

## Events

# Documentazione & Digitale 2020 Rome

## Knowledge and communication of Cultural Heritage

Cecilia Bolognesi

The event presented by the Department of History, Design and Restoration of Architecture of Sapienza University of Rome, and sponsored by UID Unione Italiana per il Disegno [1], is a moment of exchange and scientific and cultural update; the event is in its third edition after the previous editions held at the University of Pavia and the Politecnico di Torino. The origin of the meetings comes specifically from the scientific research of Representation, understood in a high sense as a key to knowledge, communication of the imagined and the real, the built environment but also the natural one. Even before for the others, a drawing is produced precisely for those who elaborates it and who finds in that action of materialization of thought an advancement of a personal knowledge with which it compares and improves, and later, as today, this can become a shared experience. Representation as a shared subject is integrated with disciplines coming from other fields such as history and restoration. But it is also treated as Memory, as synchronic and diachronic experience of the human experience in the meanings that Franco Purini underlines.

In technical terms, the purpose of the initiative is to guarantee an update of scientific innovations in the field of dig-

ital documentation of the Built Heritage, aiming at knowledge for valorization. Therefore, within it we can find research with innovative implications, methodological debates, experimental applications, tests of the best consolidated practices necessary to take possession in terms of knowledge and dissemination of cultural heritage; the medium is the research of young researchers, who become the background for dialogue and confrontation with the scientific community.

A series of introductory reports given by personalities who have the responsibility of managing cultural heritage starts the communications: the presence of Erminia Sciacchitano (MIBACT), Alfonsina Russo (Director of the Archaeological Park of the Colosseum), Federica Rinaldi (Director of the Colosseum), Stefano Borghini (Responsible for the implementation of the Digital Archaeological Park), Dario Aureli (Head of the Technical Office of Palazzo Barberini), along with Carlo Bianchini (Director of the Department of History, Representation and Restoration of Architecture of Sapienza University of Rome), Emanuela Chiavoni (Coordinator of the Doctorate in History, Representation and Restoration of Architecture of Sapienza University of Rome) and Francesca Fatta (Presi-

dent of Unione Italiana per il Disegno), together with the professors of the various universities that are part of the organizing committee, demonstrates both the liveliness of the theme and its concrete permeability between the field of research and the field of application in the realm of heritage. Specifically, the various introductions to the day clearly expressed one of the need that occurred during the pandemic months: that is to be able to communicate cultural content in the heritage sphere, even with respect to places and sites. These actions, advocated by the MIBACT and museum directors through a three-year plan for the digitization and digital innovation of museums, have had the ability to accelerate a path of communication of heritage to an increasingly broad audience; in some cases, as explained by the Director of the Colosseum Park, and Stefano Borghini, they have been able to create not only a replacement of real visits with virtual ones, but an extension of the experience to further content, with more engaging and immersive modes, so much so as to make the museum institution a forum, a new space for debate among the public, researchers, and experts. The complex cultural history of the park of the Colosseum becomes a point of reference: in the necessity of

its transmission to the public they have grown actions of storytelling supported by different technologies, from the physical models to the virtual ones, to the projections, to the immersive fruitions with an amplification of the experience that multiplies the contents and the meanings.

The contents expanded by the growth of digital tools within the cultural heritage have also demonstrated a greater inclusive capacity towards the public; some experiences can meet the needs of usability for a public otherwise affected in a visit in presence, other experiences are developed and brought for example within the study session referring to categories fragile in sight, or hearing, readily supported by touch for the use of tactile maps and other supports in view of the enlargement of the fruition.

The topics covered are many, but the general lines of research that run through the various researches can basically be ascribed to four macro areas all hinged on the same research question: how digital representation and documentation can create intelligent models that incorporate our knowledge of designers and how this heritage becomes a new source of knowledge and how this heritage becomes a new form of collective intelligence for the benefit of the heritage itself.

The first topic, and perhaps the most discussed within the reports exposed, concerns which semantic modeling to give to our models for architecture, models that we create starting from the existing, for example, with a process that immediately affects the three phases declined by Riccardo Migliari: the semantic modeling is a moment of segmentation of the mass rich in information but unaware of its constitution, after which processes of synthesis are operated, but also reduction and projection. It is a complex pro-

**DOCUMENTAZIONE & DIGITALE 2020 ROMA**

CONOSCERE E COMUNICARE IL PATRIMONIO CULTURALE

DECE. 4 2020

DESTINATION TIME

**PROGRAMMA DELL'EVENTO**

14.12 REGISTRAZIONE  
14.12 SESSIONE DI APERTURA

**CONTRIBUTORI INTRODUTTIVI**

14.12 ANTONIA CALCIANO - INIZIATIVE DI PROGETTO DI OBIETTIVI COLLABORAZIONE DEL MINISTERO  
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**PACCA PIANO**

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Fig. 1. Flyer of the event.

cess, above all within the BIM authoring software, which obliges us to discretize architectures that are sometimes very complex, to make choices and compromises to which we do not want to surrender so easily. It is therefore a matter of declining new taxonomies, the most common one that most of us refer to is the one related to historical architecture, to elaborate a lexicon congruous to its construction.

Directly related to the semantic modeling of digital architectural representations of heritage, many interventions seek the dialogue between models and formats that derive from them to support the use of Artificial Intelligence; the latter must be considered useful within systems for querying and managing the models themselves. On the one hand, theoretical and methodological issues of the digital model are investigated, on the other hand, simplifications consistent with an understanding of content for a smart use by AI. The field of application is vast and touches similar themes in all interventions: after the acquisition of digital data and the definition of a model structuring technique, the management of annotations and the structuring of AI processes remain the frontier of

application still too little explored but where collective intelligence is growing. Scripting and neural networks for the management of digital twins belong to this type of research and it is difficult to recognize the perimeters of disciplinary competences, where a large part of the success of the research is determined by the initial modeling approach. The model therefore recurs as a central element of all the developments investigated, a multiple and integrated descriptive model. The neural networks find different applications in the research in the field of automatic recognition by means of Artificial Intelligence algorithms of the semantic structure of the model, with complex phases of training to the recognition of the parts, illustrated and applied to complex cases, considering heritage. The model in its structure of relational database, is the center of the construction of a third strand of the searches, more focused on the management of the multiscale informative systems for the valorization of the architectural heritage. Once again themes touch the variety of languages, the interoperability of the systems and the use of different documental apparatuses by different users, ranging from the model to the

combined management of historical memory, information and interventions on the work. Communication to public, the profiling of the different users and of the different answers becomes a research theme and the databases explore under new points of view the structure of the model for declinations suitable for every situation undertaken. Finally, the event reports some interventions aimed at analyzing past pictorial works of art or related to the more recent graphic heritage, bringing the issue of representation on a more direct cognitive level, as mentioned at the beginning of this thought; some interventions analyze the phenomenon in its context of reference, explaining the added value that artists can offer in the enhancement of architectural heritage both historical and contemporary. In synthesis, the whole conference represents a dense and variegated analysis of the state of the art of what in our sector intersects the concepts of model, document, digital, in the relationships that exist between the parts at the service of a growth in the knowledge of architecture; particularly valuable thanks to a series of young researchers here included.

## Notes

[1] Recording of the event, available online from 10.12.2020 at: <<https://www.youtube.com/watch?v=8ZyulvDSwIA>> (accessed 10 May 2021).

## Author

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