
Architectural Heritage in Spain: New technologies, challenges and opportunities for the educational and professional framework

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RESUMEN Los cambios tecnológicos de nuestra sociedad en los últimos diez años plantean retos y oportunidades emergentes en el campo de la protección y conservación del patrimonio arquitectónico en España. Innovaciones o tecnologías emergentes como los MOOCs (acrónimo en inglés de «*Massive Online Open Courses*» o Cursos online masivos y abiertos) en educación, las denominadas «redes sociales» o internet, pueden permitir conectar a los especialistas urbanos con profesionales que trabajan en ámbitos rurales, mejorar la difusión del trabajo de pequeñas empresas locales muy especializadas, adaptar mejor

determinados marcos formativos o facilitar la transmisión del oficios tradicionales a las nuevas generaciones. Este artículo compara las actuaciones españolas con las que se están realizando en otros países europeos, valorando las posibilidades de desarrollo de las competencias necesarias para que los profesionales puedan aprovechar mejor sus capacidades y sinergias y considerando qué iniciativas públicas favorecen el proceso.

PALABRAS CLAVE patrimonio arquitectónico, formación, competencias, transferencia del conocimiento.

ABSTRACT Technological changes in our society in the last ten years set up challenges and emerging opportunities in the field of the protection and conservation of architectural heritage in Spain. Innovations or emerging technologies such as MOOCs (Massive Online Open Courses) in education, so-called «social networks» or the Internet, can allow urban specialists to connect with professionals working in rural areas topics, improve the dissemination of the work of highly specialized local small businesses, better adapt certain training frameworks or facilitate

the transmission of traditional trades to new generations. This article compares Spanish actions with those that are being carried out in other European countries, valuing the possibilities of developing the necessary skills so that professionals can take better advantage of their capacities and synergies and considering which public initiatives stimulate the process.

KEYWORDS architectural heritage, education and training, capacities, knowledge transfer

Introduction

Spain is a country with an important architectural heritage, as material remains of its historical past as a cultural connexion of people crossing and settling in its territory, but also as cultural features spreading to other continents such as America or Asia.

When we refer to this architectural heritage as a term in the context of international references established in the 1972 Convention concerning the Protection of the World Cultural and Natural Heritage, we might find three broad groups of places: monuments, sites and group of buildings¹. The convention has been a turning point that has changed the way we deal with heritage issues, but even then, it had its limits. Times and conditions have

changed, values have evolved, and new complex types of heritage have been included: built properties need increasingly complex management systems. Clearly explained by experts from ICCROM:

“The range of what is regarded as heritage has broadened significantly over the last half-century. Heritage properties tended to be individual monuments and buildings such as places of worship or fortifications and were often regarded as standalone, with no particular relationship to their surrounding landscape. Today, there is general recognition that the whole environment has been affected by its interaction with humanity and is therefore capable of being recognized as heritage. It becomes even more necessary to make judgements about what has significance and what does not.”

*Inevitably, this expansion of the concept of heritage has meant in turn an enormous expansion in the range of types of structures and places treated as heritage. The World Heritage Convention recognizes that heritage can be defined as 'monuments, groups of buildings and sites'. In practice, a broad set of typologies has developed that includes: urban centres, archaeological sites, industrial heritage, cultural landscapes and heritage routes. This greatly increases the range of places and landscapes that has to be managed by heritage managers and thus widens the range of skills required.'*²

Although there are different academic studies related to this heritage, the professions directly linked to it, with professional qualifications are, in Spain, those of architect and “*aparejador*”, also called “*arquitecto técnico*” (technical architect)³. As stated in this article, there are other university studies that also provide training related to architectural heritage, mainly the different specialties of History (History of Art, Archaeology...) and Information and Documentation (Library Science, Archives, Documentalist, Museum Curator ...), but also professions that have emerged as specialization in a certain type of market: Restorer and conservator of cultural assets, Antiquarian, Commissioner or Exhibition Technician, Manager, educator or interpreter of Cultural Heritage ... New concepts on emerging heritage, such as Industrial Heritage, link experts in the field of engineering with certain buildings or constructions. It is also necessary to have experts at different educational levels to ensure the transmission of heritage values to new generations as well as to the society in which these assets are inserted. The technologies that have been developed in current societies make it necessary to also have specialists in the media, especially audio visual media. It is necessary and fundamental to have teachers in the different trades to train specialized labour to carry out the maintenance work, repairs or interventions that these constructions require, as those techniques are often far from the current construction systems. Therefore, nowadays and in a general way, any approach related to the architectural heritage must contemplate the intervention of multidisciplinary teams that cover the different areas; but it also involves an holistic view for those working with heritage, as resources are often limited.

Legal framework for architectural heritage

Cultural Heritage Laws in Spain

The concept of “Cultural Heritage” in the Spanish legal system is not related to “Natural Heritage”: as in the 1972 Convention already mentioned, the laws are totally different for those types of protected heritage.

The main law related to Protection and Conservation of Cultural Heritage is Spanish Constitution. Passed by “*Cortes Generales*” in a Plenary Meeting of the

Congress of Deputies and the Senate held on October 31, 1978, and ratified by the Spanish people in the referendum of December 6th, 1978, it establishes in its art. 46th, on “Conservation of Artistic Heritage”:

*“The public authorities shall guarantee the preservation and promote the enrichment of the historic, cultural and artistic heritage of the peoples of Spain and of the property of which it consists, regardless of its legal status and its ownership. Offences committed against this heritage shall be punished under criminal law.”*⁴

That might suggest that all public administrations, general, regional or local should be involved in its preservation; but reality is that some of them are sometimes part of its destruction. As referred to by Querol (Querol 2010: 19)⁵, the real answer to the question of “who protects heritage?” is “qualified authorities in the field of culture” such as “*Conserjerías*” (Regional public administrations departments) and “*Ministerio*” (Spanish state government department or Ministry). The specific general Spanish law establishes (*Preámbulo y Art. 6 - Ley 16/1985, de 25 de junio, del Patrimonio Histórico Español*):

“Spanish Historical Heritage is the main witness of the historical contribution of the Spaniards to the universal civilization and its contemporary creative capacity. The protection and enrichment of the assets that comprise it constitute fundamental obligations that bind all public powers, according to the mandate that they are directed by Article 46 of the constitutional norm”. [...]

For the purposes of this Law, the following shall be understood as qualified organizations for enforcement:

a) Those authorities responsible for protection of historical heritage in each “Comunidad Autónoma” (regional government).

*b) Those authorities in the State Administration, when this is expressly indicated or when it results necessary to act in defence against illegal export, against theft or damage of Spanish Historical Heritage assets. The state will also be the qualified authority for assets that are included in the Spanish Historical Heritage ascribed to public services managed by the state administration or that are part of the «Patrimonio Nacional» (National Heritage).”*⁶

The concept of “Cultural Heritage” has changed in different historical periods and it can be used with diverse meanings. The Spanish word “*Patrimonio*” has the meaning of “set of assets of a person or an institution, susceptible of economic estimation”; those assets might be, or not, part of the built heritage with cultural or architectural values. As explained by professor Querol (Querol 2010: 23-24):

“When we refer to cultural assets, it is necessary to put behind the word “heritage” some clarifying adjective. Today the most used by the responsible Spanish administrations is “cultural” [...]; but, attention, very close in terms of incidence in administrative use is the adjective «historic». Are these words referring to two different realities or heritage types of assets?”

The answer to this question is related to the

place or the context. In the academic or university environment, nothing is further from the possibility of imagining that culture and history are synonymous. The adjective “cultural” should include many more assets than “historic” or “historical” because it is a broader and more encompassing concept. [...] But in the administrative environment - and the management of cultural heritage is primarily administrative - the real use of both adjectives shows us that they are considered synonymous.

Let's see: when in 1985 the first law of the 18 currently valid on cultural property was published, the “Ley del Patrimonio Histórico Español” (Spanish Historical Heritage Act, hereinafter LPHE) was approved with the adjective “Historical” [...] In 1990, the “Comunidades Autónomas” (Regional public administrations, CCAA) began the publication of their respective regulations on the subject. The first to do so was “Castilla-La Mancha”, which used the adjective “Historical” as the Spanish government; but the second, that of the Basque Country, has already changed to “Cultural”. The reasons appeared in the preamble of this law: it was intended to cover more than just the historical. However, when the content of that rule is analysed, it can be seen that the assets that are included are the same as in the other two: the tangible heritage assets, “unmovable” (such as real estate) and “movable” (such as artefacts or furniture) and, of course marginally, the “intangible” assets.

Subsequent laws used almost alternately an adjective or the other, reaching a true technical draw when Extremadura in 1999 published its own, named “Historical and Cultural” with little understanding of the reason or difference. [...] At this time, with all the laws of the CCAA published and even some, such as Andalusia's, already in a second edition, the adjective “Cultural” wins by majority. But they are almost the same: they deal with the same thing, they aim at identical objectives and they do not make distinctions, so there is no other way than to conclude that, from the administrative and legal point of view, “Cultural” and “Historical” are used as synonyms.¹⁷

As we might see in this good summary of the complex legal Spanish system related to management and protection of “Cultural Heritage” done by Querol, built heritage is often linked to general architectural values, including not only the artistic or aesthetic but also the functional and technical. Most historic cities, archaeological remains or monuments are important to understand a specific culture through its urban design, architecture, science or technology. This is why they are «valuable», why they might be considered “Cultural assets” and why, sometimes, there should be laws to protect them.

Architectural Heritage Professionals

Access to professional qualifications in architecture and building construction is quite different in Spain if compared to other European countries. In the

Middle Ages, in Europe, the professions organized by guilds had their own mechanisms to regulate their activities depending on their specialty. Within their hierarchy (masters, officers and apprentices) each position had its functions and there was mutual respect. Access to professional activities was supervised and granted by the guild, through different types of training and exams. Some countries have maintained a similar system and both academic education and access to professional activities as a “chartered member” is specified, monitored and certified by professional organizations, such as the Royal Institute of British Architects in United Kingdom. In other European countries, as in Spain, it is the Government which have the responsibility of setting the required level to access professional activities. Both architects and engineers follow demanding university studies that give them full professional capacity. Education and training is provided in universities, following an officially set frame established by the Spanish Government and its laws. Academic qualifications usually include different activities that are not exclusive to a profession, but the official academic titles giving access in Spain to those of “Arquitecto” (Architect) or “Arquitecto Técnico” (Building Engineer, see [3]) have a restriction on their use. Both professional titles are linked by the Spanish government to specific academic studies and to restricted practice in the field of Architecture and Building Construction; in fact, it is similar as a professional license in other countries, supervised by state⁸.

To avoid intrusiveness between professions or an irresponsible exercise of it, there are different regulatory provisions that define the tasks in each field. Professional attributions define the areas in which architects and engineers can develop their activities, establishing the conditions for such development and setting qualitative or quantitative limitations. In Spain, it is the Government that establishes those attributions⁹. Not all professions have their own attributions assigned: it is only for those activities where incompetent execution would be a health or safety threat to the public. Those derived from technical education such as architecture and engineering predominate, although occupations related to law (lawyers, notaries-at-law, etc.) and to the world of health (medicine, nursing, veterinary, medicine, etc.) also have attributions.

At the end of 20th century, important changes were introduced to these regulations due to the Spanish government transfer of all levels of education, including universities, to regional governments (Comunidades Autónomas) and also due to the process towards European Higher Education Area (EHEA), started in 1999 with Bologna declaration and launched in March 2010, during the Budapest-Vienna Ministerial Conference¹⁰.

The Spanish government still maintains control and supervision of existing and new academic titles

given by Spanish universities, as article 149 of the Spanish constitution of 1974 establishes as exclusive competences of the State: “1. The State holds exclusive competence over the following matters; [...] xxx) regulation of the conditions relative to the obtaining, issuing and standardisation of academic degrees and professional qualifications and basic rules for the development of Article 27 of the Constitution, in order to guarantee the fulfilment of the obligations of the public authorities in this matter.” [11]

It was not until Royal Decree 967/2014, of November 21¹², that the requirements, the procedure for homologation and declaration of equivalence of degrees, official academic university levels and validation of foreign studies of higher education was established; thus, the procedure to determine the correspondence to the levels of the Spanish qualifications framework for higher education of the official titles of Architect, Engineer, Bachelor, “*Arquitecto Técnico*” (see³), Technical Engineer and Diploma. It deals with two important aspects needed to be clarified due to adaptation of Spanish titles to the European model (Bologna reform):

Homologation of a foreign degree to a Spanish university degree that gives access to a regulated profession in Spain and equivalence at an academic level and to the corresponding degree for the rest of the cases.

Correspondence at the «nivel MECES» (level in MECES, the Spanish Framework of Qualifications for Higher Education) of the former university degrees.

The Spanish National qualifications framework system of equivalences and classification of qualifications relating to Spanish “pre-Bologna” titles is available online, through the website of the Spanish “*Ministerio de Educación y Formación Profesional, de Cultura y Deporte*”, the Spanish Ministry of Education and Vocational Training, Culture and Sports. Correspondence between Official University Degrees (pre-Bologna) and MECES levels¹³ might be checked there, with a specific regulation published in BOE for each official title linked to restricted practice in the field of Architecture and Building Construction, such as “*Arquitecto*” (Architect), “MECES level: 3”¹⁴ or “*Arquitecto Técnico*” (Building Engineer), “MECES level: 2”¹⁵.

Education and training heritage professionals

Academic education

Spanish universities are the first stage to become an educated professional, through studies adapted to the system established for “*títulos oficiales*” or official academic titles. Most universities have

already adapted their titles to the requirements of the European Higher Education Area (EHEA) system.

In Spain, the “*Registro de Universidades, Centros y Títulos*” or RUCT was established by *Real Decreto 1509/2008, de 12 de septiembre, por el que se regula el Registro de Universidades, Centros y Títulos*; this registry have public access through an online site¹⁶ and universities and centres, as well as all official academic titles valid in Spanish national territory, are registered. Other academic titles issued by universities may also be registered, for informative effects. On the website, it is possible to select specific studies, like “*Arquitecto*” (Architect), in any Spanish university, like *Universidad de Granada*; we will see they have three programs: to become a professional we will need to follow both the “*Grado*” and the “*Máster*”, linked to its publication in B.O.E. [figura 1]; to check if some of this studies give access to the official professional title of “*Arquitecto*” (Architect), we have to look for the mention “*Habilita para profesión regulada: Sí*” appears, as we might see in their Master Programme.

We might confirm that the level is «Nivel MECES: 3» and then see in their «*Plan de Estudios*» (syllabus), some subjects related to intervention and conservation techniques, understanding the mechanical behaviour of old structures or repairing existing buildings and others directly linked to «*patrimonio*» or heritage [figura 2].

That is related to the fact that all studies giving access to the official professional title of “*Arquitecto*” (Architect) should have contents related to develop



Figure 1. RUCT: Máster Universitario en Arquitectura por la Universidad de Granada

“Aptitude for interventions in conserving, restoring and rehabilitating the built heritage” as stated in *Orden EDU/2075/2010, de 29 de julio, por la que se establecen los requisitos para la verificación de los títulos universitarios oficiales que habiliten para el*

Cuadro 2. Módulos y Materias del Máster Universitario en Arquitectura

Módulo	Materia	ECTS	Carácter
Técnico	Intervención en edificación existente	4	Obligatorio
	El proyecto de estructuras, mecánica de estructuras antiguas, patología y rehabilitación estructural	4	Obligatorio
Proyectual	Arquitectura: ciudad, patrimonio y paisaje	8	Obligatorio
	Proyecto y planificación	4	Obligatorio
Intensificación/Investigación	Miradas cruzadas: las atenciones del proyecto	4	Obligativo
	Laboratorio de urbanismo sostenible	3	Obligativo
	Tecnologías de la información en el ejercicio profesional de la arquitectura: BIM/GIS	3	Obligativo
	Eficiencia energética, calificación y edificios de gasto casi nulo (rehabilitación y obra nueva)	4	Obligativo
	Sostenibilidad, diseño y cálculo de arquitectura bioclimática	3	Obligativo
	Tecnología del proyecto y dirección de obra: presupuestos, prevención y gestión de calidad	4	Obligativo
	Legislación	4	Obligativo
	Análisis del cálculo informático de estructuras	3	Obligativo
	Vivienda, espacio doméstico y modos de habitar	3	Obligativo
	Patrimonio, memoria y arquitectura	3	Obligativo
Trabajo Fin de Máster	Riesgos geotécnicos en áreas urbanas	3	Obligativo
	Matemáticas avanzadas para arquitectos	4	Obligativo
	Trabajo Fin de Máster	30	Obligatorio

Figure 2. Máster Universitario en Arquitectura por la Universidad de Granada: Plan de Estudios

*ejercicio de la profesión de Arquitecto*¹⁷. Nearly with the same words, it appears in the studies to become a professional “*Arquitecto Técnico*”: “Aptitude for interventions in rehabilitation of buildings and in restoration and conservation of built heritage”¹⁸. But the studies to become such a professional have a different name: “*Graduado o Graduada en Edificación*”; this is a degree in Building Construction, with a required “MECES level: 2”.

Specialized education

Managing architectural heritage need specific skills and Spanish universities realized that professionals working in that area required more specialized studies.

The first Master Programme in Spain related to Heritage Restoration and Rehabilitation was the “*Master en Restauración y Rehabilitación del Patrimonio*” organised by the University of Alcala, already mentioned in a previous paper (Flórez de la Colina, 2004) related with safeguarding cultural heritage in Spain¹⁹. Since 2015, this university has a new “*Máster Universitario en Gestión Integral de Inmuebles y Servicios en el Patrimonio Arquitectónico por la Universidad de Alcalá*”, but designed with different aims and contents, as it can be checked through RUCT website and its linked information²⁰.

Other universities have new Masters and PhD Programmes related with Architectural Heritage, as *Universidad Politécnica de Madrid*, with currently 2 Masters and 3 PhD Programmes [figura 3].

The last one, “*Máster Universitario en El Patrimonio Cultural en el Siglo XXI: Gestión e Investigación*” is an academic Master in “Cultural Heritage in the 21st Century: Management and Research” and it is organized by two universities in Madrid: *Universidad Complutense de Madrid* and *Universidad Politécnica de Madrid*. It has recently been approved and published [figura 4].

Figure 3. RUCT- Universidad Politécnica de Madrid: Patrimonio

Universidad	Código CCAA	Nombre CCAA	F. Autorización CCAA	Fecha Autorización CCAA
Universidad Complutense de Madrid	13	Comunidad de Madrid	09/10/2017	09/10/2017
Universidad Politécnica de Madrid	13	Comunidad de Madrid	09/10/2017	09/10/2017

Figure 4. RUCT: Máster Universitario en El Patrimonio Cultural en el Siglo XXI: Gestión e Investigación

Training Heritage Professionals

There are other very interesting possibilities for European professionals to widen their knowledge on architectural heritage, some of them linking institutions, companies and universities.

The range of courses is very varied, from documentation and investigation of cultural heritage sites as described by Eppich and Almagro Vidal (Eppich and Almagro Vidal 2013: 109-114)²¹ to materials and techniques for the restoration of monuments, analyzing compatibility, durability, sustainability and economy issues in retrofitting heritage structures, as the course designed by the Laboratory of Building Materials from the department of Civil Engineering in Aristotle University of Thessaloniki, Greece, taking place in the Archaeological site of Dion MARE-17²².

The main aim of courses like MARE-17 or its previous edition MARE-14, is to make possible the contact between young professionals and experienced ones, as well as academics and company experts.



Figure 5. Archaeological site of Dion MARE-14: Taking samples for testing. (Fot. M.A. Flórez de la Colina)

Checking «in situ» problems with experts, analyzing samples in the university laboratory, trying to find the best solutions with specialists from companies is a good training approach to understand scientific holistic methodologies in a short period of time and to become able to evaluate solutions for built heritage reducing the risk of irreparable mistakes [figura 5].

Knowledge transfer and live long learning

National institutions like the Spanish *Instituto del Patrimonio Cultural de España- IPCE* ²³, the Cultural Heritage Institute of Spain (attached to the Directorate General of Fine Arts and Cultural Heritage of the Ministry of Education, Culture and Sport), are permanently organizing activities related to heritage in Spain. As an example of some courses in 2018 for professionals: “Ciencia y Patrimonio. Oportunidades, experiencias y dimensión europea. Reunión de la Red de Ciencia y Tecnología para la Conservación del Patrimonio (Technoheritage)”, on “Science and Heritage. Opportunities, experiences and European dimension. Meeting of the Science and Technology for Heritage Conservation Net (Technoheritage)”; “Archaeology of architecture”, a “Seminar-Workshop of the National Defensive Architecture Plan. New uses and enhancement of defensive architecture”, “Photography for Heritage documentation”, “The traditional trades of traditional architecture in Spain. Safeguard actions. Experiences and perspectives for the future”; “Professionals involved in the Heritage: architects, archaeologists and conservators-restorers. Legal regulation and definition of competences”.

Regional institutions like *Instituto Andaluz del Patrimonio histórico* follow the same ideas and organized also specialized courses. Some of them for 2018: “Taller de esgrafiado tradicional. Dirección

académica: Ana Marazuela Esteban, especialista en la gestión de obra de rehabilitación patrimonial. Del 7 al 9 de marzo de 2018”, on traditional Spanish facade renders, usually with geometric patterns; “Curso de especialización en colaboración con la asociación hornos de la cal de Morón. Taller de aplicación de la técnica del Tadelakt. Dirección académica: José Calvente Casas, maestro artesano. Del 9 al 11 de mayo de 2018”, course on a specific technique using lime materials, by a master craftsman with the collaboration of its association; “Curso de especialización en colaboración con la escuela de bioconstrucción Los Guindales. Curso de introducción a la Carpintería de armar. Dirección académica: Loris Carboni, Carpintero de armar y bioconstructor. Del 21 al 23 de mayo de 2018”, course on a specific Spanish technique using wood frames, by a master craftsman with the collaboration a school for bioconstruction²⁴. These courses aim is clearly oriented to connect professionals, trade specialists, small companies and training schools, a very much needed relation in the conservation of built heritage.

Most Spanish institutions related with heritage are organizing activities as those presented in this paper. Some of them appear in media, either in leisure or news programmes. There are many videos in *social networks* such as Youtube. But most of them are only in Spanish, or related with the Hispanic Heritage in America, some of them only images with music²⁵.

Some Spanish universities are creating MOOCs (Massive Online Open Courses), related to specific fields of Heritage, which gives them the possibility to transfer knowledge to a very wide range of students. But those courses use innovative technologies, requiring investments from the universities (and from its partners, such as MiriadaX platform) to produce them and they are very demanding for all those involved in their design²⁶.

Conclusions

The evolution in the concept of cultural heritage, but also in our vision of society, requires new approaches to education. Technology changes may create difficulties for those not being able to adapt to them and authorities have the responsibility to address the gap that may let many people without access to modern knowledge. But it creates also new opportunities to reach a wide range of persons, and to implement live long learning.

This paper is the result of many years of experience of its author, both as a practising professional architect (*Arquitecto*) and as part of the Faculty of “*Escuela Técnica Superior de Edificación*”, previously named “*Escuela Universitaria de Arquitectura Técnica*”, a building engineering school of Universidad Politécnica de Madrid. It is a personal selection of its author to present what has been done in Spain in the last years, to adapt two of the main professions related

to Architectural Heritage to European Framework and to the regional and local context, in the hope it might be useful for a better understanding of its problems and opportunities.

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Notes

- [1] See Art.1 “Cultural Heritage” and Art.2 “Natural heritage” in: UNESCO (1972) Convention Concerning the Protection of the World Cultural and Natural Heritage, adopted by the General Conference of the United Nations Educational, Scientific and Cultural Organization, at its seventeenth session, meeting in Paris from 17 October to 21 November 1972. Paris: UNESCO [online]. Available at: <https://whc.unesco.org/en/conventiontext/> [Accessed: 30 June 2018]
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- [3] Spanish Aparejador or Arquitecto Técnico is quite different from British Technical Architect. It is sometimes translated as “Quantity Surveyor” but that is also a translation lacking precision. It might also be translated as “Building Engineer”, as what they do is closer to this term in English; in the personal opinion of the author, it is the more accurate term.
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Curriculum



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