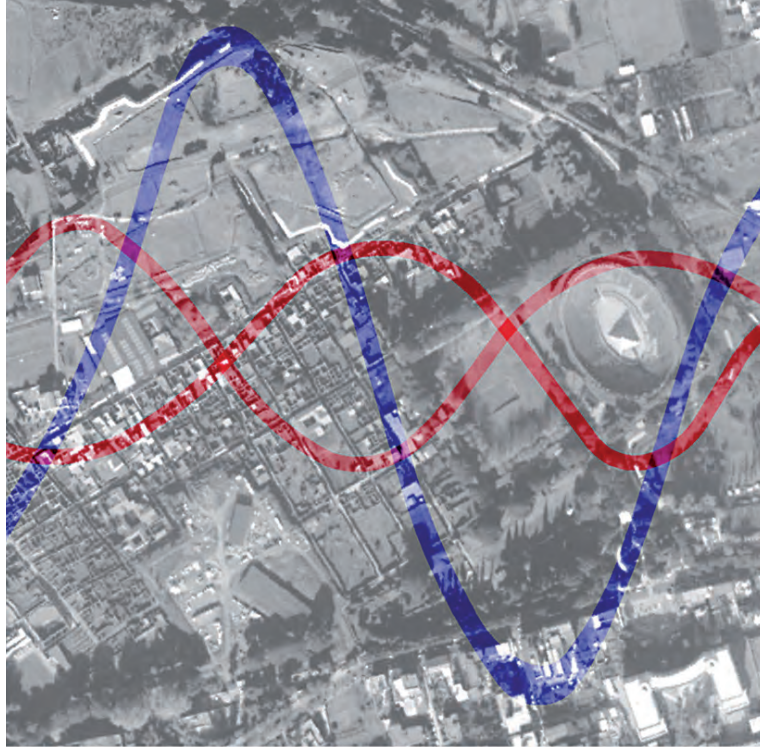


ARCHITECTURE HERITAGE and DESIGN

Carmine Gambardella

XVII INTERNATIONAL FORUM

Le Vie dei  
Mercanti



# WORLD HERITAGE and LEGACY

# WORLD HERITAGE and LEGACY

Culture | Creativity | Contamination



GANGEMI EDITORE®  
INTERNATIONAL

**ARCHITECTURE HERITAGE and DESIGN | 4**  
Collana fondata e diretta da Carmine Gambardella

## **ARCHITECTURE HERITAGE and DESIGN | 4**

Collana fondata e diretta da Carmine Gambardella

### ***Scientific Committee:***

#### **Carmine Gambardella**

UNESCO Chair on Landscape, Cultural Heritage and Territorial Governance

President and CEO of Benecon

Past-Director of the Department of Architecture and Industrial Design

University of Campania "Luigi Vanvitelli"

#### **Federico Casalegno**

Massachusetts Institute of Technology, Boston

#### **Massimo Giovannini**

Professor, Università "Mediterranea", Reggio Calabria

#### **Bernard Haumont**

Ecole Nationale Supérieure d'Architecture, Paris-Val de Seine

#### **Alaattin Kanoglu**

Head of the Department of Architecture, İstanbul Technical University

#### **David Listokin**

Professor, co-director of the Center for Urban Policy Research

of Rutgers University / Edward J. Bloustein School of Planning and Public Policy, USA

#### **Paola Sartorio**

Executive Director, The U.S.- Italy Fulbright Commission

#### **Elena Shlienkov**

Professor of Architecture and Construction

Institute of Samara State Technical University

#### **Isabel Tort Ausina**

Universitat Politècnica De València UPV, Spain

#### **Nicola Pisacane**

Professor of Drawing

Department of Architecture and Industrial Design\_University of Studies of Campania

Head of the Master School of Architecture - Interior Design and for Autonomy Course

#### **Pasquale Argenziano**

Professor of Drawing

Department of Architecture and Industrial Design\_University of Studies of Campania "Luigi Vanvitelli"

#### **Alessandra Avella**

Professor of Drawing

Department of Architecture and Industrial Design\_University of Studies of Campania "Luigi Vanvitelli"

#### **Alessandro Ciambrone**

Ph.D. in Architecture (University of Campania) and Territorial Governance (Université Paris X)

UNESCO Vocations Patrimoine 2007-09 / FULBRIGHT Thomas Foglietta 2003-04

#### **Rosaria Parente**

Ph.D. in "Architecture, Industrial Design and Cultural Heritage"

at University of Studies of Campania "Luigi Vanvitelli"

### ***Editorial Committee:***

Pasquale Argenziano

Alessandra Avella

Alessandro Ciambrone

Nicola Pisacane

Rosaria Parente

Carmine Gambardella

WORLD HERITAGE and LEGACY  
Culture, Creativity, Contamination  
Le Vie dei Mercanti  
XVII International Forum

Editing: Alessandro Ciambrone

Il volume è stato inserito nella collana Architecture, Heritage and Design, fondata e diretta da Carmine Gambardella, in seguito a a peer review anonimo da parte di due membri del Comitato Scientifico.

The volume has been included in the series Architecture, Heritage and Design, founded and directed by Carmine Gambardella, after an anonymous peer-review by two members of the Scientific Committee.

©

Proprietà letteraria riservata

**Gangemi Editore spa**

**Via Giulia 142, Roma**

[www.gangemieditore.it](http://www.gangemieditore.it)

Nessuna parte di questa pubblicazione può essere memorizzata, fotocopiata o comunque riprodotta senza le dovute autorizzazioni.

*Le nostre edizioni sono disponibili in Italia e all'estero anche in versione ebook.*

*Our publications, both as books and ebooks, are available in Italy and abroad.*

ISBN 978-88-492-3752-8

**Carmine Gambardella**

**WORLD HERITAGE and LEGACY  
Culture, Creativity, Contamination**

Le Vie dei Mercanti \_ XVII International Forum

**GANGEMI EDITORE<sup>®</sup>**  
SPA  
**INTERNATIONAL**

*Topics:*

*Heritage*

*Tangible and intangible dimensions*

*History*

*Culture*

*Collective Identity*

*Memory*

*Documentation*

*Management*

*Communication for Cultural Heritage*

*Architecture*

*Surveying*

*Representation*

*Modeling*

*Data Integration*

*Technology Platforms*

*Analysis*

*Diagnosis and Monitoring Techniques*

*Conservation*

*Restoration*

*Protection*

*Safety*

*Resilience*

*Transformation Projects*

*Technologies*

*Materials*

*Cultural landscapes*

*Territorial Surveying*

*Landscape Projects*

*Environmental Monitoring*

*Government of the Territory*

*Sustainable Development*

**WORLD HERITAGE and LEGACY**  
**Culture, Creativity, Contamination**

**Le Vie dei Mercanti**  
**XVII International Forum**

Naples | Capri  
6 - 7 - 8 June 2019

*President of the Forum*

**Carmine Gambardella**  
President and CEO Benecon,  
UNESCO Chair on Cultural Heritage,  
Landscape and Territorial Governance

International Scientific Committee

*Components:*

**Aygul Agir**  
Professor, Department of Architecture, Istanbul Technical University, Turkey

**Ahmed Abu Al Haija**  
Professor and Head, Environmental Design,  
Urban and Architectural Heritage,  
Faculty of Engineering, Philadelphia University, Jordan

**Ali Abu Ghanimeh**  
Vice president Al al-Bayt University Almafraa – Jordan

**Pilar Garcia Almirall**  
Professor, UPC Ecole Tecnica Superior d'Arquitectura Barcelona, Spain

**Harun Batirbaygil**  
Head, Department of Architecture, Okan University, Istanbul, Turkey

**Artur Beu**  
Professor, University of Art, Tirana, Albania

**Massimiliano Campi**  
Professor, University of Naples Federico II, Italy

**Cevza Candan**  
Professor, Istanbul Technical University, Turkey

**Federico Casalegno**  
Professor, Massachusetts Institute of Technology, USA

**Alessandro Ciambrone**  
Benecon UNESCO Chair, UNESCO and Fulbright Former Fellow, Italy

**Joaquín Díaz**

Professor and Dean, Technische Hochschule Mittelhessen-University of Applied Sciences,  
Department of Architecture and Civil Engineering, Germany

**Yurdanur Dulgeroglu**

Professor and Head of the Department of Architecture, İstanbul Technical University, Turkey

**Yonca Erkan**

Chairholder UNESCO Chair, Kadir Has University, Turkey

**Kutgun Eyupgiller**

Professor, Department of Architecture, İstanbul Technical University, Turkey

**Yankel Fijalkow**

Professor, Ecole Nationale Supérieure d'Architecture Paris Val de Seine, France

**Xavier Greffe**

Professor and Director, Centre d'Economie de la Sorbonne Paris, France

**Manuel Roberto Guido**

Director Enhancement of Cultural Heritage, Planning and Budget Department,  
Italian Ministry of Heritage and Culture, Italy

**Bernard Haumont**

Professor, Ecole Nationale Supérieure d'Architecture Paris Val de Seine, France

**Tatiana Kirova**

Professor, Polytechnic of Turin, Italy

**Alaattin Kanoglu**

Professor, İstanbul Technical University, Turkey

**Ilknur Kolay**

Professor, Department of Architecture, İstanbul Technical University, Turkey

**Mathias Kondolf**

Professor, Landscape Architecture and Environmental Planning, University California Berkeley

**David Listokin**

Professor, Edward J. Bloustein School of Planning and Public Policy, Rutgers University, USA

**Andrea Maliqari**

Professor and Rector of the Polytechnic University of Tirana, Albania

**Sabina Martusciello**

Design and Communication Degree Course (President)  
University of Campania 'Luigi Vanvitelli', Italy

**Massimo Menenti**

Department of Geoscience and Remote Sensing, Faculty of Civil Engineering  
Delft University of Technology, The Netherlands

**Rusudan Mirzikashvili**

Ministry of Cultural Heritage, Georgia

**Doe Morelli**

Professor, University of Campania 'Luigi Vanvitelli', Italy

**Louise Mazingo**

Chair, Landscape Architecture and Environmental Planning, University California Berkeley, USA

**Maria Dolores Munoz**

Professor, UNESCO Chair, EULA Environmental Centre, University of Concepcion, Chile



**Florian Nepravishta**

Dean of the Faculty of Architecture and Urbanism, Polytechnic University of Tirana, Albania

**Luis Palmero Iglesias**

Politécnica de València UPV, Spain

**Jorge Peña Díaz**

Professor, Facultad de Arquitectura, Instituto Superior Politécnico José Antonio Echeverría, Cuba

**Rosaria Parente**

Ph.D. in "Architecture, Industrial Design and Heritage" at University of Studies of Campania "Luigi Vanvitelli", Benecon UNESCO Chair, Italy

**Michelangelo Russo**

Professor, University of Naples Federico II, Italy

**Paola Sartorio**

Executive Director, The U.S.- Italy Fulbright Commission, Italy

**Lucio Alberto Savoia**

Ambassador, Secretary General Emeritus, Italian National Commission for UNESCO, Italy

**Maria Anita Stefanelli**

Department of foreign languages, literature and Culture, Università degli studi RomaTRE, Italy

**Elena Shlienкова**

Professor of Architecture and Construction Institute of Samara State Technical University, Russia

**Eusebio Leal Spengler**

Professor, Historiador de la Ciudad de La Habana, Presidente de Honor del Comité Cubano del ICOMOS, Cuba

**Isabel Tort**

Professor, Universitat Politècnica de València UPV, Spain

**Andrey V. Vasilyev**

Head of Department, Samara State Technical University of Russian Federation

**Yaliang Xiang**

Professor, China Academy of Art, China

**Yang XiuJing**

Professor and Director, China Academy of Art, China

**Natasa Zivaljevic-Luxor**

Director, National Heritage Foundation, Belgrade, Serbia

*Scientific and Organizing Local Committee***Alessandro Ciambrone**

Coordinator of the scientific program and relationships with the International Scientific Committee

**Rosaria Parente**

Scientific Assistant of the International Committee President

**Luciana Abate, Giuliana Chierchiello, Vincenzo Ferraro**

Graphics and layout

**Dario Martimucci**

Web master

**Peer review**

Scholars has been invited to submit researches on theoretical and methodological aspects related to Smart Design, Planning and Technologies, and show real applications and experiences carried out on this themes. Based on blind peer review, abstracts has been accepted, conditionally accepted, or rejected. Authors of accepted and conditionally accepted papers has been invited to submit full papers. These has been again peer-reviewed and selected for the oral session and publication, or only for the publication in the conference proceedings.

**Conference report** 300 abstracts and 650 authors from 39 countries:

Albania, Australia, Benin, Belgium, Bosnia and Herzegovina, Brasil, Bulgaria, California, Chile, China, Cipro, Cuba, Egypt, France, Germany, India, Italy, Japan, Jordan, Kosovo, Lalaysia, Malta, Massachusetts, Michigan, Montserrat, New Jersey, New York, New Zealand, Poland, Portugal, Russia, Serbia, Slovakia, Spain, Switzerland, Texas, Tunisia, Turkey, United Kingdom.

## Preface

*The XVII Forum “World Heritage and Heritage” addresses the issue of the handed down in the sense of transmission over time of generation, at the state of knowledge, the material and immaterial heritage that comes from the past. A generational commitment to operate, in the cyclical temporal process, in order to preserve and protect the cultural heritage; a duty of the present generations to deliver to the future generations the legacy of the past at least in the same conditions in which it is received.*

*A commitment that takes on an even more meaningful significance in a historical moment that is crossed by destructive and iconoclastic wars and by great migration phenomena involving abandonment of territories undermining the identities of places, traditions, material and immaterial culture, which characterize the Cultural Landscapes. A re-appropriation by humanity of the value of a biological continuity that is traceable in its genetic complexity as a custodian and bearer of the memory of the past and, at the same time, belonging to those who live in the future by living the present. Moreover, “to the state of knowledge” should not be interpreted as a limitation but as an exhortation not to live on the position income and above all to remind men that they were not “made to live like brutes but to follow virtues and knowledge”.*

*Knowledge therefore contains an evolutionary value in the history of progress. Where knowledge is substituted by acts or policies conducted by brutal and unreasonable actions against Humanity and its Patrimony, a fracture on historical continuity is created, which produces a negative value due to the great expenditure of economic resources and loss of human values. Therefore, in the awareness that the value produced by the past generations, which have given us and above all entrusted as heritage to be transmitted to the future is not commensurable to the value of time to re-establish and restore continuity to the regenerative space of the common good, it is impossible to activate more and more moments of reflection and I would say to monitor the behavior of supranational cultural policies.*

*This in the spirit of inducing to avoid the disastrous temporal intervals that involve serious losses of the human heritage, which break the glue that binds the generations. Architecture, Cities, Infrastructures and Landscape not only represent the form of time but all the disciplines that have contributed to and contribute to their characterization. The form of time is the body of a cultural program of society and the modification project makes use of the knowledge at the date. Economics, mathematics, physics, in one the sciences are always traceable in the construction of man’s works, from the simple artifact to monumental architectures, to cities, to large infrastructures. In fact, with*

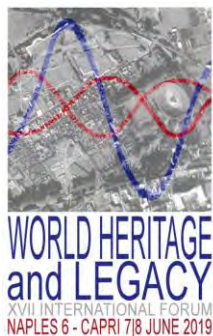
*the previous sixteen editions of the International Forum “Le Vie dei Mercanti” an interdisciplinary community has been created of about 6000 scholars and researchers, coming from over 50 Countries of the World. These have presented realized projects, theoretical research, good practices, technological innovations, which are recognized in the principles and actions to be carried out so that the Planet with its species can always adapt itself to the needs of humanity in a sustainable reciprocal relationship for the salvation of the same Planet. And if Beauty will save the world, the principles and actions shared in these sixteen previous years will find with the seventeenth Forum a moment of evaluation of the state of art so that they can increasingly reach, interest and belong to as many people as possible such as Governments, Institutions, Universities, and Enterprises.*

*This is to create and disseminate a new Humanism that acts as a generational glue through a review of the inheritance concept, or of an ongoing heritage formed by resources intended as lot, which, declined as an income statement, create solidarity, peace, trust, work with art and quality of life.*

*For these reasons and for the history of the Forum, I am sure that the scientific community will establish a debate in Naples and Capri on 6th, 7th and 8th of June which will bring further richness to the discussion among researchers who have faced the protection and safeguard of heritage handed down to us and the researchers who through their works will be the bearers of the future legacy.*

*Carmine Gambardella*

*President and Founder of the Forum*



Le Vie dei  
Mercanti

XVII INTERNATIONAL FORUM

# WORLD HERITAGE and LEGACY

CULTURE | CREATIVITY | CONTAMINATION

Naples 6 - Capri 7/8 June 2019

## SUSTAINABLE CONSERVATION: THE STATE OF ART AND THE NEED OF GUIDELINES ABOUT PROTECTION AND ENJOYMENT OF THE ARCHEOLOGICAL HERITAGE

**Giuseppe DE GIOVANNI<sup>1</sup>, Cesare SPOSITO<sup>2</sup>**

<sup>(1)</sup> Department of Architecture (DARCH), Polytechnic School, University of Palermo, Palermo, Italy  
giuseppe.degiovanni@unipa.it

<sup>(2)</sup> cesare.sposito@unipa.it

### Abstract

Within the scientific debate about the conservation, in general, of Cultural Heritage and, in particular, of Archaeological Heritage which are characterized by a dual tangible and intangible nature; and in consistence with Technological Culture for its features concerning the right development and enjoyment of the Heritage, the present essay offers a critical interpretation of the literature about a protection system with an architectural shelter for archaeological sites. On the basis of the critical elements detected in the activities that took place over the past sixty years, this essay underlines the absolute impossibility to postpone the definition of the guidelines which need to be always based on a case-by-case principle in order to bring workers towards an aware conservation, enhancement and enjoyment of the Archaeological Heritage. It is impossible to postpone the creation of operational models which allow us to set up a contemporary high-performance, reliable, sustainable but also reversible protection system (with morphological, typological, technical and constructive solutions suitable for the potential significance of the Heritage itself) in order to cope with significant and variable meanings that would or could be given by the future generations.

**Keywords:** conservation, enjoyment, quality, shelter, guidelines

### 1. Introduction

The joint approach of various experts and professionals and the disciplinary integration of archaeology, history, restoration, town planning, architecture and technology represent a prerequisite for knowledge and conservation projects [1, 2]. In particular, it may be said that the “conservation process” is different from the “construction process” insofar during its stages (technical-economic, definitive, executive feasibility). The final and executive plans illustrate a current reality which is destined to change over the years because of new actions or new discoveries concerning the Heritage as it often happens in a construction site for the Archaeological Heritage conservation. Therefore, the future reality will not be the one described in the initial project but the one which will be determined by updates and actions taken and requiring planned management and maintenance.

The “conservation process”, as well as the construction process, can be defined as «a series of activities, which vary over time, concerning the material and tangible aspects (the already processed matter) and the immaterial and intangible aspects (identity and values). Furthermore, they can identify criteria and organize projects and define crucial processes to preserve, protect, safeguard, enhance and handle the cultural artefact and its enjoyment especially in view of being handed down to future generations» [3]. The need to shelter the ancient artefacts such as archaeological sites, the architecture ruins, mosaics, floors, plasters and canvas etc., is an integral part of the conservation process. It is possible to list two strategies coming out from the archaeological investigation. The first one is about findings: after being excavated, observed, recorded and studied, they could be reburied in order to be preserved (this could be done just for minor sites). The findings could also be left exposed, restored, enhanced and offered to be studied by experts or to the public (this happens for

highly valuable and unique sites). Therefore, to preserve the ancient artefacts but also, and most importantly (unless you want to rebury the architecture ruins) “to shelter the ancient artefacts” becomes more important than conservation since it is the preparatory stage leading up to the restoration.

After the 1970s energy crisis, the public interest focused towards a more quantitative rather than qualitative conservation activities. For instance, according to the critical interpretation of performed sheltering interventions, we can notice a remarkable obsolescence within a relatively short period [4] and a non-methodical and non-systematic implementation of the UNI 8289/91 Standard (with its required performances and the absence of evaluation criteria in the many stages of its design) both on reliability and sustainability of protection systems and both on compatibility and sustainability of the added systems and on the anthropic risk due to the flow of visitors entrained by a non-suitable enjoyment. On the basis of the aforementioned critical aspects, this essay examines, by means of studies, research and implementations, the scientific debate concerning the Archaeological Heritage protection systems whose knowledge represents a fundamental condition to define binding operational methods and guidelines at the service of the various conservation workers.

## **2. Sheltering structure: State of the art between theoretical and practical research**

Every historical period before the arrival of modern archaeology had to cope with the Heritage conservation and protection issue through processes based on its own cultural and specific historical dimension, often keeping memory of pre-existent buildings to preserve their symbolic, ethical, religion, political values. The ancient history gives us many examples, such as the Heraion Temple (600 B.C.) at Olympia, in which the restoration includes the replacement of the wooden columns integrating the new stone ones and the conservation of an original vertical element invested with «ritual values extraneous to its supporting and functional value or to its artistic quality» [5]. However, the architectural culture inspired by the 1800s, livened up by the selectivity of each finding and by the resistance to their integration with the following pre-existent buildings, has a propulsive role, first, on the “active” conservation, and then “integrated” of the Archaeological Heritage in situ.

From the one hand, the eradication of any linguistic contamination with the shapes of the past, actually promoted more from the Modernism movement than from the developed needs expressed by archaeology. On the other, the need of a “permanent protection of these artworks discoveries” finds its place within the many Restoration Charts (1932), the Venice Chart (1964), in Lausanne (1900) and also within governmental cultural bodies such as UNESCO in (Recommendation concerning the Safeguarding of Historic and Traditional Areas, 1967) and non-governmental bodies such as the ICC with The Code of Ethics for Art Conservation (1967), and the ICOMOS with the Charter for the Conservation of Historic Town and Urban Areas (1987), both working at an international and local level (the Council of Europe, and the Granada Convention in 1985). All these charts become the global landmark to discipline the monuments and the archaeological artefacts’ conservation and restoration actions - from the largest to the smallest archaeological artefacts - each of them with a great cultural value representing mankind civilization and their meaningful evolutions. Within their major features: the distinguishable restoration of the archaeological matter, the reversibility of interventions, avoid- where possible - relocations, and the prohibition to build especially on the existing masonry.

It was only in the second half of the 20th century that the “integrated conservation” of the Heritage concept was created. It was also applied within The European Year of the Architectural Heritage, promoted by the Council of Europe that has defined it within the Resolution concerning the adaptation of laws and regulations to the requirements of integrated conservation of the architectural heritage of the Amsterdam Charter (1976) as a set of measures which aims to ensure the perpetuity of this Heritage, to protect its conservation in an appropriate environmental context, built or natural, and also its location and its adjustment to the society’s need. Therefore, promoting the maintenance and restoration activities and its enhancement and use of the Heritage for public and social purposes.

These are just some of the actions aiming to the physical conservation of the architectonic heritage and its integration in the society. Successively, the Charter of European Cultural Heritage in 1991 has considered feasible through the management of every initiative able to facilitate the comprehension of the monument exposed without misrepresenting its meaning, specifying that, during architectonic excavation and explorations, it is imperative to immediately ensure that every site arrangement, every protection and conservation measure taken for architectonic works and every finding will be inserted into the town planning of the territory where they are located. In the field of the Cultural Heritage “the planned and precautionary conservation”, intended as a constant and anthropic activity aimed at assuring the perpetuity of material data, found at legislative level its first recognition in Italy in 2004 with the Cultural Heritage and Environmental Code. It was also confirmed by the Public Works with the Contracts Code.

In general, the archaeological heritage's vulnerability imposes to carry out restoration and periodical maintenance actions and also to organize seasonal protection systems and architectonic sheltering to ensure both the conservation, enhancement and enjoyment of ancient remains. The conservation in situ must be the main goal for each action on archaeological remains. This goal has been confirmed by the modern conservative culture and by the International Conservation Charters (such as the ICAHM Charter in 1990), with the support and the integration of suitable strategies concerning "active conservation" and "passive conservation" by adopting new methods about temporary reburial or employing architectural sheltering.

Until the end of last century, the archaeological sheltering was not addressed in the specialized literature. Because, on the one hand, the archaeologists thought that this issue was too far from their knowledge or even that it was unacceptable for the inevitable modification caused by the romantic and Ruskin-based image of a ruins archaeological site. On the other, architects underrated its importance by considering it as a temporary superstructure to service excavation activities. The need to cover and protect architectonic structures of an archaeological site – especially the findings made of the most ephemeral and delicate materials – has its origins, probably, in the Roman period when, to protect what was believed to be the exact place of birth of Romulus on the hill Cermalus, wooden and wicker covers were used. These covers were subject to special care and maintenance, almost like a place of worship [5].

Moreover, whereas between the 18th and the 19<sup>th</sup> century conservation was mostly used for the most prestigious decorations in enclosed spaces, the first half of the 20th century stands out for "conservation in situ" through a great number of horizontal sheltering, often made with reinforced concrete, with the illusion of greater durability and less expensive maintenance. The Ara Pacis case is emblematic. It was relocated during the aftermath of the Second World War in Rome by the Lungotevere inside a wider urban regeneration project. This urban project involved Piazza Augusto Imperatore which was transformed in a museum in situ by the architect Morpurgo through a majestic reinforced concrete sheltering and perimetral glass walls that had to disclose the monument and to protect the marble sculptures from the weather [7].

Between the 1950s and the 1970s the growing urbanization and the consequent greater degradation risk of the Archaeological Heritage sparked off a debate on this issue promoting a new consciousness towards conservation in situ and a new critical sense for the research of useful and distinguished solutions in order to combine the need to shelter with the need to excavate, or with the growing consensus of the enhancement and musealization in situ for the enjoyment of the Archaeological sites. In relation to these objectives the architect Franco Minissi from Viterbo can be defined as a pioneer - being also supported by the theories of Cesare Brandi (1956) - the most prolific of the 20th century on this subject. His essays as much as his projects show us his theories about a critical process divided in different stages thanks to a multidisciplinary knowledge support; starting from a study concerning archaeological and historical aspects, to the analysis of the conservation and restoration state and from the potential planning of protective sheltering to its presentation for the enjoyment.

The project to convert the area of the Villa del Casale into a museum still is considered as an outstanding case for the critical process through which he has linked the sheltering system and the archaeological site. The outcome is a sheltering system with brand new features compared to the ancient matter, which is able to solve, at the same time, the enjoyment and the conservation of ancient art in general and the mosaics, in particular. In relation to the physical and technical skills of that time, the sheltering of the Villa in Piazza Armerina, both from a conservative and scientific point of view and as a museum, with its landscape, architectural and decorative components, represents a sheltering that, at the time of its realization, was characterized by a modern idea perfectly in line with what the Institute for Conservation and Restoration (Istituto per la Conservazione e il Restauro: ICR) was pursuing in the rest of the world.

The Heritage protection between the "transparent cases" created by Franco Minissi is essential in that environmental and landscaping context especially for visibility and enjoyment. Unfortunately, during the years, due to a lack of maintenance procedures from the 1980s, it produced a rapid and often irreversible degradation and modification phenomena of the concrete material invalidating the expected results especially in some projects such as the Cinta muraria di Capo Soprano in Gela, the Villa Romana del Casale in Piazza Armerina and the Teatro ellenistico di Eraclea Minoa [8].

These three creations, linked to an architectonic culture with no awareness about the importance of the maintenance of planned solutions, could still be sheltering the Archaeological Heritage, as Maria Luisa Germanà pointed out, if at that time the Maintenance Plan and the Dossier for the Endeavour would have been mandatory, to force the architects to take into consideration the entire «lifecycle of what they are working on by defining the technical, organizational and financial details of every single action they need to carry on, in safe conditions for the workers, in order to keep the performances unchanged over time» [9]. The transparent case topic is to be brought back to the experimental - utopic - project proposed by the Swiss architects Schweiner (1977) for the Acropolis of Athens, a huge



crystal case to protect a 40,000-square-metre area. On the one hand, it was thought to prevent the decay caused by air pollution and on the other to create a fence to restrain the urban sprawl. This project, without any structural and climatic control, had the merit of drawing the attention on the need to take appropriate measures to preserve the site.

But it's from the 1980s, when grew the interest for some findings of the material culture, ignored up until then, and with the employment of new stratigraphic excavation techniques, archaeological investigations and new restoration and conservation materials used for decorative and stone materials as well as with the maturation of new constructive techniques, that the Charters start to be understood and a new intervention philosophy aimed at the musealization in situ for the archaeological artefact starts spreading, even with the realization of architectonic sheltering. The sheltering proposed by Renzo Piano for Pompei (1988) is a perfect example of this renewed interest on the subject. It is a kind of prototype characterized by a flexible and ample structure based on regular and interchangeable modules which can be adapted to the need of excavation. It is also linked to the restoration of every access and service, to the realization of new instructional and informational assets for the archaeological complex, to the new street furniture proposal and finally to a centre to store and collect artefacts of new excavations.

In that decade, we have witnessed the birth of various conferences concerning archaeological sheltering. These conferences have always been followed by studies, theories and research; most of them tend to bring the complexity of the topic back to a few typological categories of intervention. Among these various conferences it is worth mentioning the Cyprus conference in 1983 [8] and the Ghent conference in 1985 [10]. These two conferences get the credit for having started a brand-new approach: the multidisciplinary approach; among their lecturers there were archaeologists, historians, professional mosaic restorers, architects and structural engineers.

During the conference on "Sheltering of the Vesuvius Hinterlands" held in Naples in 1984 different new problems emerged, such as the relationship between the sheltering system and the environmental context and the suitability of some architectural sheltering, already historicized, realized with philological restoration since the end of the previous century. In this scientific debate, Minissi proposed an initial classification of sheltering based on their efficiency and on their configuration by distinguishing four different models: 1) temporary sheltering; 2) the sheltering of a whole archaeological area, separated from the ancient remains; 3) the reconfiguration sheltering of spaces and volumes not supported by historical and archival sources; 4) the reconfiguration sheltering of original spaces and volumes on philological, reversible bases, using modern materials distinguished from the ancient ones [11].

Minissi's cultural heritage and his experience gained in the field led him to elaborate the "Musealization Theory for the Archaeological Areas", according to which the sheltering project must aim to fully enhance the archaeological area and its integration within the landscape; highlighting the figurative and architectural aspects with respect to the conservative ones. The architect favours the reconfigurative-philological typology with the use of modern materials, reversible and attentive to museological aspects. According to Minissi an "active" conservation can be considered as such if it introduces the so-called "musealization process". He thought that through the conservation in situ of movable and immovable goods it is possible to create a museum wherever there is a historical place or an artefact in which it is possible to recognize historical values, modernizing their meanings through a simple cultural use [12].

Another important research about protective sheltering is the one published by Prof. Hartwig Schmidt in 1988. His book, *Schutzbauten*, with the image on its cover of the new sheltering in Villa del Casale in recognition to Minissi for his theoretical and planning work, underlines three aspects of a protective structure: the "functionality", which includes protection from weather conditions, the correct air conditioning, security, stability, etc.; the "architectonic form", which must be adapted to the particular shape of the ruins and must give rise to an object clearly distinct from the findings; the "relationship with the context", which includes the compliance with the topography and with the environmental and historical context in which the heritage is located. The German researcher analysed more than 78 archaeological sheltering in the West and in the Near Middle East gathering together four different kinds of protection system: temporary sheltering, the ones not casing the Heritage (opened), the ones casing it (closed) and the crypts [13]. Closed sheltering types are divided into two subgroups depending on the form of the structure: the shed, independent from the archaeological context, and the philological sheltering which lies on old masonry suggesting the original forms and volumes.

Schmidt's studies, even if they were mainly focused on the architectural aspects and on the material used for the protective structures, underline as in some cases the wide transparent or glass surfaces may implicate a detrimental greenhouse effect for the ancient archaeological structures such as the formation of mosses and lichens on stone materials, plasters and mosaics by neglecting crucial issues regarding any intervention method. Two years later, with reference to Pompei and Ercolano's interventions, the archaeologist Giorgio Gullini categorized sheltering in three different types, including in the first type, the philological sheltering for what concerns their shapes and their materials. In the



second type we find the reconfigured sheltering with different materials, while in the third type we find sheltering not linked to the ancient findings [14]. Both studies have an excellent documentary value although they may be lacking something. Schmidt's review has an uncritical feature, Gullini's, due to the specific Pompeian field, is excessively restricted to become a general reference.

How could we forget to talk about the research and trial carried out by the Getty Conservation Institute in the context of The Project on Mosaics Conservation (1988-91). It is important not only for the realization of the so-called prototype Hexashelter which is a temporary light, modular and adaptable for every context sheltering, but for its studies (one of the first on this topic) designed to verify the efficiency of the new sheltering (for the Fort Selden site in New Mexico) through an environmental monitoring and a data correlation beneath and outside the protection [15].

At the beginning of 1990s other influential experts inspected the archaeological sheltering providing some interesting essays for the classification of different types of interventions. Among them, Professor Dieter Mertens, architect and executive director of the German Archaeological Institute in Rome, who identified some new actions to arrange and preserve the site and the setting up for visitors with architectural examples exposition (partial anastylosis and models), total anastylosis actions and rebuilding actions [16], and John H. Stubbs, Senior Advisor of the World Monument Fund. He reformulated the sheltering classification through twelve different proposals which are characterized by a growing planning action starting from discovered sites that have never been excavated until their archaeological rebuilding [17]. Sandro Ranellucci, always during the 1990s, summarized in a systemic way the studies and the thought of Hartwig Schmidt and of his master Franco Minissi by promoting, where quality and knowledge of the findings made it possible, a "musealization in situ", avoiding inauspicious effects caused by an extirpation whose «negative consequence could not be solved neither by the most effective educational arrangement» [18] – through the realization of a sheltering that must necessarily be linked to the primary protective purpose and that allows visitors to evoke the image and the meaning of ancient art.

With the beginning of the new millennium, on the occasion of the Conference entitled Protective Shelters for Archaeological Sites in the Southwest USA, held in Tumacacori in Arizona in 2001, Martha Demas, project manager of the American Institute, takes stock of the state of the art examining a first review, then updated in 2012, sufficiently comprehensive of texts published in English, French, German, Italian, Spanish and Portuguese between 1959 and 1999, highlighting how the literature in question often omits to report the aspects of conception and analysis of the criteria that guided the project, on the functionality of the sheltering in their life cycle, on criteria and guidelines to the planning of the protective sheltering of the archaeological remains [19, 20]. Other study days and conferences about in situ protection offer moments of confrontation from which emerge the important progresses achieved by the culture of conservation on a programmatic level with the shared concept of "integrated conservation" but also the uncertainties in the archaeological field on subsequent activities to the phases of excavation and their correspondence to the orientations of the current culture, the indeterminacy of the disciplinary areas of competence, the need to «systematize the acquired knowledge related to the protection systems due to the substantial lack of general guidelines unambiguously accepted» [21].

In parallel, many studies and researches concerning protective structures for archaeological heritage are published. It is fundamental to recall the important contribution offered by the Central Institute of Restoration in collaboration with ENEA which develops research guidelines already launched by the ICR in the 1990s at the sites of the Domus dei Coiedii, in Castellone di Suasa, where an architectural sheltering was installed and a study for the environmental investigation of Arsalantepè in Turkey at the Casa dei Vetii in Pompeii was set up [22, 23]. The collaboration with the body for New Technologies, Energy and Environment allowed to launch a new research with the aim of developing, through the support of interdisciplinary work groups, a methodology aimed at designing protective sheltering in the archaeological field.

The study is essentially based on a first fact-finding phase, aimed at setting up a database, the Territorial Information System (TIS) of the Risk Map, which contains information on the state of conservation of 120 architectural/archaeological monuments, randomly analysed taking into account the different features of the sheltering (provisional, definitive, materials used) and the specificity of the sites (morphology of the area and geographical location), thematic maps of the main causes of risk for the architectural, historical and archaeological heritage, on the Static – Structural danger (related to phenomena such as earthquakes, landslides and floods, coastal dynamics, avalanches, volcanism), Environmental-Air (through indicators of erosion, blackening, physical stress), and Anthropic, direct (tourist pressure, vandalism, theft) and indirect (depopulation linked to the abandonment of a certain area, intensive housing growth), useful in identifying the relative intrinsic index of danger and vulnerability, which represents how much the Heritage is exposed to the action of degradation: if there is a bad state of conservation of the Heritage there will be a higher degree of vulnerability and dangerousness. This analysis phase allows us to evaluate the functionality for each sheltering, in

relation to its constructive efficiency, and the adequacy in relation to the conservation status of the protected archaeological remains.

Also in 2006, Jacques Teller and Sophie Lefert, researchers from the Belgian University of Liège, published the results of the APPEAR Project (Accessibility Projects, Sustainable Preservation and Enhancement of Urban Subsoil Archaeological Remains) funded by the Culture Commission of the European Union. A project that, through the multidisciplinary and transnationality of the consortium, and the involvement of different stakeholders, proposes a series of decision-making tools for the management of the urban archaeological subsoil, in order to reach a sustainable socio-cultural development [24]. With respect to the theme of protection systems, the interpretation of the experts about the architectural (protective) case is of particular interest, assimilated to an interface between the city and the archaeological findings and could be divided into three elements: the outer membrane, which dialogues with the urban context (or landscape); the inner membrane, which relates to the archaeological findings; the interface with visitors (which involves various functions including the enjoyment paths).

What appears to be of particular interest, apart from the stratigraphic decomposition, which obviously has technical and technological implications, is, on the one hand, the possibility of managing relations with the context and with the archaeological pre-existing elements according to different figurative solutions, intervening at the extrados and to the intrados of the coverage with materials or components that allow a greater integration with the context and a more adequate enhancement of the Heritage. On the other, it gives the possibility to equip the inner membrane with communicative apparatuses but also to hang on it enjoyment paths and thus limiting the support points on the ancient findings [25].

In 2007, Prof. John Ashursts, one of the greatest authorities of the English Heritage on the subject of the conservation of ruins, proposed a more simplified classification, limited to only three categories of intervention: the closures, the canopies and the ruins sheltered by other buildings. The latter, new and specific category, includes all those cases of urban archaeology characterized by anthropic stratifications, sometimes complex, but often also characterized by pieces of findings and limited spaces, without the typological and functional homogeneity that is often found in non-urban sites. On the subject of urban archaeology it is also worth noting the research of Alessandro Tricoli entitled *The Hidden City: Experiences and Methods to Enhance the Archaeological Urban Heritage* that, through an interesting critical repertoire of case studies derived from the European panorama, investigates the relationship between urban archaeology and contemporary city and between urban archaeology and architectural project, inferring from the best practices and the European Code of Good Practice on Archaeology and the Urban Project of the Council of Europe (2000) twenty points that an architect must pay attention to for a good project of the enhancement of the archaeological heritage in urban areas. Of particular interest is point 10, Material and immaterial accessibility. The latter, intended as accessibility «to cultural and identity meanings of archaeology to be achieved through information systems [...]» that «[...] must be communicative and, in the case of an actual musealization, must use the necessary techniques of contemporary museography» [26].

In 2012, Ranellucci published the results of a new research on this topic from which it is possible to deduce, through 98 examples of sheltering, mainly on recent or current excavation sites, three categories of interventions that are characterized by a different (disciplinary) approach. The “operational emergency”, with a provisional character linked to the need to realize a shelter in a short time due to the remains that emerged from the excavation, related to a technological and technical method with light sheltering, mainly tensile structures, with constructive, functional, economical and reversible speed. The “need to a musealization in loco”, which requires analytical spirit and essential judgements to «operate in a cultural transversality that has the dimensions of time and history with a strict connection with the essence of the place» [27]. The “musealization of the site as a predominant creative act”. It must be compositional and based on a dialectic contrast between the pre-existent structures and the new ones. Actually, Ranellucci also proposed a fourth classification, hardly acceptable, called the “the interpretation of the pre-existing archaeology in the restoration approach”, in which he relegates the protection projects for the “archaeological restoration” as the only discipline able to make an interpretative reading of the pre-existing elements and to formulate value judgements on the context.

In recent years, conference proceedings, monographs and magazines have given us a large number of scientific contributions about the sheltering for the Archaeological Heritage, with the aim of proposing operational models and/or intervention criteria concerning process, project or product issues. In this sense, there are research and experiments initiated by several experts that deserve to be mentioned: the proposal of a checklist as a guide in the decision-making process to assess the opportunity/need to protect the heritage through architectural sheltering, elaborated on the basis of the assumption that only by understanding the specific framework it is possible to assess whether a superstructure will be a benefit or a problem for the archaeological Heritage [28]; the new “climatic” approach to create sheltering structures for archaeological sites, with the use of computer tools for environmental simulation and modelling that can allow ex-ante evaluations in the implementation of

effective "passive" solutions useful for the conservation of ancient matter [29]; the identification of physical and environmental investigations, to be carried out with visual inspection or with digital instruments, necessary, on the one hand, to understand the causes of the degradation of an archaeological asset, and on the other, to provide data for the design of an archaeological sheltering, alongside the physical and environmental monitoring as a fundamental activity to ensure that the performance of the new protection will be maintained over time [30]; experimenting with new tools for the acquisition and cataloguing of data useful for the design of sheltering for archaeological assets, from the use of unmanned aerial vehicles (UAVs) to laser scanners, to the management of information on existing structures with a BIM software for the modelling of the existing structures but also as a valid support tool for the design of new coverage [31, 32].

And finally, the archaeological sheltering designed for a limited time. We point out the prototypes of the Molecular Shelter and the TemporAula. The Molecular Shelter was created by a group of architects from the Japanese Institute of Architecture under the scientific supervision of Kengo Kuma. It was firstly tested for the Landscape and Archaeological Park of the Valley of the Temples in Agrigento, and proposed a modular structure in pine wood designed to distance as much as possible the rain from the excavations and to minimize interferences on the ground level with the archaeological pre-existent structures, guaranteeing the freedom to position the vertical supports at different points of the grid, depending on the particular conditions of the site. It was made with an articulated system of four pillars (each made up of four slats), connected with planks by means of M6 type screws, and anchored to the ground with 20 x 20 cm prefabricated concrete blocks. The structure is characterized by its reduced weight (100 kg per module), its facility to be produced (even with local craftsmanship) and the possibility to be assembled in a reasonably short time (five days are enough), for its mobility, for its adaptability to the site, for its modularity, for its equipment and for the low-cost of the module [33].

On the textile sheltering, for which the phenomena of condensation and greenhouse effect are well known, we point out the multidisciplinary study carried out by the BEST Department of the Polytechnic of Milan, the Department of Physics of the University of Milan and the Superintendence of Cultural Heritage of the Provinces of Cagliari and Oristano that led to the design of two prototypes of horizontal closures: both the simulation stage in the laboratory and the stage of monitoring thermal-hygrometric performance in situ provided interesting and promising information on the performance of these membrane structures, designed as dynamic filters obtained from the combination of different technical fabrics [34]. A further development of the research was given by the TemporAula project. A textile case that implements thermo-hygrometric performances and also provides a discrete acoustic insulation using some ETFE sheets which are low-cost translucent insulating layers (for example expanded polyethylene, low-density polyethylene and expanded polyurethane) and two air cavities, while favouring diffusion and permeability to light [35].

### **3. Concluding remarks**

The design of a sheltering for an archaeological site, in relation to the several contradictions that are inherent in its very function, is a conceptual operation, even before being technical, of considerable difficulty, since it is often characterized by the logic of work in progress for the partial or total exposure of the archaeological remains. However, due to the fact that the archaeological heritage has a dual material and immaterial nature, it is necessary to understand "what" to preserve and "why" in the perspective of a sustainable development, even before "how" to do it, allowing a clearer reading and an easier interpretation of the complex existing relationships between the archaeological pre-existence, the natural context and the added anthropic systems [3]. In most cases the protection and the musealization of an archaeological discovery is a motivated action of its potential to become a tourist attraction and a resource that can feed the local and the national economy [36]; it is based on «a number of incorrect premises» [37] which tend to overlook the key aspects of a successful site management, the most important of which is conservation.

Since the decision to protect the archaeological heritage is not necessarily based on a thorough assessment of their meaning, their conditions and their environmental relationships, it is not surprising that the final product does not reflect the initial conservation premise. On the contrary, it is evident that the design of some of these superstructures has moved away from that function, focusing on what Palumbo has identified as the architectural philosophy of «the form above the function» [38], projected towards an attractive museum installation that improves the visitor's experience but inevitably risks being perceived as a visual intrusion into the landscape. The archaeological areas and cultural heritage in general, have been the subject of various experiments in recent years with the application of new materials, new techniques and innovative technologies in sheltering interventions, which progressively reconstructed, reconfigured and protected the remains allowing the musealization of remains and findings for their enjoyment.

Although the main objectives of a sheltering structure are clear and shared, the absence of documented data concerning the primary function of sheltering and casings explains the

counterproductive effect that this measure often had on the conservation of archaeological sites in terms of ancient material degradation and early obsolescence of superstructures [37]. In this sense, the literature provides a wide range of cases on the damage reported by the Archaeological Heritage due to a wrong choice of materials used for sheltering. The dangers associated with the use of transparent materials for the roof or the southern elevation are now well known especially in the Mediterranean areas, where an accurate choice should eliminate the negative effects of overheating and condensation [39].

In conclusion, what seems to be clear is that the experiments carried out so far have mainly aimed at satisfying the “enjoyment instance”, often neglecting or underestimating; the “environmental instance” that the new sheltering have in relation to the surrounding landscape and the environment; the “archaeological request”, referring to the relationship between the structural system and the ruderal system and the “financial sustainability”, addressed to the resources used for the construction, maintenance and management of sheltering and ruins. The history of the last sixty years, with the several failures concerning the protection systems, teaches us that we can no longer procrastinate. Taking advantage of the previous experiences, with the contribution of the different disciplinary sectors is necessary to define new guidelines and operating models – a sort of code of practice – for the design of archaeological sheltering without renouncing to the case by case principle. It will be necessary to aim at a joint fulfilment of the aforementioned requests, identifying the necessary requisites for conservation, enhancement and use, adopting a systemic approach in terms of necessity/service, to assign to the heritage a new role and a new identity, consolidated or in formation, within the patterns (urban, extra-urban or landscape), and to configure a contemporary protection system (with morphological, typological and technical-constructive solutions suitable for restitution of the potential significance of the Heritage) that is performing, reliable, sustainable but also reversible, due to mutable meanings that future generations will or want to attribute to it.

## Bibliographical References

- [1] DELLA TORRE, S. Planned Conservation and Local Development Processes: the Key Role of Intellectual Capital. In VAN BALEN, K. and VANDESANDE, A. (eds). *Reflections on Preventive Conservation, Maintenance and Monitoring of Monuments and Sites by PRECOM3OS UNESCO Chair*. Uitgeverij: Acco, 2013, p. 123-127.
- [2] MASON, R. and AVRAMI, E. Heritage Values and Challenges of Conservation Planning. In TEUTÓNICO, J. M. and PALUMBO, G. (eds). *Management Planning for Archaeological Sites. An International Workshop Organized by the Getty Conservation Institute and Loyola Marymount University, 19-22 May 2000 Corinth, Greece*. Los Angeles: Getty Conservation Institute, 2000, p. 13-26.
- [3] SPOSITO, C. and SCALISI, F. Processo conservativo e significatività: un approccio metodologico per la progettazione dei sistemi di protezione dei siti archeologici. In *Agathón, International Journal of Architecture, Art and Design*, 2018, vol. 4, p. 45-58.
- [4] NOVAKOVIĆ, P., HORŇÁK, M., GUERMANDI, M. P., STÄUBLE, H., DEPAEPE, P. and DEMOULE, J. P. (eds). *Recent Developments in Preventive Archaeology in Europe: Proceedings of the 22nd EAA Meeting in Vilnius*. Ljubljana: Ljubljana University Press, 2016.
- [5] VILLANI, S. *Le protezioni delle aree archeologiche. Architettura per l'archeologia*. Tesi di Dottorato di Ricerca in “Storia e conservazione dell'oggetto d'arte e d'architettura”, ciclo XXIV. Roma: Università degli Studi di Roma Tre, 2012.
- [6] GUZZO, P. G. Coperture per Aree e Strutture archeologiche. In *Arkos*, 2000, vol. 1, p. 2.
- [7] MORETTI, G. *L'Ara Pacis Augustae*. Roma, 1938.
- [8] STANLEY-PRICE, N. P. (ed.). *La conservazione sullo scavo archeologico. Con particolare riferimento all'area mediterranea. Atti del Convegno di Cipro del 1983* (Translated by NARDI, L., 1986). Roma: ICCROM e Centro di Conservazione Archeologica, 1984. [Online] Available at: [https://www.iccrom.org/sites/default/files/2018-01/iccrom\\_08\\_scavo\\_it.pdf](https://www.iccrom.org/sites/default/files/2018-01/iccrom_08_scavo_it.pdf) [Accessed 12 June 2017].
- [8] VIVIO, B. *Franco Minissi. Musei e restauri. La trasparenza come valore*. Roma: Gangemi Editore, 2010.
- [9] GERMANÀ, M. L. Archaeological construction and its relationship with place: the theme of shelters. Costruito archeologico e rapporto con il luogo: il tema delle coperture. In RUGGIERI TRICOLI, M. C. and GERMANÀ M. L. (eds). *Urban Archaeology Enhancement | Valorizzare l'archeologia urbana*. Pisa: ETS, 2013, pp. 183-207.

- [10] AA.VV. *Preventive measures during excavation and site protection*. Proceedings of Conference in Ghent, 6-8 November 1985. Roma: ICCROM, 1986. [Online] Available at: [https://www.iccrom.org/sites/default/files/2018-02/1986\\_preventive\\_measures\\_ghent\\_56277\\_light.pdf](https://www.iccrom.org/sites/default/files/2018-02/1986_preventive_measures_ghent_56277_light.pdf) [Accessed 4 June 2017].
- [11] AA.VV. Coperture a protezione di zone archeologiche. In *Restauro – Quaderni di Restauro dei Monumenti e di Urbanistica dei Centri Antichi*, XVI, n. 81, settembre-ottobre, 1985.
- [12] MINISSI, F. Perché e come proteggere i siti archeologici. Relazione al Convegno Internazionale COPAM, 1-4 luglio 1986, Napoli. In *Restauro*, n. XVI (90), 1987, p. 78-85.
- [13] SCHMIDT, H. *Schutzbauten*. Stuttgart: Theiss, 1988.
- [14] GULLINI, G. Il restauro a Pompei. In FRANCHI DALL'ORTO, L. (ed.). *Restaurare Pompei*. Milano: Soprintendenza archeologica di Pompei, 1990, p. 25-58.
- [15] AGNEW, N., MAEKAWA, S., COFFMAN, R. and MEYER, J. Evaluation of the Performance of a Lightweight Modular Site Shelter. Quantitative Meteorological Data and Protective Indices for the Hexashelter. In *Conservation and Management of Archaeological Sites*, vol. 1, issue 3, 1996, p. 139-150.
- [16] MERTENS, D. Planning and executing anastylosis of stone buildings. In STANLEY-PRICE, N. (ed.). *Conservation on archaeological excavations: with particular reference to the Mediterranean area*. Roma: ICCROM, 1995, p. 113-134.
- [17] STUBBS, J. H. Protection and presentation of excavated structures. In STANLEY-PRICE, N. (ed.). *Op. cit.* 1995, p. 73-90.
- [18] RANELLUCCI, S. *Coperture archeologiche. Allestimenti protettivi sui siti archeologici*. Roma: DEI, 2009.
- [19] DEMAS, M. Annotated bibliography on protective shelters for archaeological sites. In *Conservation and Management of Archaeological Sites*, vol. 5, issue 1-2, 2002, p. 91-105.
- [20] DEMAS, M. Protective Shelters for archaeological sites. In ROBY, T. and DEMAS, M. (eds). *Mosaic in situ. An overview of the literature on conservation of mosaic in situ*. Los Angeles: J. Paul Getty Trust, 2013, pp. 1-75. [Online] Available at: [https://www.getty.edu/conservation/publications\\_resources/pdf\\_publications/pdf/lit\\_review.pdf](https://www.getty.edu/conservation/publications_resources/pdf_publications/pdf/lit_review.pdf) [Accessed 6 February 2019].
- [21] VILLANI, S. *Le protezioni delle aree archeologiche. Architettura per l'archeologia*. Tesi di Dottorato di Ricerca in "Storia e conservazione dell'oggetto d'arte e d'architettura", ciclo XXIV. Roma: Università degli Studi di Roma Tre, 2012.
- [22] LAURENTI M. C. (ed.). *Le Coperture delle Aree archeologiche. Museo aperto*. Roma: Gangemi, 2006.
- [23] CACACE, C., CAPPONI, G., LAURENTI, M. C. and PIETRINI, N. La protezione delle aree archeologiche. La Domus dei Coedii a Castelleone di Suasa. In BISCONTI, G. and DRIUSSI, G. (eds). *Dal sito archeologico all'archeologia del costruito, Atti del Convegno di Studi Scienza e Beni Culturali XII, Bressanone 3-6 Luglio 1996*. Padova: Arcadia Ricerche Editore, 1996, p. 412-420.
- [24] AA.VV. *The APPEAR Method. A practical guide for the management of enhancement projects on urban archaeological sites, European Commission Research. Report n. 30/4*, February 2006. [Online] Available at: [https://orbi.uliege.be/bitstream/2268/28975/1/guide\\_en.pdf](https://orbi.uliege.be/bitstream/2268/28975/1/guide_en.pdf) [Accessed 8 June 2018].
- [25] TELLER, J. and LEFERT, S. *L'intégration architecturale et urbaine des vestiges archéologiques*, Actes du Colloque International APPEAR. 2004 [Online] Available at: <https://orbi.uliege.be/bitstream/2268/28974/1/Teller-10.pdf> [Accessed 6 May 2018].
- [26] TRICOLI, A. *La Città Nascosta. Esperienze e metodi per la valorizzazione del patrimonio archeologico urbano*. Monografie di Agathón. Palermo: Offset Studio, 2011.
- [27] RANELLUCCI, S. *Conservazione e musealizzazione dei siti archeologici*. Roma: Gangemi, 2012.
- [28] THOMPSON, J. and ABED, A. B. Deciding Shelters: values and the management context. In ASLAN, Z., COURT, S., PESARESI, P. and THOMPSON, J. (eds). *Protective Shelters for*

*Archaeological Sites, Proceedings of a Symposium, Herculaneum, Italy, 23-27 September 2013.* London: British School at Rome, 2018, p. 13-39.

[29] ASLAN, Z., COURT, S., PESARESI, P. and THOMPSON, J. Introduction: sheltering the Mediterranean's archaeological heritage. In ASLAN, Z., COURT, S., PESARESI, P. and THOMPSON, J. (eds). *Protective Shelters for Archaeological Sites, Proceedings of a Symposium, Herculaneum, Italy, 23-27 September 2013.* London: British School at Rome, 2018, p. 1-10.

[30] CURTEIS, T. The use of environmental survey and monitoring in the design and evaluation of archaeological shelters. In ASLAN, Z., COURT, S., PESARESI, P. and THOMPSON, J. (eds). *Protective Shelters for Archaeological Sites, Proceedings of a Symposium, Herculaneum, Italy, 23-27 September 2013.* London: British School at Rome, 2018, p. 40-50.

[31] FIGUEIREDO, M., BERNARDES, J. P., RODRIGUES, J. I. J. and GONÇALVES, C. A Framework Supported by Modeling and Virtual/Augmented Reality for the Preservation and Dynamization of Archeological-Historical Sites. In RODRIGUES, J. M. F., RAMOS, C. M. Q., CARDOSO, P. J. S. and HENRIQUES, C. (eds). *Handbook of Research on Technological Developments for Cultural Heritage and eTourism Applications.* Hershey PA: IGI Global, 2018, p. 215-227.

[32] SCIANNA, A., GRISTINA, S. and PALIAGA, S. Experimental BIM Applications in Archaeology: A Work-Flow. In IOANNIDES, M., MAGNENAT-THALMANN, N., FINK, E., ŽARNIĆ, R., YEN, A. and QUAK, E. (eds). *Digital Heritage. Progress in Cultural Heritage: Documentation, Preservation, and Protection – Proceedings of the 5th International Conference, EuroMed 2014, Limassol, November 3-8, 2014.* Lecture Notes in Computer Science, vol. 8740. Cham: Springer, 2014, p. 490-498.

[33] MASERA, G., IMPERADORI, M., VANOSSI, A., LIOTTA, S. J. and ITO, Y. Modular, Adaptable Shelters for Environmentally Sensitive Archaeological Sites. In *International Colloquium on Bio-based and Bio-inspired Environmentally Compatible Structure at Tokyo, 2015.* [Online] Available at: [https://www.researchgate.net/publication/280841273\\_Modular\\_Adaptable\\_Shelters\\_for\\_Environmentally\\_Sensitive\\_Archaeological\\_Sites/citations](https://www.researchgate.net/publication/280841273_Modular_Adaptable_Shelters_for_Environmentally_Sensitive_Archaeological_Sites/citations) [Accessed 8 September 2018].

[34] ROMOLI, E., ZANELLI, A. and ROSINA, E. Il monitoraggio delle aree archeologiche per l'ottimizzazione del progetto delle coperture. In *Atti del XXIX Convegno Internazionale Scienza e Beni Culturali, Conservazione e valorizzazione dei siti archeologici, 9-12 luglio 2013, Bressanone.* Venezia: Arcadia Editore, 2013, p. 629-640.

[35] MAZZOLA, C., ZANELLI, A. and STIMPFLE, B. Project development of an ultra-lightweight bending-active temporary structure. In BÖGLE, A. and GROHMANN, M. (eds). *Proceedings of the IASS Annual Symposium 2017, Interfaces: architecture.engineering.science, 25-28th September 2017, Hamburg.* Hamburg: IASS and HafenCity University, 2017, pp. 1-10. [Online] Available at: [https://www.researchgate.net/publication/321128328\\_Project\\_development\\_of\\_an\\_ultra-lightweight\\_bending-active\\_temporary\\_structure](https://www.researchgate.net/publication/321128328_Project_development_of_an_ultra-lightweight_bending-active_temporary_structure) [Accessed 18 December 2018].

[36] CASTELLANOS-VERDUGO, M., OVIEDO-GARCÍA, M. A. and MARTÍN-RUIZ, D. Tourist Assessment of Archaeological Sites: The Case of The Archaeological Complex of Itálica (Seville, Spain). In *Visitor Studies*, vol. 14, issue 1, 2011, p. 100-112.

[37] AGNEW, M. Methodology Conservation Criteria and Performance Evaluation for Archaeological Site Shelters. In *Conservation and Management of Archaeological Sites*, vol. 5, issue 1-2, 2002, pp. 7-18. [Online] Available at: <https://www.tandfonline.com/doi/abs/10.1179/cma.2002.5.1-2.7> [Accessed 6 September 2018].

[38] PALUMBO, G. Sheltering an archaeological structure in Petra. A case-study of criteria, concepts, and implementation. In *Conservation and Management of Archaeological Sites*, vol. 5, issue 1-2, 2002, pp. 35-44. [Online] Available at: <https://www.tandfonline.com/doi/abs/10.1179/cma.2002.5.1-2.35> [Accessed 4 September 2018].

[39] YAKA ÇETİN, F. and İPEKOĞLU, B. Impact of transparency in the design of protective structures for conservation of archaeological remains. In *Journal of Cultural Heritage*, vol. 14, issue 3, 2013, p. e21-e24.



**Fig. 1:** From the right. Museum of the Roman Archaeological Site of Coire, Switzerland (P. Zumthor, 1985-86) and Villa Romana di San Biagio in Terme Vigliatore, Messina, Italy (F. Ravidà, 2005).



**Fig. 2:** Domus Romana San Pancrazio in Taormina, Messina, Italy: the Shelter and Catwalk for night fruition (A. Sposito and C. Sposito, 2006).



## Table of content

### **ID001\_Page 13**

Marco ZUCCA, Pietro CRESPI, Emiliana PERRELLA. Seismic vulnerability of Santa Maria Novella Basilica in Florence

### **ID003\_Page 21**

Ahmed MAHMOUD SABER. The natural light as an important element in the interior spaces forming

### **ID004\_Page 32**

Michele Di SIVO, Daniela LADIANA. Toward the programmed preventive conservation of the historical architectural heritage as system and as "antifragile" process

### **ID06\_Page 38**

Gianni DENARO, Francesca Romana LUCIANI, Lavinia TOMMASOLI. Craftsmanship's role in safeguarding memories: three Italian cases for defining a method in cultural heritage conservation

### **ID07\_Page 47**

Maria Paola GATTI, University of Trento Italy. The Prabi hydroelectric plant in Arco - Trento: Demolition or Preservation?

### **ID008\_Page 54**

Ahmed MAHMOUD SABER. The night lighting dynamics and its influence in reviving the architectural building identity

### **ID009\_Page 64**

Efisio PITZALIS, Genevieve HANSSEN, Marco RUSSO. New centralities in consolidated contexts between tradition and progress. Ariano Irpino, Cesenatico, Castel Maggiore

### **ID010\_Page 73**

Bernardino CHIAIA, Alessandro Pasquale FANTILLI, Oscar MANCINELLI. Comparison between the environmental performance of buildings made of reinforced concrete and timber

### **ID012\_Page 83**

Maria Carolina CAMPONE. The artistic experience of Giovanni Muzio in Islamic land between identity and contamination

### **ID013\_Page 93**

Tiziana CAMPISI, Manfredi SAELI. Constructive characters of the traditional stone buildings of the isle of Pantelleria (Sicily)

### **ID015\_Page 103**

Enrico BASCHERINI, Alessia BERRITTA. Pantalica, historical social physical reappropriation

### **ID016\_Page 112**

Wafeek Mohamed IBRAHIM MOHAMED. The Festival ['Al Refaee] as a Simulation Vision of Innovative & Formative in Earth Populating in Islam between Traditionalism and Positivism

### **ID018\_Page 132**

Ray AXIAQ, Sephora BALDACCHINO, Marie Claire FARRUGIA, Antonio MOLLICONE. Stereometry at Grand Master's Palace in Valletta

### **ID019\_Page 140**

Chiara INGROSSO. The Second Reconstruction. The contribution of Michele Capobianco in Miano

### **ID020\_Page 150**

José FERREIRA CRESPO, Pedro António JANEIRO. The Place(s) of Drawing(s) in Architectural Heritage: The Drawing, The Building, The Dwelling and its Seed. Noronha da Costa as an Architect



## Table of content

### **ID021\_Page 160**

Maria KOKORSKA, Marin MARINOV. The influence of the smart home technologies on the interior design principals

### **ID023\_Page 166**

Alessandro GAIANI. Heritage conservation: new tools for the circular reconditioning of existing spaces

### **ID024\_Page 174**

Còssima CORNADÓ BARDÓN, Sara VIMA GRAU, Pilar GARCIA- ALMIRALL. Assessment of the Residential Building Stock in the Vulnerable Areas in the City of Barcelona

### **ID025\_Page 184**

Buşra GÜRDAĞ, Duygu KOCA. "The First Modern - Ministry of Health Building": A Spatial Transformation of Architectural Heritage

### **ID026\_Page 192**

Anna MANDIA. And there was light!

### **ID028\_Page 196**

Vincenzo CRISTALLO, Ivo CARUSO. Historical heritages and new practices. Modern connections between design and craftsmanship in the "knowledge society"

### **ID031\_Page 203**

Claudia DE BIASE, Maria MANNA. The city as a place of ethnic contamination: the case of CastelVolturno

### **ID032\_Page 217**

Chiara AMATO, Chiara RAVAGNAN, Francesca ROSSI. Between legacy and abandonment. The reuse of minor railways as paths of resilience

### **ID033\_Page 227**

Ying XU, Zhiliang MA. Role of Oral History in Heritage Documentation: practice and reflection of the "Documenting the Demolished" project in Wuhan

### **ID034\_Page 233**

Zhiliang MA, Ying XU. Historical Layers of the "Belt and Road" and the World Significance of the "Great Tea Route"

### **ID035\_Page 239**

Annarita ZARRILLO. The use of ancient techniques and materials as innovation for the present

### **ID036\_Page 244**

Francesca CASTAGNETO. Inclusive design in cultural heritage enjoyment. An experimental project in Ragusa Ibla

### **ID037\_Page 252**

Paolo BELARDI, Luca MARTINI, Giovanna RAMACCINI. HERITAGE + DESIGN = IDENTITY. The Ceri del Col di Lana reconstruction on the occasion of the centenary since the First World War

### **ID038\_Page 262**

Vittorio FIORE. Architectural heritage for the scene. Recovery strategies between changes in the show, organizational models and current production bonds

### **ID039\_Page 272**

Angela Alessandra BADAMI. Rebuilding a cultural legacy in a New Town. Reshape physical and cultural continuity between Old and New Gibellina

## Table of content

### **ID040\_Page 288**

Francesco SPADA. The role of technical manuals for the diffusion of steel construction in Italy in the 1930s

### **ID043\_Page 316**

Marina FUMO, Gigliola AUSIELLO, Mariangela BUANNE. Re-live rural architecture and sustainable living

### **ID044\_Page 326**

Beniamino POLIMENI. What can we learn from vernacular architecture?

### **ID045\_Page 332**

Paolo MARCOALDI. Recovery strategies for urban public heritage. Viterbo case study

### **ID046\_Page 338**

Anna GIOVANNELLI. The rediscovered space between arts and architecture in the restore of the former Teachers' Club of the Città Universitaria of Rome

### **ID049\_Page 349**

Francesca MUZZILLO, Fosca TORTORELLI. Agriculture and Archeological Legacy: the Vesuvius Case

### **ID050\_Page 354**

Rachel Suet Kay CHAN. Chan See Shu Yuen: A Cantonese Ancestral Clan in Malaysia as Transnational Social Support Network

### **ID051\_Page 364**

Lobna SHERIF, Ahmed EL-ANTABLY, Hala BARAKAT, Esraa Mohsen HAMED. The Production of Middle Class Apartments Offered by Heliopolis Company for Housing and Development, Cairo, Egypt

### **ID052\_Page 375**

Francesca SIBILIO, Irene ROMANO. Occupy Farnsworth. Imaginary project as a tool for understanding modern architectural icons

### **ID053\_Page 383**

Anna Marie FISHER, Jeppe Heden CHRISTENSEN. The architecture of the 'Monobloc' and its potential of initiating a new interdisciplinary educational concept for Cultural Diversity

### **ID054\_Page 391**

Margherita TUFARELLI, Elisabetta CIANFANELLI. Design for Digital Cultural Heritage. Archives as driving force for innovation

### **ID055\_Page 400**

Márcia Maria VIEIRA HAZIN, João Nuno PERNÃO, Viviane KOURY. The Feigned Retable (altarpiece) of the Church of Conceição dos Militares, Recife-PE.1

### **ID056\_Page 410**

Giulia CERIANI SEBREGONDI. Cultural legacy and cultural contamination in a changing world: travel, diplomacy, and architectural patronage of Leonardo Donà dalle Rose (1536–1612) in early modern Venice

### **ID057\_Page 417**

Takeyuki OKUBO, Sanshiro TAKASUGI, Lata SHAKYA. The Utility Functions of Historical Courtyards as Evacuation Sites for Gorkha Earthquake 2015 - At the Patan District, Kathmandu Valley, World Heritage Site in Nepal

### **ID058\_Page 428**

Piero BARLOZZINI. From architecture to the landscape. A casket in which the sedimentary layers of collective conscience are deposited

## Table of content

### **ID059\_Page 436**

Maria Gabriella ERRICO. Landscape and climate change: projects to contain and transform CO2

### **ID061\_Page 444**

Antonella VALITUTTI, Salvatore Roberto PERRICONE. The application of Minimum Environmental Criteria (CAMs) construction and sustainable transformation of public building stock

### **ID062\_Page 451**

Francesco Pio ARCELLA. Urban Revitalization: "Conocchia" Area, in Curti

### **ID063\_Page 460**

Paolo DE MARCO, Antonino MARGAGLIOTTA. Memory and presence of thólos in architecture

### **ID064\_Page 470**

Barbara BONANNO. Preserve by trasforming. Transformation as gateway to the past

### **ID065\_Page 476**

Małgorzata DOROZ TUREK. How Foreign Legacy Became the Polish Heritage. Part I

### **ID066\_Page 487**

How Foreign Legacy Became the Polish Heritage. Part II

### **ID068\_Page 496**

Nilüfer BATURAYOĞLU YÖNEY, Burak ASİLİSKENDER, Bahar ELAGÖZ TİMUR, Nur URFALIOĞLU. Adaptive Re-use of Medieval Caravanserais in Central Anatolia

### **ID069\_Page 505**

Alessandro SCANDIFFIO. Spatial quality index of slow routes. A multi-indicators GIS method for measuring spatial quality in the landscape of southern Milan

### **ID070\_Page 514**

Enza TOLLA, Giuseppe DAMONE. The Tracks of Mary landscape in Basilicata (Italy): opportunity for knowledge and enhancement

### **ID071\_Page 522**

Michela BENENTE, Valeria MINUCCIANI. Cultural accessibility as a multidimensional condition for a real sharing of cultural heritage

### **ID072\_Page 530**

Laura RICCI, Carmela MARIANO. History for urban regeneration: a new perspective. The PRG (Masterplan) '08 of the Municipality of Rome

### **ID073\_Page 540**

Pasquale MIANO, Bruna DI PALMA. Between stratum and substratum: an urban design project for the Lotti and Tronari quarries in Naples

### **ID074\_Page 549**

Isabel TORT AUSINA, Ricardo Ignacio YUSIM, Ricard HUERTA RAMÓN. The Educating City as a Cultural and Creative Industry

### **ID076\_Page 559**

Nadia FABRIS. Representing the city in progress. From industry to City Park, Torino ex Michelin

## Table of content

### **ID078\_Page 565**

Francesco CRUPI. Landscape planning. Issues and tools

### **ID079\_Page 575**

Alice BARRECA. Invisible modern residential heritage: spatial analyses in Turin real estate submarkets

### **ID080\_Page 585**

Irene PERON. Remediation shapes. Adriastica Malhouse, scenarios despite the neglect

### **ID081\_Page 595**

Arturo BECCHETTI, Fabrizio FELICI, Alessandra PUSCEDDU. Heritage built as enhancement opportunities to Contemporary City - Infrastructure Nodes and Railway Stations: three different case studies

### **ID082\_Page 604**

Fernanda CANTONE. The building heritage of the early Twentieth Century. A tourist project for the renovation of eclectic castles. The case of the Duke of Misterbianco castle (CT)

### **ID083\_Page 614**

Cesare VERDOSCIA, Antonella MUSICCO, Riccardo TAVOLARE. 3D data acquisition and processing for implementing cognitive systems. The school building "F. Corridoni" in the old town of Bari

### **ID084\_Page 623**

M. Teresa CAMPISI. Value networks' systems for integrated conservation. Proposals and reflections for inner areas in central Sicily

### **ID085\_Page 633**

Ludovica CAPPELLETTI. The construction of a monument. Palazzo Te in Mantua

### **ID086\_Page 643**

Filippo ANGELUCCI, Hanan ELFRAITES. Re-connective interfaces in the historical urban open spaces. A comparison between two small cities in Italy and Libya

### **ID088\_Page 653**

Tiziana FIRrone, Carmelo BUSTINTO, Davide CARELLA. The Sirocco's chamber of Micciulla manor in Palermo\_ A bioclimatic archetype symbol of legality and civil redemption

### **ID089\_Page 665**

Massimo MALAGUGINI, Maria Elisabetta RUGGIERO, Ruggero TORTI. Narration of the visual identity of a city: reading of languages and perception of authorial signs

### **ID091\_Page 674**

Teresa CILONA. The Creativity of the Cultural Heritages and the Landscapes. Redevelopment experiences at compared

### **ID093\_Page 684**

Francesca FILIPPI, Elisabetta BENELLI, Laura GIRALDI. The design and the community map to preserve and pass on innovation

### **ID094\_Page 688**

Rossana NETTI. Leptis Magna: "a heritage in war uniform" to be protected

### **ID095\_Page 696**

Dominik LENGYEL, Catherine TOULOUSE. Visualized Hypotheses – Architectural Ideas as Intellectual Legacy

## Table of content

### **ID096\_Page 705**

Matteo DALLAGIACOMA, Building Engineer, Anna MARAGNO, Giovanna Angela MASSARI. Projects to save the sites of salvation

### **ID098\_Page 715**

Paolo CAMILLETI. Living the Mediterranean rural landscape: the grotto houses of Ponza between identity and preservation

### **ID099\_Page 725**

Massimiliano RENDINA, Francesco IODICE. Africa, between regionalism and modernism

### **ID100\_Page 735**

Marika FIOR, Irene POLI, Giulia BEVILACQUA. Historical network for the regeneration of the contemporary city

### **ID102\_Page 744**

Marco FELLI, Simonetta CIRANNA, Angela LOMBARDI. The Shrine of the Alamo and its Roof: History and Strategies of Recovering

### **ID103\_Page 754**

Mariangela DE VITA, Ilaria TRIZIO, Luís Manuel PALMERO IGLESIAS. The Industrial Heritage valorization: reuse projects in the town of Valencia, Spain

### **ID104\_Page 762**

Giuseppe DE GIOVANNI, Cesare SPOSITO. Sustainable conservation: the state of art and the need of guidelines about protection and enjoyment of the archeological heritage

### **ID105\_Page 773**

Giorgia AQUILAR. Heritage as Bíos: Built Legacies in Praise of Contamination

### **ID106\_Page 783**

Manlio MONTUORI. The past in the present: the anthropized landscape as an instrument of memory legacy

### **ID109\_Page 793**

Angela LOMBARDI, Sedef DOGANER. Renaissance of Downtown San Antonio: Hemisfair Park as New Urban Core

### **ID110\_Page 803**

Ishita SHAH. Role of Knowledge Management Systems in Heritage Preservation Case specific inquiry into Indian practices

### **ID112\_Page 813**

Alexandra AI QUINTAS, Mário SALEIRO FILHO. Contemporaneity and Heritage: Skin and Porosity Throughout Ancestral Shapes

### **ID115\_Page 822**

Paolo MELLANO. The Twentieth-Century: a fragile century, to be safeguarded and consciously nurtured

### **ID116\_Page 830**

Domenico GATTUSO, Caterina GATTUSO. The Dromo, ancient connecting route of the Magna Graecia cities

### **ID119\_Page 842**

Maria Paola MARABOTTO. Knowledge and transmission of intangible heritage: Raimondo D'Aronco's drawings and architecture for Turin International Exhibition of 1902

## Table of content

### **ID121\_Page 848**

Nunzia BORRELLI, Giulia CORTI, Maura BENEGLIAMO. Small farmers' Food Production as heritage. Evidences from a Survey in Kenya

### **ID122\_Page 858**

Nilufer SAGLAR ONAY, Valeria MINUCCIANI. Interior space as communicator of cultural significance

### **ID124\_Page 867**

Manuel CABEZA, Beatriz SÁEZ, Alba SOLER. Graphic and constructive analysis of the anti-aircraft shelters under both the Ribalta Institute and the Ttetuan Square in Castellón de la Plana

### **ID130\_Page 877**

Salvatore LOSCO, Claudia DE BIASE. Ecological network from regional to municipal scale. The case-study of San Tammaro (Ce)

### **ID131\_Page 890**

Giuseppe D'ANGELO, Rosaria SAVASTANO. Inno School Project and AHP

### **ID134\_Page 897**

Natasa ZIVALJEVIC-LUXOR. Our Common Built Heritage: Legacy and Prevention from Contamination of Our Urban Culture

### **ID135\_Page 9108**

Mariacarla PANARIELLO. The cultural paradigm in the smart development of slow cities

### **ID137\_Page 914**

Alberto CUSTODI, Flora SCAIA. The northern arch of the Augustus Bridge in Narni

### **ID138\_Page 924**

Saverio CARILLO. Between function and use of spaces and of the Neapolitan urban landscape. Proposal to read Piazza del Plebiscito

### **ID139\_Page 934**

Luciana DI GENNARO, Giorgio FRUNZIO. Wood in the structural restoration of masonry buildings

### **ID140\_Page 943**

Ersilia BIONDI, Giorgio FRUNZIO. Analysis of degradation for the conservation of reinforced concrete

### **ID141\_Page 953**

Luca MENEGATTI. Know, Understand, Valorize

### **ID142\_Page 963**

Alessio CACCAMO, Silvia NIGRO, Lavinia TOMMASOLI. A Multi-criteria analysis tool for rethinking cultural heritage in evolving cities

### **ID143\_Page 973**

Davide MEZZINO, Tatiana K. KIROVA. The role of Intangible for Built Heritage Conservation

### **ID144\_Page 983**

Antonio PUGLIANO. Design and experimentation of a Dynamic Atlas for historical knowledge and landscape planning

### **ID145\_Page 993**

Lorenzo FELI. Experimentation of tools and methods for the organization of archival data in support of a 'Dynamic Atlas', useful for the knowledge and fruition of Rome

## Table of content

### **ID146\_Page 1001**

Lavinia HERZOG, Francesca Romana LUCIANI, Alessandra BATTISTI. A Multi-criteria analysis tool for rethinking cultural heritage in evolving cities – naturalist approach

### **ID147\_Page 1010**

Michela BENENTE, Cristina BOIDO. Chieri, a textile town: the legacy of the former “Felice Tabasso” cotton mill

### **ID149\_Page 1020**

Brunella CANONACO. Towards the knowledge of cultural heritage for conservation

### **ID150\_Page 1029**

Daniela DABBENE. Routes to the royal palace of Venaria Reale (TO): research for the valorization of the urban context

### **ID151\_Page 1038**

Antonella SALUCCI, Donatella SCATENA. Interpreting the urban transformation of the historical city. The Garbatella district in Rome, Italy and the Lazdynai district in Vilnius, Lithuania

### **ID158\_Page 1046**

Agnese AMATO, Massimo ROVAI, Maria ANDREOLI. Digital Detox Tourism as a Resource for the Enhancement of Cultural Heritage. A Development Study for Certosa di Pisa in Calci (PI)

### **ID159\_Page 1056**

Gaetano LIUZZI. The rasole 10, 8, 12, 11 and 18 of Montella's 'Monte' (Avellino, Italy). The study of the archaeological excavations and the escaped mobile materials

### **ID160\_Page 1063**

Gerardo Maria CENNAMO, Rosario MARROCCO. Strategies of analysis, survey, representation and enhancement of space. The resilience of space

### **ID162\_Page 1073**

Mauro Attilio CECONELLO. Digital Storytelling. Interactive multimedia supporting the cultural experience

### **ID169\_Page 1081**

Federica CAPRIOLO. CARLO LOSIO, engineer and icon of the Turin society of the late nineteenth century

### **ID170\_Page 1091**

Ingrid TITOMANLIO. Hotel project in seismic area

### **ID171\_Page 1098**

Ingrid TITOMANLIO, Sergio MAGLIO. Seismic principles for hotel project

### **ID172\_Page 1103**

Elena GIGLIARELLI, Luciano CESSARI. Design strategies for the conservation and extended use of archaeological landscapes. The archaeological area of Doclea in Montenegro

### **ID173\_Page 1112**

Antonella DIANA, Fabio MANFREDI, Raffaele ZITO. The wind of the future blows through the ears of a galloping Persano

### **ID174\_Page 1120**

Maria Rita PINTO, Katia FABBRICATTI, Martina BOSONE. The role of the community-resilience for a circular regeneration led by the cultural heritage

## Table of content

### **ID175\_Page 1130**

Belmessaud Boukhalfa BAYA. Urban landscape cacography: an ethical cacophony

### **ID176\_Page 1141**

Emanuele ZAMPERINI, Pietro CASTELNOVI, Gabriele SACCO. Restoration and strengthening of the timber roof of an ancient building in Borno (BS)

### **ID177\_Page 1151**

Rossella FRANCHINO, Caterina FRETTOLOSO, Francesca MUZZILLO. The productive green between tradition and innovation

### **ID178\_Page 1159**

Cesare CUNDARI, Gian Carlo CUNDARI, Maria Rosaria CUNDARI. Cultural heritage: A bequest to be preserved and valued. You don't preserve if you don't know. Who is responsible for the preservation?

### **ID179\_Page 1165**

Giada LIMONGI, Adriana GALDERISI. Planning for climate proof cities and for preserving cultural and natural heritage

### **ID180\_Page 1174**

Claudia CENNAMO, Concetta CUSANO, Domenico DI SANTO. Stability of the Abbey of San Lorenzo ad Septimum cloister in Aversa

### **ID181\_Page 1184**

Lorenzo CAPOBIANCO. Open spaces: the new merchandise of contemporary city

### **ID182\_Page 1191**

Elena SHLIENKOVA, Alexander YUMINOV, Olga YUMINOVA. Co-participation, Synchronization, and Improvisation. Phenomenon of Sep Community and its Humanitarian Practices

### **ID183\_Page 1201**

Andrey VASILYEV. Russian approaches to estimation of noise influence to human health taking to account other physical factors

### **ID184\_Page 1208**

Andrey VASILYEV. Experience and results of automobile tire road noise calculation and reduction

### **ID185\_Page 1213**

Maria MARTONE, Alessandra Marina GIUGLIANO. Past, present, and future of the village of Faito

### **ID186\_Page 1223**

Liala BAIARDI, Marco E. M. TALIANI, Michele UGOLINI. Sustainable urban planning for the revival and development of an African rural area

### **D187\_Page 1232**

Mario PISANI. Two emblematic experiences in comparison

### **ID188\_Page 1240**

Antonio BOSCO. Old city/Smart city

### **ID189\_Page 1244**

Maurizio CARTA. Planning the Fluid City: the Palermo Creative Waterfront



## Table of content

### **ID190\_Page 1253**

Daniele RONSIVALLE. The Lucania Apennines. A Neo-Anthropocene landscape

### **ID191\_Page 1262**

Barbara LINO. New rur-urban alliances: Experiments of Social Innovation in Terre Sicane Inland Area in Sicily

### **ID192\_Page 1268**

Maria Dolores MUÑOZ. Places of memory and urban landscape in the mining town of Lota

### **ID193\_Page 1277**

Danila JACAZZI. "Visiting excavations in the evening, in the moonlight and on horseback": the touristic organization of Pompeii in historical times

### **ID194\_Page 1287**

Uzma KHAN. Secular and Sacred Spaces – Dargahs of Delhi

### **ID196\_Page 1296**

Giuseppe D'ANGELO, Rosaria SAVASTANO. Open school and evolution of students needs

### **ID197\_Page 1305**

Maria Grazia CAMMISA, Roseda GENTILE. The recovery of an industrial archeological space in the old town of Catania and its reconversion into an international contemporary art center and receptive space for artists

### **D198\_Page 1315**

Luciana ABATE. University of Campania, Italy. From Traditional Territory Representation to new Information Acquisition techniques

### **ID199\_Page 1325**

Rosaria PARENTE. Benecon University Consortium, Pegaso Univesity. Monitoring and Knowledge activity to guarantee the Legacy of Cultural Heritage: the case study of Santa Maria of Costantino-poli in Torre del Greco

### **ID200\_Page 1335**

Alessandro CIAMBRONE. Benecon University Consortium, Pegaso Univesity. World Heritage and Legacy: the case studies of Shanghai, Hangzhou, Mount Wuyi

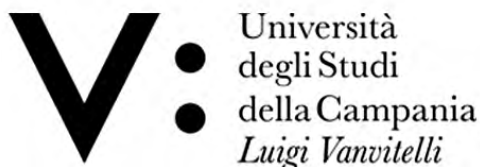


### **CARMINE GAMBARDELLA**

UNESCO Chair on Landscape, Cultural Heritage, and Territorial Governance; President and CEO of Benecon SCA RL Research Centre on Cultural Heritage, Ecology and Economy (Consortium of five Universities: University of Campania "Luigi Vanvitelli", Pegaso University, University Federico II of Naples, University of Salerno, University of Sannio). Rector at the European Polytechnical University, EPU. Professor of Drawing at the Pegaso University and at the University of Campania. President of the International Forum 'Le Vie dei Mercanti' since its first edition in 2003. Honorary President of the Italian Committee of the National Fulbright Sector on Cultural Heritage, Sustainable Development, Urban Planning, Architecture and Management of UNESCO World Heritage Sites. Editor and Founder of the series "Surveying is/or Project", "Knowledge Factory" and "Architecture, Heritage and Design". Component of the Scientific Committee of International Class A Magazine 'Abitare la Terra'/'Dwelling on Earth'. He covered various roles including the Pro Rector of Institutions, Academic Senator, Director of the Department of Architecture and Industrial Design Luigi Vanvitelli, Dean of the Faculty of Architecture Luigi Vanvitelli, Director of the Department of Culture of the Project, Director of Doctoral School in the Discipline of Architecture, Coordinator of the PhD in Protection, Safety and Representation of the Environment and Structures and Territorial Governance, Coordinator of the PhD Program in Surveying and Representation of Architecture and the Environment, President of the Course Degree in Industrial Design. He is author of numerous scientific papers on surveying and representation of the built and natural heritage.



- UNESCO Chair on Landscape, Cultural Heritage and Territorial Governance
- BENECON Research Centre of Competence of the Campania Region for Cultural Heritage, Ecology and Economy, Naples, Italy



## PATRONED BY



**UNIVERSITÀ DEGLI STUDI DELLA CAMPANIA  
LUIGI VANVITELLI**

**SCUOLA POLITECNICA E DELLE SCIENZE DI BASE**

**DIPARTIMENTO DI ARCHITETTURA  
E DISEGNO INDUSTRIALE**



Organisation  
des Nations Unies  
pour l'éducation,  
science et la culture



• UNESCO Chair  
• Forum University  
and Heritage



UNIVERSITAT  
POLITÀCNICA  
DE VALÈNCIA



Organizzazione  
delle Nazioni Unite  
per l'Educazione,  
la Scienza e la Cultura



Commissione Nazionale  
Italiana per l'UNESCO



MINISTERO  
PER I BENI E  
LE ATTIVITÀ  
CULTURALI



**GANGEMI EDITORE®**  
SPA  
INTERNATIONAL



THE US - ITALY FULBRIGHT COMMISSION  
Linking Minds Across Cultures