

Events

Digital Cultural Heritage | International Experiences Documentation, Survey and Representation for Knowledge, Design and Conservation

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The intensive schedule of the XXV edition of the *Restoration, Museums and Cultural Business Trade Show* in Ferrara included, on the afternoon of 21st March, 2018, the inaugural day of the event, the conference initiative *Digital Cultural Heritage | International Experiences. Documentation, survey and representation for knowledge, design and conservation*, organised and curated by the DIAPReM/ TekneHub Departmental Centre of the Department of Architecture at the University of Ferrara, in collaboration with the UID, Italian Union for Drawing, with the scientific coordination of Marcello Balzani and Manuela Incerti (University of Ferrara). The main theme of the conference was the relationship between digital technologies and cultural heritage: the undeniably prominence of this topic, as well as its central role in the international debate, are borne out by the importance given to digitalisation in the development trajectories set out in the European Digital Agenda, in addition to the the institution in 2018 of the European Year of Cultural Heritage, with the aims of promoting knowledge and sharing and disseminating history and culture.

During the conference in Ferrara, the theme was tackled and explained through the presentation of a mosaic of international case studies, which

offered a varied and exhaustive overview of the borders of the research programs currently in progress at Italian universities, as well as the principle experiences of those aimed to internationalisation of research activity. Using the projects conducted by the Italian scientific community in the field of representation and architectural, archaeological, urban and environmental survey as its starting point, the UID presented studies and research carried out in cooperation with universities or cultural referents from other countries (China, Iraq, Algeria, Morocco, Vatican City, etc.) and founded on the themes of knowledge, protecting and enhancing the value of cultural heritage through digital documentation. The areas of study covered by the projects presented during the conference featured a remarkable degree of transversality and a significant variety of application contexts, ranging from specific conservative and museum purposes, which assume a central role in the development of innovative research applications, to knowledge and documentation activities aimed at promoting and disseminating cultural heritage, and enhancing its value.

Coordinated by Marcello Balzani (University of Ferrara), the conference opened with the introduction by Mario Centofanti, vice president of UID, which

focused on the elements that provide an expanded definition of cultural heritage, retracing the essential steps in the evolution of the concept of heritage and focusing on the importance of digital technologies in its documentation, from the architectural survey right through to its communication. In fact, the widespread use of IT tools has made possible to develop a large variety of manners for protecting, conserving and enhancing the value of cultural heritage, outlining a complex scenario where the disciplines of representation play a primary role. The series of the case studies was then opened with the intervention of Salvatore Barba (University of Salerno), entitled *Data acquisition using active and passive sensors for digital architecture survey in so-called at-risk countries. Two case studies carried out in Algeria and Iraq* that, in view of the pressing nature of the problems represented by the risk of degradation and destruction of cultural heritage, highlighted some encouraging policies for the digital preservation of architectural heritage and memory of places. In this context, new professional figures are working daily to achieve the goal of a faithful and exhaustive digital documentation of material goods, which in the presence of shared methods of linguistic coding, can contribute to build-

ing a global database. The theme was exemplified through the presentation of two case studies: the first, developed in collaboration with the *Laboratorio de Arqueología y Arquitectura de la Ciudad* in Granada, focused on the reconstruction of the mosque and minaret of the Algerian city of Mansourah through the use of a photographic campaign also conducted in remote; the second, which formed part of a training project in enhancing the value of cultural heritage promoted by the Italian Ministry of Foreign Affairs, with the collaboration of the CNR-ITABC, focused on the limestone block aqueduct at Jerwan (in modern day Iraqi Kurdistan), considered the most ancient irrigation system known to history and investigated using laser scanner survey systems.

The second intervention, entitled *Didactic and research experiences at Fez and Tbilisi*, was presented by Paola Puma and Giovanni Pancani (University of Florence), whose studies, on one hand, focused on the relevant aspects for enhancing the value of archaeological heritage and, on the other hand, on the need for digital architectural survey for diagnostic and protection purposes. The *Vani through Virtual heritage* project, which is a collaboration between the Faculty of Architecture at the University of Florence and the Tbilisi State Academy of the Arts-Media Arts department, involves research activity, which is still ongoing, consisting of a digital survey aimed at producing a digitally consultable documentation (with two-dimensional and three-dimensional output) of the important archaeological heritage of the Georgian city of Vani. The survey of the Arch of Caracalla in Volubilis, in the Moroccan region of Fès-Meknès, is part of a cooperation project between the University of Florence and the Université Euro-Méditerranéenne de Fès, which

Fig. 1. Image of the exhibition space dedicated to UID during the Restoration, Museums and Cultural Business Trade Show.



has also seen the launch of the *École Euro-Méditerranéenne d'Architecture, Design et Urbanisme de Fès*. The survey, carried out using *Structure from Motion* techniques, together with direct measurements aimed at checking and verifying dimensions, has enabled the researchers to build up an exhaustive knowledge of the evolution of the artefact, and has been extended to include a study of its seismic vulnerability, leading to the identification of the potential collapse mechanism on the basis of the comparison with the data emerging from the historical investigations. The following intervention, presented by Paolo Belardi (University of Perugia) and Simone Bori (Academy of Fine Arts 'Pietro Vannucci' of Perugia)

and entitled *Sistina Experience*. An *international knowledge, protection and value-enhancement experience*, took its cue from the outcome of an integral digital architectural survey of the spaces and works preserved in the Vatican Museums, performed by the Perugian company Archimede Arte, to illustrate the design concept for an itinerant multimedia replica of the Sistine Chapel (in other words, a replica that can be dismantled and reassembled anywhere in the world: from New York to Beijing, from Moscow to Rio de Janeiro, as demonstrated by the speakers' remarkable infographics). The project, developed by an interdisciplinary team drawn exclusively from the Umbria region (Archimede Arte srl of Perugia, 'Pietro

Vannucci' Academy of Fine Arts in Perugia, Department of Civil and Environmental Engineering at the University of Perugia, Tecla srl of Gubbio) was named *Sistina Experience* to underline the possibility of experiencing one of the most famous artistic sites in the world in a multi-sensorial and multifunctional way: a wooden case, which recalls the external dimensions of the Sistina Chapel, and functions as a blank, elementary volume, accommodates replicas of the works of art that it houses, realised through a combination of traditional and innovative technologies, with the aim of creating experiential visual paths capable of rendering visible details and settings that would otherwise be hidden, thereby enhancing the cultural and communicative potential of the copy and amplifying the knowledge and experience of the original cultural asset.

The fourth intervention, entitled *MONADII - Operational Methodologies for New Non-Destructive Approaches to Interoperable Interventions and Management of Cultural Heritage*, was presented by Andrea Giordano and Cosimo Monteleone (University of Padua) and illustrated the results of a research project focused on issues related to the knowledge, protection and management of cultural heritage that makes use of the specialised contribution of Duke University (NC, USA) and Nanyang University (Singapore). The proposed case study is that of the *Scuola del Carmine* in Padua, whose immersive 3D model was created both to serve the needs of the scientific community

and to promote tourism; based on the premise that the development of tourism and the management of cultural heritage can benefit from unprecedented synergies between different digital technologies, the research project explores the potential offered by combining and integrating the use of BIM with Augmented Reality. Immersion in 3D space is achieved both through portable devices, which may be used by any operator, and within fixed CAVE (*Cave Automatic Virtual Environment*) stations; Augmented Reality permits the user to experience the BIM model, which is realised by using laser-scanning techniques, directly; moreover, the use of a point cloud constitutes an additional experimental frontier, placing the accent on the *SCAN to BIM* process.

The final case study, presented by Antonio Conte and Marianna Calia (University of Basilicata) and entitled *From urban Qilou houses to the rural fortresses of the south-eastern coast of China: research contributions for understanding, protecting and enhancing the value of cultural heritage*, was developed within the context of a broader collaboration between the University of Basilicata, the Polytechnic of Bari, the South China University of Technology of Canton and the Fuzhou University. The research, which was carried out in order to study Chinese urban, rural and landscape heritage, focused on examples located in the coastal strip of the southern Chinese regions of Guangdong and Fujian. Specifically, the historical centre of the city of Guangzhou (Canton), whose

residential fabric displays evident influences of Western architecture, presents narrow, extended building lots (*Qilou*) that represent one of the essential characteristics of the traditional Cantonese residence: through documentation and monitoring it was possible to produce maps and diagnostic surveys at various scales, with the purpose of drawing up a manual of good practices for use during recovery and maintenance work and of creating tools to support the regeneration project and the processes of protecting and safeguarding the city-landscape system.

The conference concluded with the presentation of the *open access* biannual journal of the UID scientific society, *diségno*, by Vito Cardone, President of UID, and Alberto Sdegno (University of Trieste), respectively the editor-in-chief of the publication and member of its editorial-coordination committee; the journal is intended to provide space that enables members of the representation scientific community to share and compare their research experiences.

The complete picture of the topics covered during the conference was summarised in a dedicated space at the *Restoration, Museums and Cultural Business Trade Show* in Ferrara; this installation, which was also prepared by Marcello Balzani and Manuela Incerti, allowed visitors to the event to get closer to the experiences developed in the academic field, providing a further opportunity for sharing, distributing and disseminating research results.

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