



PAST AND PRESENT OF THE EARTHEN ARCHITECTURES IN CHINA AND ITALY



Edited by
Loredana Luvidi, Fabio Fratini
Silvia Rescic, Jinfeng Zhang



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LOREDANA LUVIDI, FABIO FRATINI
SILVIA RESCIC AND JINFENG ZHANG

This series of volumes comprises research outputs that have been achieved due to the financial contribution of the National Research Council of Italy (CNR) and the the Chinese Academy of Cultural Heritage (CACH) within the context of a Bilateral Agreement of Scientific and Technological Cooperation between these two Institutions.

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P.le Aldo Moro 7
00185 Roma

ISBN paper version 978 88 8080 470 3
ISBN electronic version 978 88 8080 315 7

Front-page image captions

1. TECLA (Technology and Clay) 3D printed house by WASP and Mario Cucinella Architects, Massa Lombarda, Ravenna, ITALY (2021)
2. Ruins of a vernacular building in Sant’Omero, Abruzzo, ITALY (by Dalila Fortunato and Anna Jaroszewski, 2020)
3. Ruins of Gaochang ancient city, Xinjiang Province, CHINA (by Fabio Fratini and Loredana Luvidi, 2016)
4. Keziengaha beacon tower (Han Dynasty) in Kuche city, Xinjiang province, CHINA (by Center of Conservation of Xinjiang Cultural Heritage, 2020)

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FOREWORD

GILBERTO CORBELLINI

Director, Department of Social and Human Sciences, Cultural Heritage, National Research of Science of Italy - CNR

In 2015 CNR and CACH initiated their collaboration, which introduced, next to the bilateral research project programs, also a book series on China and Italy. This volume is the fourth publication in this series.

The research carried out within this bilateral project and discussed in the contributions of this book deals with the conservation of earthen architecture, widespread in many regions of China and Italy, as well as in other countries of the world. These buildings represent a very perishable cultural heritage due to the low durability of earthen artefacts towards atmospheric agents. Therefore, their existence is in danger because it is difficult to consolidate the earth without causing further damage to the original material.

In China, earthen artefacts comprise wall structures, whole cities and monumental or historic buildings of great value. Their characteristics differ from one territory to another, in relation to the geographical context in which are located and the cultural environment. There is also a diffused vernacular architecture of lesser value that gives character to each territory making it different from any other, but at serious risk of disappearance. Urbanization and the aspiration of people to conditions of better comfort has meant that the countryside has become depopulated with the abandonment of houses that are disappearing without maintenance.

The collaborative work between CACH and CNR researchers aimed at identifying products and methods suitable for the conservation of the earthen material which characterize this architecture. The earthen architecture of Italy is different from the Chinese one and generally present in vernacular heritage. It is a little-known cultural asset but through its study it will be possible to enhance and preserve this architecture which testifies to the wealth of technological-cultural diversity of man's housing adaptations to changing environmental contexts.

The challenges faced by the CACH - CNR joint research project have been and are an important scientific growth ground for ISPC, the CNR Institute dedicated to the study of the conservation and enhancement of cultural heritage in a multi- and interdisciplinary perspective.

Scientific methods and new technologies are now used to improve the understanding of building technologies, conservation aspects and enhancement of this architectural heritage, whose knowledge for a long time was based only on historical and socio-anthropological studies.

CHAI XIAOMING

Director General, Chinese Academy of Cultural Heritage – CACH

Based on the bilateral cooperation framework between CACH and CNR, five selected projects have been initiated and launched in 2016. To show and exchange the achievements of cooperation, both sides plan to jointly edit a series of academic publications. This book, I am glad to see it as the fourth collection of papers growing out of the bilateral cooperation, includes papers on both sides' achievements in researches of history, existing status, conservation and perspectives in earth architectures in China and Italy.

Earthen sites is one of earliest kind of human remains. They show not only our past, but also future. Through the bilateral cooperation, as shown by the papers in the book, refreshing and inspiring light have been shed on complex issues concerning conservation and valorization of earthen sites, the theme of which indeed deserves academic comparison from multi-cultural perspectives to comprehend the evolution of research, conservation and management under different social contexts.

As much as I am pleased to see the book, I look forward to continuing and deepening this kind of bilateral exchanges with more and more fruits growing out of it. Therefore, CACH would like to further our cooperation with CNR and provide all necessary support, to strengthen and advance conservation communication, and cultures behind.

INTRODUCTION

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The National Research Council of Italy (CNR) and the Chinese Academy of Cultural Heritage (CACH) during the past three years (2016-2018) carried out a Joint Research Project on “Assessment of innovative methods for the conservation of earthen surface”. The project was carried out by the Institute for the Conservation and Valorization of Cultural Heritage (ICVBC) of the CNR that since 1st October 2019 was suppressed to join the new Institute of Heritage Science (ISPC-CNR). The ISPC deals with the study of the conservation and enhancement of cultural heritage with a multidisciplinary approach, which take advantage of scientific methods and new technologies together with historical and social aspects.

The subject of this Joint Research Project was a real challenge and continues to be so. Actually if the decay of building stone materials exposed to the external environment still represents one of the main threats to monuments and architecture all over the world, a fragile architecture such as the earthen one, is in a situation of increased risk considering the climate change problem and the increased rainfall intensity.

Earthen architecture is a type of construction almost unknown to most of the inhabitants of the developed countries and when it is talked about it, is most often in a derogatory way (i.e. “poor mud houses”). Actually, the earthen constructions are spread in many countries and constitute a testimony of skills and habits of peasant civilizations. Earth is one of the oldest materials used in architecture. It was widely used in ancient Egypt and in the civilizations of Mesopotamia and it is mentioned in the Bible (Book of Exodus 5, 6-8). The constructions of Iran, Afghanistan, Yemen, Iraq, Morocco and Mali testify that earthen architecture has evolved and specialized until reaching a remarkable technical perfection (vaulted systems, domes, multi-storey buildings, decorated surfaces). About 30% of the world population lives in earthen buildings.

Earthen buildings are present also in Europe: Germany, United Kingdom, Spain, Portugal, Poland, Hungary, Romania, Baltic countries. In France 15% of the rural population lives in earthen buildings. In Italy, earthen architecture is present in Sicily,

Sardinia, Calabria, Basilicata, Abruzzo, Marche, Tuscany and Piedmont. Similarly, throughout the western part of China, along the Silk Road, earth is the most widespread building material, both in civil and monumental architecture and in fortifications. It is therefore a type of architecture that for good reason constitutes an important cultural heritage, both from a material and immaterial point of view due to the social implications relating to the construction of the buildings which often involves entire communities.

For some decades, however, we have witnessed the gradual abandonment of earthen buildings, because they are considered unhealthy and unsafe, incompatible with the modernity that people are looking for. In addition, there are three other aspects that hinder the use of earth: it is a material whose application requires specific knowledge and skills; it is a fragile architecture that requires scheduled maintenance which, if it fails, leads to decay; modern building standards are still very restrictive and do not favour the use of earth in architecture.

For all these reasons, preserving earthen architecture and ensuring its existence over time is a real challenge. Experiments are needed to identify the means by which to improve its resilience, so as to foster both the preservation of the existing earthen heritage and a more widespread use of earth in new constructions.

This book, in addition to contributing to the dissemination of knowledge of earth architecture in China and Italy, examines the conservation techniques used in the respective countries and the researches that are being carried out to improve these interventions in order to make them more durable and compatible with a material as delicate as earth. The new opportunities that the earth architecture can have in future in the two countries are also illustrated.

Ultimately, this book is an attempt to bridge the gap between the science applied to Cultural Heritage and the real meaning of the so-called "cultural asset".

Cultural heritage is the result of sensitivity, thought, expectations and skill of men and women stratified over the centuries who, with their identities and personalities, have built the reality in which we live today and with the help of science we want to contribute to its preservation.

PART 1

**HISTORICAL USE OF EARTHEN MATERIALS FOR
ARCHITECTURE**

CONSERVATION OF EARTHEN ARCHITECTURE: AN OVERVIEW OF INTERNATIONAL GUIDELINES AND RESOLUTIONS

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Keywords: Earthen architecture, conservation, authenticity, integrity, compatibility

Attention first turned to the conservation of the world's earthen heritage towards the end of the 1960s, following a few archaeological campaigns in the Middle East (Iraq). Starting in 1972, the topic became the subject of special academic conferences spearheaded by Piero Gazzola, the first president of ICOMOS.

Today, a fresh reading of the *Proceedings* and *Resolutions* resulting from the international meetings over a fifty-year period allows us to 'take stock' of the current situation and, in particular, compare the theoretical premises with the actual work that has been done. Through these documents and the rich body of published research that they inspired, a considerable corpus of in-depth (increasingly geographically broad) information about earthen heritage emerges to which the development of theoretical reflections on the topic and coherent conservation practices do not always correspond.

Since historical earthen architecture constitutes a considerable part of the Cultural Heritage identified by UNESCO (around 15% of the World Heritage List)¹, conservation of this evidence cannot neglect the essential aspects for which it is recognised as "Heritage of Humanity"². While recognising that the material out of which these works are made poses particularly complex conservation problems due to its perishable nature, this characteristic cannot justify total reconstruction or replacement

1 *Earthen architecture in today's world*, UNESCO 2012, 260.

2 "To bear a unique or at least exceptional testimony to a cultural tradition or to a civilization which is living or which has disappeared; to be an outstanding example of a traditional human settlement, land-use ... which is representative of a culture or human interaction with the environment" (UNESCO *Criteria*, III-V).

activity that would jeopardise its authenticity and erase its history. Such practices are extraneous to the conservation of historical-cultural heritage.

In the following, we shall trace the conceptual path marked out by the conferences over the years, with the aim of determining its topicality and identifying the criticalities entailed by the various developments, more or less in line with the original conservation premises.

THE INTERNATIONAL CONFERENCES FROM 1972 TO TODAY

It is immediately clear that a limited number of reports, devoted to historical knowledge of earthen architecture and study of conservation technologies, were presented at the first conferences (between 1972 and 1987). Comparison of research and experience was carried out in a really interdisciplinary context (Piaget 1967). Dedicated questionnaires were distributed to identify and compare the issues encountered in the conservation of these structures worldwide, "to encourage standardization of testing procedures" (Torraca 1980, p. VI). Particular critical issues were then highlighted to be addressed in subsequent research and it was stipulated that this research would be gathered by ICOMOS-ICCROM and circulated worldwide (*Resolutions Yazd 1976*, pp. 265-268).

Starting in 1990, the conference topics began to increase considerably and, as a consequence, the meetings were divided into distinct sections. This led to the separation of the historical-conservation approach from the technical-scientific one, having been addressed together until then. New research areas were added to the original themes, including anti-earthquake structural analyses, attention to urban and socio-economic context and restoration of existing buildings. In particular, this last topic highlights new interests (environmental sustainability, socio-economic aspects) and different aims (reuse, modernisation of building traditions) that led to maintenance practices that sometimes conflicted with the initial conservation premises.

At the first conferences, although a distinction was drawn between 'archaeological sites' and 'buildings in use', attention was primarily focused on the former due to their greater cultural interest. Subsequently (parallel to extension of the concept of 'monument' from the single building to include the urban environment and 'minor' architecture)³, case studies of existing buildings steadily increased, with the aim of keeping them in use or restoring them to functionality. From then on, the primary objective was no longer the conservation (understood as authentic transmission of material evidence of historical-cultural importance) since other factors (such as sustainability, economic feasibility, social issues and future development) being taken on board that led to a notable revival of earthen building techniques. These techniques were used both for the restoration of existing structures and the construction of new ones.

3 See the *Venice Charter* (1964) for the Restoration/Conservation of monuments and sites.

Taking a close look at the acts of the various conferences, we find that the aim of the first meetings was to “establish an international methodology for the study and conservation of earthen architecture”.

In particular, as early as the 1972 Conference (Yazd, Iran), it was not only recommended to protect the monuments from the damage of time but also to shield them from inappropriate interventions. The position taken was clearly in line with restoration guidelines, understood in a conservative sense and entailing attention to material and figurative authenticity. Indeed, we read that, “from the perspective of respect for the original structure, conservative surface treatment is preferable to covering the surface with plaster, which would need to be periodically renewed. Covering with cement plaster or with bricks completely conceals the original remains and belongs to the field of — more or less arbitrary — reconstruction and interpretation rather than that of the authentic conservation of historical monuments” (Gullini, Torraca 1972).

At the 1976 conference (Yazd, Iran), we find special attention paid to archaeological sites and it was recommended “that no archaeological excavation of sites likely to contain the remains of structures in mud brick should be undertaken unless a provisional conservation policy has been established”, since once unearthed, these structures deteriorate extremely quickly. In the case of structures in ruined state, their stability and integrity needed to be guaranteed; in that of buildings in use, periodical maintenance was of fundamental concern. It was, however, specified that “restoration should respect the spirit of the Venice Charter”; the reference to the principles of restoration, as opposed to falsifying reconstruction, is clear. The influence of this document also appears in the specific call for “towns and quarters (...) to be rehabilitated and adapted to modern living standards without losing their character, keeping their typical architectural features”.

At the subsequent meeting in 1977 (Santa Fé, New Mexico, USA), a need was expressed for development of historical research on earthen architecture, along with study of the material itself. Guidelines were also provided that were to “be considered when planning any adobe preservation project” laid out (as in the *Carta Italiana del Restauro* of 1972) in a list specifying what was ‘recommended/not recommended’. Consistent with restoration principles, the following were recommended: “contemporary intervention that is distinguishable”, “use of new materials which are compatible”, “preservation of alterations and additions that may have acquired historical significance”, “adequate documentation prior to initiation of any preservation action”.

In 1980 (*Ankara, Turkey*), the definition of ‘earthen architecture’ appeared for the first time; that required attention not only to materials (*mud-brick* or *adobe*) but also “to all architecture, historic or contemporary, that is constructed of earth materials”. In parallel, a distinction also seems to have been made between ‘monuments’ and ‘vernacular architecture’, which is to say minor structures to be preserved as evidence of a historical culture at risk of disappearance. The latter, while fully included within the UNESCO definition (see *Criteria III*), nevertheless seemed extraneous to the restoration sphere and became the object of building salvage. In spite of the initial

definition of *earthen architecture*, attention seems to have been focused more on materials and construction techniques than on the architecture itself. The history of the buildings seems to have been moved to the background⁴. As a consequence, the elements testifying to the authenticity of these works were neglected and often subjected to total reconstruction (Bartolomucci 2005).

In 1983 (Lima, Peru), the theme of training took on special importance, with the aim of reclaiming and passing down traditional construction techniques. The theme of conservation was flanked by sociological and ecological approaches, which had until then remained in the background. In particular with regard to the practical results of this change, it is here important to emphasise a few orientations that marked a reversal with respect to the past: the aim of the conference was no longer to study historical earthen architecture in view of its conservation, but rather to “circulate knowledge of adobe construction and raise awareness of the importance of preserving and reassessing both old earthen monuments and the techniques used for building with this material”.

The principle of distinguishability, included a few years earlier among the guidelines for restoration, seems to have now disappeared: use of traditional techniques is prescribed not only for maintenance but also for “completing and repairing old buildings, thus ensuring the survival of the skills through the use of like techniques and materials”. Therefore, the transmission of a traditional construction technique led to justification of such activities as completion and reconstruction of historical buildings that remained unfinished or were in ruin⁵. The historical meaning and authenticity of the buildings was undervalued or entirely ignored.

In 1987 (Rome, Italy), the importance of training was also stressed by the participation in the conference of CRATerre and the Ecole d’Architecture de Grenoble. The conference’s declared aim was “to expand current knowledge of methods and techniques appropriate for earthen architecture conservation”, but in this case as well, we find a marked inclination towards training focused on modernising traditional building techniques. In the opening speech, it was indeed affirmed that “this knowledge of historical heritage and the *know-how* of the people of the past is an invaluable treasure that can be reproduced today with the contribution of modern technology and science” (Doat, Verdillon 1988, p.V). In spite of these premises, which are quite distant from those of conservative restoration, the results were presented of important experiments that used ethyl silicate (Chiari 1988, pp. 25-32) and additives of organic origin to strengthen adobe (Vargas Neumann, Mehta 1988, pp. 103-107), with the aim of preserving the authentic material.

4 “The use of traditional methods and materials should be encouraged, because they are often highly appropriate for the preservation. Even more important is the contribution these methods and materials make to the organic quality of earthen architecture, particularly as it relates to its inhabitants” (*Recommendations* in Ankara 1980, 281–84).

5 See the restoration of the Bahla Fort in Oman, restored between 1993 and 1999.

The 1990 Conference (Las Cruces, USA) stands out for a high number of talks, divided into themed sessions (history and tradition, conservation and restoration, site preservation, material consolidation, current construction, humidity problems, chemical and micro-structure of clay, future directions). All of the initial interdisciplinarity seems to have disappeared, now replaced by a multi-disciplinarity that prevents true synergy. The theoretical and methodological orientations were fragmentary and, unlike previous conferences, there was, for the first time, no summary with final recommendations.

From then on, the number of reports steadily rose. In 1993 (Silves, Portugal), the various specialist topics remained divided, with a few changes from the previous meeting (history and tradition, conservation methodologies and techniques, conservation case studies, earthquake resistance, industrial prospects, future directions). In the final recommendations, emphasis was placed on the conviction that “conservation of earthen heritage should not be limited to building preservation but should also consider construction traditions” and that, “from this point of view, the priority is not only training activity but also modernisation of earthen technologies and building practices”. The historiographic approach remained wanting: attention was focused on study of “building cultures” but chronological references seem to have been almost entirely absent in the illustrated cases. There seems to have been confusion — already seen in the previous meetings — between restoration (understood as conservation of cultural evidence) and recovery (aimed at building reuse), as well as between interventions on historical buildings and new construction.

The emergence of diversified interests, often cited (“conservation of architectural heritage will need to be framed in a broader context of development, environment and quality of life. Technical issues will not be able to be disassociated from social, economic, political and cultural conditions”), seems to have contributed to the increasing distance between practice and methodological reflection on the one hand and the restoration sphere on the other. The need was highlighted to define “guidelines for correct conservation practices”, including in reference to the ethical principles of the restoration charters. Reference to the need to “conduct research with more scientific methods” revealed a rather chaotic overall tendency.

At the Conference in 2000 (Torquay, UK), the various topics were again divided: archaeological sites and monuments, materials, conservation and maintenance, continuation of tradition, political, economic and legal context. In the *Resolutions*, the ‘holistic’ approach to conservation was cited and the idea that ‘the conservation of earthen architecture must be aimed not only at preserving buildings but also building traditions’ was again repeated. The term ‘*geo-architecture*’ was introduced, but in this case as well, the reference to ecology seems to distance historical and conservation interests, in favour of sustainability and reuse.

The opening talks tried to take stock of the situation from the methodological perspective: one cited the state of the art of knowledge from the technical-scientific point of view and compared the topics of the previous international conferences (Chiari

2000, pp. 107-114); the other presented a summary of the previous recommendations synthesised by keywords (Taylor 2000, pp. 189-194). There was a call to focus more attention on assessment of the results and outcomes of previous work and, therefore, on documentation of the state of preservation and current interventions.

At the 2003 (Yazd, Iran) meeting, the reports were no longer organised by topic and there were no final recommendations. There was still clear (never resolved) contamination between history and tradition, the ecological approach for sustainable development and the dialectic/opposition between progress and continuity with the past. Among the contributions, there was a critical review of the literature on the topic (Guillaud-Avrani 2003, pp. 201-220) and reflection on the relationship between conservation and development, in which the concepts of integrated conservation, authenticity and integrity (functional, structural, visual) made a return (Jokilehto 2003, pp. 11-18).

At the 2008 Conference (Bamako, Mali), the reports were once again divided by theme and, in particular, distinction was again made between conservation of 'living sites' and of 'archaeological sites'. The 'intangible aspects' (in reference to oral traditions of know-how), which need to be preserved along with the tangible ones, made their appearance⁶. Alongside the multiplicity of topics (problems caused by natural and seismic activity, results of scientific research on conservation, training, challenges and opportunities for conservation and development) we find a proposal for '*Standards and Guidelines for new and existing structures*'. The recommendations and general conclusions emphasise that "the study of earthen architecture has become (or is fast becoming) a discipline in its own right with an explicit terminology, a defined body of knowledge, and its own pedagogy". It is again stressed that "conservation initiatives must involve the local community; this is essential if efforts are to be sustainable and the heritage is to be valued and cared for the long run" (Teutonico 2008, p. 389). It is further affirmed that "conservation and development are not antithetical, but are part of a *continuum*".

This affirmation, although sound, seems to increase the confusion between authentic conservation of historical-architectural heritage and possibilities for current/future development of earthen architecture. As we shall see below, there no longer seems to be a theoretical and practical distinction between two profoundly different themes. If the hoped-for continuity is detached from solid historical awareness, there is a risk of falsifying earthen heritage.

The 2012 Conference (Lima, Peru) also presented a multiplicity of themes and devoted particular attention to natural catastrophes (earthquakes, floods) and climate change, addressing issues linked to the conservation of *World Heritage Earthen-Architectural Sites* (WHEAP) from the perspective of prevention and risk management. The distinction remained between 'living sites' (*Human Settlements and Cultural*

6 See the *Convention for the Safeguarding of the Intangible Cultural Heritage* (UNESCO 2003).

Landscape) and monumental evidence of the past (*Archaeological Sites*), but this separation was in conflict with the definition of "Cultural Landscape" understood as a whole combined works of nature and humankind. In parallel, the mixing of "local knowledge, intangible heritage and social impacts", and that of "ancient/historic and contemporary architecture" created a clash of theoretical positions and aims.

There was a special session devoted to *Charters, Standards and Guidelines for Heritage and Construction* but, in this case as well, it is significant that there was no distinction made between historical architecture and new construction. The conservation of Earthen Architecture was by this point firmly associated with "the safeguarding of the communities that have, *since time immemorial*, handed down traditional knowledge and skills that are still studied and appreciated as examples of low-cost, adaptive and sustainable technology" (Bandarin 2012, pp. 14-15). The chronological vagueness seems to be in step with the prevalent (if not exclusive) focus on economic sustainability and '*adaptive reuse*'. It was followed by the devaluation of cultural heritage from "unique or exceptional testimony" to product to be replicated ("earthen architecture has been recognized for its heritage values and for its intrinsic technical and economic advantages in all regions of the world").

The *Reflections and Recommendations* from 2012 seem fairly generic from the theoretical perspective, but the "Lima Declaration for Disaster Risk Management" deals with the specific theme, highlighting interesting issues (against post-earthquake demolitions carried out in the name of safety; in favour of historical knowledge of past earthquakes). Hope is expressed for greater engagement with other disciplines in order to tackle the themes of materials conservation and technological innovation, in the interest of achieving "change and innovation". The mixing of "continuity of the architectural and construction culture" and "preservation of earthen-architectural heritage" remained. There was some criticism of current research ("the lack of definition of research problems, the repetition and redundancy of research topics, the lack of access to information"), revealing that the methodological premises that had been initially defined (cfr. Torraca 1980) had disappeared: "the existence of different groups, networks, associations ... engaged in earthen architecture" and the need "to promote exchange and collaborative activities, as well as the establishment of an international observatory to define priorities and strategies for research and communication" (Terra 2012, *Reflections and Recommendations*, p. 301).

It seems meaningful that another important International Meeting took place in 2012, spearheaded by UNESCO: *Earthen architecture in today's world* (Paris, France). At this meeting, contemporary earthen architecture was considered for the first time on its own (in the footsteps of Hassan Fathy) and in a way distinct from the World Heritage Sites and Cultural Landscapes. The "World Heritage Earthen Architecture Programme" was illustrated among the *Annexes* (WHEAP 2007-2017).

Of particular interest is the statement that "observing the traditional architecture provides relevant information on the most seismic-resistant structures" since it disproves the widespread overall mistrust, in the event of seismic activity, of historical

building⁷ (Annex 3, p. 256). In this regard, “inventories and the application of available and appropriate documentation tools are needed before, during and after disasters and conflict, to improve risk assessment, response and recovery” (a modern and necessary consideration for architecture in general, not just earthen).

Here as well, we can see frequent confusion between *tangible* and *intangible* values. The statement that “the conservation of the constructive culture of earthen architecture is at the hearth of sustainable development” reveals a greater focus on the ‘building tradition’ to be followed towards the aim of sustainable development, than on the conservation of material/tangible evidence produced by said culture over the centuries.

In the final recommendations, we find concepts that had already been expressed as early as the very first conferences (implementation of exemplary conservation and management projects), but there still seems to be the same confusion between the ‘tools’ and ‘aims’ of conservation (contribute to social and economic development; ... enhance the role of earthen architecture in environmental sustainability and economic and social development). Finally, noting that there are no specifications for Earthen Architecture Heritage in the *Operational Guidelines for the Implementation of the World Heritage Convention*, conclude that “a specialized annex be developed to address conservation guidelines, particularly in relation to *authenticity* and *integrity*, as well as principles for *use*, *interpretation*, and other aspects crucial” (*Appeal*, in Paris 2012, pp. 260-263).

In the *Declaration of 12th Congres Mondial: Terra 2016* (Lyon, France), the ecological motivations for environmental sustainability (use of “bio-based materials”) and the *Sustainable Development Goals* of the ‘2020 Agenda’ still seem to predominate over the cultural motivations that had oriented the first studies on earthen architecture conservation. The aims cited in the *Recommendation* (“to preserve and support the intangible values associated with earthen architecture and its building traditions”) emphasise that ‘intangible values’ seem to prevail over ‘tangible values’ and material conservation; the latter seems to be motivated by use and no longer by the need to protect heritage of cultural interest.

In spite of the call “to focus more attention on World Heritage sites in danger” and despite the noteworthy increase in knowledge regarding the first and second themes of the Conference (Heritage inventories and studies; Heritage conservation and management), the archaeological, historical and technical knowledge of this heritage seems to serve solely “to adapt earth building technologies to new socio-economic realities and evolving production conditions” and, in sum, “to demonstrate the business opportunities that the earth construction sector presents”.

The topics highlighted in the various recommendations for the conservation of earthen architectures are illustrated below (tab. 1).

⁷ See also the *International Workshop for the Recovery of Bam’s Cultural Heritage* (2004).

RECOMMENDATIONS	1972 Iran	1976 Iran	1977 USA	1980 Turk.	1983 Peru	1987 Rome	1990 USA	1993 Port.	2000 UK	2003 Iran	2008 Mali	2012 Peru	2016 Fran.
Moisture e drainage issues			x										
Field lab tests e coordination		x	x	x		x		x					
Traditional materials e techniques based on compatibility and continuous use	x		x	x				x	x		x		x
Excavation protection plans	x	x		x									
Backfilling	x	x											
Protective roof structures/ capping	x	x	x	x									
Application e maintenance of renders	x		x										
Surface treatments	x	x	x										
Maintenance	x	x									x		
Inventory of Earthen Sites					x	x	no recommendations		x	no recommendations			
Establish training centers					x	x		x			x	x	x
Contacts with industrial research						x		x					x
Activation of national committees						x		x					x
Conservation in broader context of social, political issues, planning								x			x	x	x
Sustainable building technologies								x			x		x
Media/didactic materials								x			x		x
Lab research		x						x				x	x
Information exchange system, data bank for research results		x	x	x	x	x		x	x		x	x	x
Utilities upgrade of building in use		x											x
Seismic issues			x					x				x	
Documentation e monitoring								x	xx				
Glossary													

Tab. 1. Summary of the *Recommendations* for the conservation of earthen architecture (cfr. Taylor 2000, 190)

CONCLUSIONS

Today, it seems more important than ever to reaffirm theoretical and methodological reflection on the conservation of Earthen Architecture, since the protection of a substantial heritage of cultural interest is now flanked by other important factors (see the ecological approach and sustainable development in *Agenda 2020*) that, as we have seen, risk predominating over the authentic safeguard of this evidence.

First and foremost, the goals of the conservation of Earthen Architecture need to be clarified: whether it is a matter of preserving architectures of recognised cultural interest (*tangible* heritage), or of transmitting building cultures and traditions that are also important for future development and environmental sustainability (*intangible* heritage).

Both aims are of primary importance, but it is opportune to maintain the distinction between the sphere of conservation of historical earthen heritage and that of new construction, since they are distinguished by different aims. On the contrary, at the most recent conferences the two have always been indistinctly associated. Indeed, the dialectic between conservation and development seems to have created a certain degree of confusion between the aims of safeguarding cultural heritage and those of reclamation and new construction.

Study of earthen architecture has resulted in increasing use of these building traditions both in the recovery of existing architecture and in new construction, but this can create serious problems of authenticity in the area of the conservation of cultural heritage.

Separating the conservation of earthen architecture from the Theory of Restoration — which provides the conceptual bases and guidelines for the authentic conservation of historical evidence — is dangerous and ineffective. Indeed, without the necessary knowledge of the history and the values that the architecture documents, one risks falsifying this material evidence and passing down the historical building methods negating the history itself and the values for which this heritage is recognised to be of 'cultural' interest. In this sense, instead of the implied disciplinary autonomy outlined at the 2008 conference, it would be more opportune to stress the need for an interdisciplinary effort, indispensable for tackling such a complex theme.

As concerns the premises expressed at the first conferences and in spite of the considerable body of knowledge gained in regard to this heritage, what still seems lacking today is a true historiographic approach that makes it possible to frame the phenomenon not only in terms of geography and typology but also in that of chronology. The challenges here are considerable above all because, as has already been observed, it is almost impossible to date this architecture due to its constant reconstruction. Nevertheless, it is precisely for this reason that it seems urgent to rethink the criteria for intervention, in a direction more rigorously conservative and attentive to material authenticity.

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N° 4

ITALY & CHINA
*Joint Initiatives for
Cultural Heritage*

PAST AND PRESENT OF THE EARTHEN ARCHITECTURES IN CHINA AND ITALY

The Bilateral project “Assessment of innovative methods for the conservation of earthen surface” was financed by the National Research Council of Italy (CNR) and the Chinese Academy of Cultural Heritage (CACH) for the period 2016-2018. The research undertaken by the two teams aimed to promote a better knowledge of the earthen architecture in China and Italy, exchange and sharing of experiences about methods, tools, protocols and best practices for the conservation of earthen materials. This fragile architecture, due to the poor durability of earthen materials against atmospheric agents, is in a situation of great risk considering also the problem of climate change

This book examines the historical use of this material for architecture, the different types of earthen construction in Italy and in China, the conservation techniques used in the respective countries and the researches that are being carried out to improve these interventions. New opportunities that the earthen architecture can have in future in the two countries are illustrated.

ISBN 978 88 8080 315 7