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Digital Research and Education in Architectural Heritage

5th Conference, DECH 2017, and First Workshop, UHDL 2017
Dresden, Germany, March 30–31, 2017
Revised Selected Papers
Urban history, drawing on architectural heritage and cultural history, is one of the key areas in digital humanities. Regarding the research interest, digital libraries play an important role, especially for visual media such as photographs, paintings, or drawings, but also for physical and virtual models. Owing to the wide field of possible research, different approaches, methods, and technologies have emerged – and are still emerging.

For a long time, funding priorities for digital cultural heritage in general—and digital supported research on urban history in the EU and in Germany in particular—focused primarily on technological aspects. These included cost minimization, the ease of use of software tools for creating digital 3D reconstructions, and specific cases of application. One focus has been on digital research environments for the digital humanities. While DARIAH\(^1\) and CLARIN\(^2\) develop and operate virtual research environments for humanities scholars, especially for text-related research approaches, projects like DC-NET\(^3\) focus on e-infrastructures for preserving cultural heritage. ARIADNE\(^4\) and associated projects are dedicated to supporting archaeological information management on a European level. Complementing these, the EUROPEANA\(^5\) virtual library and its sub-projects are dedicated digital repositories for digital cultural heritage assets in Europe, which collect and aggregate resources from museums, libraries, and archives.

Regarding the role of digital libraries and repositories as main facilitators, previous funding programs have not sufficiently considered the fact that digitally supported urban history research is conducted and applied in complex socio-technical arrangements. Against this background, a paradigm shift has taken place in funding politics since 2010. Besides the further development of technical infrastructures like research environments and digital repositories, human resources, transnational knowledge exchange and cooperation, social and economic impacts, valorization and dissemination are increasingly important objects of funding. An evaluation of the FP5-7 research funding programs stated that: “Foster[ing] the dissemination, transfer and take-up of program results” has been seen—in these programs—as an underrepresented issue. By contrast, the Horizon 2020 work program aims for “an understanding of Europe’s intellectual basis,” the use of “new technologies […] as they enable new and richer interpretations of our common European culture while contributing to sustainable economic growth,” and the development of innovative research infrastructures to foster research, education, and publication of “knowledge-based resources such as collections

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to a European audience. In this changing context, the question arises as to how research and education of urban history can be supported by digital libraries.

The primary objective of the conference “Digital Encounters in Cultural Heritage” (DECH) and the workshop “Urban History in the Age of Digital Libraries” (UHDL), held in March 2017 in Dresden as a joint event, was to concentrate on the area of tension between the fields of culture, technologies, and education. This book presents major findings and aims to highlight crucial challenges for further research and to encourage debate between the sciences. We showcase contributions on theoretical and methodological issues, application scenarios and projects, as well as novel approaches and tools. The 33 submissions to the joint event were reviewed by a joint Program Committee. The reviewers selected which paper was to be accepted for the conference and which for the workshop. After the conference, 13 papers were invited for the revised and selected papers volume: 11 from the DECH conference and two from the UHDL workshop track. These include the following five areas:

1. Research on Architectural and Urban Cultural Heritage

Do computing methods lead to new and ground-breaking research questions, approaches, or insights into architectural and urban cultural heritage research? This general question has been primarily addressed in terms of research contexts, research objects, or phases in the research process. In most cases, the use of computing simply extends nondigital possibilities, without much change to the pre-digital approaches and research questions. Nevertheless, digitalization has dramatically altered research qualities, quantities, and workflows. This section will present three chapters about insights and research approaches in the field of cultural heritage fertilized by the employment of digital technologies.

2. Technical Access

During the past few years, various new technological opportunities have arisen from big data, Semantic Web technologies, and the exponential growth in data accessible via digital libraries such as EUROPEANA. The immense effort invested in digitization and rapid changes in technologies and formats have greatly increased the importance of sustainability in recent years. Long-term data storage, availability of models, and the interoperability of data formats are major challenges to existing digital infrastructures. Moreover, novel approaches such as the photogrammetric reconstruction of historical buildings from image databases allow for contextualization and intuitive access to data. This section includes two articles focusing on technical workflows and tools to support research and education in the field of urban history.

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3. Systematization

Both research on urban history from the perspective of humanities and the development of supporting digital technologies are attracting attention from art history, digital cultural heritage studies, and information sciences. These multidisciplinary settings present various challenges due to the specific requirements of interdisciplinary work, such as common grounds, project strategies, or critically reflected methods. The widespread impact of digital humanities has created a high demand for research to be put to practical use. The applicable techniques, valid strategies, classifications, and quality standards need to be determined. Against this background, this section includes five articles about methodologies, practices, and standards for utilizing digital technologies for cultural heritage research.

4. Education in Urban History

Education and support through digital libraries plays only a minor role in scholarly discourses on cultural heritage and in particular urban history. There is still no broad consensus on specific education paradigms, or a canon of didactic settings in digitally supported teaching on urban history, and as yet no larger studies have been conducted in this area. In this section, two articles highlight perspectives to employ digital technology and to educate a broad audience about urban and landscape history.

5. Organizational Perspectives

Concerning application of digital methods, numerous associations were funded and a lively scholarly community has arisen during the last decades. One of the most renowned associations worldwide is the CIPA Heritage Documentation, an International Scientific Committee (ISC) of ICOMOS, and ISPRS (International Society for Photogrammetry and Remote Sensing). This last chapter is dedicated to gain an insight in CIPA’s activities as well as to highlight challenges and perspectives of cultural heritage on a global level.

We would like to acknowledge the important work done by the chapter reviewers. We also thank the sponsors, Program Committee members, supporting organizations, and volunteers for making the joint event held in Dresden in March 2017 a success. Without their efforts, the event would not have been possible.

February 2018

Sander Münster
Kristina Friedrichs
Florian Niebling
Agnieszka Seidel-Grzesińska
Organization

Reviewers

<table>
<thead>
<tr>
<th>Name</th>
<th>Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fabrizio I. Apollonio</td>
<td>University of Bologna, Italy</td>
</tr>
<tr>
<td>Stefan Bürger</td>
<td>Julius-Maximilians-Universität Würzburg, Germany</td>
</tr>
<tr>
<td>Emanuel Demetrescu</td>
<td>Istituto per le Tecnologie Applicate ai Beni Culturali, Italy</td>
</tr>
<tr>
<td>Andreas Georgopoulos</td>
<td>National Technical University of Athens, Greece</td>
</tr>
<tr>
<td>Robert Hecht</td>
<td>IÖR Dresden, Germany</td>
</tr>
<tr>
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<td>Thomas Koehler</td>
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<td>Piotr Kuroczynski</td>
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<tr>
<td>Marc Erich Latoschik</td>
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<td>Davide Mezzino</td>
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<tr>
<td>Mieke Pfarr-Harfst</td>
<td>TU Darmstadt, Germany</td>
</tr>
<tr>
<td>Nikolas Prechtel</td>
<td>Technische Universität Dresden, Germany</td>
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<tr>
<td>Fulvio Rinaudo</td>
<td>Politecnico di Torino, Italy</td>
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<tr>
<td>Antonio Rodríguez</td>
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<td>Mario Santana Quintero</td>
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<tr>
<td>Danilo Schneider</td>
<td>Technische Universität Dresden, Germany</td>
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<tr>
<td>Jin Shang</td>
<td>Tsinghua University, China</td>
</tr>
<tr>
<td>Alex Ya-Ning Yen</td>
<td>China University of Technology, Taiwan</td>
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