



DIGITAL HERITAGE TRAINING FOR HISTORIANS IN EUROPE: A LOCAL PROPOSAL

APRENDIZAJE DIGITAL EN PATRIMONIO PARA HISTORIADORES EUROPEOS: UNA PROPUESTA LOCAL

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Abstract:

This paper presents a proposal for the use of digital resources to improve the university curriculum for historians in particular and heritage managers in general. It is possible to develop the sector, providing more employment and promoting theoretical and methodological changes conducive to mutual progress. To achieve this, the proposal takes into account the recent legal reforms in education and within the European Digital Single Market. However, although such changes are possible given that there is already extensive experience in heritage digitisation, they are hindered by the current curricula content and slow implementation of competency-based education. The desk research reported here focused on a Spanish context that could benefit from curriculum development implemented elsewhere, and the resulting proposal for positive action was explored in the context of history and heritage education at the University of Cadiz.

Key words: digital training, historian, cultural heritage, European Higher Education Area (EHEA).

Resumen:

Este artículo propone implementar el uso de los recursos digitales en el currículo de historiadores en particular, y de gestores del patrimonio en general. Es posible desarrollar el sector proporcionando más empleo y promoviendo cambios teóricos y metodológicos. Para alcanzar esta propuesta hay que tener en cuenta las recientes reformas legales en educación y en el Mercado Europeo Único Digital. Tales cambios son posibles porque hay una enorme experiencia en la digitalización del patrimonio. Pero los contenidos de los planes de estudio existentes en la actualidad, así como la lentitud en la implantación de la Educación por Competencias lo impiden. Esta investigación documental se basa en un contexto español que puede beneficiarse del desarrollo curricular implementado en otros lugares. Se plantea todo esto en el caso de los estudios de Historia y Patrimonio en la Universidad de Cádiz, así como una propuesta de acción favorable.

Palabras clave: aprendizaje digital, historiador, patrimonio cultural, Área de Educación Superior en Europa (EHEA).

1. Introduction

The 2015 Digital Heritage Congress represents a benchmark for all those in academia who work in the humanities. In my opinion, this is due to the crisis currently afflicting the humanities. This Congress is not a discipline-based discussion forum, it far transcends that. It assumes that the humanities are immersed in a new socio-historical environment.

Here, I want to use the term 'historian' in a broad sense, to refer to professionals engaged not only in history but also in heritage. I focus here on heritage professionals because it is precisely on their metier that I wish to reflect.

This line of inquiry obviously reflects not only a way of working but also an inner conviction that I think is widely accepted: namely that history is constructed from material traces that, with the corresponding social conceptualisations, we now call historical or cultural heritage. Therefore, I will discuss historians as heritage professionals, and I intend to talk about their training in relation to the goal of this Congress.

The humanities have been slow to incorporate the new technologies, as noted by Pedro Peña (2015), who in particular highlighted the reasons for conservatism and disconnection from the labour market and business innovations. The work of Roberto Busa with IBM in 1949 (Hayles, 2012, note 1 in page 62; Jones, 2016) is also important in this respect. Two works in particular have emphasised the economic importance and relevance of new technologies in the field of culture in general, and of heritage in particular. In the case of culture, the book *Creation of Enterprises in the Field of Culture*, directed by José Ruiz Navarro from the University of Cadiz, is a good example. Originally written in 2005 (and published in Ruiz, 2008), this was a groundbreaking study of how the new technologies drive start-ups and help redress the principle established by Baumol and Bowen (it involves a rise of salaries in jobs that have experienced no increase of labour productivity). The *COTEC Report* (2010) focused on innovation in the field of historical heritage, and mentioned the importance of technology applied to heritage in several fields.

In the francophone world, the digital humanities are known as the "humanités numériques" (Barbier, 2014),

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and have formed a part of the curriculum for some years now at institutions such as the University of Tours (Lorans, 2008).

The most important issue is the future of digital competencies. In the academic year 2015-2016, the new primary school curriculum introduced the subject "Digital Culture and Practice" (Regional Government of Andalusia, JUNTA, 2015) in sixth grade (11 years old children) within the context Autonomous Region powers established by the LOMCE (Education Act), which accounts for 7% of the total teaching hours (two a week, or Social Sciences and Natural Sciences).

The course is structured into three thematic blocks: Digital Culture, Technological Practice and Online Education. The first of these is intended to introduce students to the importance of digital technology in society and the media (social networking platforms, blogs, mobile connectivity), and digital identity (use, safety and ethics). The second explores mobile and tablet applications, as well as blogs, wikis, virtual communities and social networks (web 2.0), and the third looks at digital learning environments and the production of original work.

2. Why do we need digital historical heritage?

In general, we define history as information about the past. When this history has a wider scope and a material expression, we call it heritage. Given that we now live in the information age, how does this influence heritage? From my point of view, information from the past expressed in the analogue form, in other words, as a continuous input signal, can be converted into a series of discrete values. These numerical values, or digits, are represented in binary code by computers.

Our everyday lives are filled with computers. The question is whether these are more than mere machines: can they change our understanding of history? Can heritage be digitally interpreted? The answer is clear from the moment we become participants in this Congress. We are not talking about the mere storage of information, or of a machine that can transmit narratives. When physical (normally visual) variables are converted, they are analogically expressed by means of digital representations. This facilitates their processing (digitisation), by reducing noise and interference.

Information, in this case, historical information, is embedded in a context, and our current context is digital. The very concept of 'Digital Heritage' proposed by this Congress is simply one part of the 'digital humanities'. Digital media and computational analytics have already been employed for several years now in the practice of history, and by extension, of culture. Similarly, other tools such as digital files, databases, presentations, online access, interactive images, time lines, audio files, Geographic Information Systems (GIS), 3D modelling and virtual recreation, have for years accompanied the analysis of big data, which are basically used in quantitative history, cliometrics and social computing (Grandjean, 2015). A recent example of the evaluation of digital programmes implemented in museums and exhibitions has been published in this journal (Vicent, Ibáñez-Etxeberria and Asensio, 2014).

We cannot practice our profession without considering the presence of historiographical options that rely on the existence of the Internet (such as History under Debate), or which attempt to address humanistic research from a scientific perspective, as Lev Manovich proposed when he coined the term Cultural Analytics in 2005 (Manovich, 2016), and subsequently gave it a more practical form two years later. In a more business-oriented sphere, the concept of culturomics has already been proposed as an approach to working with vast amounts of data (for example, all books or all manuscripts, etc.) (Michel et al., 2011). In short, historians must embrace this context now that knowledge is digitally produced and shared.

3. From European to local scene

Earlier, I referred to the existence of the EHEA (European Higher Education Area) as a frame of reference for university education. This obliges us to implement the proposal made on the 6th of May, 2015, by the President of the European Union, Mr Juncker, concerning the European Digital Single Market (European Commission, 2015). This proposal should be given priority at the highest political, economic and social level. It revolves around three 'pillars' or areas of political action.

The first aim is to improve online access to digital goods and services in the European Union, improved access being understood here mainly in terms of modernising copyright legislation regarding images, films, music and games. At this point, I would like to draw the audience's attention to the historical and cultural importance of some of these fields. Heritage is primarily about image. How can digital media help us to enrich heritage? But we must also ask what training students of either history or cultural heritage have in digital methods, as presumably they have acquired considerable knowledge of history and cultural heritage – and depending on their institution perhaps of digital methods pertaining to both fields.

The second aim is to create an environment in which digital networks and services can flourish, in other words, one in which they can improve in quality and increase in quantity. If this happens, and here I mean as an everyday reality, it will become increasingly necessary for our students to acquire more digital skills. In short, proficient digital literacy is vital for all.

The third aim is for digital technology to become a vehicle for economic and social growth. This essentially implies working with big data and cloud computing. I repeat, we need to increase our digital skills.

The digital competencies have been acknowledged as one of the 8 key competencies for lifelong learning by the European Parliament (2006) and the European Commission (2006). The digital competence was defined in the DIGCOMP Project of the Institute for Prospective Technological Studies (IPTS), one of the seven that form the European Joint Research Centre, as "the confident, critical and creative use of ICTs (Information and Communications Technologies) to achieve goals related to work, employability, inclusion and/or participation in society" (European Parliament, 2006 & European Commission, 2006).

Digital competence is a key cross-curricular competence involved in the acquisition of basic skills such as language, maths, learning to learn and creativity, as

explicitly described in European legislation (COMMUNICATION, 2016).

In Spain, the main areas of digital competence identified in a document issued by the Spanish Ministry of Education, Science and Sport (MINISTERIO, 2013) are:

- Information: to identify, retrieve, store, organise and analyse digital information, evaluating its purpose and relevance.
- Communication in digital environments: collaborative learning, interaction and participation in communities and networks.
- Creation of multimedia and computer programming content (text, images, videos), integrating and reformulating knowledge within a framework of intellectual property rights and licences.
- Security: data protection and digital identity.
- Troubleshooting and identification of needs and digital resources, creative use and updating.

Digital skills are becoming of fundamental importance. However, they do not explicitly appear in the Spanish Qualifications Framework for Higher Education (in Spanish, the MECES), unless we consider them to be encompassed within “learning skills”, and practical skills such as “Knowledge of information technology related to the field of study”.

In the case of the University of Cadiz, there is only one ‘digital’ Master’s programme, the Master’s Degree in Digital and Social Marketing. Furthermore, the digital age is completely absent in the content of courses (undergraduate and master’s degrees) related to history and heritage. As we are discussing skills, I will illustrate the specific competence level in history (University of Cadiz, 2008):

G05 - To acquire basic skills in document management and analysis for the production of historical and cultural heritage knowledge.

G09 - To be proficient in the activities and planning entailed in the cultural and publishing market and industry.

E02 - To know how to search and manage bibliographic resources.

E03 - To know how to analyse and interpret diverse historical sources.

E06 - To know how to analyse and interpret the archaeological record.

Any of these skills could have a digital component, such as reading, writing, analysing and or interpreting digital data: the development of Bloom’s Digital Taxonomy from its analogue version, Bloom’s Taxonomy, could be seen as an example of this progression (Fractus Learning, 2014).

As can be seen, traditional skills in the Master’s Degree in Heritage, Archaeology and Maritime History adhere to the EC 9 ability to identify ICT applications in heritage, especially multimedia, television and radio resources. These competences do not seem adequate to enter the European labour market, at least not in the form in which they have been designed in the European Union. Nonetheless, closer inspection indicates that basic digital

content such as GIS and photogrammetry is included in archaeology.

4. Comparing the curricula in Spain

In The University of Cadiz is no exception in the Spanish university system. To explain this, I will conduct a comparison of the curricula of other universities with degrees related to history. It is not easy to establish a comparison between the different curricula. The first problem encountered stems from the lack of definition of areas of knowledge, as some are historically established, whereas others have traditionally been included within the arts and humanities. Thus, the Autonomous University of Barcelona (UAB, 2016) offers a Master’s Degree in Digital Humanities, in which the curriculum focuses on philology, a trend that is common in the humanities in Spain. The subjects explicitly mentioning the word ‘digital’ are Principles and Methods of Digital Humanities, Speech and the Digital Universe, and Digital Philology. Another example of this trend is the Master’s Degree in Digital Humanities and Textual Heritage at the University of Salamanca (USAL, 2016). In this case, I will discuss the digital textualities subjects, Creation, Transmission and Dissemination of Digital Contents, and the optional Digital Reading and Writing: Devices and Applications. Thus, to sum up, this will not be our field of analysis, since furthermore it is associated with the International Society of Hispanic Digital Humanities, which in 2013 organised the First Conference on Digital Humanities. Challenges, Achievements and Future Prospects (HDH, 2013).

Turning to culture, for example the Master’s Degree in Cultural Management at the Carlos III University of Madrid, Module 6 (Culture and Technology) includes the subject Technology Applied to Work in Culture and Current Cultural Media, and Module 7 (Heritage) includes Application of Technology to Cultural Heritage (UC3M, 2016). Similarly, there is an Advance Research and Innovation Applied to Heritage subject on the Master’s Degree in Cultural Heritage: Research and Management, taught at the University of Castile-La Mancha (UCLM, 2016), while the Master’s Degree in Historic, Artistic and Cultural Research and Management at the University of Murcia includes a research specialisation with the compulsory subject, Advanced Research Techniques and Methods (UM, 2016). This superficial approach is also evident in the Master’s Degree in World Heritage and Cultural Projects for Development, which the universities of Barcelona, Turin and the International Training Centre of the ILO in collaboration with the UNESCO Centre for World Heritage have entitled: ICT Applied to Cultural and Heritage Projects (ITCILO, 2016).

Let us return to heritage, and more specifically, to conservation. The Master’s Degree at the Pablo de Olavide University in Seville includes the optional subject, New Imaging Technologies Applied to Cultural Heritage (GIS and Image), while the Master’s Degree in Arts, Museums and Historical Heritage Management at the same university includes Digital Museology: The New Museums (UPO, 2016). However, this so-called ‘digital’ content does not refer to the application of digital knowledge, but to the restoration of digital material. This same problem is evident in Subject 4, Conservation Strategies for Digital Heritage, on the Master’s Degree in Conservation of Cultural Heritage taught at the

Complutense University of Madrid (UCM, 2016), and the University of Malaga's independent course (not a master's degree) on History of Digital Art (CEHAD, 2016). This becomes even more specific when considering the conservation of architectural heritage. In the case of the master's degree with the same title taught at the Polytechnic University of Valencia, the word 'digital' is not used, but the subjects clearly include digital content: Advanced Technology Applied to the Conservation of Architectural Heritage, Advanced Techniques for Elevations: Topography, Photogrammetry and Laser Scanner, and Virtual Reconstruction of Architectural Heritage (UPV, 2016a).

Continuing my argument, at the same university (the Polytechnic University of Valencia), the Master's Degree in Cultural Management only includes the subject "Knowledge Management and Information Resources" (UPV, 2016b), but the Master's Degree in Cultural Heritage: Identification, Analysis and Management at the University of Valencia includes the subjects Historiography and New Technologies Applied to Cultural Heritage and the specialisation in Analysis and Management of Landscape Heritage, "Landscape Analysis Techniques", features Landscape Mapping Techniques, Thematic mapping and GIS, Aerial photography and Satellite Imagery, and Graphic and Photographic Representation Techniques (UV, 2016).

However, it is in archaeology where the presence of the digital age is most clearly evident. The University of Alcalá de Henares offers an independent expert course in the arts and humanities which includes the subjects Digital Tools Applied to Archaeology, and entails use of GIS tools, the use of GIS in archaeology and digital drawing: archaeological/planimetric materials (UAH, 2016). Turning to the official Master's Degree in Classical Archaeology, promoted by a consortium of Catalan universities and the Catalan Institute of Classical Archaeology (ICAC), this merely includes Drawing and Restoration Techniques in Architecture, and Landscape Archaeology Methods and Techniques (URV, 2016). Similarly, the Master's Degree in Mediterranean Archaeology in Classical Antiquity, taught at the Complutense University of Madrid (UCM DSU, 2016), has a course on GIS and another on Documentary Sources and Resources in Digital Archaeology.

The curricula at the universities of Granada, Jaen and Seville notably include an undergraduate course on New Technologies for the Dissemination and Enhancement of Archaeological Heritage (UGRA, 2016). This indicates a greater and more specific use of these technologies, especially compared to other, similar degree courses, which employ more traditional approaches. Moreover, there is a growing interest in specialisation and retraining, evidenced by the fact that several courses and seminars have already been scheduled on master's degrees: the courses include Instrumental Aspects Related to Archaeological Exploration and Excavation, Geophysics Applied to Archaeology, Quantitative Methods and Computer Science Applied to Archaeology, while the seminars include GIS Applications in Archaeology, 3D Modelling and Reconstruction with Laser Scanners in Archaeological and Historical Heritage (UGRA-MASTER, 2016).

The Department of Graphic and Cartographic Expression at the University of Alicante, in conjunction with the Virtual Heritage Group, has designed a specific Master's Degree in Virtual Heritage, which includes a specialisation course on New Technologies Applied to Virtual Heritage, as well as a specialist course on Virtual Restoration and an expert course on Heritage Virtualisation. This has a solid tradition in architecture and engineering, but has not yet been consolidated in officially recognised degrees (UA, 2016). The full text can be accessed in this journal (Molina, Esclapés, Tejerina, & Fabregat, 2013).

To end the comparison, I will refer to the most important training offered, although it has not yet achieved officially recognised status in higher education, namely the Master's Degree and Expert Course in Archaeology and Virtual Heritage: Documentation, Preservation and Dissemination of Heritage in the Digital Age. This forms part of the International Campus in Archaeology and Heritage SEAV Virtual Training, a space created by the Spanish Society of Virtual Archaeology, the Virtual Archaeology International Network, INNOVA, and 18 research groups affiliated to 14 universities (SEAV, 2012). From my point of view, it is appropriate to mention the six professional areas that underpin the Master's Degree:

- Methodological Innovation in Heritage.
- Advanced Heritage Visualisation.
- Interpretation and Presentation of Heritage.
- Geometric Documentation of Heritage.
- Virtual Reconstruction of Heritage.
- 3D Heritage Research.

5. Discussion

In 2008, the Excellence in Processing Open Cultural Heritage group published a draft proposal for a digital heritage curriculum (EPOCH, 2008) aimed at a number of graduate programmes in Italy, the UK, Greece, France and Spain (Farjas and Rejas, 2008). My analysis thus represents the latest contribution on the reality of digital heritage in Spain.

Despite educational reforms and the existence of the EHEA, historians receive a university education that is obsolete and anachronistic. I believe that this is basically due to an illogical emphasis in the curriculum (excessively political and lacking in social awareness, understood in terms of work experience and international scope), as well as to the enduring conservatism inherent to the academic structure. I do not intend to claim that no Spanish historians on any of these programmes are engaged in making digital knowledge work. But these programmes are insufficient to achieve the goals proposed in the EU. Furthermore, time is running out as other educational and social sectors move more rapidly, demonstrating the lack of inter/cross disciplinaryity.

Digital heritage curricula are rare in Europe. Exceptions include the Digital Art History Initiative of the Getty Foundation, a series of training workshops funded via grants awarded to trainee art historians to work with digital technologies (Getty, 2016). This initiative is based on "Transitioning to a Digital World. Art History, its

Research Centres and Digital Scholarship. A report to the "The Samuel H. Kress Foundation and Roy Rosenzweig Centre for History and New Media, George Mason University" (Zorich, 2012).

These institutions came together again in 2014 to organise the summer activity, Rebuilding the Portfolio: Digital Humanities for Art Historians (George Mason Univ., 2014). Also for the summer, in this case for 2017, a course on 3D Laser Scanning and Photogrammetry has been announced, in this case in Nafplio, Greece (IHC, 2016).

However, the growing importance of digital heritage training is evidenced not only by the organisation of seasonal courses, but also by its implementation in British universities. I cite as an example the universities of Manchester and Leicester. The former offers a Digital Heritage Research Training Initiative, with a course worth 15 credits on Digital Heritage, within the area of Digital Training, which engages with issues related to curation, interpretation, communication and learning in heritage institutions (Manchester Univ., 2016).

In the latter, courses on Heritage Practice Training are offered in conjunction with the Historic England and Heritage Skills Centre (Leicester Univ., 2016).

The training of professionals in the humanities in general, and in heritage and history in particular, cannot be based solely on traditional content or methodologies. Taking this as an axiom in this paper, history is already being practised differently from a quantitative and qualitative point of view (Turchin et al., 2013; EPOCH, 2008).

Material on virtual reality is now being taught on various specialised courses, even at master's degree level. Virtualisation is perhaps the most important part of digitalising the humanities, as I argued in section 4, but precisely for this reason there is an evident need to include basic training. At university level, we must integrate and promote the different practical activities within the new digital universe that history will shortly invite us to participate in.

When we compare the Gutenberg Galaxy (McLuhan 1962), based on the alphabet, we move from a debate focused on encoding and decoding (reading and writing) to another which requires skill, knowledge and aptitudes. The acquisition of competencies involves acting and interacting (agency), with technology, learning its uses for good professional practice. Again, we should recall Bloom's Taxonomy and its application to digital contexts (Fractus Learning, 2014). For a deeper exploration of this line of research, I recommend reading the recent work by David Barreiro (2013).

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6. Conclusion

My proposal is not novel in the context of the last International Digital Heritage Congress, where the Master's Degree in Virtual Cultural Heritage was announced. It is far from my intention to underestimate or dismiss the digital work that has been carried out throughout history. Rather, I have tried to highlight the slow pace at which it is implemented. The objective underlying my proposal is not solely to achieve specialisation in digital material, but also to incorporate digital skills in the standard curriculum for historians and heritage professionals, or "heritagians".

The opportunity and desirability of the new European Digital Single Market requires us to plan courses consistent with a digital future. In my view, a proposal for a more technologically focused training is logical; not for the market as such, but rather for a society that stopped being analogue some time ago. In this regard, mention should be made of the work in Europe undertaken by the Initial Training Network for Digital Cultural Heritage, which emerged from the FP7 PEOPLE programme coordinated by the Digital Heritage Research Lab of the Cyprus University of Technology (ITN-DCH, 2016), and of the Heritage Portal, which provides general information on training opportunities in Europe (Heritage Portal, 2016).

For history and heritage studies at the University of Cadiz, it will be necessary to incorporate new material to expand the digital skills of students graduating within the framework of the knowledge society. Such material should cover not only the creation of digital products, but also the minimum digital skills of knowledge and use of hardware and software related to GIS, georeferencing, remote sensing, LiDAR, virtualisation, photogrammetry, 3D scans, and surveying, drawing and recording archaeological excavations.

There is no time to lose. Our responsibility is to prepare future history and heritage professionals, precisely those who will replace us in a very different society as regards education. This is the path that the authors and institutions I mentioned in Sections 2 and 3 have proposed we follow. It is not about blindly taking a path but about appreciating how far we have come and how far we have to go. But are we convinced that this is the right direction? I think so.

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