# Conservation of Architectural Heritage (CAH): Sustainability

A Book of Abstracts submitted to the 7<sup>th</sup> edition of the international conference on Conservation of Architectural Heritage (CAH): Sustainability

12 – 14 Sep 2023







## Acknowledgements

IEREK would like to express its appreciation to all members of the staff and scientific committee for their tremendous efforts and contribution to the growth of this institution and for making the seventh edition of the international conference on Conservation of Architectural Heritage (CAH): Sustainability. IEREK would like to thank the its partner, the University of Portsmouth, and CAH 2023 conference Chairs, Dr. Tarek Teba and Dr. Antonino Di Raimo, from the School of Architecture at the University. Dr. Tarek Teba, Dr. Antonino Di Raimo and their team had a hand in making the 7<sup>th</sup> Edition of this conference what it is today by providing their unwavering support in managing scientific and logistical aspects of this edition of CAH, contributing to this conference series' continued success.

IEREK takes pride in being an institution that amasses a highly qualified and competent team who restlessly worked for months to make this conference what it is today in hopes of covering the topic of heritage conservation & maintenance against degradational factors. Last but not least, we cannot neglect the prominent role undertaken by our network of experts contributing as editors, reviewers, session moderators and keynote speakers who made it their duty to help this institution in spreading knowledge to the masses.

### **Preface**

The international conference on the "Conservation of Architectural Heritage (CAH): Sustainability" in its seventh edition brings attention to the wider topic of heritage enriched by the exploration of fundamental relationships that heritage retains with sustainability.

Undoubtedly, over the last two decades architectural heritage as a complex interdisciplinary field has evolved consistently not only by including tangible and intangible dimensions in Architectural Heritage practices and theories, but also by linking heritage conservation and regeneration with the wider discourses around Sustainability and Sustainable Development.

As can be seen by the abstract collected in this book, the evolution of heritage as a notion seems to converge on two aspects: the first aspect concerns the crucial need of working with communities where heritage exists and eventually shared, preserved and enhanced. Communities, the actual owners of heritage, are key to achieving effective conservation and interventions. The second aspect is related to the essential bond that contemporary heritage practices and praxis hold with the broader notion of environment and thus with the theme of sustainability.

This conference, therefore, aims to stress the importance of the relationship between heritage and sustainability and to emphasise the unprecedented recognition of the notion of culture as part of performing the Sustainable Development Goals. Culture and more specifically Cultural Heritage can play a crucial role in the development of our built and unbuilt environments, especially through SDG 11. This goal, which asks to make the cities and human settlements inclusive, safe, resilient and sustainable, intends to strengthen the efforts to protect and safeguard the cultural and natural legacy of our cities and the world (target 11.4). Therefore, conservation of tangible and intangible heritage is paramount in making our world more sustainable.

Contributions presented in this conference shows not only that heritage is a cultural product that embraces the substance of our places at their architectural, urban and landscape scales, but also emphasises the importance of the notion of sustainability as a systemic approach. On the other hand, if we refer to the earliest definition of Sustainability, namely "meeting the needs of the present without compromising the ability of future generations to meet their own needs", we also realise how heritage and sustainability deal with very similar concerns, which are about preserving cultural and environmental resources for future generations to have sustainable and resilient future and living circumstances.

This book collects contributions from different geographical and cultural realities.

Despite the greatness in the variety, the majority of the contributions share the same concern conveyed through a common call to the notion of sustainability through heritage practices. Within the presented experiences, this notion occurs at different scales and praxis, which proposes that a sustainable approach, rather than being a mere enrichment, is a profound necessity for any kind of cultural heritage operation regardless of its tangible or intangible nature.

Thanks to the organisational support that IEREK offers for the development of the seventh conference on Conservation of Architectural Heritage (CAH): Sustainability that is held at the University of Portsmouth. The unique place of Portsmouth as the only island city in the UK with its diverse coastal and naval heritage is suitable for maintaining the conference objectives in enriching and expanding the Architectural Heritage's domain by acknowledging its role in achieving a more sustainable world.

### Word from the Chairman of the Board of IEREK

It is my honor to be launching this conference on Conservation of Architectural Heritage (CAH): Sustainability the 7<sup>th</sup> Edition of its kind.

IEREK- International Experts for Research Enrichment and Knowledge Exchange - is an institution that began pursuing its goal of reaching excellence in the research field in 2013, and since then has been connecting the world's scholars and providing them with a platform that would advance all their endeavors. Building international relationships with prestigious universities and institutes worldwide is one of IEREK's main goals, spreading knowledge and enhancing research around the world, along the way, through collaborating with trustworthy partners who share its same vision.

That said, IEREK continues to hope to present the world with a conference that positively contributes to its relative field and makes way for scholars to combine their ideas for the greater goal of discovering new and innovative solutions to the issue at hand, with the aid of our scientific committee comprised of distinguished professors and researchers from a variety of international, established universities.

Finally, I hope that the conference succeeds in delivering its message to the world of professionals in the various concerned disciplines in order for their work to be put into motion. I also declare our welcome to all audiences, from undergraduate to postgraduate students, and all who will benefit the most out of this conference. I am looking forward to meeting you all and collaborating within this successful experience.

Mourad S. Amer, PhD

IEREK CEO & Founder COEUS CEO & Founder Series Editor, ASTI /SUCI /SLNR by Springer

#### WORD BY THE CONFERENCE CHAIRPERSONS

The "Conservation of Architectural Heritage (CAH): Sustainability" conference is a great opportunity for cross-border exchange of knowledge and best practices of the sustainable conservation and development of tangible and intangible heritage. The University of Portsmouth and its Heritage Hub welcome this conference to the University and the City as it reinforces the ethos of communities and their role in preserving and regenerating their heritage. As the chair of the conference and the chair of the University of Portsmouth Heritage Hub, I am delighted to welcome a wide range of international experts and academics with local heritage bodies and stakeholders in the city to explore matters related to heritage and sustainable development in light of the different environmental, economic and social challenges the world is facing nowadays. I hope the conference will be the key starting point for further national and international collaborations in this interdisciplinary field.



Reader in Architectural Heritage at School of Architecture, the University of Portsmouth, UK.

The "Conservation of Architectural Heritage (CAH): Sustainability" is a significant opportunity to share knowledge about cultural heritage practices and their relations with sustainability.

As the chair of the conference and research lead at Portsmouth School of Architecture, I consider this event as a significant step toward a more integrated approach, where sustainability playing its paradigmatic role can inform heritage projects at different levels and articulate with more effectiveness both aesthetic and socio-economic values along with their repercussions within on current built and unbuilt environment. The conference also shows how the need for an interdisciplinary approach in which the notion of sustainability plays the role of unifying paradigm is currently a growing and tangible reality, as many international presented case studies clearly show. We hope that this conference will foster many exciting opportunities for cooperating across researchers, practitioners and students, and will contribute to the discussion about sustainability and resiliency of our tangible and intangible heritage.

Dr. Antonino Di Raimo

Reader in Architecture at School of Architecture, the University of Portsmouth, UK.

## **Table of Contents**

Part I	: The Concept of Heritage Sites, their Conservation and Sustainable Adaptation	
1	Which materials for a digital materials library applied to the Algerian residential heritage?  Sara Allaouchiche, Sabrina Kacher	3
2	Sustainable character of underground dwellings in south-east Tunisia Houda Driss Ép. Chaabouni	5
3	Preservation of the architectural buildings from pathologies Analysis and diagnosis of the restoration of the facade of Bastion 23 Casbah Algeria  Saouane Med Boudiaf, Maammar Hicham	6
4	Architectural Investigation into the Adaptive Reuse Potential of the Modern Movement Car Parking Structure for Urban Food Production- a Case Study  Monika Szopińska- Mularz	8
5	Exploring a Potential Heritage Trail Comprising Farashganj, B K Das Road, Pyari Das Road, R M Das Road, and Dholaikhal Nabila Ferdousi	11
6	Towards a new framework approach for adaptive reuse to promote social sustainability and community resilience for hotel "De la Post" in Port Said. <b>Aya Gamal Mohamed Ahmed</b>	14
7	Social inclusion by stakeholders' empowerment in Jordanian Cultural Heritage: Herit-IT Project Rania Fayiz Aburamadan, Victoria Andrea Cotella, Claudia Trillo	16
8	Redevelopment of Defence Heritage: The Conflict between the Political Approaches, Socioeconomic Needs and Conservation Requirements  Soudabeh Pashaei, Tarek Teba	19
9	Documenting Izmir-Aydın Railway as a Part of Industrial Heritage in Turkey Şeyma Seyrek, Ebru Omay Polat	20
10	Educate architecture students about the cultural and environmental value of built heritage in Africa through a reading guide on the potential of vernacular architecture  Nour El Houda Jouini, Mouldi Chaabani	22
11	Abandoned Religious Heritage after Internal Displacement: Lefke District, Cyprus <b>Damla Misirlisoy, Makbule Oktay</b>	24
12	In-situ U-values measured in a representative selection of Irish traditional buildings Caroline Engel Purcell, Rosanne Walker, Anna Hofheinz, Oliver Kinnane	26
13	Teaching about sustainable heritage preservation- learning by engaging in adaptive reuse projects <b>Milena Metalkova-Markova</b>	27
14	Theory of construction of the Giza plateau pyramids Carlos Eduardo Rodríguez Varona	28
15	The Role of Creative Practices in Preserving Historical Landscapes: A Case Study of Al-Kalha Steps in Amman-Jordan Lama Bilal Abuhassan, Rawan M. Majzoob, Amro A. Yaghi	29
16	An Evaluation of Spatial Organization of Dravidian Christian architecture in Tamil Nadu - Case study in Vellore District  Sharmila jagadisan, Selva Ziona	31
17	An Analysis of The Nicosia Master Plan's Effectiveness in Regenerating the Areas of Selimiye and Omeriye in Divided Nicosia, Cyprus Christina Pieri	33

18	Mining Landscapes as Tangible and Intangible Heritage: The Case of The Valli Joniche of The Peloritani in Sicily  Martina La Mela				
19	Questioning Heritage Values: Lessons Learned from an Inventory of The Architectural and Urban Landscape of the 19th and 20th Centuries of Tunis  Khaoula Stiti, Safa Ben Achour, Samia Ben Rajeb	37			
Part I	I: The Importance of sustainability in Architectural Heritage Practices				
20	Tracing the Journey of Bhai Ram Singh in the Indo-Saracenic Architectural Style Ripu Daman Singh, Nisar Khan, Hina Zia	41			
21	Creating old towns: a tool for sustainable development? Insights from Langzhong Giorgia Mascaro				
22	Privacy and Gendered domestic Spaces in the 21st Century: Mapping Socio-cultural Continuity in the Community led-housing project of Ksar Tafilelt  Hadjer Messabih, Federico Wulff				
23	The effect of the war on Syria's cultural heritage: The case of the Mamluk and Ayyubid architecture in Aleppo Saraa Saleh	45			
24	Urban Heritage Role in Post-War City: Revitalizing the Routes Of "Sufi Rituals" In the Syrian City of Homs Racha Taiyara, Abeer Abdelal	47			
25	Resilience, Resistance, and Atmosphere: Bounding the Wooden Churches of the Carpathians <b>Michael Lucas</b>	49			
Part I	II: Concepts, Methods, and Technology Used in Sustainable Heritage Asset Conservation				
Part I	II: Concepts, Methods, and Technology Used in Sustainable Heritage Asset Conservation  A Method for the Application of the HBIM to the Restoration Projects of Algerian Built Heritage  Doumaz Mohamed Anis, KACHER Sabrina	53			
	A Method for the Application of the HBIM to the Restoration Projects of Algerian Built Heritage	53 55			
26	A Method for the Application of the HBIM to the Restoration Projects of Algerian Built Heritage  Doumaz Mohamed Anis, KACHER Sabrina  Preserving Urban Cultural Heritage with Color Planning for Japanese Merchant Towns				
26 27	A Method for the Application of the HBIM to the Restoration Projects of Algerian Built Heritage  Doumaz Mohamed Anis, KACHER Sabrina  Preserving Urban Cultural Heritage with Color Planning for Japanese Merchant Towns  Dongqi Li, Yunjia Huang, Tomo Inoue, Kohei Inoue, Qiaoling Fang  Closed prisons. Conservation Issues to Reuse a Difficult Heritage	55			
26 27 28	A Method for the Application of the HBIM to the Restoration Projects of Algerian Built Heritage  Doumaz Mohamed Anis, KACHER Sabrina  Preserving Urban Cultural Heritage with Color Planning for Japanese Merchant Towns  Dongqi Li, Yunjia Huang, Tomo Inoue, Kohei Inoue, Qiaoling Fang  Closed prisons. Conservation Issues to Reuse a Difficult Heritage  Valentina Pintus  Influence of treatment technique on the effectiveness of nanolime as a consolidant for low-porosity limestones	55 57			
<ul><li>26</li><li>27</li><li>28</li><li>29</li></ul>	A Method for the Application of the HBIM to the Restoration Projects of Algerian Built Heritage  Doumaz Mohamed Anis, KACHER Sabrina  Preserving Urban Cultural Heritage with Color Planning for Japanese Merchant Towns  Dongqi Li, Yunjia Huang, Tomo Inoue, Kohei Inoue, Qiaoling Fang  Closed prisons. Conservation Issues to Reuse a Difficult Heritage  Valentina Pintus  Influence of treatment technique on the effectiveness of nanolime as a consolidant for low-porosity limestones  Cyril Maucourant, Fin O'Flaherty  New understanding of Post-industrial Heritage value in Poblenou (Barcelona) and their design implications. The case of Eix Pere IV and Can Picò factory	55 57 59			
<ul><li>26</li><li>27</li><li>28</li><li>29</li><li>30</li></ul>	A Method for the Application of the HBIM to the Restoration Projects of Algerian Built Heritage  Doumaz Mohamed Anis, KACHER Sabrina  Preserving Urban Cultural Heritage with Color Planning for Japanese Merchant Towns  Dongqi Li, Yunjia Huang, Tomo Inoue, Kohei Inoue, Qiaoling Fang  Closed prisons. Conservation Issues to Reuse a Difficult Heritage  Valentina Pintus  Influence of treatment technique on the effectiveness of nanolime as a consolidant for low-porosity limestones  Cyril Maucourant, Fin O'Flaherty  New understanding of Post-industrial Heritage value in Poblenou (Barcelona) and their design implications. The case of Eix Pere IV and Can Picò factory  Melina Guirnaldos Díaz  Diagnosis of the wooden roof structures of the Cathedral of Santa Maria del Fiore in Florence, Italy	55 57 59 62			

34	Environmental Design Approach of Protective Shelters for The Preservation of Archaeological Sites: Performance-Based Assessment and Digital Simulations for Sir Bani Yas Island Church and Monastery Site in Abu Dhabi, UAE.  Rana Zureikat, Aseel Hussein, Zaki Aslan, Aqeel Ahmed Aqeel				
35	Enhancing Inclusivity for Cultural Archeological and Heritage Sites: Exploring Visitors' Experiences, Expectations, and Recommendations in Jordan Aseel Mahammed Aljaafreh, Vanja Garaj, and Youngok Choi	71			
36	Endangered religious cultural heritage: spatial distribution, tourism design and heritage narratives from a protection and enhancement perspective in the Carpathian region  Quattrone Giuliana	75			
37	Restoration anamnesis as a knowledge tool. The case study of St Nicholas' Basilica in Bari. Laura Morero, Antonella Guida, Nicola Masini	76			
38	Innovative strategies for the management of the historical defence heritage: the Italian project IMASS CHAIN Elisa Pilia, Donatella Rita Fiorino	77			
39	Thermal Conductivity Testing of Traditional Irish Building Materials using Transient Line Source Methodology Anna Hofheinz, Rosanne Walker, Caroline Engel Purcell, Oliver Kinnane	79			
40	Data interoperability between element classifications and semantics of historic buildings. Case study of the Duomo of Molffeta  Enrique Nieto-Julián, Juan Moyano, Alessandra Pili, Silvana Bruno	81			
41	Masonry evaluation of architectural-historical buildings in Chisinau, Moldova Doina-Cezara Albu, Svetlana Albu, Ion Serbanoiu	83			
42	Increasing the resilience of Aotearoa New Zealand's built heritage through integrated seismic and energy upgrades  Paola Boarin, Priscila Besen, Stacy Vallis	85			
43	Capillary Absorption for a selection of Irish traditional bricks and its estimation to assist material selection in Hygrothermal Software  Rosanne Walker, Anna Hofheinz, Caroline Engel Purcell, Oliver Kinnane	88			
Part I	V: Sustainable Design and Regeneration Practices for Architectural and Urban Heritage				
44	A methodology for conservation and enhancement of Sardinian Domus de Janas Giovanna Concu, Donatella Rita Fiorino	93			
45	Energy efficiency for sustainable rehabilitation of military districts in Cagliari  Donatella Rita Fiorinoa, Andrea Frattolillo, Emanuela Quaquero, Giulia Leoni, Costantino C.  Mastino	95			
46	Restoration of Our Lady of the Gate Parish a 17th century Church Ana M. Lorillaa, Leo A. Del Rosario	97			
47	The 733 years of stone heritage buildings of the University of Coimbra (Portugal)  Mário Quinta-Ferreira, Lídia Catarino, Fernando Pedro Figueiredo, Francisco Campos Gil,  Fernando Marques	99			
48	Fibrous Plaster: An Overview of Research and The Impact of Audiences Upon Fibrous Plaster Ceiling Environments in Theatres  Raggie Dams, Martin Appell, Marion Harney, John Stewart, Richard J. Rall	102			

# Restoration Anamnesis As A Knowledge Tool. The Case Study of St Nicholas' Basilica In Bari.

Laura Morero<sup>1,2</sup>, Antonella Guida<sup>1,2</sup>, Nicola Masini<sup>1,2</sup>

<sup>1</sup> DiCEM - Department of European and Mediterranean Culture: Architecture, Environment and Cultural Heritage, University of Basilicata, Matera, Italy

#### **Abstract**

G. De Angelis d'Ossat stated that the restoration of Monuments cannot be considered as a Cultural product of modern civilisation alone, but must be understood as a phenomenon that can be traced back to the continuous architectural interventions that have taken place throughout the ages.

Before any conservation work is carried out, it is necessary to study the building both from the point of view of architectural design and conservation state, and in relation to the material-constructive events that have marked its existence.

The constructive reading of historical architecture, through an in-depth analysis of the published and unpublished sources, interwoven with the studies of physical consistency, can represent a precious cognitive tool to acquire all that fundamental information that constitutes the basis of a conscious restoration intervention.

The possibility of consulting and using the archive documents and the historical data they contain, is a guarantee of a deeper knowledge and anamnesis of the Monument and its historical path.

The interpretation of documentary memories is therefore configured as a concrete cognitive tool and, consequently, a planning tool for restoration work, as it allows us to relive and reread the events on the artefact, to know the construction technique and the materials used in the historical work.

The key is to understand restoration history as a model of knowledge and a methodology of initial diagnosis to be carried out through history.

This paper is conceived as a metaphor of a journey through time and dusty documents that unveils the historical truth of one of the most important Romanesque monuments in southern Italy, the St Nicholas' Basilica in Bari, recounting the interventions that have modified its architectural consistency and decorative apparatuses, in order to arrive at that cognitive basis, the so-called anamnesis, that critically and consciously guides future conservation interventions.

#### Keywords

Anamnesis; Restoration; St Nicholas' Basilica; Apulian architecture; History; Archival sources.

<sup>&</sup>lt;sup>2</sup> ISPC- Institute of Cultural Heritage Sciences, CNR - National Research Council of Italy, Potenza, Italy