# Technological perspectives for cultural heritage

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**CHINESE – SPANISH SEMINAR ON CULTURAL ECONOMICS RESEARCH**
**"CULTURAL POLICIES AND THE ECONOMIC IMPACT OF CULTURE"**
University of Valladolid / Shanghai Jiao Tong University
Valladolid, Spain, 11-13 July, 2017

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2. Effects of technology on demand and supply of cultural heritage
3. Technology in the decision-making process
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5. A relevant phenomenon: the digital divide
6. Concluding remarks

# Some definitions

- Technologies play many different roles for Cultural Heritage (CH), from diagnostics, conservation and restoration to Information and Communication Technology (ICT).

- Digital technologies provide innovation in the cultural sector:
  - larger audiences, new developments for art forms, new sources of economic and cultural value and new business models (Bakhshi – Throsby, 2010).
  - Digitization and the publication of heritage collections online are used as indicator of innovation in heritage organizations (Borowiecki – Navarrete, 2015).

- Here, attention on digitization and ICT applications to CH

# Effects of technology

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# Economic effects of technology

- Technology influences two economic characteristics of CH: rivalness and excludability (Giardina et al., 2016).

- Effects are different depending on the type of cultural institutions (Guccio et al., 2016)
  - consumption of libraries and archives collections is rival;
  - for museums, historical buildings or archaeological sites rivalness occurs only in case of congestion.

- Positive effects on the sustainability of heritage:
  - conflicts between the objectives of preservation vs. fruition are reduced (e.g. Calakmul case)

# Technology effects on demand/1

- "*Technological change does not just mean more, but also means different*" (Potts, 2014)
- Technology is likely to enhance demand:
  - more information about heritage
  - increased consumers' knowledge
  - better consumers' critical appraisal
- Greater consumers' awareness about CH fosters competition among suppliers
- Peacock (1994) definition of CH "*an intangible service increasing the utility of consumers, in which historic buildings and artefacts are inputs*" emphasises the consumer's role as the 'producer' of her own utility

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# Technology effects on demand/2

- 'Virtual' individual cultural experiences can be replicated and differ, depending on the consumers' ability of appreciation and not on the changes in the CH features.
- 'Globalization of culture' (Peacock, 2006): technology is likely to play as a form of advertisement
- The records of visited website pages offer an indirect way to reveal consumers' preferences
- Technology broadens the set of consumers but also causes an overlapping supply of 'hard' (real) and 'digital' cultural good or services, of kind (Guccio et al., 2016)

# Technology effects on demand/3

- Substitution or complementarity? It depends on the motivation of consumers- entertainment, study, research:
  - access to a digitised document may almost be equivalent to the inspection of the original while this is not the case for the digital copy of a painting or a virtual tour
  - if 'virtual' visits can be considered as substitutes for actual ones, the concern for physical deterioration might loose part of its relevance
- No conclusive evidence across the different types of cultural consumption; there is some evidence supporting complementarity (Ateca and Castiglione, 2014; Styliani et al., 2009)

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# Technology effects on demand/4

- Technology empowers consumers but not all potential users enjoy the same accessibility
  - differences between digital 'natives' and the others
- Do electronic media lead to a democratization of access or increase inequalities?
- The 'digital divide' depends on individual disparities (race, socioeconomic resources, cognitive skills, demographic characteristics) (Norris - Inglehart, 2013)
  - the 'divide' implies the unequal representation of different social groups with negative effects in terms of social inclusion and participation (Krebs, 2012)

# Technology effects on supply/1

- New possibilities for CH preservation and knowledge
  - e.g. a US-French consortium has been created to digitally document CH sites threatened by war (Sharpe, 2017)
- Provision of new services and products
- Joint products with divisible private benefits (e.g. dvd, e-books, selective web services) incentive private provision
  - 'hot' topic: copyright issue
- Reduction of reproduction costs and distribution costs
- Increasing competition among the producers of cultural goods and services

# Technology effects on supply /2

- Technical changes and social media impact on the relations with funders:
  - the role for public financing is less crucial since 'globalization' of culture makes sponsorships more attractive
  - more possibility and scope for advertising
- Business models based on multi-sided markets and network effects enhance the 'superstar' features (Handke et al., 2013): 'minor' CH organizations may not survive
- Technological interactivity allows customers to coproduce cultural outputs and to enlarge cultural supply:
  - blurred boundaries between public and private production
  - 'prosumption' and 'produsage' (Bruns, 2013)

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# Technology effects on supply /3

Crowdfunding shows how internet widens the opportunities for the voluntary provision of cultural goods

- transaction costs are eliminated
- barriers to entry are reduced allowing also for low contributions
- small contributors may easily receive an individual recognition and this generates warm-glow donations
- people can verify in real time other contributors efforts, generating an imitation or snowball effect

# Technology in the decision-making process

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# Technology in the decision-making process/1

- Decisions about the adoption of technologies take place in a framework with several actors
  - On the supply side: politicians, heritage agencies/ bureaucracies/experts, museums and galleries, at different levels of administration
  - On the demand side, the general public, organized specific groups (museum associations, professional associations, personnel of CH organizations, etc.)
- "*Within this complex scenario, the rules of policy-making will be shaped by the legal framework, which defines competences of each institution, the link between central and peripheral bodies, and the balance between the political sector and bureaucratic and independent agencies, in a context of overlapping principal–agent relationships*" (Holler – Mazza, 2013)
- Technology may foster accountability overcoming asymmetries in information

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# Technology in the decision-making process/2

- Different functions for technology: aim *per se* or just tool (for research, communication, education)? (Peacock – Rizzo, 2008)
  - Is the opportunity cost of technology taken into account?
- The extent depends on the type of organization (private, not for profit, public), its mission and the related business model
  - Asymmetrical information between curators and ICT experts
- 'Virtuality' is not unanimously accepted by CH experts as a tool for enhancing CH (Peacock – Rizzo, 2008)
  - risk of downgrading the 'high' character of CH
  - different approaches across countries (e.g. the case of Daming Palace National Heritage Park, Xi'an, China) (Forte, 2013)

# Much ado about what? Some empirical evidence

# Much ado about what? Empirical evidence/1

- Data on the extent of technologies in the CH sector are scarce
- At European level, *Enumerate Core Survey III* (Nauta - van den Heuve, 2015) collects on a comparative basis statistical data on the state of digitisation in cultural institutions such as museums, archives and libraries
  - almost 1.030 institutions of various size from 32 European countries: 34.47 % museums, 33.59% libraries, 21.12% archives and 10.78% of other types
- Great caution is needed in interpreting data since the sample is not representative and suffers of self selection-bias

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# Much ado about what? Empirical evidence/2

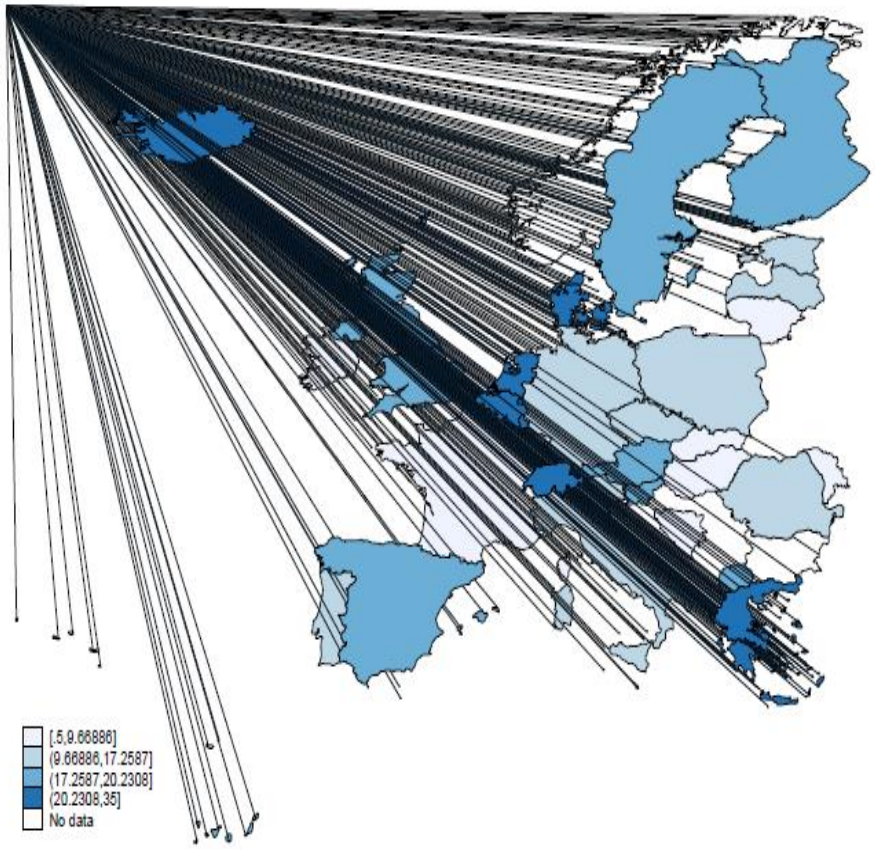
Some snapshots

- 58% of the collections is catalogued in a collection database
- 23% of the collection is digitised
- 41% of institutions declares to have an explicit digitization strategy
  - academic research is perceived as the most important reason to provide digital access to the collection; the educational use is second; sales and commercial licensing is the least important
- 32% of digitally reproduced and born digital collections is online
- 52% of all institutions monitors digital access
  - 91% uses web statistics and 38% uses of social media statistics
- 47% does not have a solution for long term preservation based on international standards for digital preservation
  - large differences across institutions: national libraries are 'front runners', followed by national archives; museums are much behind

# Much ado about what? Empirical evidence/3

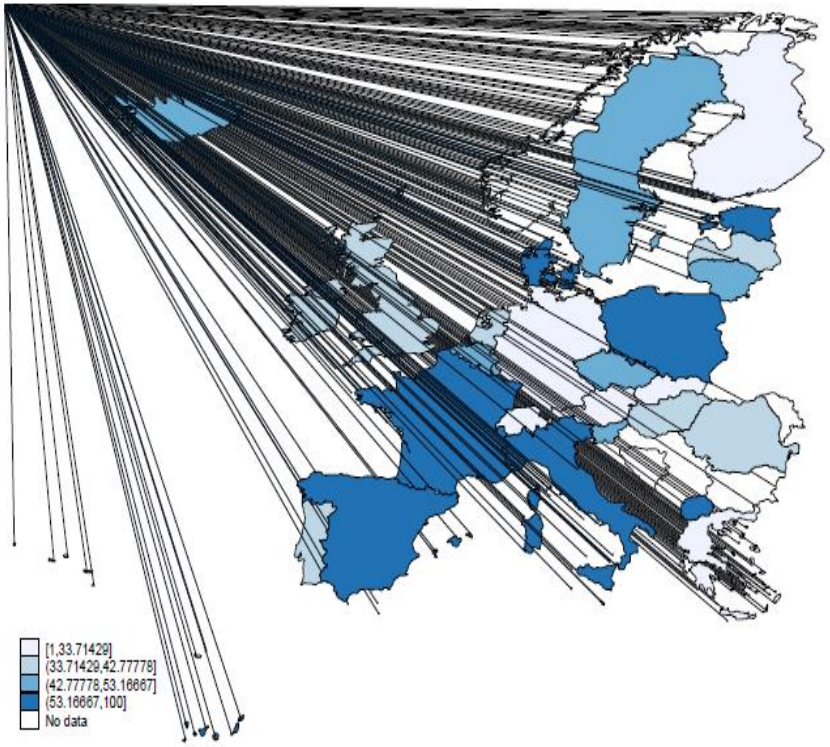
**Share of digitization collection per country**

**Source: K. J. Borowiecki – T. Navarrete (2015)**




**Publication of collection on line per country**

**Source: K. J. Borowiecki – T. Navarrete (2015)**

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# A relevant phenomenon: the digital divide

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# The digital divide/1

- Large digital divide across institutions occurs depending on the visibility on internet: institutions which are culturally very relevant may be dominated by less relevant ones (Paolini et. al, 2013)
- Countries like Italy with outstanding heritage distributed over a huge number of sites/institutions (small villages, churches, museums) might be disadvantaged in providing an overall picture
- Major differences between USA and Europe

# The digital divide/2

What causes?

- Different mission: **c**onservation and restoration are still major concerns of most continental European institutions
- Business model: a very influential factor, affecting the others
  - cultural organizations relying on a strong relationship with their audiences consider ICT as a priority; this is not the case for public institutions relying on public funds, unless a suitable system of incentives is enacted
- Lack of resources: it is the result of the decision making process, depending on decision-makers priorities and on the business model of each institution.
  - in most cases 'heritage experts', because of their training, consider digital content as a 'lower' category of cultural communication
  - policy makers and sponsors who are interested in attracting mass audiences tend to disregard 'minor' cultural institutions

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# Concluding remarks

# Some concluding remarks

- Technology favours the dissemination of knowledge and is likely to improve education and cultural appreciation, to enhance cultural participation and to differentiate cultural experiences
- Private financing of public goods is likely to increase because tastes and preferences of the public change and transaction costs decrease
- Technology might reduce asymmetrical information in cultural policy decision-making: it may partially 'franchise' consumers from the judgments of experts and increase the representativeness of public decisions, through public scrutiny, surveys and public enquiries
  - whether 'democratization' really improves outcomes is an open issue
- The effects of technology crucially depend on whether it is used as a tool or as an aim *per se*
- The institutional features of CH organizations matter

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