devices for communication has revolutionised the way we interact with every facet of our world. Increasingly, as a society, we are more likely to own and to use a mobile telecommunications device that will be enabled through superfast broadband of the future and change the way we relate to one another and every service or facet of life that we encounter.

> *We are moving towards a world with a multiplicity of devices, including new specialized devices in a pervasive "Internet of Things". With laptops shrinking in dimensions, as smartphones gain in functionality, the space between smartphones, tablets and PCs is shrinking fast, while the gap between smartphones and basic feature phones is widening.*[94]

Service providers in both the public and private sector will need to adapt quickly to new technology to maintain communication with users and to engage them. The same is true for the cultural sector.

Beyond this, **there will be a need to consider and adapt to new methods of communication** facilitated by the arrival of faster, superfast broadband.

> *The social use of video chat applications (such as Skype video, Google Talk and Apple's ichat) has become increasingly common over recent years, and the consumer market is arguably ahead of the business market in its use of this form of communication*."[95]

Adapting to this new use of video-based communication will be a challenge that will increasingly become prevalent in society.

The more efficient use of electronic methods and media will **challenge business models in the future.** Super fast broadband brings with it another serious concern is that as economic change [i.e. more efficient and effective processes] "leads to job losses … finding people to fill the new jobs may

[93] ibid., p.10
[94] Broadband Commission for International Development (2012) "Broadband: State of Broadband 2012" p.12
[95] SQW (2013) "UK Broadband Impact Study: Literature Review" p.41

involve considerable retraining".[96] This means that business models will change and people will have to learn new skills, but the impact will be harsh on those forced to re-learn elements and to match their talent with new areas.

As services are re-designed, **new business models come into being** and things move on-line facilitated by quicker speeds, careful thought will need to go into protecting those who would otherwise be excluded. There remain up to 8.7 million adults in the UK alone who have never used the Internet[97] and large numbers of people for whom re-learning some elements that worked perfectly well on paper or in the old way of doing it would be a real strain. In designing superfast broadband-based services, careful thought needs to be given to this area.[98]

The **digitisation of life in general** will be seen as a benefit by some and a challenge by others. New, fast ways of storing material online will become prevalent. The potential to view websites from one's armchair anywhere in the world will change the way we think about engaging with everyday things, from the services we use to the entertainment we engage in.

3. Potential significance/implications

What could this mean for cultural heritage? It could be significant in the following aspects:

How to think global, act local – The speed of superfast broadband will bring the world to the door step of museums, libraries and archives. According to research by the Institute for Museum and Library Services, 43% of museum visits in 2006 were remote, predominately via museum websites. This percentage is likely to rise, and the content of remote visits to museums will continue to shift from basic information gathering to more complicated forms of engagement.[99]

The challenge to think global yet act local should be a guide for museums in transition.

> *Whilst most museums might best support well-being in a specific locality, all could increase the extent to which they make international links, use digital tools to reach wider audiences and open their visitors' eyes to global histories and contemporary issues.*[100]

Cultural heritage organisations should use their networks to deliver this, but use them in reverse also: collect best practice, other models, partners, new ideas, comments, critiques and feedback to best serve the changing needs of the populations that they engage with.

Embrace innovative ways of sharing collections – Superfast broadband will allow a whole range of media to be engaged with. More often than not, visitors of the future will bring with them highly connected, high speed devices that will engage with the internet through superfast means. Examples of museums already embracing technology such as QR codes for their exhibits can be readily found and this will only increase with superfast broadband access also spoken commentary and video on devices as well as the information that already exists.[101]

Digital = practically free - Arguably, Google, YouTube and Flickr have established themselves as museums of the digital world and are actively trying to redefine the idea of curating content. As a result, we are witnessing a dramatic structural shift in the expectations of the public (particularly

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[96] Dini P., Milne C., Milne R., (2012) 'Department of Media and Communications: Costs and Benefits of Superfast Broadband in the UK, p. 26
[97] ONS (2011b). Internet Access Quarterly Update 2011 Q2. found at: http://www.ons.gov.uk/ons/dcp171766_229469. pdf.
[98] Dini P., Milne C., Milne R., (2012) 'Department of Media and Communications: Costs and Benefits of Superfast Broadband in the UK, p. 27
[99] Center for the Future of Museums (2008) "Museums & Society 2034: Trends And Potential Futures", found at: http://www.aam-us.org/docs/center-for-the-future-of-museums/museumssociety2034.pdf?sfvrsn=0
[100] Sam Thompson and Jody Aked (2011) 'The Happy Museum: A tale of how it could turn out all right' found at: http://www.happymuseumproject.org/wp-content/uploads/2011/03/The_Happy_Museum_report_web.pdf
[101] Rathbone, N and Palmer, P (2011). Private communication, referenced in Dini P., Milne C., Milne R., (2012) 'Department of Media and Communications: Costs and Benefits of Superfast Broadband in the UK', p.108

among young adults), which now expects anything that can be digitized to be digital—and usually free.[102]

A vision of what used to be – Museums' role in the past has been to present what used to be in engaging, creative and educating ways. This role will not change. As the Center for the Future of Museums notes in its vision of 2034:

> *The prevalence of the digital, virtual world raises public awareness of the increasingly rare world of non-digital assets that help tell the story of how humans got where we are. Museums play a more critical role than ever as purveyors of the authentic, addressing a human desire for the real as the wonders of technology march us towards the opposite path*."[103]

4. References and further reading

- Dini P., Milne C., Milne R., (2012) 'Department of Media and Communications: Costs and Benefits of Superfast Broadband in the UK', found at: http://www2.lse.ac.uk/media@lse/research/pdf/Innovation-and-Governance/LSE-Superfast-Broadband-Report-May-2012[1].pd
- Center for the Future of Museums (2008) "Museums & Society 2034: Trends And Potential Futures", found at: http://www.aam-us.org/docs/center-for-the-future-of-museums/museumssociety2034.pdf?sfvrsn=0
- FreshMinds (2008). Understanding Digital Exclusion. Report for the DCLG. http://www.communities. gov.uk/documents/communities/pdf/1000404.pdf
- Federal Communications Commission (2010) 'Connecting America: The National Broadband Plan', found at: http://www.broadband.gov/download-plan/
- EU Digital Agenda, A 2020 initiative, found at: http://ec.europa.eu/digital-agenda/en/our-goals/pillar-iv-fast-and-ultra-fast-internet-access
- Economist Intelligence Unit (2012), "Superfast Britain? Myths and realities about the UK's broadband future"
- Broadband Commission for International Development (2012) "Broadband: State of Broadband 2012"
- SQW (2013) "UK Broadband Impact Study: Literature Review"
- NESTA (2008) 'Getting up to speed: making super-fast broadband a reality' Policy Briefing, January 2008
- McKinsey Global Institute (2011) "Internet matters: The Net's sweeping impact on growth, jobs and prosperity"

[102] Center for the Future of Museums (2008) "Museums & Society 2034: Trends And Potential Futures", found at: http://www.aam-us.org/docs/center-for-the-future-of-museums/museumssociety2034.pdf?sfvrsn=0

[103] Center for the Future of Museums (2008) "Museums & Society 2034: Trends And Potential Futures", found at: http://www.aam-us.org/docs/center-for-the-future-of-museums/museumssociety2034.pdf?sfvrsn=0

Demographic changes

1. Description

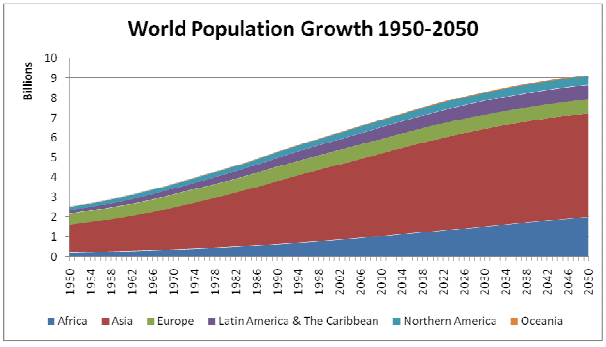
Demographic change refers to a shift in the statistical characteristics of populations. It has become an umbrella term for changes in the structure and composition of societies. Key demographic trends that have been the focus of attention in recent years include global population growth together with a general trend towards the ageing of societies.

The ageing of societies is the combined result of increasing life expectancy and a falling birth rate. Healthy life expectancy in the UK, for instance, has increased for most people and many are now fit to work to later ages than in the past. This trend of ageing populations combines with population growth. Natural population growth is concentrated in the developing world, but migratory patterns are also expected to lead to an increase in the population in the EU27.

2. Evidence and signs of change

While demographic patterns around the ageing of populations can be projected with some certainty, future developments in life expectancy and even more in fertility and net migration are all uncertainties and therefore extremely difficult to project with any certainty. It is therefore important to interpret population projections with great caution, and where possible to consider a range of different outcomes that allows for variations in the underlying assumptions[104].

Demographic projections indicate that there will be further, significant growth in the global population from 6.9 billion in 2010 to 9.15 billion in 2050.[105] This represents a growth of some 33% in the world's population over 40 years. The world regions where the most significant increases are expected are Asia and Africa. China and India remain central to this overall population growth (already with a combined population of 2.56 billion in 2010). China's population growth is expected to level off towards the end of the 2020s, whilst India's is likely to continue to grow until 2050.



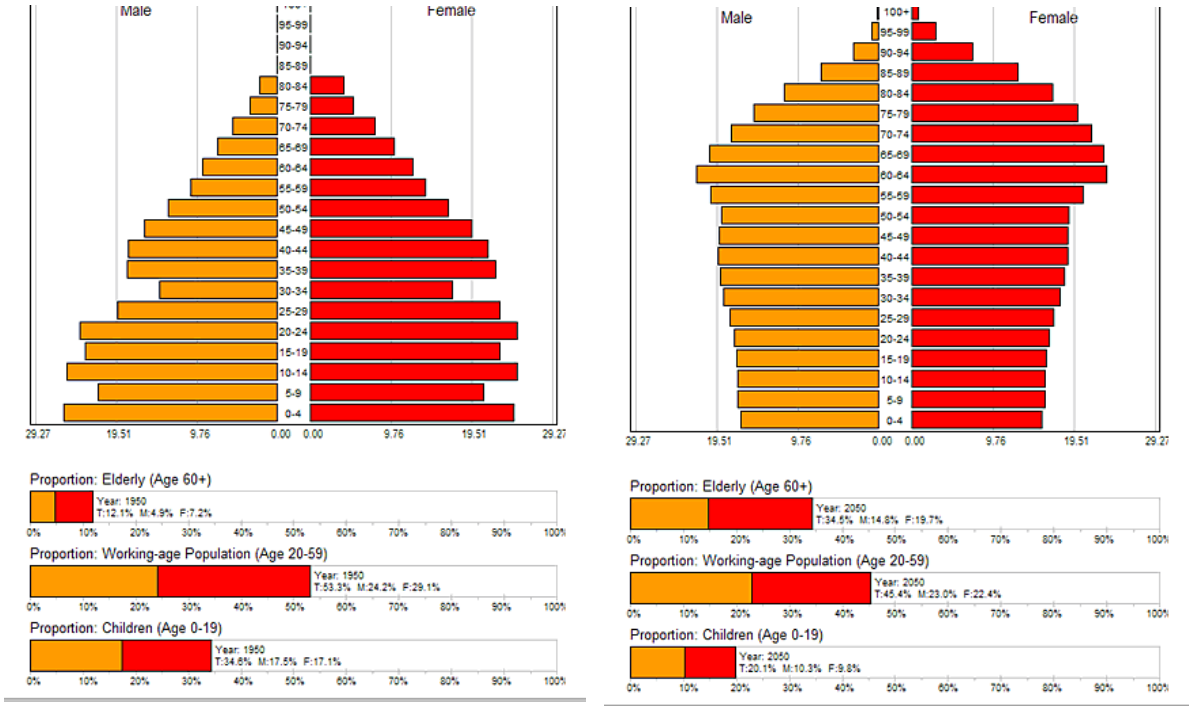
[104] Pat Thane (2012), *NEW PARADIGMS IN PUBLIC POLICY, Demographic futures*, British Academy for the Humanities and Social Sciences Policy Centre

[105] United Nations, Department of Economic and Social Affairs, Population Division (2009). World Population Prospects: The 2008 Revision, CD-ROM Edition.

Population growth is usually predominantly associated with the developing world, but the EU27 population is also projected to increase from 495 million on 1 January 2008 to 521 million in 2035. However, from 2015 onwards deaths are projected to outnumber births, and hence population growth due to natural increase would cease. From this point onwards, positive net migration would be the only population growth factor. Since, from 2035, this positive net migration is projected to no longer counterbalance the negative natural change, the EU27 population is projected to gradually decline to 506 million in 2060[106].

At the same time, the average age of populations is expected to increase. Over the last few decades the average age of the world's population has increased and UN predictions suggest that this trend will not only continue but grow more rapidly as we progress further into the 21st century. In addition to this, due to declining fertility rates and increased life expectancies, the relative proportion of older persons will more than double by 2050, with 20% of the world's population expected to be 60 or over. The number of older persons will triple over the next 40 years. By 2050 it is expected that the number of people over the age of 60 will reach 2 billion.[107][108]

Figure 2: Patterns of demographic change in Europe 1950 – 2050 (United National Population Division, 2005)



Currently, there is a significantly higher proportion of older people in more developed countries than lesser developed countries, with Europe being the oldest global region. However, the ageing process is occurring far more rapidly in less developed countries with the growth rate of the over 60 population currently 3 times higher in these areas than in developed countries, and the gap is expected to widen much further by 2050, with an annual growth rate of 3.7% expected in less developed countries, while the growth rate in developed countries is predicted to be only 0.2%. This will result in nearly 80% of the world's over-60 population living in less developed regions by 2050.

[106] EUROSTAT Press release STAT/08/119, 26 August 2008
[107] United Nations, Department of Economic and Social Affairs, Population Division (2002). World Population Ageing 1950-2050.
[108] Also see http://unfpa.org/ageingreport/

In spite of the fact that 80 per cent of the world's older people will live in developing countries by 2050, the number of people aged 15 to 24 is expected to further increase over the next few decades from the current nearly 1.2 billion young people in the less developed regions[109].

Impacts in different areas

Demographic changes are already impacting significantly on the following areas:

- **Natural resources:** Globally, with the scale of population increases projected, one of the key impacts is likely to be the demand and pressure on global resources, particularly food, water, mineral resources and energy etc. The emerging indications of the potential impacts might be found in food prices, commodity prices (energy, minerals etc) and changes in demand for water (leading to increased scarcity). At the same time, the shifting population pyramid is expected to result in lower productivity and economic growth of the EU states and the increasing number of elderly people that make use of services in the social security systems puts additional pressure on public expenditure[110].
- **Allocation of public resources:** The changing balance between younger and older people will challenge existing living arrangements and intergenerational relations. The trend of ageing societies presents huge challenges as it requires completely new approaches to health care, retirement[111], the size of the successive cohorts of young people in the developing world equally has implications for the demand for education and health, the supply of labour as they enter the labour market which can constitute a dynamic force of political change and social transformations[112].
- **Intergenerational relationships:** Using the UK as an example of the societal implications of an ageing society, a British Academy report[113] identifies three main paradigms that are prevalent in current discussions about an ageing population and its implications that portray the ageing of society either as an unprecedented economic burden, highlighting the considerable contributions of older people to society and the economy or focuses on intergenerational equity between affluent 'baby-boomers' and younger people. How these paradigms play out in different societies and which one prevails will substantially shape the life style of older people and relationships between different demographic groups in society.
- **Commercial applications:** Population ageing will not only stimulate the market for assistive and telecare technologies, but will stimulate the development of new applications using electronic devices in a range of areas from intelligent home and office spaces to smart transport solutions[114].

3. Potential significance/implications

What could this mean for cultural heritage? It could be significant for in the following aspects:

- **Role of cultural heritage in society:** The shifting demographic patterns are likely to change societal perceptions of the relevance of and interactions with different kinds of cultural heritage.

  Young people growing up in a context of economic and cultural integration on a scale never before seen are absorbing new ideas, values, beliefs and codes through the connected world, mass media and new information technologies; but they are also growing up with the traditional cultural

[109] http://www.un.org/esa/population/meetings/egm-adolescents/adolescents.html
[110] Linz K & Stula S (2010), Demographic change in Europe - An Overview, Working paper no. 4 of the Observatory for Sociopolitical Developments in Europe
[111] UNFPA (2012), Ageing in the Twenty-first Century: A Celebration and a Challenge
[112] http://www.un.org/esa/population/meetings/egm-adolescents/adolescents.html
[113] Pat Thane (2012), *NEW PARADIGMS IN PUBLIC POLICY, Demographic futures*, British Academy for the Humanities and Social Sciences Policy Centre
[114] Integrated Products Manufacturing Knowledge Transfer Network, Electronics Enabled Products Technology Watch

values of their own societies[115]. At the same time, older people enjoying healthier lives may well play a more active role in maintaining, communicating, mediating or even defending what they perceive as the most relevant cultural heritage. The blending of local and globalized cultures combined with shifting patterns of generational perceptions of cultural heritage is likely to cause certain tensions and challenges.

- **Competing demands on natural resources:** With increasing pressures on natural resources from a growing world population, preserving cultural heritage may increasingly be perceived as an abstract value and questions may be raised regarding its relative importance in comparison to the tangible and more immediate priorities of different societal groups (e.g. those with material interests such as land ownership or natural resource exploitation on community land)[116]. This may require the development of a new consensus as to the value and purpose, but also the limitations of preserving and promoting cultural heritage sites in particular.

4. References and further reading

- Pat Thane (2012), *New Paradigms In Public Policy, Demographic futures*, British Academy for the Humanities and Social Sciences Policy Centre
- United Nations, Department of Economic and Social Affairs, Population Division (2009). "*World Population Prospects: The 2008 Revision*", CD-ROM Edition.
- United Nations, Department of Economic and Social Affairs, Population Division (2002). "World Population Ageing 1950-2050."
- Linz K & Stula S (2010), Demographic change in Europe - An Overview, Working paper no. 4 of the Observatory for Sociopolitical Developments in Europe
- UNFPA (2012), Ageing in the Twenty-first Century: A Celebration and a Challenge
- UNFPA (2008), Generation of Change: Young People and Culture, state of world population 2008 youth supplement
- Robles Garcia N & Corbett J (2011), *Sustaining heritage, sustaining communities: a cautionary tale from Oaxaca, Mexico,* Our Future's Past: Sustainable Cultural Heritage in the 21st Century 24-26 November 2011, The American University of Rome and The British School at Rome, http://www.aur.edu/american-university-rome/wp-content/uploads/2011/09/Abstracts.pdf

[115] UNFPA (2008), Generation of Change: Young People and Culture, state of world population 2008 youth supplement

[116] Robles Garcia N & Corbett J (2011), *Sustaining heritage, sustaining communities: a cautionary tale from Oaxaca, Mexico,* Our Future's Past: Sustainable Cultural Heritage in the 21st Century 24-26 November 2011, The American University of Rome and The British School at Rome, **http://www.aur.edu/american-university-rome/wp-content/uploads/2011/09/Abstracts.pdf**

Social Capital, mutuality and volunteering

1. Description and evidence

These are linked but distinct concepts and areas of discourse, therefore they will be considered in turn before being discussed more holistically in terms of the opportunities and risks associated with this driver.

Social capital

This is based on the idea that resources available to individuals are to an extent founded in the relationships that they have with others. This in turn implies that these relationships have value. Such relationships are built around concepts like trust, norms of behaviour and mutual networks of contacts. This broad view of social capital is founded on the work of Coleman (1988)[117]. In this sense it is a relatively recent label, although some roots can arguably be found in Durkheim's work on 'anomie' and the breakdown of social solidarity (see for example Durkheim, 1952)[118]. In addition, Granovetter's work (1973)[119] lays foundations for perhaps a more instrumental conception of social capital based on the utilization of connections to access employment, for example.

However, it is the work of Robert Putnam that has brought the notion of social capital to wider attention through his popular and deeply researched book 'Bowling Alone' (2000)[120]. While his earlier work on Italian society pointed to the importance of century's of tradition in building up social ties, Bowling Alone focused on American society, arguing that the social networks exemplified by gathering at the ten pin bowling alley had declined over recent decades and were in need of rebuilding. This is a less individualist view of social capital than that of Granovetter in that the resource represented by this form of capital in Putnam's formulation does not belong to the individual, but is a property of the social networks themselves.

The notion of describing this as a form of capital attracts some controversy within the field of sociology from those who are critical of the economic connotations attached to the term. Nonetheless, as a strategic driver affecting cultural heritage there are some clear implications that will be explored below, not least through the notion of mutuality. It is to a definition and discussion of this that we now turn.

Mutuality/reciprocity

The term mutuality in the context of this report is synonymous with the term 'reciprocity', an idea that is closely tied to social capital. (The other common definition of mutuality as referring to corporate structuring is expressly *not* the meaning being discussed here).

Reciprocity might be described in terms of altruistic acts undertaken in the present in the (often vague and un-quantified) expectation of some future benefit. This is known as 'generalized reciprocity' and is composed of a number of such acts that confer longer term benefits on those undertaking them.

[117] Coleman, J. (1988) Foundations of Social Theory. Cambridge, Harvard University Press.
[118] Durkheim, E. (1952) Suicide. RKP, London.
[119] Granovetter, M. (1973) The Strength of Weak Ties, American Journal of Sociology, 78.
[120] Putnam, R. (2000) Bowling Alone. Simon and Schuster, London.

Putnam (ibid) suggests that most moral codes contain some version of the idea of 'doing unto others as you would have them do unto you'.

The notion of self interest would seem to be at odds with reciprocity, but it is argued that in a given community, the self interest of individual members is in fact served in the longer term by generalized reciprocity. A fundamental societal requirement is what Putnam calls 'thin trust' which can be characterised as a pre-disposition to trust (or give the benefit of the doubt to) those in your general community who you do not directly know to be trustworthy.

Reciprocity is therefore seen as one of the main components and building blocks of social capital.

Volunteering

Volunteering is defined by 'Volunteering England' as:

> "...any activity that involved spending time, unpaid, doing something that aims to benefit the environment or someone (individuals or groups)... central to this definition is the fact that volunteering must be a choice freely made by each individual. This can include formal activity undertaken through public, private and voluntary organisations as well as informal community participation."
>
> (http://www.volunteering.org.uk/iwanttovolunteer/what-is-volunteering)[121]

Volunteering is generally seen as an activity chosen by an individual, although there are a number of ways in which this can be structured and encouraged. For example, many organisations exist to promote volunteering such as Volunteering England or the Wales Council for Voluntary Action[122]. The United Kingdom government has also sought to promote volunteering through its 'Big Society' initiative (see discussion below).

In addition an important facet of volunteering is employee volunteering. Individual civil engagement is now increasingly replaced by facilitated volunteering through employee volunteering schemes. This is often part of a firm's environmental or corporate social responsibility policies, and as such can be open to criticism for being something that pursues benefit for the corporation rather than treating civic engagement as a good in its own right. Having said this, most company policies are still 'passive' in that they *allow* volunteering rather than actively encouraging it and building into company strategy[123]. Firms might espouse policies such as allowing employees to take paid or unpaid leave to engage in volunteering. Occasionally firms will prescribe which cause or organisation its employees should volunteer with, although in many cases research suggests that initiatives often come from staff in terms of choosing recipients of volunteering action.

Critics of bodies who promote volunteering express caution that volunteering should not be allowed or promoted to the extent where it supplants the work of the state and creates a situation where public funds can be withdrawn.

2. Discussion: Implications, risks and opportunities for cultural heritage.

[121] A number of other useful resources can be found at the website of the Institute for Volunteering Research. http://www.ivr.org.uk/

[122] See http://www.wcva.org.uk/

[123] See Crane, A. and Matten, D,. (2010) Business Ethics (3rd Edn). Oxford University Press.

Increasing urbanization might present a threat to volunteering because research based in the USA suggests that the size of a community is negatively correlated with social capital and reciprocity[124]. There is evidence that individuals in larger communities are more likely to feel a 'moral distance'[125] that impacts negatively on the propensity to engage in reciprocal actions. This might be problematic since some types of cultural heritage are found more readily in large cities, including organisations and repositories such as art galleries and museums.

However, a potentially positive finding from research conducted by the Institute for Volunteering Research in the United Kingdom is that those who do volunteer in museums and art galleries (among other culturally based organisations) are often 'career volunteers'.

Building on this, some research has pointed to the effectiveness of 'professionalisation' of volunteering in this sector is Canada and America[126]. The logic being that if (as reported in Holmes, 1999)[127] volunteers in these organisations have a semi-vocational commitment to their volunteering, this can be codified through the kind of practices more often associated with conventional careers. This would require investment from the institutions concerned (galleries and museums and so on. However, research by the IVR shows that over 50% of staff at such places were volunteers at the start of this century, so an investment in them seems likely to reap a return in kind in terms of a professional approach and increased commitment.

The recent interest in corporate social responsibility by large firms and the part played by employee volunteering schemes represents an opportunity for cultural heritage. Those seeking to maintain and promote cultural heritage could benefit from connecting to firms directly or through representative groups such as Business in the Community[128]. The associated risk is that if firms build such activities into their strategic architecture, these commitments could be prey to economic pressure if firm priorities change at times of difficulty.

Returning to the part played by reciprocity, the maintenance of cultural heritage by volunteers is a clear example of reciprocity in that individual and group acts of altruism in maintaining cultural heritage has a benefit to all who interact with it, as well as presumably bringing feelings of well being to the volunteers. Therefore the promotion of individualism and the breaking down of traditional communities (and identities, cf. Identity Driver) might represent a threat to cultural heritage.

Paradoxically, recent efforts by the United Kingdom government to promote the notion of 'The Big Society' are potentially counter-productive in promoting volunteering and the attendant reciprocity. This is due to a number of factors. In the first place, politicizing the idea of volunteering and responsibility risks drawing criticism from opposing political parties and interest groups. This might have particular impact on its adoption in regions that are dominated by these opposing political parties. Secondly, this promotion has been criticised for seeking to supplant the investment of public money at a time of economic austerity and spending cuts. Thirdly, the language used by the proponents of 'The Big Society' often champion individual responsibility in the context of society. On the one hand the idea of responsibility is seen as positive, but equally the discourse of 'individualism' rather than mutuality still dominates. This flies in the face of the broad conception of social capital having value in the relationships themselves and not in some property of the individual. Finally, the UK government has been criticised for failing to offer a coherent definition of what 'The Big Society'

[124] Putnam, R (2000) ibid.
[125] Crane and Matten (2010) Ibid.
[126] Such research is referenced in Holmes K. (1999) 'Changing times: volunteering in the heritage sector 1984-1998. (See IVR website ibid)
[127] Holmes, K (1999) (ibid).
[128] See www.bitc.org.uk

means and this has led to further critique from charities and similar organisations that might naturally have been expected to support the initiative.

Putnam argued that social capital and the attendant involvement in civic associations and volunteering builds trust and reciprocity which in turn provides relational infrastructure for other (sometimes economic) activities. The risk for cultural heritage is that the actions at the heart of social capital such as volunteering are intimately coupled to the maintenance of such heritage. In other words it is not a 'by product' of such activities.

This means that cultural heritage is disproportionately at risk from large scale societal changes that loosen community ties. The driver dealing with identity looks at some of these trends, but broadly speaking globalization is lessening the attachment to (and identification with) place that is necessary for the creation and maintenance of social capital such as that discovered by Putnam in his work on Italian history. Related trends include the promotion of individualism (which arguably opposes notions of mutuality) and consumerism, which risks commodifying culture and its artefacts. If culture is commodified then the kind of commitment to volunteering seen in museums, galleries and other sites of cultural heritage might be at risk. Putnam (2000) also suggests that the reduction of faith based communities lessens commitment to the associated cultural heritage, although it should be recalled that his work was based in The United States of America.

In summary, there can be little doubt that threats to social capital represent threats to cultural heritage, but equally, if social capital, reciprocity and volunteering can be encouraged, even if it means 'selling' it as being economically beneficial in order to gain support from institutions such as government and business.

3. References and further reading

- Coleman, J. (1988) Foundations of Social Theory. Cambridge, Harvard University Press.
- Durkheim, E. (1952) Suicide. RKP, London.
- Granovetter, M. (1973) The Strength of Weak Ties, American Journal of Sociology, 78.
- Holmes K. (1999) 'Changing times: volunteering in the heritage sector 1984-1998.
- Putnam, R. (2000) Bowling Alone. Simon and Schuster, London
- Crane, A. and Matten, D,. (2010) Business Ethics (3rd Edn). Oxford University Press.

Identity Formation and Multiple Identities

1. Definition and background

Heritage, culture and identity are closely woven ideas. Heritage is often employed in the construction and maintenance of individual and group identities. At the same time, what is selected by individuals and societal groups as worthy of being considered 'heritage' or culturally significant is often mediated by an awareness of identity.

A comprehensive but brief definition of identity is as follows:

> *At its' most basic, 'identity' refers to the ways in which we demarcate and make sense of ourselves. It generally entails locating oneself within a range of categories (e.g. male, old, British) or formulating a description and account of who and what one is. Furthermore, by definition this involves a demarcation of what one is not, a marking out of 'the other' and of one's difference.*[129]

Writings on identity often distinguish between social identity and personal identity. The latter refers to the way in which an individual differentiates their 'self' as unique through their own particular features, situation and history, for example. Social identity refers more commonly to the groups or cultures to which an individual links themselves or is linked by others.

This means that through things like language, values and other cultural factors, our social identity might link us to groups, but then our personal identity is used to mark us out as different within that group.

There are literally hundreds of thousands of references on identity – it is a huge field within social and anthropological sciences. What follows therefore is a summary of the key debates, which then informs further discussion of the implications for culture and heritage.

Main debates in the field

<u>The acquisition of identity</u>

Some facets of identity are argued to be comparatively resilient. These include biological features such as gender, as well as ethnicity, although even these are not always totally and absolutely fixed. Other aspects of identity can be more malleable and tend to be acquired over time as the individual grows and perhaps enters the workplace, joins explicit or tacit social groups, or moves around geographically, for example. It is argued that these alterations in a person's sense of who or what he or she might be involves a process of negotiation between the self and external drivers or agencies (see for example the work of G.H Mead[130]).

<u>Are identities fixed or contextual?</u>

[129] Crossley, N. (2005) Key Concepts in Critical Social Theory. Sage, London.

[130] For example, The Individual and the Social Self: Unpublished Essays by G. H. Mead. Ed. by David L. Miller. University of Chicago Press.1982.

Leading on from the previous section, there is recent debate over the extent to which identities are fixed. In other words is there a deep underlying identity that acts as a fixed point for the self, or is identity actually the product of a continuously negotiated relationship with the context in which the individual finds themselves? There is currently no unified theory to resolve this debate. However, it seems logical to assume that while individuals might attempt to maintain some coherence in their identity, there are external influences which cause one to flex in accordance with the demands of our context. This brings us to the notion of the deliberate 'management' of our identities, discussed next.

How identities are managed and performed

It can be argued that individuals present a deliberate identity that is designed to manage image or impression[131] . This implies that identity might be confused with the creation of deliberate 'masks' but nonetheless the idea of managing ones identity remains an important debate. As touched on below, individuals and groups can try to attain a certain identity and then employ the use of narratives and rituals to delineate and defend that identity. The process of labelling is one that is closely related to these processes. In other words, there is a purposeful or emergent process of naming and describing identity that may result in certain labels acquiring more or less currency and longevity. This raises the related questions of what purpose is served by individuals designing or managing their identity in one way or another.

Collective identities

The study of social movements, such as 'gay rights', or political movements accompanying industrialization, for example, has shown that groups often strive to build collective identities. Groups will normally try to achieve some kind of collective coherence and internal consistency and increase solidarity as a result.

This is often approached through the appropriation or creation of terms used to describe themselves, as well as the deliberate or emergent construction of narratives, rituals and shared history. Paralleling the notion of individual identity, groups create the 'we' as distinct from the 'other'. This is related to the idea of 'belonging' and it can be argued that individuals define themselves as belonging to a group such as a local community, for example, that may in fact lack any essential characteristics and be largely an imagined construction. Nonetheless, the sense of belonging, imagined or otherwise, is a powerful tool often used to bring the political into notions of identity.

The impact of contemporary society

It is argued that there are a number of factors that mark out contemporary society as having particular effects on identity.

Firstly, globalization in its current accelerated, technologically enabled state is thought to affect identity in a variety of ways, although these can sometimes seem contradictory. For example, it is often argued that processes of globalization lead to cultural standardization, with its associated homogenizing affects on identity. On the other hand, there is evidence that globalization actually increases diversity as different global cultures come into contact with each other resulting in the formation of hybrid cultures and identities. As is often the case there is little overarching explanatory theory on this, although it is argued that hybridization leads to an increasing fluidity and fragmentation of identity. There is also evidence that, even if the standardization argument is accepted, group identity in particular is reinforced as groups that identify themselves as culturally coherent defend their 'difference' against homogenisation.

[131] Goffman, E (1964) Stigma: Notes on the Management of Spoiled Identity Englewood Cliffs, NJ: Prentice-Hall

Secondly, the foundations of social identity are changing rapidly. This is partly related to processes of globalization (such as encouraging international travel or economic migration, as well as diminishing the status of the nation state) but is also to do with the breaking down of traditional sources of identity such as labour movements, social class, extended family or religion for example. Individuals might, perhaps, identify themselves as belonging to a profession or interest group that transcends national or class boundaries.

Thirdly, it is argued, although not without contest, that people are now likely to identify themselves by and through that which they consume. Giddens [132] described how people were self consciously aware of themselves and their identity as a work in progress; he describes it as "the reflexive project of the self". It is suggested that the growth of (often conspicuous) consumerism alongside the power of advertising and branding offer additional means by which identity can be acquired, constructed and managed.

Technology, the internet and identity.

The increased use of social media, user generated content and computer-mediated communications generally has increased exponentially in the last decade. In 2008 research showed that over 75% of internet surfers used social media[133]

It is axiomatic that this will have an impact on both individual and group identity, and it can be strongly argued that such media fuel the production and subsequent management of multiple identities. Even those engaged in simple dialogue conspire in the social construction of a shared understanding of their respective identities. More sophisticated social media such as Face-book are very explicitly concerned with the construction and conveyance of individual identities as well as the explicit creation of 'insider' and 'outsider' groups through the use of multi-level permissions with regard to access and interaction.

Research suggests that individual identity is more difficult to convey and maintain through computer mediated communications, although group and social identity can arguably more readily develop[134] . In a related argument, it is suggested that individuals engage in self-disclosure as a means of creating and managing their identity in a computer mediated communication, whether on a simple email or through Facebook and personal websites. Perhaps the most obvious and overt example of identity creation mediated by computers is the use of virtual game-worlds and virtual social spaces such as 'second life'. In these spaces the creation and management of identity is part of the 'raison d'être' of the activity, although the identity concerned is reflective mainly of individual identity rather than social identity.

Cultural Identity

Recent work[135] suggests that cultural identity is a right. This in turn implies that there should be a freedom of choice of cultural identity, especially in respect of language and beliefs, and also the right to a cultural heritage or heritages. This conclusion is built on arguments familiar from other areas of identity work, such as the notion that cultural identity is built on inter-relationships, not isolation. Therefore it is an ongoing construction, not an essential or unchanging list of characteristics.

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[132] A.Giddens, Modernity and Self-identity, Polity Press, London, 1991

[133] Forrester Research, in Andreas M. Kaplan, Michael Haenlein, Users of the world, unite! The challenges and opportunities of Social Media, Business Horizons, Volume 53, Issue 1, 2010

[134] Tanis, M. (2003). Cues to Identity in CMC. The impact on Person Perception and Subsequent Interaction Outcomes. Thesis University of Amsterdam. Enschede: Print Partners Ipskamp

[135] See for example Peterkova J. (2003) European Cultural Identity. The Role of Cultural Heritage in the Process of Mutual Communications and Creation of Consciousness of Common Cultural Identity. http://www.kakanein.ac.at/beitr/fallstudi/JPeterkova1.pdf (accessed 30th September 2012)

The implications for culture and heritage

Challenges:

- Globalization may lead to the loss of certainty over individual and group identity roots, leading in turn to a lack of perceived connection to and ownership of heritage artefacts.
- In a related observation, the creation of multiple identities through games and computer mediated communication might lessen attachment to place, thereby weakening the link to geographically situated heritage.
- Definitions of both identity and heritage remain contested, meaning that basing policy on what 'is' heritage may be difficult.
- Despite the apparent acquisition of multiple or fluid identities being reported as a result of cultural hybridization globally, much tangible heritage remains rooted in national-scale history and is often iconic and located in urban spaces in a particular country. Attempts by trans-national bodies to lay some kind of claim on these for the universal good risk resistance.
- The construction of identity through consumption implies that heritage must position itself as a 'product' that can be consumed. The act of consumption itself however might damage heritage in two ways. Physical heritage artefacts may require maintenance or protection from those that would consume them. At the same time, the less tangible but no less important symbolic power of some cultural artefacts might be perceptually damaged by being associated with consumerist ideologies.
- Identity is an ongoing construction, whether individual, social or cultural. In this sense it is fluid and open to manipulation, whether economic, social or political.
- The intention to use cultural heritage as a means of economic and social development might be hindered by the increasing ability to use technology to consume heritage remotely.

Opportunities

- Processes of globalization are argued in some cases to be increasing the coherence of social and cultural identity groups. This could lead in turn to a closer symbolic attachment to heritage artefacts.
- Cultural identity fragmentation is being counteracted in some examples by the work of the UN, and UNESCO in protecting heritage. Examples of pro-active protection and promotion of symbolic and physical heritage at a European level include the Santiago de Compostela pilgrim routes.
- Knowledge of cultural heritage, once created and/or captured, can be efficiently and easily shred through information and communication technology.
- The increase of the management of identity through consumption presents opportunities for heritage that might be commodified, although caution has been expressed in the 'challenges' above as to how this might damage heritage artefacts both physically and symbolically.
- The acceleration of global travel means cultural and heritage tourism has become a significant potential engine of economic growth.

4. References and further reading

- Crossley, N. (2005) Key Concepts in Critical Social Theory. Sage, London.
- Goffman, E (1964) Stigma: Notes on the Management of Spoiled Identity Englewood
- Cliffs, NJ: Prentice-Hall Kaplan, A.M. and Haenlein, M. (2010) Users of the world, unite! The challenges and opportunities of social media. Business Horizons, vol 53, no. 1 pp 59-68.
- Peterkova J. (2003) European Cultural Identity. The Role of Cultural Heritage in the Process of Mutual Communications and Creation of Consciousness of Common Cultural Identity. http://www.kakanein.ac.at/beitr/fallstudi/JPeterkova1.pdf (accessed 30th September 2012)
- Tanis, M. (2003). Cues to Identity in CMC. The impact on Person Perception and Subsequent Interaction Outcomes. Thesis University of Amsterdam. Enschede: Print Partners Ipskamp

Mobility and migration

1. Description

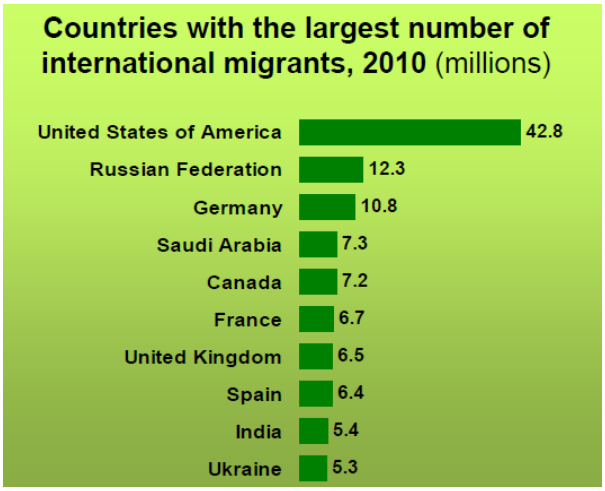
The introduction to the UN Secretary-General's Report on International Migration and Development describes this driver as follows:

> *International migration is a global phenomenon that is growing in scope, complexity and impact. Today, virtually all countries in the world are simultaneously countries of destination, origin and transit for international migrants. Traditional immigration patterns are complemented by new migratory flows, fuelled by changing economic, demographic, political and social conditions. Changing migration patterns affect the size and composition of immigrant populations as well as economies and societies in countries of origin and destination.*[136]

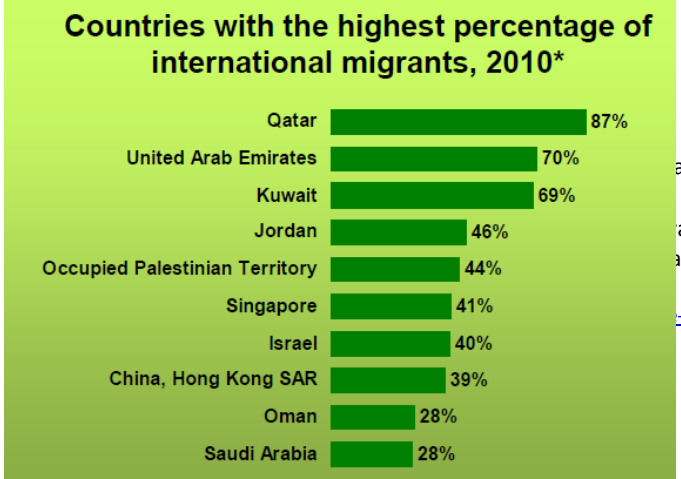
Increasing mobility combined with cheaper communications means that in the future, the global community may become connected in a manner not experienced since our small-world evolutionary origins in Africa.[137] States and civil society organizations are also increasingly recognizing that international migration is integral to development processes and to the functioning of modern economies.

2. Evidence and signs of change

Migration is difficult to analyse: the process is complex, the data poor, and the theory unsatisfactory. Its many factors include unpredictable policy change[138]. Existing estimates suggest, however, that in 2010 the number of international migrants in the world amounted to ca. 214 million, an increase of 35 million since 2000 and 58 million since 1990[139]. Reported UN figures suggest that this trend will continue to grow, and reach 2.2 million migrants a year[140].



Economic migrants are the world's fastest growing group of migrants. Globalization has increased the mobility of labour, and a decline in fertility and working-age populations in many developed countries is leading to a rising demand for workers from abroad to sustain national economies. One of the most significant changes in migration patterns in the last half century is that more women are migrating than ever before. Women now constitute half the international migrant population, and in some countries, as much as 70 or 80 per cent.



and development, Report of the Secretary-General A/67/254

ation in Europe, *Oxf Rev Econ Policy (2008) 24 (3): 452-476.*
ation Division (2011), International Migration Report 2009: A

-migration-to-rich-countries.html

Source: United Nations, Department of Economic and Social Affairs, Population Division (2009). International Migration, 2009 Wallchart (United Nations publication, Sales No. E.09.XIII.8),
http://www.un.org/esa/population/publications/2009Migration_Chart/IttMig_maps.pdf

Internal migration within countries is also on the rise, as people move in response to inequitable distribution of resources, services and opportunities, or to escape violence or natural disaster. The movement of people from rural to urban areas has contributed to the explosive growth of cities around the globe[141].

In the wake of the general strengthening of several emerging economies, most notably China, India and Brazil, rising incomes are leading to the emergence of 'new middle classes' in those countries. The emergence of the new middle classes increases individuals' mobility and migration choices, which may lead to further changes in the make-up of migratory flows.

Impacts in different areas

Mobility and migration has already been significant in the following areas:

- **Labour force and economy**: Often seen as a drain on resources, immigration also offers great benefits in the form of boosted economic activity and higher tax income for the host country. Poor countries may suffer when they lose their best brains to the emigration - 43% of Liberian doctors, for example, now work in North America. However, the prospect of migrating can also be seen to spur people in poor countries to acquire marketable skills. Some then decide not to migrate after all. Others spend several years abroad but then return home with new skills, new contacts and a pot of savings to invest. Overall, the brain-drain actually seems to help poor countries.[142]
- **Migration and development**: Migration is increasingly perceived as a force that can contribute to development, and an integral aspect of the global development process. Migration considerations are being incorporated into poverty reduction strategies and broader planning policies. Migration is often temporary or circular, and many migrants maintain links with their home countries. While migrants make important contributions to the economic prosperity of their host countries, the flow of financial, technological, social and human capital back to their countries of origin also is having a significant impact on poverty reduction and economic development[143]. According to the World Bank, remittances to developing countries reached $372 billion in 2011, an increase of 12 per cent compared to 2010.[144] These transfers play an important role in the economic outlook of the recipient countries.

[141] http://www.unfpa.org/pds/migration.html
[142] The Economist (26th May 2011) The future of mobility
[143] http://www.unfpa.org/pds/migration.html
[144] United Nations General Assembly (2012), International migration and development, Report of the Secretary-General A/67/254

- **Integration and identities**: The integration of immigrants and their children is a challenge that affects many different public services and policies at all government levels. In many OECD countries, new specialised entities in charge of immigration and/or integration policy have emerged in recent years, reflecting the growing importance of the topic.[145] Beyond the practical implications of ensuring appropriate provision for immigrants, the increased mobility and diverse migration patterns is changing the nature of national identities. Populations are increasingly the product of a globalized world with people themselves becoming the actors shaping their identity. Their notions of belonging and citizenship are often fluid and flexible[146] and substantially shape the patterns and degrees of citizen's participation in politics and related issues of civic education.[147]

3. Potential significance/implications

What could this mean for cultural heritage? It could be significant in the following aspects:

Migration and population mobility affects both the 'recipient' culture as well as the 'donor' culture and therefore for each migrant there is a potentially complex and two-sided implication in respect of that individual's cultural heritage. The implication to make the cultural heritage that is marked and celebrated one which is no longer linear but is interconnected and intertwined with an external heritage experience.

Similarly, a population migration 'event' not only affects the size and composition of immigrant populations within the recipient cultures but also becomes, in itself, an aspect of the heritage of both the donor and recipient countries of the immigration. Again, the complexity of interpretation and representation of cultural heritage is challenged and increased in complexity because of the two sided view that may be taken. For example, the significant Polish population that is recently established in Great Britain represents a cultural heritage event for Great Britain but also has a counterpoint because it is an emigration event in Poland's cultural heritage.

Mobility and migration also challenges the interpretation and representation of cultural heritage by requiring a fundamental initial question to be asked, that of, 'which cultural heritage is being interpreted and captured?' In some contexts, the USA for example, a major focus for the interpretation and representation of cultural heritage is already around built around the immigrant experience and immigrant influence on the recipient cultures and may increasingly represent a de-facto parallel heritage within a single geography and society.

Political and economic attitudes and factors triggered by migration and mobility may introduce significant und=certainties for cultural heritage. For example, where political action to reduce or repatriate immigrants is taken, this in itself may be more or less successful in its aims and will inevitably impact on the heritage of those immigrant and host populations.

More positively, migration and mobility may be expected to create a greater degree of multi-cultural heritage that emphasises inclusivity and shared identity. These in themselves will become an important aspect of that society's cultural heritage, albeit, in the long term.

4. References and further reading

- United Nations General Assembly (2012), International migration and development, Report of the Secretary-General A/67/254

[145] OECD (2009), THE LABOUR MARKET INTEGRATION OF IMMIGRANTS AND THEIR CHILDREN Key Findings from OECD Country Reviews, ***High-Level Policy Forum on Migration Paris, 29-30 June 2009***

[146] Jian-Bang Deng (2008), *The End of National Belonging? Future Scenarios of National Belonging from Migration Experiences of Taiwanese Businessmen in Shenzhen*, Journal of Futures Studies, November 2008, 13(2): 13 - 30

[147] Future Citizenship Statement of Purpose

- The Economist (26th May 2011), '*The future of mobility*'
- Coleman D. (2008), *The demographic effects of international migration in Europe*, *Oxf Rev Econ Policy (2008) 24 (3): 452-476.*
- United Nations, Department of Economic and Social Affairs Population Division (2011), International Migration Report 2009: A Global Assessment
- Telegraph, (2007), "*UN predicts huge migration to rich countries*", http://www.telegraph.co.uk/news/worldnews/1545634/UN-predicts-huge-migration-to-rich-countries.html
- United Nations Population Fund, Migration: A World on the Move, last accessed 27th February 2013: http://www.unfpa.org/pds/migration.html
- OECD (2009), THE LABOUR MARKET INTEGRATION OF IMMIGRANTS AND THEIR CHILDREN Key Findings from OECD Country Reviews, *High-Level Policy Forum on Migration Paris, 29-30 June 2009*
- Jian-Bang Deng (2008), *The End of National Belonging? Future Scenarios of National Belonging from Migration Experiences of Taiwanese Businessmen in Shenzhen*, Journal of Futures Studies, November 2008, 13(2): 13 - 30

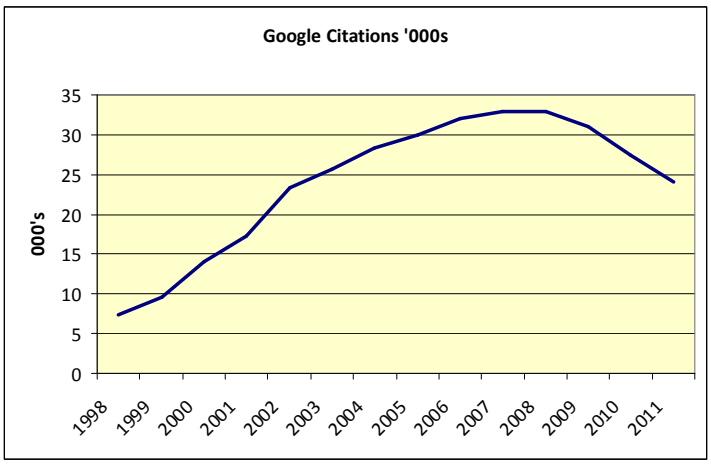
Globalisation

1. Description

The Oxford English Dictionary defines globalisation as *"the process by which businesses or other organizations develop international influence or start operating on an international scale"*[148].

The concern with globalisation began to appear in public and academic discourse only in the late 1980's and gathered pace over the next two decades reaching a peak in 2007 – 2009 as the global economic crisis hit, since when concerns with globalisation have tended to wane most probably as other concerns and interests have taken over and as the complexity of globalisation as a phenomenon has become more apparent.

For example, this trajectory is demonstrated on Google Scholar as follows:



In their short paper exploring the different definitions and scopes of the term globalisation, Al-Rodhan and Stoudmann[149] collected some 114 definitions of globalisation from literature and estimated that if these, 67 or just over 50% refer to the economic meaning of globalisation.

The definition included in the OED quoted above has a definite focus on the economic or business sense of globalisation and others abound, for example,

"The integration of the world economy."[150]

On the other hand, a typical socio-economic definition would be,

"…processes whereby many social relations become relatively delinked from territorial geography, so that human lives are increasingly played out in the world as a single place[151]*."*

Al-Rhodan and Stoudmann provide their own synthetic definition as follows:

"Globalization is a process that encompasses the causes, course, and consequences of transnational and trans-cultural integration of human and non-human activities."[152]

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[148] Oxford English Dictionary 2012

[149] Nayef R.F. Al-Rodhan and Gérard Stoudmann, "Definitions of Globalization: A Comprehensive Overview and A Proposed Definition", Geneva Centre for Security Policy, 2006,

[150] Robert Gilpin, Global Political Economy, Princeton University Press, 2001, quoted in Al-Rhodan and Stoudmann 2006

[151] Jan Aart Scholte, "The Globalization of World Politics", in J. Baylis and S. Smith (eds.), The Globalization of World Politics, An Introduction to International Relations, Oxford University Press, 2001 quoted in Al-Rhodan and Stoudmann 2006

The emphasis here is on the integration that is said to take place within the globalisation process – a process that may have both positive and negative impacts and consequences depending on the perspective adopted. For example, Ritzer (2003) notes *that "attitudes toward globalization depend, among other things, on whether one gains or loses from it."*[153]

Although globalisation as a term and a concern and subject for study is relatively recent (1980's), it is in all probability a phenomenon that has been impacting communities, cultures, and economies for hundreds or even thousands of years. This point is well made by Larsson (2001) who described globalisation as "*the process of world shrinkage, of distances getting shorter, things moving closer. It pertains to the increasing ease with which somebody on one side of the world can interact, to mutual benefit, with somebody on the other side of the world."*[154]

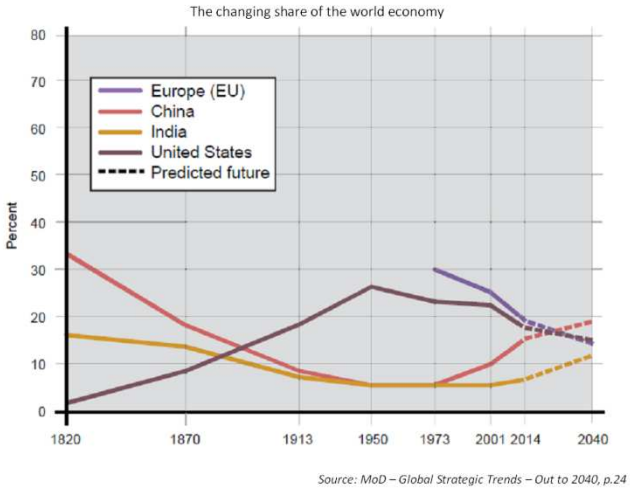
2. Evidence and signs of change

The scope and impact of globalisation as a driver of future trends and impacts may be seen to have influence in a number of related areas.

- Firstly, patterns of global trade and economic power,
- Secondly, the governance models and arrangements that partly follow the global shifts in economic power and,
- Finally, an increasing homogeneity in societies and populations.

2.1 Global trade and economic power

Globalisation is frequently seen as a phenomenon intimately connected with the dominance of the Western economies and cultures over the developing and emerging economies and societies.



However, the changing balance of global power and influence now in train is likely to give globalisation a different perspective in the future.

For example, the rise of the so-called BRIC (Brazil, Russia, India and China) as global economic powers in their own right can be expected to bring with it greater influence and a degree of integration of these economies and cultural traits and attitudes into the globalisation arena.

Although it remains approximately 3 times the size of her nearest national competitor the US share of global GDP has already decreased to 22% in 2007, and this shrinkage is expected to continue, resulting in a diminution of US economic power.[155] Similarly, the world's largest economic bloc, the European

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[152] Nayef R.F. Al-Rodhan and Gérard Stoudmann, "Definitions of Globalization: A Comprehensive Overview and A Proposed Definition", Geneva Centre for Security Policy, 2006

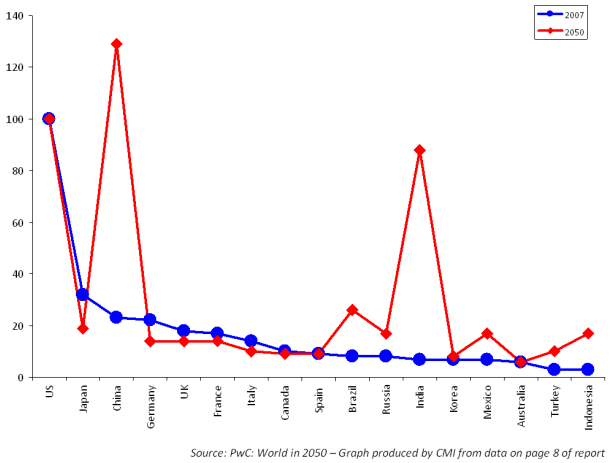
[153] G. Ritzer, "The Globalization of Nothing", SAIS Review, Vol. 23, No. 2, Summer-Fall 2003,. quoted in Al-Rhodan and Stoudmann 2006

[154] T. Larsson, The Race to the Top: The Real Story of Globalization ,Cato Institute, 2001,

[155] According to some China has the potential to become the world's largest economy by 2025, and double the size of the US economy by 2040 – UK Defence Academy, Ministry of Defence (2010) '*Global Strategic Trends – Out to 2040*', 4th edition update9 – Feb 2010

Union, is likely to grow less rapidly than the US, China and India, such that by 2040, they will all share similar magnitudes of economic output.[156]

Over recent years China and India have been restoring their historic position of a couple of centuries ago. Whilst estimates tend to vary[157] they concur broadly that, by 2025, China and India will hold approximately 45% of the world's economic wealth and will surpass the GDP of all other economies except for the US and Japan[158]. Beyond the growth of China and India, growth projections show all BRIC countries matching the G7 share of GDP by 2040-50[159] which will result in a potential shift of economic influence toward these economies. The An impact of the current global downturn has been a delay in this transformation and what is effectively a mere 'blip' in the trends predicted to date.



Source: PwC: World in 2050 – Graph produced by CMI from data on page 8 of report

The shift in global economic power has been amplified by the increase in sovereign investment vehicles. Sovereign Wealth Funds (SWFs) are a common form of this type of vehicle, but China and the Gulf Cooperation Council (GCC) are increasingly using various forms of sovereign investment to enter into private market places.

Sovereign Wealth Funds (SWFs) had almost US$5 trillion in assets under management at the end of 2011[160] and have enjoyed steady growth despite the global economic downturn, as noted by UNCTAD (2012), *"even during 2007-2011, a period spanning the global financial crisis, and despite losses on individual holdings, the total cumulative value of SWF assets rose at an annual rate of 10 per cent"*[161]

2.2 Governance models and arrangements – global and local

The shifting locus of economic activity will be amplified in its impact by the changing models of political and economic governance that will accompany the changed scenario. For example, firstly, as geopolitical and economic influence shifts to the BRICs (alongside continuing US influence), middle or lower ranked countries are likely to consider forming regional (in a global sense) blocs to cooperate and achieve scale in terms of competition and influence[162]. Secondly, by 2040, greater protectionism – economic, social and cultural - is possible in response to potential geopolitical insecurity and instabilities caused by such a shift[163].

The economic rise of the BRIC states and the sovereign wealth of the Gulf States also have to be seen against a backdrop of non-democratic models of governance. Many commentators expect t see a shift towards a model of state-based capitalism, a blurring of the distinctions between public and private and a less pivotal role for the market to dictate events.

According to US National Intelligence Council projections, *'Today wealth is moving not just from West to East but is concentrating more under state control….with some notable exceptions like India, the states*

[156] Ministry of Defence (update9 Feb 2010) op cit
[157] Ministry of Defence (update9 Feb 2010) op cit
[158] National Intelligence Council – USA (2008), 'Global *Trends 2025 – A transformed world*', p.7
[159] Ibid p7
[160] UNCTAD World Investment Forum 2012 - Sovereign Wealth Fund Round Table Issues Note
[161] Ibid
[162] UK Defence Academy, Ministry of Defence (2010) '*Global Strategic Trends – Out to 2040*', 4th edition update9 – Feb 2010 p. 44.

[163] ibid. p.40 & p. 43

that are beneficiaries of the massive shift of wealth — China, Russia, and Gulf states — are non-democratic and their economic policies blur distinctions between public and private spheres.[164]' Over the next 15-20 years, an increasing number of the world's developing countries may gravitate toward Beijing's state-centric model rather than the traditional Western model of markets and democratic political systems to increase the chances of rapid development and perceived political stability.

The number of global institutions formed to tackle the challenges of a global world has increased and their role can be expected to continue to grow up to 2025. '*Global institutions such as the UN, the World Trade Organisation (WTO), G8 and G20, World Bank and the International Monetary Fund (IMF) will remain influential, especially in addressing the problems of a highly globalised and interdependent world.*'[165]

A UK Ministry of Defence report also suggests that the UN will continue to offer a framework for international discourse around strategic issues and to be the global service provider, offering international coordination and direction through bodies such as the World Health Organisation (WHO), UNHCR and United Nations Educational Social and Cultural Organisation (UNESCO). The permanent membership of the UN Security Council is likely to expand, but it will struggle to deal with conflict and tension.

A key challenge will be the need for these institutions to adapt to new issues that have emerged in the global context. So far, adaptation has tended to be a reaction to outside forces (climate change etc…) rather than institutional foresight.[166] In relation to the Gs, for instance, the Economist records: '*At present, a number of groups are jostling to be the pre-eminent forum for discussions between world leaders. The G20 […] replacing the old G8 is likely to be the most lasting institutional consequence of the global financial meltdown of 2008. But that is not the end of the matter. […] Attempts to divert the real decisions to a G2 made up of just the United States and China will not succeed.'*[167]

The governance system at the state, regional and local levels in developed and developing economies are also likely to be considerably more complex shifting towards multiple centres – of both state and non-state actors. It is likely that this will happen in stages. In the initial period, informal spheres of influence are likely to coalesce around the leadership of China, India, the US, Russia and others. It is also likely that middle and lower-rank powers will band together into regional blocs, often based on trade and economic links, in an effort to maximise their collective prosperity and influence in decision-making and governance circles[168].

Beyond this, power and governance structures will also shift, to some extent toward non-state actors. Whilst this is far less certain, there is a trend toward this emerging in recent governance transactions.[169] '*Changes in the distribution of power, the need for influence in a globalised world and balance of power considerations are likely to drive the formation of formal alliances and informal partnerships. Traditional alliances, such as NATO, are likely to continue, but states will also seek partnerships of common interest with non-traditional partners*.'[170]

Transnational NGOs, civil-society groups, churches and faith-based organizations, multinational corporations, other business bodies, and interest groups have been equally, if not more effective than states at reframing issues and mobilizing publics. While the nation-state is likely to remain a key level of governance and decision-making, many developing countries, which are likely to play an increasing role at the regional and global level, suffer from a relative paucity of non-state actors.

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[164] National Intelligence Council – USA (2008), 'Global *Trends 2025 – A transformed world*', p.8
[165] Ministry of Defence (2009) '*Global Strategic Trends – Out to 2040*', 4th edition, p.39
[166] National Intelligence Council – USA (2010), 'Global Governance – At a critical juncture', p. iv

[167] The Economist, Nov. 2009
[168] Ministry of Defence (2009) '*Global Strategic Trends – Out to 2040*', 4th edition, p. 44
[169] National Intelligence Council – USA (2010), 'Global Governance – At a critical juncture' p.iii
[170] Ministry of Defence (2009) '*Global Strategic Trends – Out to 2040*', 4th edition, p. 44

2.3 increasing homogeneity

In the wake of the general strengthening of the new global economies, most notably China, India and Brazil, in those countries rising incomes are leading to the emergence of 'new middle classes'. The emergence of new middle classes is likely to lead to higher levels of consumption helping to overcome a situation in which growth in those countries has so far largely been export-led amidst calls to rebalance the world economy by nurturing domestic growth.

Global shares of middle class consumption, (2005 PPP $billions)

	2009		2020		2030	
North America	5,602	26%	5,863	17%	5,837	10%
Europe	8,138	38%	10,301	29%	11,337	20%
Central and South America	1,534	7%	2,315	7%	3,117	6%
Asia Pacific	4,952	23%	14,798	42%	32,596	59%
Sub-Saharan Africa	256	1%	448	1%	827	1%
Middle East and North Africa	796	4%	1,321	4%	1,966	4%
World	21,278	100%	35,045	100%	55,680	100%

'Consumer spending in developing Asia […] has shown surprising resilience, even during the recession. It reached an estimated $4.3 trillion in annual expenditures in 2008—nearly a third of private consumption in the OECD countries. Assuming consumption expenditures continue to grow at roughly the same rate as in the past 20 years they are likely to reach $32 trillion and comprise about 43% of worldwide consumption by 2030, placing the region at the forefront of worldwide consumption.'[171]

At the same time, US and European consumers are being urged to rebalance their debt to savings ratio, in other words, to spend less. As a result, the 'new middle classes' of China, India and Brazil may emerge as the next generation of global consumers driving economic development throughout the world. Even taking account of the obvious differences in forecasts, a considerable shift in global consumption patterns does therefore seem more than likely.

As a result, the consumption of consumer durables is also increasing rapidly. *'The appearance of a large Asian middle class has already raised the consumption of consumer durables, and is likely to continue to do so as policies shift in favor of domestic consumption. Sales of refrigerators, television sets, mobile phones, and automobiles have surged in virtually every country in recent years.'*[172]

However, for the middle class to become a prominent force *'it will require governments to introduce policies that bolster the incomes of those already in the middle class[…] and social policies to expand the middle class—such as through greater spending in education and health.'*[173] Such policies may well have a bearing on global politics as well. The Asian Development Bank suggests that internally, middle class values may lead to greater accountability and political challenge due to the fact that leaders and activities often emerge from the middle classes. Some commentators also see a danger of tensions between the changing expectations of the populations of many of Asia's leading states and their governments' reactions while externally, shifting values and economic possibilities make this group much more likely to influence socio-political matters beyond their home country and heighten the need to manage migration much more effectively.

NB. The Asian Development Bank warns against complacency in relation to the new middle classes., nearly 1.5 billion Asians were still living on less than $2.0 per day (as opposed to an absolute definition of per capita consumption of $2–$20) and the majority of the Asian middle class still falls in the $2–$4 range, leaving them highly vulnerable to slipping back into poverty due to economic shocks.

Finally, one key factor that is often overlooked in consideration of globalisation and the increasing trends towards homogeneity of societies is the role of religion and religious adherence.

[171] Asian Development Bank (2010) Key indicators for Asia and the Pacific 2010, SPECIAL CHAPTER The Rise of Asia's Middle Class

[172] ibid

[173] ibid

In fact, in globalised economics, societies and power systems the role of religion is likely to become an even more important feature. Although in Europe, it often regarded as a fringe activity, religious faith and observance and its influence on cultures, societies and politics are, in fact, dominant for much of the rest of the world. Religion plays a major role in the majority of societies with the major religions such as Christianity, Islam and Hinduism dominating much of religious faith throughout the world. Christianity and Islam are, in particular, projected to grow throughout the 21st century while those who are non-religious and atheist are projected to decline slightly despite growing levels throughout the 20th century[174]. "*Christians and Muslims together will encompass two-thirds of the global population—more than 7 billion individuals."* (G. Bellofatto 2012)

Furthermore the migration of Islamic groups into the 'more prosperous' west and as a result Muslims' experience of an 'alien and hostile culture' may lead to further social tensions with some Islamists arguing that democracy is a purely Western Concept imposed on Muslim cultures[175].

Tension between religious and secular world views is evident in the French stance on the Burqa and controversies in a number of EU countries regarding the display of Christian crosses in schools and the workplace. Similarly, the rise of science and secular movements has led to convictions around human rights, animal testing or controversial scientific methods clashing with religious expectations.

3. Potential significance/implications

What could this mean for cultural heritage? It could be significant in the following aspects:

For European institutions and cultural heritage assets, there may be a reduction in and/or transfer of philanthropic support for their activities as the Western economies become less significant alongside growing wealth from individuals, corporations and states within the emerging BRIC states. Managing the transfer of philanthropic support will be critical if heritage institutions and assets are to maintain their activities.

As economic and political power moves and adjusts within a new global order of things, the emphasis on Western cultural heritage and histories is likely to become less relevant and the focus will shift to the cultural heritages of many more and less familiar cultures, societies and histories.

This shift in focus will provide both the need and the opportunity to transfer knowledge and research skills to globally relevant cultural settings. This will require support to enable the mobility of researchers and technology and knowledge transfers to be achieved.

The increasing middle classes in the emerging global powers will provide important new markets for attracting visitors, investments and audiences for Western cultural heritage and institutions – this will need investment in providing sympathetic and appropriate access through both physical and virtual interpretation.

In a globalised world, respect and understanding for diversity and traditions will make the protection, interpretation and access to diverse and endangered cultural heritage a key to successfully living within a globalised homogenised environment. Cultural heritage acquires a global 'binding power' equivalent to that enjoyed at nation state and continental level for some time.

Ownership of cultural and heritage assets will be challenged as emerging economies become more confident in challenging the status quo. A strong set of rules and protocols regarding intellectual property and physical ownership of cultural heritage will be necessary.

The place of cultural heritage within political systems that are not based on Western liberal democratic models of governance will be challenging and should not be assumed. State-capitalism

[174] Gina A. Bellofatto, Religious Belief in the Year 2100, The Futurist, September-October 2012 (Vol. 46, No. 5)

[175] Council on Foreign Relations: http://www.cfr.org/publication/8034/islam.html

systems may have very different attitudes to and expectations of cultural heritage within the fabric of society and with different policy prescriptions.

4. References and further reading

- Asian Development Bank (2010) Key indicators for Asia and the Pacific 2010, SPECIAL CHAPTER The Rise of Asia's Middle Class
- G. Ritzer (2003), "*The Globalization of Nothing*", SAIS Review, Vol. 23, No. 2, Summer-Fall.
- Gina A. Bellofatto (2012), "*Religious Belief in the Year 2100"* in The Futurist, September-October 2012 (Vol. 46, No. 5)
- Jan Aart Scholte (2001), "*The Globalization of World Politics*", in J. Baylis and S. Smith (eds.), The Globalization of World Politics, An Introduction to International Relations, Oxford University Press, 2001
- National Intelligence Council – USA (2008), '*Global Trends 2025 – A transformed world*'
- Nayef R.F. Al-Rodhan and Gérard Stoudmann (2006), "*Definitions of Globalization: A Comprehensive Overview and A Proposed Definition*", Geneva Centre for Security Policy, 2006
- Robert Gilpin (2001), Global Political Economy, Princeton University Press
- T. Larsson (2001), "*The Race to the Top: The Real Story of Globalization"*, Cato Institute
- UK Defence Academy, Ministry of Defence (2010) '*Global Strategic Trends – Out to 2040*', 4th edition update9 – Feb 2010
- UNCTAD World Investment Forum 2012 - Sovereign Wealth Fund Round Table Issues Note

Intellectual Property

1. Description

Intellectual Property (IP) in general terms protects the application of ideas and information that have commercial value. The term is often used as a catch all that can incorporate a number of forms such as patents, copyrights, designs and trademarks. In the modern era it may be said that knowledge capital, more than physical capital, increasingly drives economic success.[176] National Science Foundation research in the United States, for example, suggests that knowledge and technology industries have become a major part of the global economy, representing some 29% of world GDP compared with a 26% share in 1992[177].

In terms of cultural heritage, issues around intellectual property protection have tended to centre for a number of years around traditional debates about ownership of ancient artefacts and the protection of indigenous rights and cultures of indigenous peoples. However, with the digital age, further issues around IP are emerging for the cultural heritage sector and the focus of this particular driver is less about the traditional questions of IP and more about protection in the digital arena.

2. Evidence and signs of change

The increasing pace of technological change and innovation has led to an increased digitisation of a number of areas of business and the economy and the cultural heritage sector is no less affected by this.

The World Intellectual Property Organisation notes*:*

> *Throughout the legal history of copyright, the conjunction of technological innovations … and the ascendance of new right holders … has forced the legal institution of copyright to make amendments. However, what is perhaps particular about the contemporary conjunction is that we seem to be moving from a print culture, in which the Western institution of IP was conceived, to a new type of global information culture of which we are only beginning to see the contours*[178]*.*

The implications of this shift from print to global information culture challenges conventional ideas and norms (both legal and ethical) regarding IP in the cultural heritage sector and acknowledges that it remains *"an open question and subject of heated debate whether these ideas are obsolete in a networked digital technology connecting most of the globe instantaneously into one big marketplace of ideas".*[179]

In amongst the traditional area of patents filed and a growth in total patent filings (see figure[180]), trends such as digitisation of IP have been a particular area of debate. Digitisation has opened up the possibility of straightforwardly copying and exchanging of digital products and has impacted strongly on sectors such as the entertainment industry that has traditionally relied on copyrighting as a key source of protection.

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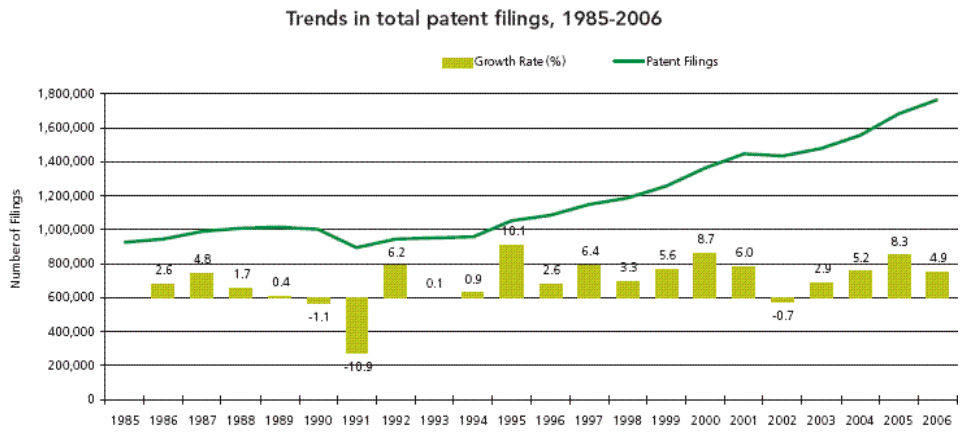
[176] OECD (1996) 'The Knowledge-based economy', Paris.
[177] http://www.nsf.gov/statistics/seind10/c6/c6s1.htm
[178] Towards Intellectual Property Guidelines and Best Practices for Recording and Digitizing Intangible Cultural Heritage - A Survey of Codes, Conduct and Challenges in North America, World Intellectual Property Organisation (WIPO) by Martin **Skrydstrup**, p.104
[179] Ibid.,
[180] WIPO (2008) 'World Patent Report', http://www.wipo.int/ipstats/en/statistics/patents/wipo_pub_931.html#a11



Graph: Trends in total patent filings, 1985-2006 (World Patent Report)

The debate has been particularly evident in the area of copyright. Here clear positions / areas of debate have emerged around those, on one side, that support 'all rights reserved' models of IP in which the role of IP is to provide complete protection and appropriation for inventors. (This has been described as the 'Hollywood model'.)

Other models, however, argue that the current system is not sufficiently flexible. One example, here is the Creative Commons movement.[181] This was developed as a more flexible copyright model, replacing "all rights reserved" with "some rights reserved". Wikipedia – the web-based online encyclopaedia is one of the notable platforms using a Creative Commons licenses. In this respect Creative Commons seeks to present a mid-ground option, between complete protection, against greater openness and the reduction in rewards for innovators.

These developments represent a significant challenge to the traditional basis of the IP system. It is unclear, however, whether the IP system is able to respond effectively to these challenges and this has led some to question the future role of IPR in areas such as copyright.[182]

Furthermore, Pine and Gilmore[183] have described a trend to move to the development of the "Experience Economy" - an economy largely based on providing consumers with an experience and a service based on their participation in events and based on their own personal circumstances allied to a positive association through the consumption of brand-name products. For example, cultural heritage organizations with rare and unique collections are being increasingly pursued by organisations with commercial interests (e.g. Google Docs) in the Experience Economy for their content, their integrity in providing the content and their authority, or branding, as being recognizable to the consumer.

These aggregators of information have placed considerable financial value on the content received from authoritative respected sources, increasing the pressure on the museum or gallery to participate more in the Experience Economy. Museums and Cultural Heritage Institutions will therefore have to consider new form of intellectual property protection going forward.[184]

Impacts in different areas

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[181] www.creativecommons.org/

[182] Ernest Adams 'Designer's Notebook: The End Of Copyright' - http://www.gamasutra.com/view/feature/2470/designers_notebook_the_end_of_.php

[183] Pine, J. & Gilmore, J. (1999) Experience Economy: Work is Theatre and Every Business a Stage, Harvard Business School Press , Boston

[184] WIPO Guide on Managing Intellectual Property for Museums by Rina Elster Pantalony, August 2007 - http://www.wipo.int/copyright/en/museums_ip/guide.html#P64_3695

Museums, libraries, archives and other cultural heritage institutions (CHIs) play an invaluable role in preserving and providing access to their collections but preserving and providing access to these collections can raise a number of IP issues, especially in a digital environment.

For example, collections of "traditional" cultural expressions and "traditional" knowledge raise a specific set of IP issues. Indigenous and traditional communities voice concerns that sometimes documenting and displaying a traditional song or a tribal symbol, for example, make them vulnerable to misappropriation. The very process of preservation of traditional cultural expressions can therefore trigger concerns about their lack of legal protection.[185]

For CHIs therefore there are two-sides to potential impact with respect to IP in the digital age: firstly, they are users of IP and therefore will require procedure and policies to engage with a more open IP environment; and secondly, they are creators and originators of IP in their own right and will need to consider new approaches to the management of IP. [186]

Traditionally, CHIs have seen IP, in particular copyright, as inhibiting their ability to carry out their mission and mandate. According to WIPO, it is the general view that the IP interests of third parties (the rights holders in many cases) have prevented CHIs from carrying out reproduction for preservation purposes, reproduction and distribution for educational purposes and reproduction and distribution as a means of providing access to collections. While IP laws necessitate additional administrative functions on the part of CHIs, there is a growing awareness that IP may also provide the means to promote national cultural heritage as a whole. Finally, if managed well, IP may also hold the promise of developing sustainable cultural heritage programming for museums.[187]

In this instance, the digital age and new business models for IP in the Experience Economy, particularly with the proliferation of the Internet, will raise issues in some of the following areas:

- which rights apply and when (display, public communication, reproduction, 'making available', others)?;
- what are the limitations and exceptions to rights (e.g. preservation, education, access to content by visually-impaired persons);
- how is online access to CH managed in terms of rights clearances and third-party interests;
- what is the role of internet intermediaries, e.g. search engines; and,
- what are the issues related to documentation, orphan works, the public domain.[188]

Similarly, the traditional position of CHIs as predominantly users of IPR content is shifting, with the advent of digital technologies including the Internet. CHIs now face opportunities and challenges as managers of their own developed 'content' and complementing their roles as custodians and providers of access to cultural content with a more commercial appreciation and outlook.

In terms of CHIs as right holders of IP, the following will develop as issues:

- the need for new emerging business models for CHIs;
- an understanding of the commercial value of CH;
- online access to museum and archive collections, new licensing and technological tools;

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[185] http://www.wipo.int/tk/en/culturalheritage/museums-archives.html

[186] *Intellectual Property and Cultural Heritage at the crossroads of law, technology and business: a view from WIPO* - Presentation at the INTERNATIONAL CONFERENCE ON INTELLECTUAL PROPERTY AND CULTURAL HERITAGE IN THE DIGITAL WORLD, Madrid, October 29, 2009 – Richard Owens, WIPO

[187] WIPO Guide on Managing Intellectual Property for Museums by Rina Elster Pantalony, August 2007 - **http://www.wipo.int/copyright/en/museums_ip/guide.html#P64_3695**

[188] *Intellectual Property and Cultural Heritage at the crossroads of law, technology and business: a view from WIPO* - Presentation at the INTERNATIONAL CONFERENCE ON INTELLECTUAL PROPERTY AND CULTURAL HERITAGE IN THE DIGITAL WORLD, Madrid, October 29, 2009 – Richard Owens, WIPO

- CH as a driver in online education; and preservation issues of web-based materials and archives.[189]

3. Potential significance/implications

Some research argues that IP is 'dead' but the evidence suggests that, in fact, it has simply changed its focus to embrace more open models of protection in the digital ages. In many ways, IP will provide future opportunities for the CH sector and will be a key element in generating revenue for institutions in the future.

What could this mean for cultural heritage? It could be significant in the following aspects:

- **Policy and Regulation:**
  For CHIs as users of IP, there will be a need to develop and review policies and procedures to deal with IP issues in the digital age. This will involve engaging proactively with rightholders to secure open access to IP that will be expected by the users of CHIs.
- **Business model development:**
  For CHIs that are developing content, education and training materials and generally open accessible information the development of CHI business models that will embrace and engage with IP creatively in the 21st century will be important.

  In the Experience Economy, allowing access to external parties over the internet will be an avenue of sustainable funding for CHIs.

Possible research implications

- Policy and procedural approaches (rights, access, display, reproduction, communication etc…
- Business model research
- Online access tools and techniques
- Digitised content management
- Digitised archiving and accessibility

4. References and further reading

- OECD (1996) 'The Knowledge-based economy', Paris.

- Towards Intellectual Property Guidelines and Best Practices for Recording and Digitizing Intangible Cultural Heritage - A Survey of Codes, Conduct and Challenges in North America, World Intellectual Property Organisation (WIPO) by Martin Skrydstrup, p.104

- WIPO (2008) 'World Patent Report', http://www.wipo.int/ipstats/en/statistics/patents/wipo_pub_931.html#a11

- WIPO Guide on Managing Intellectual Property for Museums by Rina Elster Pantalony, August 2007 - http://www.wipo.int/copyright/en/museums_ip/guide.html#P64_3695

- *Intellectual Property and Cultural Heritage at the crossroads of law, technology and business: a view from WIPO* - Presentation at the INTERNATIONAL CONFERENCE ON INTELLECTUAL PROPERTY AND CULTURAL HERITAGE IN THE DIGITAL WORLD, Madrid, October 29, 2009 – Richard Owens, WIPO

[189] *Intellectual Property and Cultural Heritage at the crossroads of law, technology and business: a view from WIPO* - Presentation at the INTERNATIONAL CONFERENCE ON INTELLECTUAL PROPERTY AND CULTURAL HERITAGE IN THE DIGITAL WORLD, Madrid, October 29, 2009 – Richard Owens, WIPO

- There are some relevant articles at: www.creativecommons.org/

Natural hazards and disasters

1. Description

Natural disasters and hazards obviously predate human experience and are ubiquitous. They may encompass a range of events that are related to man's experience of the Earth and its natural environment and will include, inter alia, geological phenomenon such as volcanic eruptions, earthquakes, floods, tsunami etc; climatic events such as tornadoes, hurricanes and cyclones, heat waves and droughts and blizzards; and other events that may, in some degree, be exacerbated by human activity such as wild fires, landslides, and avalanches.

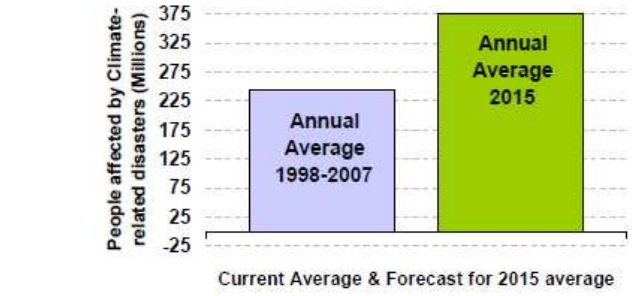
In terms of a defining natural disasters, extreme events – typically, weather, climate and geological – leading to a natural disaster are generally defined as the occurrence of a value or variable of the event above (or below) a threshold value near the extreme ends ('tails') of the range of observed values of the variable.[190]

This can entail droughts, floods, geophysical phenomenon (earthquakes and tsunamis) and weather extremes (hurricanes, tornados, tropical cyclones etc…). For example, different levels attributed to the measurement of categories of hurricanes (Saffir–Simpson Hurricane scale), typhoons (Fujita scale) or earthquakes (Richter Scale).

Some climate extremes (e.g., droughts, floods) may be the result of an accumulation of weather or climate events that are, individually, not extreme in themselves, but the cumulative effect has a significant impact on human populations which are affected. Conversely, not all extremes necessarily lead to serious impacts.[191]

2. Evidence and signs of change

Numbers of people affected by climate-related natural disasters	
Annual average, 1998–2007	243 million
Forecast, 2015	375 million
% Change	Increase by 54%



Source: CRED EM-DAT Global natural disaster occurrence and impact: 1980–2007.

Current data and trends suggest that increasing numbers of people are and will be affected by emergencies caused by natural disasters in coming decades. This will be particularly evident in developing countries. It is predicted that not only will extreme events become more frequent, but it appears that they are becoming increasingly unpredictable and complex.

This complexity is shown by differing figures and estimates, but the general trend remains the same.

According to a report by Oxfam, by 2015, on average 375 million people are likely to be affected by climate related disasters. This is an increase of 50% of those affected in an average year over the past

[190] Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation - Special Report of the Intergovernmental Panel on Climate Change, 2012 p.111

[191] Ibid.,

decade.[192] Similarly, according to the IPCC, in 2011 263 million people were affected by disasters which relates to 110 million more than in the tsunami year of 2004.[193]

Looking forward, while evidence exists that increases in greenhouse gases have caused changes in some types of extremes, it is difficult to conclude on whether the climate in general has become more or less extreme and the knock-on effects of this. From a physical climate science perspective it is difficult to devise a comprehensive set of metrics that encompass all aspects of extreme behaviour in the climate and therefore allow a modelling to take place.[194]

However, there is evidence gathered since the mid 1950s that there has been a change in some extremes and a trend toward continued change.

Climate change has led to changes in the frequency, intensity, spatial extent, duration, and timing of extreme weather and climate events. There is also evidence that some extremes have changed as a result of anthropogenic (Human impact on the environment) influences, including increases in atmospheric concentrations of greenhouse gases. As highlighted in the climate change driver, models project substantial warming in temperature extremes by the end of the 21st century and this is likely to result in knock on effects in the climate system in terms of other weather and climate extremes. [195]

Impacts in different areas

There are several areas where there is likely to be predicted impact with varying degrees of certainty. The following table summarises the key area of impact and the predicted impact on each by the end of the 21st century:

[192] Forecasting the numbers of people affected annually by natural disasters up to 2015, Centre for Research on the Epidemiology of Disaster (CRED) Oxfam

[193] Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation - Special Report of the Intergovernmental Panel on Climate Change, 2012 p.111

[194] Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation - Special Report of the Intergovernmental Panel on Climate Change, 2012 p.124

[195] http://www.ipcc.ch/docs/COP17/stocker_durban_wg1_presentation.pdf

		Projected Changes (up to 2100) with Respect to Late 20th Century
Weather and Climate Variables	Temperature	***Virtually certain decrease*** in frequency and magnitude of unusually cold days and nights at the global scale. ***Virtually certain increase*** in frequency and magnitude of unusually warm days and nights at the global scale. ***Very likely increase*** in length, frequency, and/or intensity of warm spells or heat waves over most land areas.
	Precipitation	***Likely increase in*** frequency of heavy precipitation events or increase in proportion of total rainfall from heavy falls over many areas of the globe, in particular in the high latitudes and tropical regions, and in winter in the northern mid-latitudes.
	Winds	***Low confidence in projections*** of extreme winds (with the exception of wind extremes associated with tropical cyclones).
Phenomena Related to Weather and Climate Extremes	Monsoons	***Low confidence in projected changes*** in monsoons, because of insufficient agreement between climate models.
	El Nino and other modes of variability	***Low confidence in projections*** of changes in behaviour of ENSO and other modes of variability because of insufficient agreement of model projections.
	Tropical cyclones	***Likely decrease*** or no change in frequency of tropical cyclones. ***Likely increase*** in mean maximum wind speed, but possibly not in all basins. ***Likely increase*** in heavy rainfall associated with tropical cyclones.
	Extratropical cyclones	***Likely impacts*** on regional cyclone activity but low confidence in detailed regional projections due to only partial representation of relevant processes in current models. ***Medium confidence*** in a reduction in the numbers of mid-latitude storms. ***Medium confidence*** in projected poleward shift of mid-latitude storm tracks.
Impacts on physical environment	Droughts	***Medium confidence*** in projected increase in duration and intensity of droughts in some regions of the world, including southern Europe and the Mediterranean region, central Europe, central North America, Central America and Mexico, northeast Brazil, and southern Africa. ***Overall low confidence*** elsewhere because of insufficient agreement of projections.
	Floods	***Low confidence*** in global projections of changes in flood magnitude and frequency because of insufficient evidence. ***Medium confidence*** (based on physical reasoning) that projected increases in heavy precipitation would contribute to rain-generated local flooding in some catchments or regions. ***Very likely earlier spring*** peak flows in snowmelt- and glacier-fed rivers.
	Extreme sea level and coastal impacts	***Very likely*** that mean sea level rise will contribute to upward trends in extreme coastal high water levels. ***High confidence*** that locations currently experiencing coastal erosion and inundation will continue to do so due to increasing sea level, in the absence of changes in other contributing factors.
	Other physical impacts	***High confidence*** that changes in heat waves, glacial retreat, and/or permafrost degradation will affect high mountain phenomena such as slope instabilities, mass movements, and glacial lake outburst floods. High confidence that changes in heavy precipitation will affect landslides in some regions. ***Low confidence*** in projected future changes in dust activity.

Source: Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation - Special Report of the Intergovernmental Panel on Climate Change, 2012 p.119-120

3. Potential significance/implications

What could this mean for cultural heritage? It could be significant in the following aspects:

Natural disasters and risk avoidance has the same issues and potential significant implications the world over and through all sectors. The unpredictability of this area means that efforts must focus on risk identification and mitigation strategies going forward.

The World Bank developed a view on Building Safer Cities: The Future of Disaster Risk and specifically addressed the issues of cultural heritage and natural disaster[196]:

- **Don't underestimate the impact to cultural heritage:** All the risks outlined above and the uncertainty with which predictions can be made means that environmental degradation, the inability to manage fluctuations in the volume of rivers, and other weather-related natural disasters are on the increase in many parts of the world can destroy precious heritage sites.
- **Develop disaster scenarios for cultural heritage sites:** Establishing priorities, improving the security of collections and buildings, and training staff are all of the utmost importance. Although many institutions have emergency plans they need to be revised to address a range of disasters.
- **Education and training of the public about the risks to cultural heritage**: Public helpers and volunteers will create an active constituency to support preventive measures.
- **Perception of risk**: It has been shown that perception of risk to cultural heritage varies significantly through populations and cultures. Working to increase the perception of risk in vulnerable areas is going to be important in protecting cultural heritage.

Possible research implications

- Risk management strategies for cultural heritage
- Cultural heritage specific data collection
- Public perception research

4. References and further reading

- Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation - Special Report of the Intergovernmental Panel on Climate Change, 2012

- Forecasting the numbers of people affected annually by natural disasters up to 2015, Centre for Research on the Epidemiology of Disaster (CRED) Oxfam

- Intercontinental Panel for Climate Change (2011), '*Thomas Stocker presentation to Working Group 1 – Physical Science Basis*', http://www.ipcc.ch/docs/COP17/stocker_durban_wg1_presentation.pdf

- World Bank, 2003, Building Safer Cities: the future of disaster risk - http://www.pacificdisaster.net/pdnadmin/data/original/world_bank_%20building_safer_cities_future_%20dr_03.pdf

[196] World Bank, 2003, Building Safer Cities: the future of disaster risk - http://www.pacificdisaster.net/pdnadmin/data/original/world_bank_%20building_safer_cities_future_%20dr_03.pdf

Climate change

1. Description

Climate change is used as a catch-all term that can refer to the cumulative effects of processes in the Earth's macro-ecosystem around areas such as: greenhouse gas composition (in particular CO_2 in the atmosphere), surface temperature, precipitation (rain, snow, hail), snow cover, sea and river ice, glaciers, sea level, climate variability, extreme weather events.

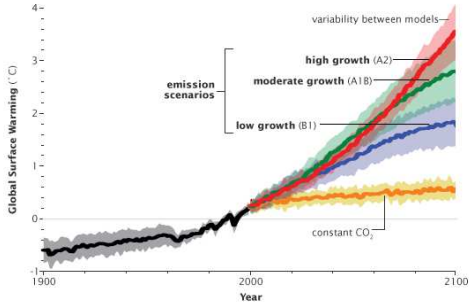
There is an increasing, new and stronger body of evidence that "most of the warming in the Earth's temperature observed over the last 50 years is attributable to human activities"[197]. Human activities have lead to the increase of atmospheric concentrations of greenhouse gases and changes in land use, inducing an increase of global averaged atmospheric temperatures. The current rate of increase of greenhouse gases is unprecedented during at least the past 20,000 years.[198]

2. Evidence and signs of change

Climate change is making itself evident in a range of factors sometimes conflicting and contradictory: global warming; rising sea level; mitigation vs. adaptation; acidification

Global warming

The Earth is warming up. Models predict that as the world's population and economies consume ever greater amounts, increasing fossil fuel combustion will result in greater greenhouse gas concentrations and ultimately a rise in the Earth's average surface temperature of between 2°C and 6°C by 2100. The physical and social impacts and disruption on a local, regional and global basis will be significant. These impacts and disruptions to the environment, populations and eco-systems will generate varied responses from nations and societies.



http://earthobservatory.nasa.gov/Features/GlobalWarming/page5.php

However, uncertainty regarding the rate, type and magnitude of change remains an issue. It is likely there will a 2.0°C rise in temperature by 2060[199] irrespective of what action is taken from now on due to historic greenhouse gas emissions. However, human activity and attitudes to climate change will play a role in global warming as our future emissions will determine the extent of the temperature increase and the knock-on effects.[200]

Already a number of wide-ranging impacts of global warming have been documented including retreating glaciers, longer growing seasons, shift of species ranges, and health impacts due to heat waves of unprecedented magnitude[201].

Current civilisation in terms of agriculture and population distribution has developed based on the current climate. The more climate changes and the more rapidly it changes the greater the cost of adaptation[202].

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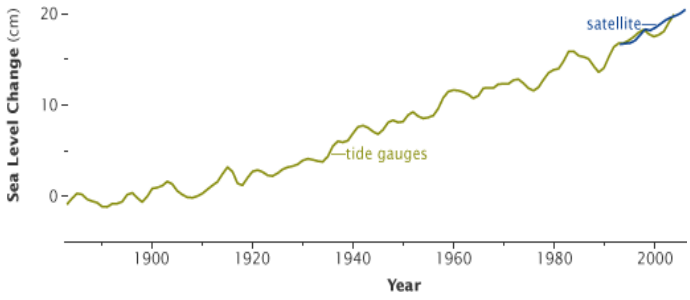
[197] Intergovernmental Panel on Climate Change. Third Assessment Report of Working Group II on Climate Change Impacts, Adaptation and Vulnerability, 2001.
[198] PREDICTING AND MANAGING THE EFFECTS OF CLIMATE CHANGE ON WORLD HERITAGE - A joint report from the World Heritage Centre, its Advisory Bodies, and a broad group of experts to the 30th session of the World Heritage Committee (Vilnius, 2006)
[199] Natural England (2009), *Global Drivers of Change to 2060*, Natural England Commissioned Report NECR0304 pg 4
[200] IPCC Report 2007
[201] IPCC Fourth Assessment Report (2007)

These changes will have consequences that vary over time and geographical extent. For example, some regions will experience desertification, others will experience permanent inundation, and tundra and permafrost are likely to melt, releasing methane, possibly in large amounts. Land available for habitation is likely to reduce and patterns of agriculture are likely to change. Tropical diseases, such as malaria, are likely to move north and into previously temperate zones. Extreme weather events will change in frequency and intensity, threatening densely populated littoral, urban and farming regions with changing growing seasons, flooding and storm damage, and resulting in increased migration.[203]

Rising sea levels

Global sea levels rose at an average rate of 1.8mm per year from 1961 to 1993 with a faster rate of 3.1mm per year from 1993 to 2003. Between 1870 and 2000, the sea level has risen 0.7 feet with an average increase of 1.7 millimetres per year. Furthermore this rise is found to be increasing since between 1993 and 2009, NASA satellites have shown sea levels to have increased by 0.16 feet, amounting to 3 millimetres per year[204] and likely to have been caused by the adverse effects of global warming.



It is projected that sea levels will continue to rise at an accelerated rate rising by between 0.18 and 0.59m[205]over the next century putting at risk the estimated 23% of the world's population that lives both within 100 km distance of the coast and less than 100m above sea level. The population of coastal areas is also likely to increase over the next century from 1.2 billion to 5.2 billion placing further populations at risk.[206]

Rising sea levels are projected to lead to an increased risk of inland flash floods and more frequent coastal flooding and erosion[207]. Coastal water is likely to become saltier, wetlands are likely to become endangered and valuable land and coastal communities are going to become inundated[208].

Impacts in different areas

Impacts of climate change on cultural heritage are likely to be diverse, interconnected and wide ranging. For cultural and natural heritage systems, the impacts are likely to be far-reaching and have already begun to take effect.

Cultural and nature-based heritage sites-- from Charles Darwin's favourite barrier reef in Belize and South Africa's famous West Coast National Park to 600 year-old Thai ruins and archaeological sites in Scotland-- are increasingly threatened by climate change[209]. It is challenging to predict the exact impact of climate change on cultural heritage beyond saying that it will have physical, social and cultural impacts and will change the way people relate to their environment.

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[202] NASA Earth Observatory, found at: http://earthobservatory.nasa.gov/
[203] UK MOD Development, Concepts and Doctrine Centre (DCDC) Global Strategic Trends Programme (2007) – Global Strategic Trends Out to 2040 pg 12/13
[204] IPCC Fourth Assessment Report (2007)– Direct Observations of Recent Climate Change
[205] NASA Earth Observatory, found at: http://earthobservatory.nasa.gov/
[206] IPCC Impacts, Adaptation and Vulnerability
[207] IPCC Fourth Assessment Report(2007)
[208] Union of Concerned Scientists (UCSUSA) – Projections of Climate Change, found at: http://www.ucsusa.org/global_warming/science_and_impacts/science/projections-of-climate-change.html
[209] http://www.unep.org/Documents.Multilingual/Default.asp?DocumentID=485&ArticleID=5412&l=en

In terms of natural world heritage, the impact is likely to come in terms of challenges to terrestrial biodiversity, mountainous ecosystems and marine ecosystems[210]. Where climate change exacerbates the incidence of pests, pathogens and fires; and warmer temperatures are achieved in deserts this could threaten species that now exist near their heat tolerance limit, as desertification increases.[211] As far as mountainous glaciers are concerned, widespread retreats are being observed among which many are listed as World Heritage sites. The projected declines in glaciers, permafrost and snow cover will affect soil stability and hydrological systems, eventually causing many river systems to dry up[212]. The melting of glaciers has obvious consequences for the aesthetic values of these sites, but it will also have an impact on surrounding natural ecosystems[213]. Furthermore, the impact on marine ecosystems is likely to be affected where increased coral bleaching and mortality would profoundly affect the productivity of reef ecosystems[214].

Beyond natural heritage, there are implications and impacts for cultural heritage sites, landscapes assets and artefacts.

UNESCO notes, "*archaeological remains and related evidence will be affected when the hydrological, chemical and biological processes of the soil change. Desertification, salt weathering and erosion is already threatening cultural heritage in desert areas. Historic building materials are more porous than modern constructions and consequently increases in soil moisture might result in greater salt mobilisation; salt crystallisation; and, ultimately damage to decorated surfaces of buildings. Timber and other organic building materials may be subject to increased biological infestation in altitudes and latitudes that may not have been previously affected. Flooding may damage building materials not designed to withstand prolonged immersion. Increases in storminess and wind gusts can lead to structural damage*." [215]

Finally, more difficult to predict in terms of impact, but nonetheless crucial is the impact of climate change on social and cultural heritage. This will be influenced by changes in society, changes in demographics, people's behaviour, and the impact of conflicting societal values and land use planning which will also need to evolve in the face of Climate Change**[216]**.

Climate change will therefore have physical, social and cultural impacts on cultural heritage. It will change the way people relate to their environment and will be characterised by challenges to the way people live, work, worship and socialise in buildings, sites and landscapes with heritage values. Climate change and the socio-economic changes that will result will have a greater possible impact on the conservation of cultural heritage than Climate Change alone.**[217]**

3. Potential significance/implications

For cultural heritage moving forward, the key implication and decision to be made – like all sectors of society – is the question of mitigation vs. adaptation: is the strategy either/or; or a combination of the both?

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[210] PREDICTING AND MANAGING THE EFFECTS OF CLIMATE CHANGE ON WORLD HERITAGE - A joint report from the World Heritage Centre, its Advisory Bodies, and a broad group of experts to the 30th session of the World Heritage Committee (Vilnius, 2006)

[211] UNESCO Policy document on the impacts of climate change on World Heritage Properties; World Heritage Centre, CLT- 2008/WS/6, Paris, p.3

[212] UNESCO Policy document on the impacts of climate change on World Heritage Properties; World Heritage Centre, CLT- 2008/WS/6, Paris, p.3

[213] PREDICTING AND MANAGING THE EFFECTS OF CLIMATE CHANGE ON WORLD HERITAGE - A joint report from the World Heritage Centre, its Advisory Bodies, and a broad group of experts to the 30th session of the World Heritage Committee (Vilnius, 2006)

[214] UNESCO Policy document on the impacts of climate change on World Heritage Properties; World Heritage Centre, CLT- 2008/WS/6, Paris, p.3

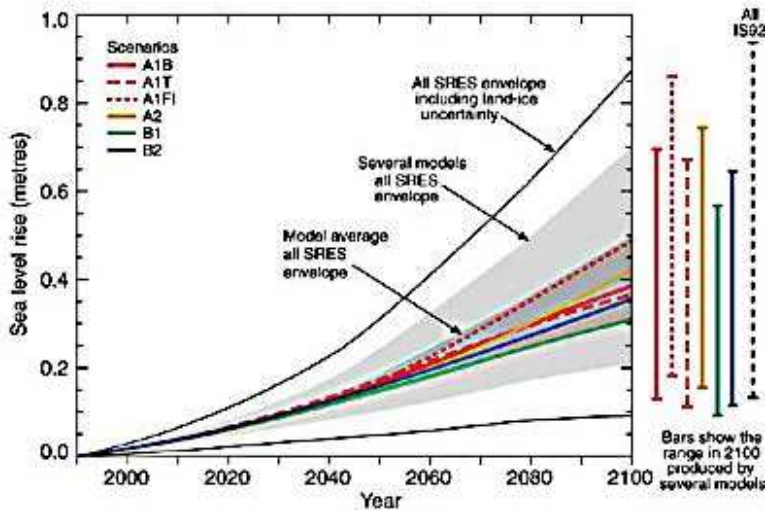
[215] Ibid.,

[216] PREDICTING AND MANAGING THE EFFECTS OF CLIMATE CHANGE ON WORLD HERITAGE - A joint report from the World Heritage Centre, its Advisory Bodies, and a broad group of experts to the 30th session of the World Heritage Committee (Vilnius, 2006)

[217] PREDICTING AND MANAGING THE EFFECTS OF CLIMATE CHANGE ON WORLD HERITAGE - A joint report from the World Heritage Centre, its Advisory Bodies, and a broad group of experts to the 30th session of the World Heritage Committee (Vilnius, 2006)

The nature and scale of the threat from climate change is influenced by human activity in relation to carbon emissions – past, present and in the future. Efforts aimed at slowing down the processes of global warming and thus mitigating against the effects of climate change are a key part of the global policy tool kit in the face of global warming.

If future projections of global warming and its extenuating effects are correct then mitigating actions could save many of the threats humans may potentially have to contend with even if not completely averting the effects of climate change. These threats include resource shortages such as food and water; sea level rise; more intense weather systems; damaged ecosystems and agriculture; extinction of species; mass migration due to 'climate refugees'[218] as well as increased risk of global conflict and terrorism due to global impacts.



However, many commentators believe that global warming is now irreversible, and that *"it is probably too late for sustainable development. Enlightened living of this kind might have worked 200 years ago in Malthus's time but not now".*[219]

The UK Intergovernmental Panel on Climate Change projects noted that even if emissions are significantly lowered in coming years, the average global temperature will continue to increase by at least 2.0°C because of previous emissions.

Global warming will undoubtedly impact life on Earth in many ways, but the extent of the change will partly depend on how the world's population and societies adapt to the changes that will occur[220] [221]. The world's best hope of survival as a planet and an ecosystem may therefore be to adapt. Adaptation will probably protect some key aspects of our global cultural heritage and society while inevitably sacrificing other aspects. *"Adaptation is a process by which individuals, communities and countries seek to cope with the consequences of climate change as well as addressing the impacts and opportunities resulting from climate change"*[222]*.*

Adapting to climate change will be expensive and require significant long term investment. A UNFCCC report concluded that the total funding needed for adaptation by 2030 could amount to $49 – 171 billion per annum globally, of which $27 – 66 billion would accrue in developing countries with the largest cost item being investment in appropriate infrastructure accounting for three-quarters of total costs. The associated political pressures that will arise from the need to invest in hard and soft infrastructures to support populations under dramatically altered circumstances has the potential to disrupt consensual ways of political decision-making. A shift towards adaptation rather than mitigation is also likely to open the flood gates to outlying technological solutions such as geo-engineering.

What could this mean for cultural heritage? It could be significant in the following aspects:

- **Data sources and generation:** UNESCO notes that there is currently a lack of data that is specifically relevant to understanding climate change impacts on World Heritage properties,

[218] James Lovelock (2007), *Climate Change on a Living Earth*, found at: http://www.jameslovelock.org/page24.html

[219] James Lovelock (2007), *Climate Change on a Living Earth*, found at: http://www.jameslovelock.org/page24.html
[220] http://earthobservatory.nasa.gov/Features/GlobalWarming/printall.php
[221] Union of Concerned Scientists (UCSUSA) – Projections of Climate Change, found at: http://www.ucsusa.org/global_warming/science_and_impacts/science/projections-of-climate-change.html
[222] Environmental Protection Agency Ireland

particularly cultural properties.[223] However, collecting data is an expensive operation and requires significant resource which is not always forthcoming when more certain imminent issues require a similar level of data. Without data however, the capacity to assess the loss of key values of World Heritage properties as a consequence of climate change is reduced. Addressing gaps in knowledge, information and capacity, and performing vulnerability assessments will assist in determining priorities for management action.

- **Role of cultural heritage in society:** The shifting demographic patterns are likely to change societal perceptions of the relevance of different kinds of cultural heritage. Further socio-economic research, such as cost-benefit analyses, valuing the economic losses from climate change and contingent valuation, as well as research into the impacts of climate change on societies, particularly traditional ones or in sites such as cultural landscapes where the way of life contributes to the Outstanding Universal Value will be important[224]. Understanding the climate change impacts that are causing changes in society i.e. movement of peoples, displacement of communities, their practices, livelihoods, and their relation with their heritage is important. Finally, working to develop a broader understanding of the adaptation implications for the cultural heritage sector will be vital.
- **Natural heritage impact:** Generally, identifying natural World Heritage properties most at risk from the impacts of climate change to enable a clearer identification of priorities for overall response actions to avoid or alleviate impacts will be important. Taking into consideration areas such as biodiversity, geodiversity and beauty will be important. This will allow the development of the most suitable monitoring and evaluation systems to enable the most effective detection of climate change and its impacts at natural properties to project how these impacts will threaten natural heritage over time and space.[225]

Possible research implications

- **Impact assessment of and understanding of natural heritage sites** e.g. Regional earth observation for improved impact assessment of sites; identify natural properties most at risk from the impacts of climate change to enable a clearer identification of priorities for overall response actions to avoid or alleviate impacts;
- **Monitoring and evaluation systems**
- **Properties research** - identify how properties contribute to greenhouse gas emissions, sequestration and storage.
- **Sustainable Management of Cultural Heritage** – e.g. synthesizing data and modelling; development of indicators; Monitoring change; or, Modelling and projecting climate behaviour
- **Understanding materials vulnerability in cultural heritage sites** e.g. materials (indoor, outdoor, buried) to climate variables (for example, particularly too much or little moisture effects)
- **Preventing damage** techniques and technologies
- **Understanding climate change impacts causing changes in society** i.e. movement of peoples, displacement of communities, their practices, livelihoods, and their relation with their heritage.

4. References and further reading

- Intergovernmental Panel on Climate Change (2001), "*Third Assessment Report of Working Group II on Climate Change Impacts, Adaptation and Vulnerability*"

[223] UNESCO Policy document on the impacts of climate change on World Heritage Properties; World Heritage Centre, CLT- 2008/WS/6, Paris, p.5
[224] UNESCO Policy document on the impacts of climate change on World Heritage Properties; World Heritage Centre, CLT- 2008/WS/6, Paris, p.6
[225] Ibid., pg. 10

- Predicting and managing the effects of climate change on world heritage - A joint report from the World Heritage Centre, its Advisory Bodies, and a broad group of experts to the 30th session of the World Heritage Committee (Vilnius, 2006)

- Natural England (2009), *Global Drivers of Change to 2060*, Natural England Commissioned Report NECR0304

- UNESCO Policy document on the impacts of climate change on World Heritage Properties; World Heritage Centre, CLT- 2008/WS/6, Paris

- James Lovelock (2007), *Climate Change on a Living Earth*, found at: http://www.jameslovelock.org/page24.html
- UK MOD Development, Concepts and Doctrine Centre (DCDC) Global Strategic Trends Programme (2007) – Global Strategic Trends Out to 2040 pg 12/13

Crowdfunding and giving for cultural heritage

1. Description

Context

The availability of funding is important for cultural heritage – and research on cultural heritage – as it is for other fields. This driver description considers the non-State or non-Governmental sources and models of funding that could be significant for cultural heritage.

The field of cultural heritage is familiar with the funding roles of philanthropy, corporate sponsorship and charitable foundations. A recent report on fundraising activity in arts, culture, heritage and sports organisations pointed to a changing and challenging environment – as a result of the financial crisis (and its impact on the behaviour of donors) and the anticipated consequences of reduced government spending. Factors considered to have affected culture and heritage organisations to a larger extent included:

- A public perception that arts, culture, heritage and sports are less in need of charitable support.
- Existing donors to arts and culture tend to be enthusiastic supporters who will show commitment, even during challenging times.[226]

What's changing?

Donations from individuals, corporate, trusts and foundations are well-established but the models for raising funds and brokering relationships are changing. One of the most significant developments has been 'crowdfunding' – mediated platforms that are supported by Internet technologies, which connect people (that are trying to generate finance to set up various initiatives) with investors or donors. Crowdfunding initiatives can operate on a for-profit or a not-for-profit basis.

What's driving crowdfunding?

- The Internet is a key driver – enabling new relationships to be brokered quickly and easily
- In many cases, initiatives that seek support through crowdfunding platforms would find it difficult to access other forms of (commercial) finance – although this isn't necessarily true in all instances.
- Crowdfunding can help to overcome geographical barriers, where traditionally proximity has been an important factor in brokering relationships between financers and those seeking funding for businesses and projects.
- A sense of engagement and affiliation: many crowdfunding initiatives give investors a chance to invest (even small sums of money) in projects and initiatives that they particularly

[226] Amrita Sood & Cathy Pharoah, Fundraising activity in arts, culture, heritage and sports organisations: a qualitative study, The Culture and Sport Evidence (CASE) programme, Department for Culture, Media and Sport (DCMS) in collaboration with the Arts Council England, English Heritage, the Museums, Libraries and Archives Council and Sport England, September 2011

appreciate. In one Crowdfunding platform, investors in musical artists/bands – that are seeking funds to record albums etc – are termed as 'believers'. [227]

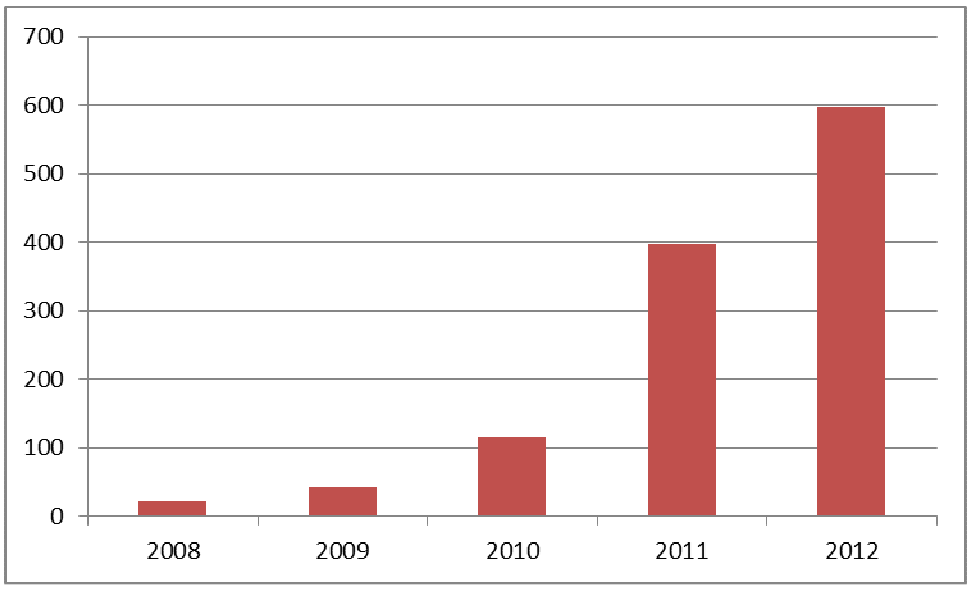
Crowdfunding investor/donor motivations include intangible elements such as status, social esteem, identification[228]. Ordanini et al (2011) also provide useful insights on crowdfunding based on the literature on brand community and donor behaviour.

- From the brand community literature, consumers or users can be actively engaged in activities such as new product development and experience sharing[229] . According to the literature, members of the brand-community are motivated by fun, learning, identification and status[230] .
- The literature on donor behaviour indicates that 'people who contribute to charitable causes are motivated by self-esteem, public recognition, satisfaction of expressing gratitude for one's own wellbeing, and relief from feelings of guilt and obligation'.[231][232]

2. Evidence and signs of change

Interest in crowdfunding models has increased significantly over recent years. A proxy of this is the significant increase in search results on 'crowdfunding' on Google Scholar (Chart).

Chart: Google Scholar results for 'Crowdfunding' by year[233]

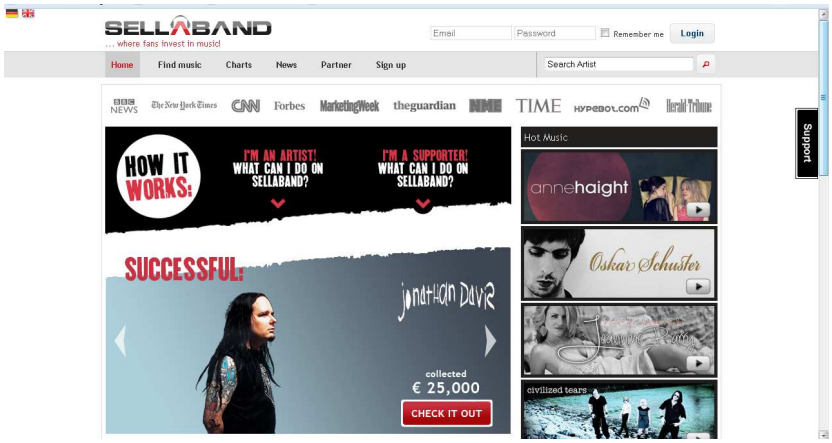


[227] Sellaband https://www.sellaband.com/
[228] Andrea Ordanini, Lucia Miceli, Marta Pizzetti, A. Parasuraman, 'Crowd-funding: transforming customers into investors through innovative service platforms', Journal of Service Management Vol. 22 No. 4, 2011, pp. 443-470
[229] Ouwersloot, H. and Oderkerken-Schroder, G. (2008), "Who's who in brand communities and why?", European Journal of Marketing, Vol. 42 Nos 5/6, pp. 571-85.
[230] Bagozzi, R.P. and Dholakia, U.M. (2006), "Open source software communities: a study of participation in Linux user groups", Management Science, Vol. 52 No. 7, pp. 1099-115.
[231] Hibbert, S. and Horne, S. (1996), "Giving to charity: questioning the donor decision process", Journal of Consumer Marketing, Vol. 13 No. 2, pp. 4-13; White, K. and Peloza, J. (2009), "Self-benefit versus other-benefit marketing appeals: their effectiveness in generating charitable support", Journal of Marketing, Vol. 73 No. 4, pp. 109-24.
[232] Cited in Andrea Ordanini, Lucia Miceli, Marta Pizzetti, A. Parasuraman, 'Crowd-funding: transforming customers into investors through innovative service platforms', Journal of Service Management Vol. 22 No. 4, 2011, pp. 443-470
[233] 2012 results are not for full calendar year – only to 21 September 2012

However, beyond the commentaries and more scholarly work on crowdfunding initiatives, some of the most significant signs of change can be found in the range of initiatives that have been set up since around 2008. The following examples illustrate the use of the crowdfunding approach in diverse fields.

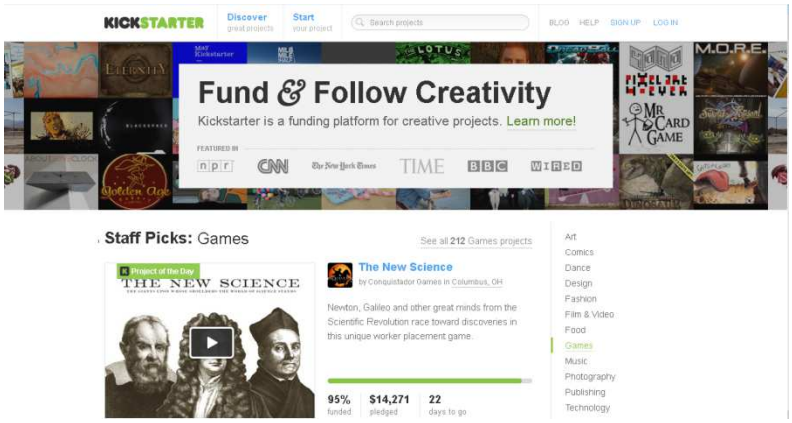
Sellaband (https://www.sellaband.com/)

Sellaband is a Crowdfunding platform that brings together bands and supporters. Supporters/fans can buy parts of new projects (a new album, a tour). Bands specify for the crowdfunding target. Supporters can receive a number of rewards – free downloads, T-shirts, backstage passes and even a share of revenue from subsequent sales.



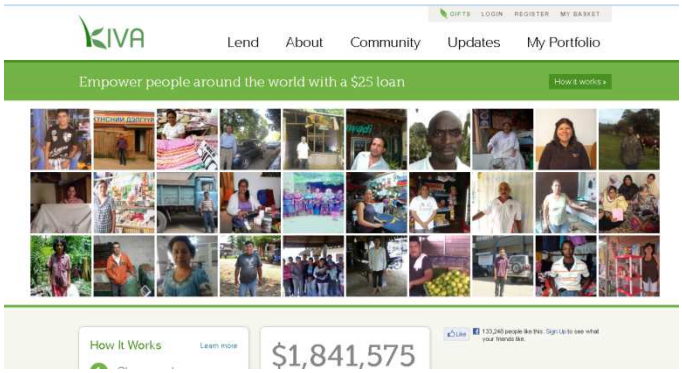
Kickstarter (http://www.kickstarter.com/)

Kickstarter is a funding platform for creative projects. The following categories are listed: art, comics, dance, design, fashion, film & video, food, games, music, photography, publishing, technology, theatre.



Kiva (http://www.kiva.org/)

Kiva is a not-for-profit microfinancing organisation that connects investors with entrepreneurs around the world – the main focus is on supporting people to alleviate poverty. The loans are made on the basis of future re-payment.



In the fields of the creative industries, arts and culture, organisations have started to assess the importance of crowdfunding within broader strategies of fundraising and philanthropy. For example, Artsupport Australia[234] 'sees crowdfunding as one part of a private giving landscape which also includes individual gifts or donations (including major gifts, capital campaigns, bequests, workplace giving, fundraising events and direct mail appeals) and philanthropic grants by private and corporate foundations and corporate philanthropy'[235].

Artsupport Australia recently commissioned a piece of research to produce a snapshot on current practices and attitudes to crowdfunding. The report listed a number of donor barriers and motivations regarding supporting or investing in artists.

Donor barriers

- No tax deduction benefit
- Concerns about the project team
- No 'personal connection' with the artist (know personally, through networks or, more broadly, feel an affiliation with their work)
- Reluctance to pledge online (but not for younger cohorts)

Donor motivations

- They know the person
- The desire to help creative people
- Creative belonging (shared mission amongst group towards the artist)
- Engaging in cultural production (donors feel that they are contributing to cultural production)
- Social kudos
- The perks (free tickets or experiences such as dinner with the creative producer, a day on set)[236]

[234] Artsupport Australia is the philanthropic arm of the Australia Council for the Arts.
[235] Artsupport Australia/Australia Council for the Arts, *How to work the crowd:A snapshot of barriers and motivations to crowdfunding,* July 2012, p4

[236] Artsupport Australia/Australia Council for the Arts, *How to work the crowd:A snapshot of barriers and motivations to crowdfunding,* July 2012

3. Potential significance/implications

Although it shares some features with other forms of fundraising, crowfunding has innovative dimensions, with new models built around platforms and social technologies. It appears that cultural heritage could learn from other fields in how they have embraced crowdfunding (for-profit and not-for-profit models). Crowdfunding could be significant for cultural heritage – and cultural heritage research – in the following ways

- Funding for cultural heritage: crowdfunding is an alternative mechanism for generating funding that will help to support the field, particularly where there may be a decrease – at least in the short term – in other forms of philanthropy and giving, such and corporate donations. One other implication of the crowdfunding model is that there may be scope to generate income from projects that might be less attractive for corporate or individual benefactors. Community crowdfunding initiatives could be one area for the model to be developed – where other sources of donations might not be forthcoming (for esteem, social identification factors, and so on).
- Crowdfunding as a way of building communities of support for cultural heritage: by contributing even small amounts to crowdfunding initiatives, 'investors' become supporters and advocates for particular fields of cultural heritage. This could foster stronger sense of affiliation for particular projects – where the venture being supported has a particular meaning for the individual.

How might cultural heritage crowdfunding initiatives look?

- Community crowdfunding initiatives – platforms for local or community-based initiatives, where supporters have a place-based affiliation (place and proximity are still viewed as important factors in crowdfunding[237]);
- Cultural heritage crowdfunding platforms: partly influenced by models such as Kickstarter and Sellaband, substantial national/international crowdfunding platforms could bring together projects looking for support and potential funders.

What might shape the landscape for cultural heritage crowdfunding?

- Motivations for supporting initiatives: the literature on donor behaviour and brand community that factors such as social identification, personal connections, meaning and esteem will be important in shaping crowfunding in cultural heritage;
- 'Returns' and rewards for investors/supporters: it is generally assumed that cultural heritage crowdfunding initiatives will be on a not-for-profit basis – for public or social benefit. Individual investors could be the recipients of certain benefits – free access to exhibitions, public recognition, and so on. Even though the assumption for cultural heritage is that these relationships will be on a not-for-profit basis, it is conceivable in some cases that there may be a financial return or repayment to investors – for example in supporting exhibitions that go on to be successful commercially;
- Tax deduction benefit: the status of donations (whether they are tax deductible) may have an impact on the success of crowdfunding initiatives in cultural heritage;

[237] Ajay Agrawal, Christian Catalini, Avi Goldfarb, Friends, Family, and the Flat World: The Geography of Crowdfunding, University of Toronto, August 3, 2011. Available at http://www-2.rotman.utoronto.ca/~agoldfarb/crowdfunding.pdf

- The support of the State: where core funding from the State is reduced, there will be additional pressure to generate funds from alternative sources – including crowdfunding;
- The broader environment for giving and philanthropy – trends in donation are linked to the fortunes of the economy more generally. Although a different approach, crowfunding is part of the fundraising mix.
- Crowfunding saturation: there may be a danger of saturation (or at least a loss of focus) if crowdfunding initiatives proliferate significantly.

Possible Research Implications

- **Research on understanding crowfunding for cultural heritage:** a stronger research/knowledge bases on crowdfunding specifically for cultural heritage would be beneficial. Although much of the knowledge is broadly transferable (understanding of investors from a commercial perspective, donor behaviour, experiences in the arts/culture field in particular), there is scope for developing a much better understanding of, for example, the motives of cultural heritage donors, the feasibility of different business models and platforms for cultural heritage, e.g. social science/anthropology; feasibility and pilot studies.
- **Building cultural heritage communities and meaning – the role of crowdfunding:** how might crowdfunding – as part of broader social processes (social identification, peer groups, network formation) and social technologies – change the relationship between the individual/user and different aspects of cultural heritage?

4. References and further reading

- Amrita Sood & Cathy Pharoah, *Fundraising activity in arts, culture, heritage and sports organisations: a qualitative study*, The Culture and Sport Evidence (CASE) programme, Department for Culture, Media and Sport (DCMS) in collaboration with the Arts Council England, English Heritage, the Museums, Libraries and Archives Council and Sport England, September 2011

- Artsupport Australia/Australia Council for the Arts, *How to work the crowd:A snapshot of barriers and motivations to crowdfunding,* July 2012

- Ajay Agrawal, Christian Catalini, Avi Goldfarb, *Friends, Family, and the Flat World: The Geography of Crowdfunding*, University of Toronto, August 3, 2011. Available at http://www-2.rotman.utoronto.ca/~agoldfarb/crowdfunding.pdf

- Bagozzi, R.P. and Dholakia, U.M. (2006), "Open source software communities: a study of participation in Linux user groups", Management Science, Vol. 52 No. 7, pp. 1099-115.

- Hibbert, S. and Horne, S. (1996), "Giving to charity: questioning the donor decision process", Journal of Consumer Marketing, Vol. 13 No. 2, pp. 4-13;

- Andrea Ordanini, Lucia Miceli, Marta Pizzetti, A. Parasuraman, 'Crowd-funding: transforming customers into investors through innovative service platforms', *Journal of Service Management* Vol. 22 No. 4, 2011, pp. 443-470

- Ouwersloot, H. and Oderkerken-Schroder, G. (2008), "Who's who in brand communities and why?", European Journal of Marketing, Vol. 42 Nos 5/6, pp. 571-85.

- White, K. and Peloza, J. (2009), "Self-benefit versus other-benefit marketing appeals: their effectiveness in generating charitable support", Journal of Marketing, Vol. 73 No. 4, pp. 109-24.

Tourism and Travel

1. Description

Tourism and travel plays a very important part in the lives of people. The growth of tourism and travel has been unprecedented since 1945 due to a range of inter-related factors which include; increased mobility, increased discretionary time, increased discretionary income and an increased awareness of domestic and global locations. Tourism and travel is a major force in the world economy, an activity of global importance and significance[238]. The growth of tourism and travel has continued despite recent threats to the phenomenon such as; 'September 11th', the bombing of the tourism resort at Bali, SARS (severe acute respiratory syndrome), the threat of bird flu, the second Iraq war, bombings of both the London and Madrid railway systems and the 2004 Tsunami (26.12.2004)[239] . Estimates predict that in the next decade there will be over one billion international trips taken annually. The World Travel and Tourism Council (WTTC) demonstrate the scale of world tourism, as a sector, in their 2006 research which states that;

1) The travel and tourism industry's percentage of world gross domestic product was 10.3%;

2) The world travel and tourism industry had a turnover of US$6,477.2 billion; and

3) The world travel and tourism industry supported 234 million jobs (8.7% of total world employment).

Cultural Heritage – Heritage Tourism

The World Tourism Organisation (WTO) recognise that almost 40 per cent of all international tourism and travel trips include, or are motivated by, cultural heritage itineraries. The market for cultural heritage tourism is divided into those for whom cultural tourism is the principal motivation for their trip, the so called niche markets, and those who undertake cultural tourism activities as part of their holiday itinerary. The most popular cultural activity for those undertaking tourism and travel itineraries is visiting heritage sites (castles, churches, historic houses, ancient monuments) followed by visiting artistic or heritage exhibits (museums and galleries etc.)[240].

> *In terms of culture as an actual motivator to visit, it is the purposeful and sightseeing tourists that travel to learn about different cultures. They take a more profound interest in culture than just*

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[238] Cooper, C. et al (2008) *Tourism: Principles and Practice* FT Prentice Hall
[239] *Ibid.*
[240] Wales Tourist Board, 2003
http://wales.gov.uk/about/cabinet/cabinetstatements/2003/030403ADwalestouristboard?lang=en

seeing the famous sights of a given destination. The traveller is interested in learning about and understanding a culture; is interested in discovering the peculiarities of a place and its people. These travellers are interested in cities, historical sites, the arts and all aspects of 'high culture'. The holiday might be quite tiring – lots of walking around and looking at things – but it provides great personal enrichment[241].

The prime market for those undertaking cultural itineraries as part of their tourism and travel experience are empty nesters and the affluent early retired. Recent marketing strategies have however targeted the 'family 'market and increasingly the younger 'teenager' market. The quality of the experience is an important factor in the cultural itinerary of the tourist. Ensuring a quality authentic tourism experience which meets and exceeds visitor expectations is the key to repeat visits especially among domestic cultural tourists.

Categorising Cultural Heritage for Tourism

There have been numerous attempts to try and classify the cultural tourist – a useful classification is;

1) *Culturally motivated tourist* – The tourist motivated by culture selects a holiday on the basis of the cultural opportunities. Examples of this category include those visiting a literature festival or a cultural tour of City museums;

2) *Culturally inspired tourist* – The tourist motivated by a once in a lifetime event to an internationally famous cultural attraction. They tend to try and cram as much as possible in one trip and are unlikely to repeat visit;

3) *Culturally attracted tourist* – The tourist motivated to visit cultural attractions while taking part in another activity such as a short beach break, a conference or visiting friends and family[242].

VisitBritain (2012) present a similar classification;

1) *The purposeful cultural tourist /culture vulture* - cultural tourism is the primary motive for visiting a destination and the tourist has a deep cultural experience.
2) *The sightseeing cultural tourist* - cultural tourism is a primary reason for experiencing a destination, but the experience is less deep.
3) *The serendipitous cultural tourist* - A tourist, who does not travel for cultural reasons but who, after participating, ends up having a deep cultural experience.
4) *The casual cultural tourist* - cultural tourism is a weak motive for travel and the resulting experience is shallow[243].
5) *The incidental cultural tourist* - the tourist does not travel for cultural reasons, but nonetheless participates in some activities and has shallow experiences.

These categories can be blurred with the same individual passing through, and returning to, each phase dependent upon lifecycle, mode of travel and family circumstances.

2. Cultural Tourism and Europe

[241] http://www.visitbritain.com/en/EN/

[242] http://wales.gov.uk/about/cabinet/cabinetstatements/2003/030403ADwalestouristboard?lang=en

[243] http://www.visitbritain.com/en/EN/

In the European Union the Council of Europe, founded in 1949, has the greatest influence on cultural heritage and tourism. The Council was established to promote 'a greater unity between its members for the purpose of safeguarding and realising the ideals and principles which are their common heritage and facilitating their economic and social progress'[244] . The Council has established a series of conventions relating to cultural heritage and tourism, including;

- European Cultural Convention 1954
- European Conservation on the Protection of the Archaeological Heritage 1969
- European Convention on Offences relating to Cultural Property 1985
- Convention for the Protection of the Architectural Heritage of Europe 1986
- European Convention on the Protection of the Archaeological Heritage (revised) 1992
- European Landscape Convention 2000[245]

The Council of Europe's conventions are partially concerned with the environmental management of the cultural heritage of Europe. Equally the conventions aim to reflect how European countries have recognised, and embraced, the significant economic value of cultural tourism upon local economies because of the income generated from overseas visitors.

The European Union is also a significant source of funding for cultural tourism development through its 'Structural Funds' – these include, the European Regional Development Fund (ERDF), the European Agricultural Guidance and Guarantee Fund (EAGGF), the Financial Instrument for Fisheries Guidance (FIFG) and various programmes such as Kaleidoscope, Ariane and Raphael[246] .

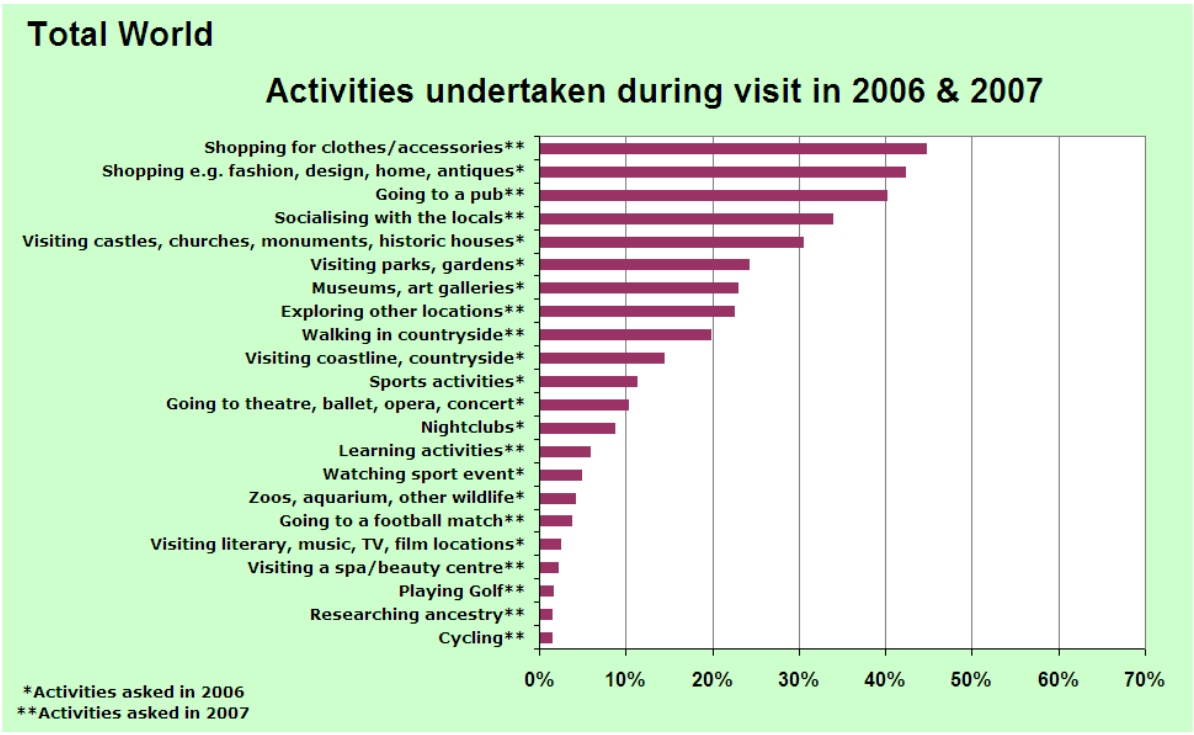
3. Evidence and signs of change

Visits

Culture and heritage matters to tourists: 57% of respondents from 20 countries agreed that history and culture are strong influences on their choice of holiday destination (only 15% disagreed), so it is clear that destinations excelling in this area are likely to be high on travellers' consideration lists[247].

The market for cultural heritage tourism can be distinguished by focussing on the built heritage, cultural heritage and contemporary culture. Figures for visitor activity in the UK during 2006/07 make it immediately clear that cultural heritage activities are among the most popular among visitors. Shopping for clothes/accessories stands out as the most popular activity closely followed by going to the pub. Visiting castles, churches, monuments or historic houses was an activity enjoyed by three out of every ten visitors in 2006, with nearly one quarter of visitors going to parks/gardens, and to museums or art galleries[248] .

[244] http://conventions.coe.int/Treaty/en/Treaties/Html/001.htm
[245] Beech, J. and Chadwick, S. (2006) The Business of Tourism Management FT Prentice Hall
[246] *Ibid.*
[247] http://www.visitbritain.com/en/EN/
[248] http://www.visitbritain.com/en/EN/



Management

Beech and Chadwick[249] identify management in the context of cultural tourism as consisting of a number of key components. The management of cultural tourism is often dominated by relatively static visitor levels, a changing environmental focus – both from Government and interested bodies – and a resource which is sensitive, reputation driven and repeat visits dependent. Two particular areas of focus are funding and planning for the cultural tourism sector. Funding continues to be a major factor in the development of cultural tourism; especially when one considers the growth of the sector since the early 1960s. Sources of funding are increasingly competitive; access to central and local government sources is increasingly difficult – especially given recent austerity planning and control.

4. References and further reading

- Cooper, C. et al (2008) *Tourism: Principles and Practice* FT Prentice Hall
- Beech, J. and Chadwick, S. (2006) *The Business of Tourism Management* FT Prentice Hall

[249] Beech, J. and Chadwick, S. (2006) The Business of Tourism Management FT Prentice Hall

Bibliography

Ajay Agrawal, Christian Catalini, Avi Goldfarb, *Friends, Family, and the Flat World: The Geography of Crowdfunding*, University of Toronto, August 3, 2011. Available at http://www-2.rotman.utoronto.ca/~agoldfarb/crowdfunding.pdf

American Association of Museums, (2012) '*TrendsWatch 2012, Museums and the Pulse of the Future*'

A.Angelopoulou,D.Economou, V. Bouki, A. Psarrou, L. Jin, C.Pritchard,F. Kolyda, 'Mobile Augmented Reality for Cultural Heritage', Mobile Wireless Middleware, Operating Systems, and Applications, Lecture Notes of the Institute for Computer Sciences, Social Informatics and Telecommunications Engineering Volume 93, 2012, pp 15-22

Artsupport Australia/Australia Council for the Arts, *How to work the crowd:A snapshot of barriers and motivations to crowdfunding,* July 2012

Asian Development Bank (2010) Key indicators for Asia and the Pacific 2010, SPECIAL CHAPTER The Rise of Asia's Middle Class

Luigi Atzori, Antonio Iera & Giacomo Morabito, 'The Internet of Things: A survey', *Computer Networks* 54 (2010) 2787–2805, p2787

Bagozzi, R.P. and Dholakia, U.M. (2006), "Open source software communities: a study of participation in Linux user groups", Management Science, Vol. 52 No. 7, pp. 1099-115.

Beech, J. and Chadwick, S. (2006) *The Business of Tourism Management* FT Prentice Hall

Gina A. Bellofatto (2012), "*Religious Belief in the Year 2100"* in The Futurist, September-October 2012 (Vol. 46, No. 5)

Broadband Commission for International Development (2012) "Broadband: State of Broadband 2012"

Center for the Future of Museums (2008) "Museums & Society 2034: Trends And Potential Futures", found at: http://www.aam-us.org/docs/center-for-the-future-of-museums/museumssociety2034.pdf?sfvrsn=0

Coleman, J. (1988) Foundations of Social Theory. Cambridge, Harvard University Press.

Coleman D. (2008), *The demographic effects of international migration in Europe*, *Oxf Rev Econ Policy (2008) 24 (3): 452-476.*

Cooper, C. et al (2008) *Tourism: Principles and Practice* FT Prentice Hall

Coughlan, Tim; Brown, Michael; Houghton, Robert and Lawson, Glyn (2012). Exploring new connections between the physical and digital for future heritage interpretations. In: CHI 2012 Workshop: Heritage Matters, 5-10 May 2012, Austin, Texas.

Council on Library and Information Resources, (2012) 'How does big data change the research landscape', found at: http://www.jisc.ac.uk/news/stories/2012/06/digging.aspx

Craig, T. and Ludloff, M. (2011) 'Privacy and Big Data', O'Reilly Media, Inc, USA.

Crane, A. and Matten, D,. (2010) Business Ethics (3rd Edn). Oxford University Press.

Crossley, N. (2005) Key Concepts in Critical Social Theory. Sage, London.

Jian-Bang Deng (2008), *The End of National Belonging? Future Scenarios of National Belonging from Migration Experiences of Taiwanese Businessmen in Shenzhen*, Journal of Futures Studies, November 2008, 13(2): 13 – 30

Dini P., Milne C., Milne R., (2012) 'Department of Media and Communications: Costs and Benefits of Superfast Broadband in the UK', found at: http://www2.lse.ac.uk/media@lse/research/pdf/Innovation-and-Governance/LSE-Superfast-Broadband-Report-May-2012[1].pd

Durkheim, E. (1952) Suicide. RKP, London.

The Economist (26th May 2011), '*The future of mobility*'

Economist Intelligence Unit (2012), "Superfast Britain? Myths and realities about the UK's broadband future"

EU Digital Agenda, A 2020 initiative, found at: http://ec.europa.eu/digital-agenda/en/our-goals/pillar-iv-fast-and-ultra-fast-internet-access

European Union, Internet of Things: Strategic Research Agenda, September 2009. <http://ec.europa.eu/information_society/policy/rfid/documents/in_cerp.pdf>.

Federal Communications Commission (2010) 'Connecting America: The National Broadband Plan', found at: http://www.broadband.gov/download-plan/

Franks, B. (2012) 'Taming The Big Data Tidal Wave: Finding Opportunities in Huge Data Streams with Advanced Analytics', Wiley and SAS Business Series 49.

Fresa, A. (2012) 'A data infrastructure for digital cultural heritage: characteristics, requirements and priority services', TELDAP 2012 Conference, 22nd February. Available from: http://www.digitalmeetsculture.net/wp-content/uploads/2012/02/INDICATE-DC-NET-Taipei-TELDAP-2012.pdf

FreshMinds (2008). Understanding Digital Exclusion. Report for the DCLG. http://www.communities.gov.uk/documents/communities/pdf/1000404.pdf

Gasser, U. and Palfrey, J. (2007) 'Breaking Down Digital Barriers: When and How ICT Interoperability Drives Innovation', Berkman Publication Series, November. Available from: http://cyber.law.harvard.edu/interop

Gasser, U. and Palfrey, J. (2012) 'Interop: The Promise and Perils of Highly Interconnected Systems'. Basic Books

Robert Gilpin (2001), Global Political Economy, Princeton University Press

Goffman, E (1964) Stigma: Notes on the Management of Spoiled Identity Englewood Cliffs, NJ: Prentice-Hall

Granovetter, M. (1973) The Strength of Weak Ties, American Journal of Sociology, 78.

M. Gutierrez, A. Vexo and D. Thalmann, Stepping into Virtual Reality, Springer, 2008

M.Haydar, D. Roussel, M. Maïdi, S. Otmane, M. Mallem, 'Virtual and augmented reality for cultural computing and heritage: a case study of virtual exploration of underwater archaeological sites', Virtual Reality, November 2011, Volume 15, Issue 4, pp 311-327

Hibbert, S. and Horne, S. (1996), "Giving to charity: questioning the donor decision process", Journal of Consumer Marketing, Vol. 13 No. 2, pp. 4-13;

Holmes K. (1999) 'Changing times: volunteering in the heritage sector 1984-1998

Economist (2010) 'Data data everywhere', February 25th, Available from: http://www.economist.com/node/15557443

Intergovernmental Panel on Climate Change (2001), "*Third Assessment Report of Working Group II on Climate Change Impacts, Adaptation and Vulnerability*"

Intergovernmental Panel on Climate Change, Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation - Special Report of the Intergovernmental Panel on Climate Change, 2012

Kaplan, A.M. and Haenlein, M. (2010) Users of the world, unite! The challenges and opportunities of social media. Business Horizons, vol 53, no. 1 pp 59-68.

Knowledge Works, 2020 Forecast: Creating the Future of Learning, http://futureofed.org/2020forecast/

T. Larsson (2001), "*The Race to the Top: The Real Story of Globalization*", Cato Institute

F.Liarokapis, S. Syliaou, D.Mountain, 'Personalizing Virtual and Augmented Reality for Cultural Heritage Indoor and Outdoor Experiences' Paper in 9th International Symposium on Virtual Reality, Archaeology and Cultural Heritage (VAST), 2008

Linz K & Stula S (2010), Demographic change in Europe - An Overview, Working paper no. 4 of the Observatory for Sociopolitical Developments in Europe

Nicole Lipkin & April Perrymore, *Y in the Workplace: Managing the "Me First" Generation*, Career Press, 2009

James Lovelock (2007), *Climate Change on a Living Earth*, found at: http://www.jameslovelock.org/page24.html

McKinsey Global Institute (2011) 'Big data: The next frontier for innovation, competition, and productivity', May. Available from: http://www.mckinsey.com/insights/mgi/research/technology_and_innovation/big_data_the_next_frontier_for_innovation

McKinsey Global Institute (2011) "Internet matters: The Net's sweeping impact on growth, jobs and prosperity"

P.Milgram, H.Takemura, A.Utsumi, F. Kishino, 'Augmented Reality: A class of displays on the reality-virtuality continuum', SPIE Vol. 2351, Telemanipulator and Telepresence Technologies, 1994

Daniele Miorandi , Sabrina Sicari, Francesco De Pellegrinia & Imrich Chlamtac, 'Internet of things: Vision, applications and research challenges', *Ad Hoc Networks* 10 (2012) 1497–1516

National Intelligence Council, Disruptive Civil Technologies – Six Technologies with Potential Impacts on US Interests Out to 2025 – Conference Report CR 2008-07, April 2008, <http://www.dni.gov/nic/NIC_home.html>.

National Intelligence Council – USA (2008), '*Global Trends 2025 – A transformed world*'

Natural England (2009), *Global Drivers of Change to 2060*, Natural England Commissioned Report NECR0304

Nayef R.F. Al-Rodhan and Gérard Stoudmann (2006), "*Definitions of Globalization: A Comprehensive Overview and A Proposed Definition*", Geneva Centre for Security Policy, 2006

NESTA (2008) 'Getting up to speed: making super-fast broadband a reality' Policy Briefing, January 2008

NESTA (2010) 'Big Data: The power and possibilities of Big Data'. Available from: http://www.nesta.org.uk/library/documents/Hot_Topics_Big_Data_v5.pdf

OECD (2012), "Machine-to-Machine Communications: Connecting Billions of Devices", OECD Digital Economy Papers, No. 192, OECD Publishing. http://dx.doi.org/10.1787/5k9gsh2gp043-en

OECD (2009), THE LABOUR MARKET INTEGRATION OF IMMIGRANTS AND THEIR CHILDREN Key Findings from OECD Country Reviews, *High-Level Policy Forum on Migration Paris, 29-30 June 2009*

OECD (1996) 'The Knowledge-based economy', Paris.

Andrea Ordanini, Lucia Miceli, Marta Pizzetti, A. Parasuraman, 'Crowd-funding: transforming customers into investors through innovative service platforms', *Journal of Service Management* Vol. 22 No. 4, 2011, pp. 443-470

Ouwersloot, H. and Oderkerken-Schroder, G. (2008), "Who's who in brand communities and why?", European Journal of Marketing, Vol. 42 Nos 5/6, pp. 571-85.

Oxfam, Forecasting the numbers of people affected annually by natural disasters up to 2015, Centre for Research on the Epidemiology of Disaster (CRED)

Peterkova J. (2003) European Cultural Identity. The Role of Cultural Heritage in the Process of Mutual Communications and Creation of Consciousness of Common Cultural Identity. http://www.kakanein.ac.at/beitr/fallstudi/JPeterkova1.pdf

Putnam, R. (2000) Bowling Alone. Simon and Schuster, London.

H. Rheingold, *Virtual Reality*, Summit, New York, 1991

G. Ritzer (2003), "*The Globalization of Nothing*", SAIS Review, Vol. 23, No. 2, Summer-Fall

María Dolores Robles-Ortega, F. Feito, J. Jiménez, R. Segura, 'Web technologies applied to virtual heritage: An example of an Iberian Art Museum', Journal of Cultural Heritage, Volume 13, Issue 3, July–September 2012, Pages 326–331

Robles Garcia N & Corbett J (2011), *Sustaining heritage, sustaining communities: a cautionary tale from Oaxaca, Mexico,* Our Future's Past: Sustainable Cultural Heritage in the 21st Century 24-26 November 2011, The American University of Rome and The British School at Rome, http://www.aur.edu/american-university-rome/wp-content/uploads/2011/09/Abstracts.pdf

M. Roussou, 'Virtual Heritage: From the Research Lab to the Broad Public, *Virtual Archaeology*, 2002

Katie Salen, Robert Torres, Loretta Woolzin, Rebecca Rufo-Tepper& Arana Shapiro, *Quest to Learn. Developing the School for Digital Kids*, Cambridge, MA, MIT Press, 2011

Hans Schaffers, Nicos Komninos, Marc Pallot, Brigitte Trousse,Michael Nilsson, Alvaro Oliveira, 'Smart Cities and the Future Internet: Towards Cooperation Frameworks for Open Innovation' in The Future Internet, Springer Berlin, 2011, pp431-446

Jan Aart Scholte (2001), "*The Globalization of World Politics*", in J. Baylis and S. Smith (eds.), The Globalization of World Politics, An Introduction to International Relations, Oxford University Press, 2001

David Siegel, *Pull: The power of the Semantic Web to transform your business*, Portfolio 2009

Jorge Simões, Rebeca Díaz Redondo & Ana Fernández Vilas, 'A social gamification framework for a K-6 learning platform', *Computers in Human Behavior,* Available online 5 July 2012:

Amrita Sood & Cathy Pharoah, *Fundraising activity in arts, culture, heritage and sports organisations: a qualitative study*, The Culture and Sport Evidence (CASE) programme, Department for Culture, Media

and Sport (DCMS) in collaboration with the Arts Council England, English Heritage, the Museums, Libraries and Archives Council and Sport England, September 2011

SQW (2013) "UK Broadband Impact Study: Literature Review"

Tanis, M. (2003). Cues to Identity in CMC. The impact on Person Perception and Subsequent Interaction Outcomes. Thesis University of Amsterdam. Enschede: Print Partners Ipskamp

Pat Thane (2012), *New Paradigms In Public Policy, Demographic futures*, British Academy for the Humanities and Social Sciences Policy Centre

Douglas Thomas & John Seely Brown, *A New Culture of Learning*, CreateSpace, 2011

UK Defence Academy, Ministry of Defence (2010) '*Global Strategic Trends – Out to 2040*', 4th edition update9 – Feb 2010

UK MOD Development, Concepts and Doctrine Centre (DCDC) Global Strategic Trends Programme (2007) – Global Strategic Trends Out to 2040 pg 12/13

UNCTAD World Investment Forum 2012 - Sovereign Wealth Fund Round Table Issues Note

United Nations, Department of Economic and Social Affairs, Population Division (2009). "*World Population Prospects: The 2008 Revision*", CD-ROM Edition.

United Nations, Department of Economic and Social Affairs, Population Division (2002). "World Population Ageing 1950-2050."

United Nations, Department of Economic and Social Affairs Population Division (2011), International Migration Report 2009: A Global Assessment

UNESCO Policy document on the impacts of climate change on World Heritage Properties; World Heritage Centre, CLT- 2008/WS/6, Paris

United Nations Population Fund, Migration: A World on the Move, last accessed 27th February 2013: http://www.unfpa.org/pds/migration.html

UNFPA (2012), Ageing in the Twenty-first Century: A Celebration and a Challenge

UNFPA (2008), Generation of Change: Young People and Culture, state of world population 2008 youth supplement

United Nations General Assembly (2012), International migration and development, Report of the Secretary-General A/67/254

Valtolina, S., Franzoni, S., Mazzoleni, P. and Bertino, E., 2005, 'Dissemination of Cultural Heritage Content through Virtual Reality and Multimedia Techniques: A Case Study', in Proceeding of the 11th International Multimedia Modelling Conference (MMM 2005), available at http://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=1385994

White, K. and Peloza, J. (2009), "Self-benefit versus other-benefit marketing appeals: their effectiveness in generating charitable support", Journal of Marketing, Vol. 73 No. 4, pp. 109-24.

WIPO (2008) 'World Patent Report', http://www.wipo.int/ipstats/en/statistics/patents/wipo_pub_931.html#a11

WIPO Guide on Managing Intellectual Property for Museums by Rina Elster Pantalony, August 2007 - http://www.wipo.int/copyright/en/museums_ip/guide.html#P64_3695

World Bank, 2003, Building Safer Cities: the future of disaster risk - http://www.pacificdisaster.net/pdnadmin/data/original/world_bank_%20building_safer_cities_future_%20dr_03.pdf

Jonathan Zittrain, The Future of the Internet and How to Stop it, Penguin Books, London, 2008