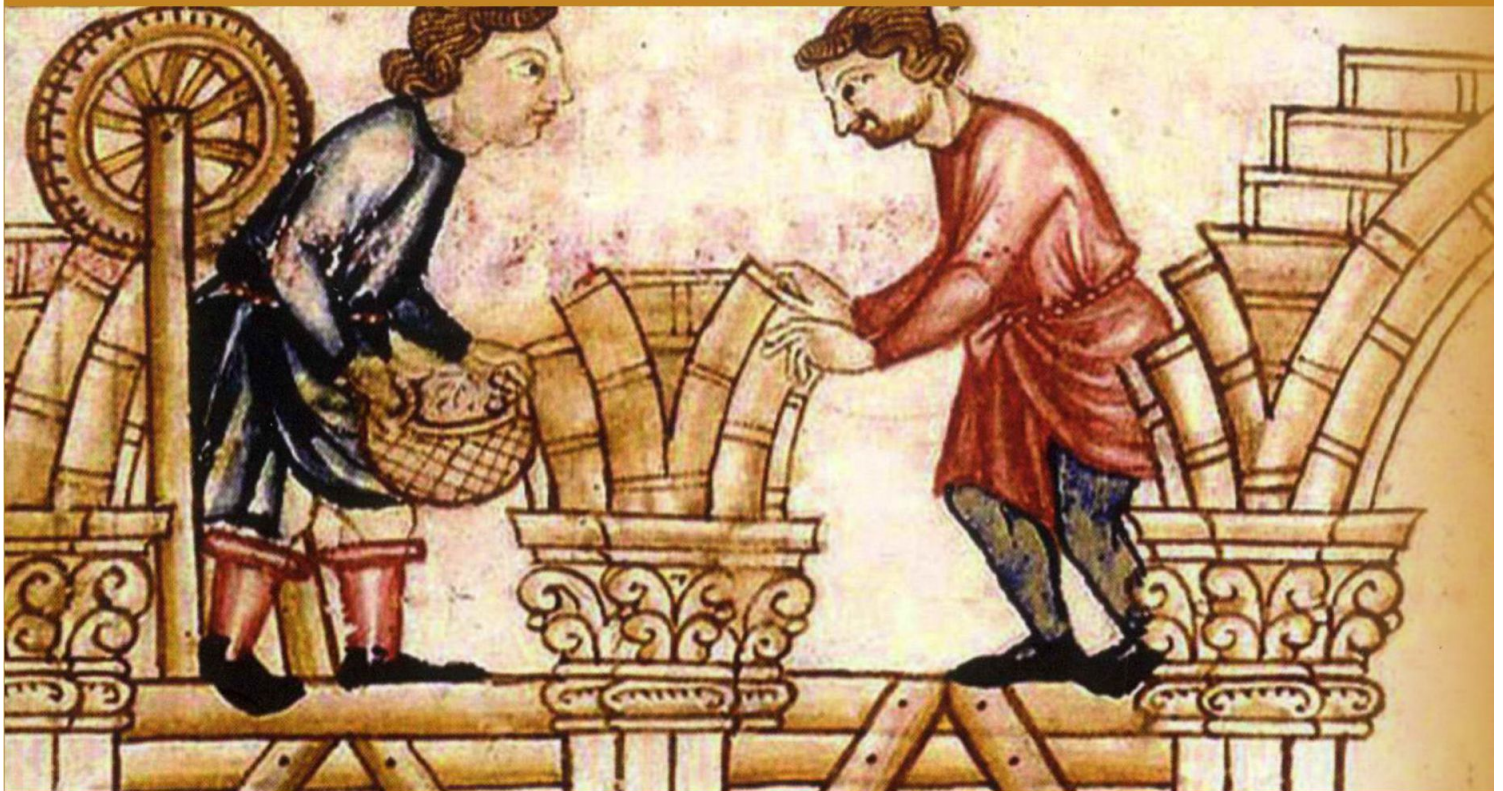


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# Contents

Foreword	v
Organizing Committee	vii
Scientific Committee	ix
Partners	xi
Contents	xiii

## **Chapter 1 - Technologies for inspection and monitoring of buildings performance and pathologies**

Survey to architects: challenges to inspection and diagnosis in historical residential buildings J. Gonçalves, R. Mateus, J. D. Silvestre & G. Vasconcelos	3
From “brutalist” to “sustainable” - the COIM shopping and office center in Potenza, Italy, becomes NZEB F. Lembo, F. P. R. Marino & C. Lucia	11
Mobile Mapping and laser scanner to interrelate the city and its heritage: the Roman Circus of Tarragona J. M. Macias Solé, J. M. Puche Fontanilles, P. Solà-Morales, J. M. Toldrà Domingo & I. Fernández Pino	21
Automatic recognition of materials from laser-scanner survey data by the reflectance method P. Solà-Morales, J. M. Puche Fontanilles, J. M. Macias Solé, I. Fernández Pino & J. M. Toldrà Domingo	29

**Chapter 2 - Seismic behaviour of historic buildings**

Structural analysis of Roman groin vaults C. Baggio & S. Santini	41
The wooden elements as anti-seismic presidia in the built heritage of L'Aquila A. Bellicoso & A. Tosone	49
Seismic behaviour of historic masonry structures: the case of the neoclassical city of Patras, Greece A. Philippou & D. Theodossopoulos	61
Earthquakes and historic masonry buildings: an experimentally based algorithm for debris formation prediction E. Quagliarini, G. Bernardini, S. Santarelli & M. D'Orazio	71
The relative value of the architectural heritage in seismic hazardous countries: the Severín library (Valparaíso, Chile) M. P. Urrutia & P. M. Millán	81

**Chapter 3 - Preservation and rehabilitation of historic buildings and structures: case studies**

Erbil Citadel revitalization and the presence of its emergence history A. Abbas	93
Preservation and rehabilitation of the former Hoffman ceramic urban factory, in the UNESCO city of Mantua (Italy) C. Agosti, E. Mussinelli & D. Cerati	107
Restoration and adaptive reuse of Modern Architectural Heritage - case study: Great Warehouse of the Kayseri Sümerbank Textile Factory B. Asiliskender & N. Baturayoğlu Yöney	117
The single miners' dwelling by Gustavo Pulitzer Finali. Recovery and reuse C. Atzeni, G. Monni & A. Sanna	127
Seismic assessment of hotel El Comercio, Peru A. Barontini & P. B. Lourenço	139
God is moving house: Churches on sale D. Besana	149
Historic heritage in ruins in Sardinia (Italy). Between schemes of collapse and consolidation measures B. Billeci & M. Dessì	159
Adaptive reuse for social agriculture: a sustainable approach for the recovery of abandoned villages in Sicily A. Cardaci & A. Versaci	169
Knowledge for preservation: an integrated approach E. Coisson & L. Ferrari	181

Reuse of historic buildings in the city of Seville for institutional purposes. A public proposal for heritage and urban regeneration	191
A. Cubero-Hernández & M. T. Pérez-Cano	
Talking walls and authenticities to be preserved in the rehabilitation of the abandoned parish complex of San Giovanni Battista in Carpineto (Fisciano, Salerno, Italy)	203
F. De Guglielmo & G. Miccio	
Restoration project of the Punta of Guardia lighthouse on the Ponza Island, Italy	213
G. De Martino, C. Bartolomei & C. Fronta	
The Restoration site of an house in Monopoli, Largo Castello, N. 5	223
A. Diceglie & N. D'Amico	
Conservation at all costs? The case of Les Arenes in Barcelona	233
G. Domènech	
Dialog between contemporary perspectives and conservation principles	243
D. Đukanović	
Contributions for the implementation of preventive conservation and maintenance strategies in the Faculty of Architecture of the University of Porto	255
T. C. Ferreira	
From student to student: a new project for Golgi College in Pavia	265
A. Greco & C. Bonora	
Oteiza Museum Foundation, Alzuza, Navarra. A good practice's case in rehabilitation	275
I. Jiménez Caballero, L. M. Fernández-Salido, F. Alonso Pedrero, Y. Fernández Sangil & A. Urtasun Pineda	
Conservation as the careful management of change to the historic urban fabric: implementing the transition from vision to reality	289
P. Leverton & H. Russell	
The deformations of the Valle de Aran's vaults in Spain. The formation of anti-funicular arches	297
J. Lluís i Ginovart, A. Costa-Jover, S. Coll-Pla, M. López-Piquer & J. Urbano Lorente	
How to define a design methodology able to achieve anti-seismic and functional upgrades of building heritage	309
F. P. R. Marino & F. Lembo	
Daylight in the Choirs of the Monastic Church of São Bento de Cástris in Évora and the research Project ORFEUS	323
A. M. T. Martins & J. S. Carlos	
Adaptive reuse of civic buildings	333
S. Y. Mehr, S. Wilkinson, H. Hassanpour, H. Skates & G. Holden	
The Incurables Hospital complex in the Ancient Center of Naples: a project between layers	343
P. Miano & F. Coppolino	
Museums renewals: rehabilitations and urban interactions	355
E. Mosquera & C. Mosquera	

Rafael Arévalo and the other scale: social housing neighbourhoods in medium-sized cities of Andalusia D. Navas-Carrillo, M. T. Pérez Cano & J. C. Gómez de Cózar	363
Retail-reuse of historic buildings: an inquiry into opportunities and threats B. Plevoets	373
Abandoned mining Heritage in Southwest Sardinia, a valuable site to be preserved: the Delaunay Hospital in Monteponi mine R. Putzolu	383
Eveleigh Carriageworks adaptive reuse J. Rice	395
The Palacio de las Cigüeñas façade through five centuries of historical documents analysis J. Saumell & N. M. Trejo	407
Moinho Fluminense: an experience of rehabilitation of a historic centre in Rio de Janeiro F. F. Soares, A. Sabrosa & L. M. S. A. Costa	415
Colonial revival comparison P. Tennakoon	425
Case study: the application of Khorasan mortar in Tsakonia region, Greece E. Tsangouri	435
Community engagement; emerging players in monuments' rescue N. Varouchaki & D. Theodossopoulos	445
Architecture and landscape. Studies for preservation and enhancement of the mills' valley in Gragnano (Na) C. Verazzo	455
The study and conservation of reinforced concrete architecture: still a challenge? A. Versaci & A. Cardaci	465
The conservation of the Seven Dolls Temple at Dzibilchaltún: a multifactorial challenge I. Vit Suzan	477
From knowledge to management. Methods and tools for the planned conservation of university built heritage. A case study E. Zamperini, M. Morandotti, V. Cinieri & S. Lucenti	487

#### **Chapter 4 - Preservation and rehabilitation of historic centres**

Urban revitalization of historical centres: through cultural and heritage assets 'case of historical medina of Algiers' H. Benacer	499
Earthquake safety in historic city centres: how to plan evacuation routes by considering environmental and behavioural factors G. Bernardini, S. Santarelli, E. Quagliarini & M. D'Orazio	513

The re-design of the urban connective: historic towns accessible N. Carrà	523
Developing awareness about industrial heritage: experiences from a Graduation Architectural Design Studio A. Ciravoğlu, D. Erinsel Önder, A. Çiftçi, S. Erkenez, B. Mızrak Bilen & H. Taştan	531
The Concelho de Vinhais as an historic centre A. Cremin	541
The protection of historic centers. The analysis of the perturbation pressure system to mitigate wear and failure phenomena D. Diano	551
Integrated planning of urban “common” heritage: objectives and enhancement strategies C. Fallanca	561
Urban upgrading policies for the historical center of Campinas/Brasil H. Gallo, M. R. S. Oliveira & C. L. Ferreira	569
Small historic centers: from abandonment to new ways of living. Tools for the preservation of ancient “marginal” villages M. Giambruno & S. Pistidda	583
The use of GIS in the preservation of a historic center of a town in southern Brazil D. Heidtmann, D. Feger, M. Moreira, V. Gonzaga & L. M. Costa	595
The quality of social environment in the centers of historic towns in the context of the stability of families living in them (outline of a research problem) B. Podhalański & Z. Orłowska	605
From intangible to tangible. Urban evolution in two Mediterranean villages through popular traditions R. Rambla Moliner & J. A. García-Esparza	613
A cultural evaluation of the contemporary experiences of urban space regeneration in historic cities of Iran E. Ranjbar & S. Afsari Bajestani	621
Revisiting the city, augmented with digital technologies: the SeeARch tool M. Raposo, S. Eloy, M. S. Dias & M. Lopes	637
Infill development and heritage: the case of Raciborz old town, Poland E. Stachura	647
Soft mobility in city planning A. Taccone	659
Recovery of historical center of Guadalajara A. M. Trallero Sanz	665
Urban utility tunnels as a key tool in the sustainable revitalization of historic centres: the case study of Pamplona J. V. Valdenebro-García & F. N. Gimena-Ramos	673

A diagnostic process to involve users in built environment maintenance. The Metrics Project for the historic center of Naples S. Viola	685
From a medieval town to a stratified urban centre. Archaeological and architectural analyses for the rehabilitation of the old town of Marignane M. R. Vitale & D. Sanzaro	693
Visible or not? A comparison of historic areas conservations in colonial Chinese cities X. Zang, B. van Gorp & J. Renes	705

## Chapter 5 - Authenticity and built heritage

The Crichton Estate: a cultural built heritage perspective J. H. N. Amar & L. Armitage	723
New Co <sup>+</sup> : new sustainable life for summer camps D. Besana & F. Scalzone	735
Bucharest, the little Paris? L. Brumă	747
On value conflicts: negotiating difference in the renovation of historic buildings K. Connolly, Y. Megahed & A. Sharr	759
Consumption and authenticity: relationships between built heritage and local society A. Csizmady & B. Csurgó	769
Which authenticity for Fascist regime architecture? The case of the Santarelli Kindergarten in Forli (Italy) G. Favaretto & L. Signorelli	783
Urban typology and sense of place: Port Said's heritage authenticity between challenges and protection S. S. Fouad	795
Transforming to Preserve: the dimension of time and materiality in cultural heritage H. Gallo	805
Registration and rehabilitation of abandoned municipal property in mountain regions. A key for a local culture - oriented development S. Giannakopoulou & A. Arvanitis	815
Contemporary architecture in ancient buildings. About authenticity M. M. Grisoni	825
Effect of Colonial British Architecture in the Iraqi Modern Architecture S. A. Hassan	835
Sylvestro-Benedictine Churches in Sri Lanka: as an alternative tropical model S. Jayasinghe	851

The Rocks, Sydney: conservation and interpretation of the site of Australia's initial European settlement W. Johnson	861
Urbicide, an approach to the birth of a contemporary concept A. Juana	869
Affordable 20th century housing in Porto. The transformation processes under scope G. Lameira, L. Rocha & M. Cruz	877
Teaching continuity: new modes for developing architectural design in historic settlements S. J. Lee & S. H. Stone	887
Reconstructing bridges. A cultural operation C. Mariotti & A. Zampini	897
Collective dwelling of cooperative promotion, defining authenticity criteria V. P. Matos	909
Landscapes of ruins: authenticity and invention. A case study of the restorations of the Banditaccia necropolis of Cerveteri, initiating from the World Heritage evaluation P. Porretta	921
The relationship between authenticity and worship space E. Pozzi & M. Pretelli	933
Scattered architectonic heritage in the Municipality of Cáceres A. B. F. Serrano Candela & C. C. J. C. Salcedo Hernández	943
The ruin and the creative scenography of the urban heritage J. M. Silva	955
Explorations of the hidden space. A new place to look at the heritage. Wanderings in Seville's Cathedral A. Tomás García & B. F. J. Montero Fernández	965
The archaeological landscape as common good. Knowledge, preservation, enhancement and fruition R. Vanacore, M. Antoniciello & F. Silva	975

## **Chapter 6 - Inclusivity of historic sites and buildings**

After conservation: let building tell its own story İ. Aytar	987
The modern approach in designing the inclusivity of historic sites and buildings G. Di Ruocco, F. Primicerio & E. Sicignano	999
An elevator for an historical college: how to improve accessibility respecting the existing building A. Greco	1009
How many (hi)stories can we save? Piccini in Vienna G. K. Heinz	1017



Accessibility to archaeological sites. From the accessibility dimensions to an access strategy	1025
A. Lauria	

Environmental design in historic sites	1035
M. Rotilio & P. De Berardinis	

### **Chapter 7 - New materials and products for the rehabilitation of historic buildings and structures**

Textile reinforced mortars for strengthening of historical stone buildings in Oman	1047
A. H. Al-Saidy, A. W. Hago & S. El-Gamal	

Maintenance and recovery of plasters: a decision-making process for the selection of compatible products and technologies	1057
P. F. Biancamano	

Innovative materials for the conservation of built heritage. An overview	1069
M. Carraco Palos, C. Rivera-Gómez, C. Galán-Marín & A. Barrios-Padura	

Rehabilitation of “tabique” walls using a sustainable solution	1077
I. Fonseca & J. S. Machado	

Experimental investigation of masonry columns strengthening using basalt fibres ropes: first results	1083
F. Monni, E. Quagliarini, M. Vaccarini & S. Lenc	

From arazzo to textile based innovative system for energy efficiency of listed buildings	1093
V. Pracchi, E. Rosina, A. L’Erario, C. Monticelli, S. Aliprandi & A. Zanelli	

The assessment of soft capping as a new material and approach for ruin wall protection by experiment on two test walls in Shanghai, China	1105
Y. Zhong, Y. Liu, S. Dai	

### **Chapter 8 - Sustainability principles and practices in the rehabilitation of historic buildings and structures**

Operational energy advantages	1119
N. Boyd	

Lifecycle approach for widespread built heritage: potentialities and criticalities	1129
V. Cinieri & E. Zamperini	

Maintenance-focused conservation plan of modern heritage buildings, an Australian overview	1139
A. Cruz, V. Coffey & T. H. T. Chan	

Networks for the sustainable development of cultural heritage: the case of Palazzolo Acreide	1151
S. De Medici & C. Senia	

Sustainable strategies applied to built heritage rehabilitation	1161
C. Marchionni, M. Rotilio & P. De Berardinis	

State of the Art survey for energy-efficient retrofit of historic residential buildings in both the EU and Turkey	1173
M. Ulu & Z. D. Arsan	
Single and Double Step Joints Design: overview of European standard approaches compared to experimentation	1185
M. Verbist, J. M. Branco, E. Poletti, P. B. Lourenço & T. Descamps	
<b>Chapter 9 - Special chapter: earthen buildings</b>	
Traditional construction techniques in northern Mozambique	1197
F. G. Branco, L. Belgas, J. M. Mascarenhas & A. Valente	
Build and re-build with earth, a building material paradigm of sustainability's culture	1207
G. De Francisci	
Climate-responsive strategies of vernacular architecture in Albania and Portugal	1217
J. Fernandes, R. Mateus, E. Dobjani & H. Gervásio	
The conservation of Hakka earthen building. Conceptual tool and technical notes	1225
M. Giamb Bruno & R. Gabaglio	
Past, present and future of earthen buildings in Sahrawi refugee camps	1235
R. A. Jiménez Expósito & A. Barrios-Padura	
<b>Index of Authors</b>	1245

## Accessibility to archaeological sites. From the accessibility dimensions to an access strategy

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**ABSTRACT:** The paper highlights one of the crucial topics of contemporary culture: the notion of cultural heritage as a 'common asset'. An asset, in order to be truly “common”, must be accessible to the greatest possible number of people. This is the reason why some scholars underline the fact that if a place is not fully accessible and usable, it loses its quality as a common asset. The focus of the paper is on accessibility dimensions of archaeological sites, and the tool described in it is both a planning strategy and an action plan - called *Accessibility Plan* - aimed at improving the accessibility degree of places and services by means of a set of coherent actions and interventions scheduled on the basis of shared priorities. The Accessibility Plan, in order to fulfil its predetermined objectives, must not be understood – sic et simpliciter – as a technical tool, but rather as an instrument for the valorisation of the individual and as a resource for the community.

### 1 INTRODUCTION

Archaeology is a wide field and difficult to delimit. According to the eminent archaeologist Massimo Pallottino, it regards the “monuments of a past that is not connected to us in direct continuity, but in some way interrupted, and which are known only through a process of exploration and reconstruction” (Pallottino, 1968). Archaeological sites may vary in terms of dimensions (from isolated monuments to entire cities, as in the case of Pompeii), of historical period (from prehistoric to industrial archaeology), of location (inside and outside urban areas). They can be found on the surface or underwater. Some archaeological sites no longer have a functional usage and represent mostly remains to be observed and studied (such as certain great Roman or Arab hydraulic works); others, on the contrary, can still fulfil in an exemplary manner the function for which they were originally built (this is the case, for example, of many ancient Greek and Roman theatres) or are capable of being adapted to new public functions.

In the case of these latter sites in particular, being as they are public places, the necessity arises to guarantee their use, as much as possible, within a full respect of conservation considerations. The relationship between *conservation and usage* is an aspect of the constant dialectic between *permanence* and *transformation* and is one of the topics which generates more debate regarding cultural heritage. In the past, the two instances of conservation and usage had been interpreted as expressions of opposed and almost irreconcilable interests (Lauria et al., 2015). In time things changed, however, and the concept of *conservation* of the cultural asset evolved from referring exclusively to the protection of constructions which were not to be

altered in their material form, to expressing the protection of the cultural identity and of the social and testimonial role of the said constructions, which - as Della Torre has written (1998) - "describe trajectories in time".

Accessibility, in the broad sense described in this article, may play an important role in the process of valorisation of the cultural heritage.

To increase the degree of accessibility of archaeological sites, making them more attractive and usable, represents, however, a difficult challenge, especially when the buildings in question are in a fragmentary state or in ruins. In these cases, they can generate in the visitor a fascination which is sometimes extraordinary, but also a sense of unease due to the incapacity to fully 'reconstruct' their meaning or their sense. Another complicating element is the fact that an archaeological site often includes parts that may be visited and parts which may not (for example, sections which may not be visited for safety reasons, and areas under excavation or not yet excavated).

## 2 ARCHAEOLOGICAL AREAS AND ACCESSIBILITY

Accessibility is a *key enabling knowledge* (Lauria, 2014) expressed through a variety of dimensions. These dimensions acquire relevance in function of the context of intervention. An attempt will be made below to modulate, with specific reference to archaeological areas, the following dimensions of accessibility: (1) physical, (2) communicative, (3) organisational, (4) socio-economic. Since the dimensions of accessibility are strictly linked to each other, they must be seen and acted upon as parts of a whole.

### 2.1 *The physical dimension*

The physical dimension of accessibility regards all visitors, and particularly people with mobility problems. It pertains to interventions that insist on the material essence of the building to be adapted/re-qualified. These interventions produce an effect, more or less pronounced, of material and usually also perceptive alteration of the structure. "Environmental adjustment interventions aimed at ensuring the reachability (that is the accessibility toward a target) of the structure are also connected to the physical dimension of accessibility.

When carrying out an intervention on a cultural asset, it is important to identify, already during the survey phase, the "points of minor resistance" (Pane, 2004), that is those parts of the asset capable of accepting the adaptation/re-qualification devices with the least possible impact and with the least sacrifice of original material (Della Torre, 1998). In the Colosseum, for example, the place of minor resistance where to place a lift was identified in the so-called "Stern spur", a brick buttress which was added for supporting the monument after the earthquake of 1806 (Fig. 1). A problematic (but perhaps inevitable) consequence of this type of approach is that of attributing to the various parts of a single structure different levels of protection: untouchable parts and parts that may be modified/'sacrificed'. The risk is that of losing the understanding of the structure as a whole, and therefore as worthy of being safeguarded as a whole (see Pane, 2004). A second question regards the assessment of the congruity between the location of the points of minor resistance and the functional layout of the building, or, in other words, the assessment of the suitability of the points of minor resistance for receiving the devices aimed at increasing the accessibility of the building. An example of a positive response to this requirement is the main entrance to the Louvre Museum designed by Ieoh Ming Pei (1989) placed at the centre of the Cour Napoléon under the controversial steel and glass Pyramid. The central location of the entrance, which includes an exposed oleodynamic lift perfectly integrated with a helicoidal staircase, permits to rationally solve the problem of the access to the various wings of the Museum through underground connections which reduces queuing. It is no coincidence that the entrance to the Louvre is considered as a brilliant example of "urban acupuncture" (Lerner, 2009), that is as a punctual intervention that has positive effects over a wide radius.



Figure 1. The Colosseum, Rome. To the *left*, a detail of the Stern Spur. To the *right*, a detail of the lift.

In the case of archaeological areas, 'physical' interventions are often very problematic due to the difficulty of reconciling the qualities of the place (clivometric conditions, length of pathways, features of pavings, differences in height in the terrain, etc.) with the needs of users with mobility problems. This difficulty refers back to a specific question linked to the accessibility to cultural heritage in general and to archaeological sites in particular: the contrast between the adaptation project and the carrying capacity of the asset. The concept of carrying capacity derives from biology (Hardin, 1977) and was subsequently extended to places of cultural interest by scholars studying the tourism industry (Murphy, 1985) to indicate “the conditions necessary to the preservation of the natural environment and the physical features of historic sites such as archaeological ruins” (Gould, 2014). In the context of this article, “carrying capacity” is understood, more specifically, as the maximum transformation that a cultural asset can resist before endangering the values and meanings it expresses. Evidently, the concept of “carrying capacity” is a subjective concept, and therefore subject to modifications through time as a result of cultural evolution and of changes in awareness regarding conservation of the cultural heritage.

## 2.2 *The communicative dimension*

The communicative dimension of accessibility is anchored to the complex sensory-perceptive dynamics and concerns initiatives and actions aimed at increasing orientation, recognition of sources of danger and the intelligibility of places for all, and especially for children and for people with cognitive and perceptive problems. It also includes accessibility to cultural contents or, more succinctly, cultural accessibility.

The communicative dimension of accessibility is explained through *off-site* and *in-site* actions. *Off-site* actions provide the visitor with useful information for knowing, *a priori*, the features of the asset to be visited and for planning the trip. For example, informations (obtained through web-sites, brochures or audio-visual devices, etc.), which indicate both the environmentally critical situations regarding access for reaching and enjoying the archaeological



site, and the services available for making accessibility easier. For people with specific needs (disabled persons, seniors, children, those with children in prams, etc.), *a priori* knowledge of the actual accessibility conditions of a place or of a service is essential. In fact, due to their reduced capacity of adapting to the environment they could have difficulties in compensating, *in situ*, any incomplete or wrong information (see Daniels et al., 2005). Lack of information is considered a relevant problem for 37% of tourists with specific needs (C.A.R.E., 2006). These persons, in order to satisfy their particular information needs, generally follow a multi-source planning approach: from informal sources (e.g., disabled people's travel stories available on the internet or personal recommendations to barrier-free travel information collected, marketed and disseminated by public authorities, among which web-sites and accessibility guidebooks (Lauria, 2016). Regarding *in-site* actions, the first thing is to identify the so-called "perceptive barriers". Since perceptive barriers are overcome through an increase in information, this usually implies a moderate impact on the context of intervention.

In larger archaeological areas, especially, it is important to pay attention to the issues of orientation and wayfinding. Orientation regards the capacity of the visitor to know where he is in relation to significant points of reference, in particular the beginning and the end of the path. Wayfinding, instead, regards the capacity to "find the way": it is thus a form of dynamic orientation. The first step consists in the definition of the *diagram of decisions* (Passini & Arthur, 1992). It consists in imagining the actions that the visitors can carry out for reaching the site and moving within it (for example: identifying the site, parking the car, identifying the main entrance, entering, obtaining the necessary information, move toward the objective, etc.). 'Summarised' sources of information, such as 3-D models, visit maps, tactile and tactile-visual or virtual representations, are all essential resources for allowing the visitor to construct and consolidate a "cognitive map" of the place and to acquire useful information for the purpose of *geographical orientation* (that is the ability to determine position relative to topographic - distant - space that is required for wayfinding in an unfamiliar area). The regulation of the flow of visitors and the allocation of an adequate information system along the pathways (for example signage and multi-sensory landmarks) and for the description of the works permit the visitor to move with awareness, 'dynamically' acquiring the necessary information.

Cultural accessibility represents a peculiar element in the valorisation of archaeological sites. A building in ruins, for example, will not easily communicate to the 'average' visitor anything beyond what can be seen (Fig. 2).



Figure 2. Reconstruction of the podium of Temple "C" of the archaeological area of Populonia-Baratti (Tuscany, Italy).

As Goethe said: "Man erblickt nur, was man schon weiß und versteht" ("One recognizes only what one already knows and understands") (Müller & Burkhard, 1870). The understanding and intelligibility of archaeological sites must not refer exclusively to their material aspect, but also

to the representations of life in the historical period which generated them (everyday, religious and political life), thus establishing a meaningful relationship between tangible and intangible values, between the material nature of the structures and the history to be narrated. The objective, therefore, is to make the spirit of the places alive once again (Norberg Schulz, 1979; ICOMOS, 2008), to understand which values, today, the said structures transmit and how these values may be of interest and importance to our existence. Cultural accessibility does not mean, therefore, only learning facts, but also experiencing the life of individuals and peoples who thrived in contexts and conditions very different from our (Sivan, 1997). The tale of these lives, the evocation of these conditions, may become the purpose of the valorisation of an archaeological site. In constructing a narrative it is important to bear in mind that each archaeological area is a palimpsest of cultural environments. For example, Pompeii presents traces of various civilisations: Greek, Etruscan, Samnite, Roman. We can say that it has many stories to tell. These reality presents a series of delicate questions (is it fair to establish a hierarchy among these stories?, is it proper to determine intervention priorities?) that could have a direct impact on the identification of the places where to carry out possible physical adaptation interventions (*points of minor resistance*). Virtual reconstructions can offer tools for narrative support that are especially efficient; their use is fundamental when the sites are not physically accessible and are not adaptable. They can help any individual to enhance and expand his understanding of what the archaeological site represents. Virtual reconstructions, when scientifically based and used with sobriety, can help the visitor to 'read' the sites that are in a fragmentary state, and to 'access' their meaning.

### 2.3 The organisational dimension

The organisational dimension of accessibility concerns the management of services which regard the correct functionality of the structure. The scope of action of the organisational dimension is very vast and concerns the manners in which external (reachability) and internal mobility services are provided, the information services provided within the structure or related to it (for example, the constant updating of the web-site or information and assistance services for visitors), the training of personnel, the management of the flow of visitors, the functional organisation of spaces, the cleaning and maintenance practices for taking good care of the different spaces (including green areas), etc. Its intangible nature combines the organisational and communicative dimensions of accessibility.

Some texts (for example, NDA, 2011), include among organisational practices all of those interventions which do not imply a physical alteration of the places: from offsite and advance information to the determination and installation of temporary devices for one-off events (for example, moveable wooden ramps for overcoming a small height difference in the terrain).

In interventions on the cultural heritage in general, and on archaeological areas in particular, the use of correct organisational practices assumes a special value since it can reduce the probability of interventions on the material substance of the remains. Precisely for this reason it is important that organisational practices are assessed *before* interventions of a physical-material type. Occasionally, within a specific spatial context, the relocation of the most important functions to areas that are more accessible can be a good solution for mitigating problems. When the margins for intervention are limited, or when the possible physical interventions are too invasive, solutions such as these present the only adequate alternative for increasing the accessibility of a site. In access borderline cases the only possibility consists in compensatory services aimed at providing a virtual, rather than a physical access to the place under intervention.

In case of large archaeological sites which require the covering of long distances, special transport systems could be used for the benefit of people with mobility problems, such as, for example, electro-scooters, electric minibuses, or club-cars. When paths are not ideal for wheelchairs, a possibility consists in modifying the person-environment interface and proposing, as an alternative to the traditional pushchair, different means of locomotion such as, for example, traction equipment adaptable to manual wheelchairs. An interesting solution has been tried out in the archaeological area of Vatnsdalur in the North of Iceland, where, with the help of ponies with special saddles, even paraplegic people can travel on pathways that would otherwise be

impracticable (Hjaltalin, 2009). It is interesting to highlight the 'universal' vocation of this solution. It is, in fact, adaptable to a very wide range of user groups. Additionally, it is perfectly in harmony with the atmosphere and the 'time' of the archaeological site. It undoubtedly implies high management costs.

The problems in relating between disabled and non-disabled people can represent, in itself, a communication barrier. Personnel that is knowledgeable and aware of the needs of the various profiles of disabled users and capable of relating with each of these can mitigate many difficulties. First of all, they can focus attention on the person, and not on the disability, but they can also identify and describe the various spatial criticalities present and suggest the best way to visit the site, as well as offering qualified assistance in case of need. Furthermore, personnel trained in the culture of accessibility can suggest to the management of the site solutions to increase the degree of accessibility while respecting the features of the place that is to be intervened.

#### 2.4 *The socio-economic dimension*

The archaeological sites which pursue the accessibility objectives described above can not only better satisfy the tourism demand of people with special needs (an ever-increasing demand, especially due to the ageing of the population and the growing tendency of the elderly to travel), but can also become much more attractive for all visitors and play an important role in the regional tourism system. This need is particularly pressing in the case of less-known sites where the reduced number of visitors collides with the economic sustainability of the investments required and sometimes even with the possibility to cover maintenance and management costs (see English Heritage, 2001). In order to undertake a process of valorisation, it is fundamental that the archaeological site is not seen by the local communities as something alien and belonging to a past that is disconnected to the present, but rather as a part of their history and as a potential resource capable of generating social and civil value (see Sivan, 1997; Gould, 2014).

It is important that valorisation initiatives should be coherent with the identity of the site, respectful of the values it embodies and compatible with its vocation. For example, the organisation of specific events connected with the traditions and culture of the places (for example to the food and wine culture) and the promotion of certain activities aimed at reviving both the place and the traditions that characterised it (for example, theatre performances, concerts, nocturnal visits, etc.). Within the archaeological site of Pompeii, in the area known as the "Orto dei Fuggiaschi", autochthonous vine varieties from the Roman era were planted. These varieties were chosen based upon archaeological finds, and botanical and iconographic studies carried out on ancient Pompeian frescoes. The grape is cultivated according to techniques which were used before the great eruption of 79 C.E. The vineyard is not only perfectly integrated into the archaeological landscape, making it more beautiful and vital, but offers interested visitors the opportunity of an educational experience thanks to the guidance of an archaeologist (Fig. 3).



Figure 3. Archaeological Area of Pompeii. Vineyard cultivated in the "Orto dei Fuggiaschi".



### 3 AN ACCESSIBILITY PLAN FOR ARCHAEOLOGICAL AREAS

In Italy, according to Act n. 41/1986, public administrations are under the obligation to carry out for the existing public buildings a Plan for Eliminating Architectural Barriers (Piano per l'Eliminazione delle Barriere Architettoniche, PEBA). This obligation naturally regards as well the entities which manage archaeological sites, historical gardens and museums. Unfortunately only very few of these entities have fulfilled their duties in this respect. The reasons are many and, at least partially, depend on the difficulty to reconcile immediate and urgent necessities with programmes which require financial resources which are not always available or foreseeable, and mid-to-long term commitments. Yet, in particular in the case of larger and more complex cultural sites, in the absence of a comprehensive vision, truly representative of reality and detrimental results (see Shannon, 1997).

The *Accessibility Plan* (AP) represents a cultural and operative evolution of PEBA; it is the result of two coordinated research projects commissioned by the Tuscan Region, and carried out between 2008 and 2012 at the Faculty of Architecture of Florence, and further developed by the Inter-departmental Research Unit "Florence Accessibility Lab" of the University of Florence. An AP is an intervention strategy aimed at increasing the degree of accessibility of spaces, buildings and services through a series of coherent interventions carried out on the basis of shared priorities (Lauria, 2012).

AP methodology was devised for connecting separate actions and different actors thanks to a comprehensive view which is developed by phases and which, for every phase, envisages specific products and activities. For larger cultural sites, the implementation of the various phases can be developed through single functional phases. This methodology can be represented by the mathematical symbol for infinite, stressing the fact that the bettering of the accessibility conditions of a place (an asset or a service) is not a once-off activity, but rather an evolutionary process which is carried out through time through progressive adaptations guided by a strategic vision (Lauria, 2012; Lauria, 2014). Every cycle of this process is not closed (as in the classical "Deming cycle model". At the end of each cycle a review of the accessibility conditions is envisaged (Fig. 4). These various phases and tools will be synthetically described below, with a special reference to archaeological areas.

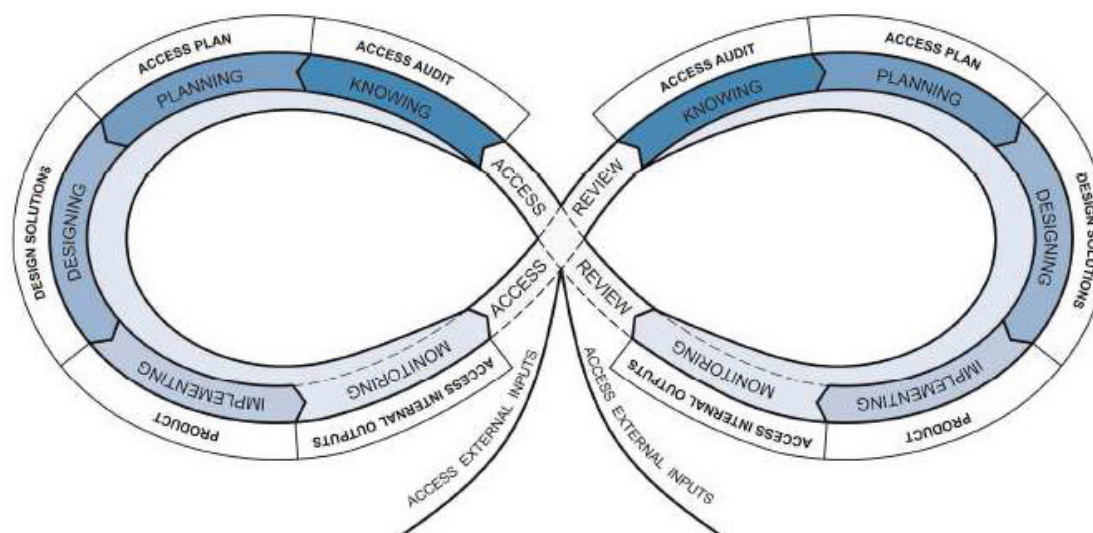


Figure 4. The six phases/actions of the Accessibility Plan for cultural interest sites and their related products and activities.

First of all, a deep understanding is necessary of the meaning that the archaeological site represents. The first step is thus the constitution of an *Interdisciplinary work-group* which includes, together with experts in conservation (archaeologists, restorers, art historians, architects) and accessibility, the representatives of the most important associations of disabled

people in the region, the representatives of the local communities and, in function of the issues that must be addressed, specialists such as systems installations designers, graphic designers, landscape designers, botanists, tourist authorities, tour operators, etc. The activities of this work group are:

- To draft the *Operative programme* of the AP, a document which indicates: the values, both tangible and intangible, expressed by the archaeological site; the valorisation strategy in relation to the resources (professional, financial, patrimonial, informative) available, or reasonably possible; the chosen narrative structure; the modality and time frame for its realisation; the interest groups to be involved and the manner of the said involvement; the obligations to fulfil and the opportunities to develop; the strategy for maintaining and bettering the times and accessibility degree of the site. The operative programme must be conceived as a flexible document capable of including enhancements and permitting the necessary revisions.
- To coordinate, attend to and carry out the various phases of the AP.
- To evaluate, according to a strategy of mainstreaming, the consequences of the policies and of the choices of the entity that manages the site in terms of the accessibility of places, assets and services.

Subsequently, it is important to define a comprehensive *cognitive framework* of the archaeological site. This phase consists of three coordinated actions: (1) To know the needs and expectations of the local communities; (2) To know the wishes of the users; (3) To know the information regarding the site. The first and second actions use typical social research tools. In particular, the first may be developed through focus groups, thematic workshops and public meetings; the second by reconstructing, through questionnaires and in-depth interviews, the main difficulties encountered by visitors for acquiring information on the site, as well as for reaching and for visiting it; observing the behaviour models of visitors when experiencing the site; observing and interpreting the physical “traces” left by visitors; etc. The third action may be usefully initiated with a SWOT analysis (Strengths, Weaknesses, Opportunities and Threats) further developed by analysing the documentary sources regarding the historical and cultural events related to the site in its social context; fulfilling the appropriate regulations; surveying and digitally rendering the *environmental criticalities* (existing architectural barriers and absent quality indicators) (Lauria, 2012); identifying the *points of minor resistance* of the site.

The following step is the determination of the maximum limits of adaptation/re-qualification interventions and their programming in time. First of all, it is important to establish the complete list of the interventions to be carried out differentiated by typology (interventions regarding, in this order, the organisational, communicative, physical and socio-economic dimensions of accessibility). In this phase, for example, the parts of the site to be virtually reconstructed (digital models represented as images, inter-active applications or films) due to the fact that their figurativeness is heavily compromised (cultural accessibility) or because it does not seem to be reasonable/possible to better accessibility through material interventions. Each intervention could be 'discreet', in other words concern a specific problem or, better yet, concern a coherent set of works. Every intervention in the list must indicate the works to be carried out and include the description of the significant elements necessary for directing the successive design phase. At this point, on the basis of appropriate criteria (also inspired on the principles of continuity and completeness of results), it is necessary to define the *list of intervention priorities* in terms of a combination of the 'urgency' of the intervention and of the 'impact' that the said intervention can have on the accessibility of the site and on the overall quality of usage. The various interventions will be scheduled in relation to the financial resources available (or foreseeable).

The design phase benefits of the whole of the information resources gathered during the precedent phases and is aimed at reconciling the instances of protection and conservation with the requirements regarding accessibility and valorisation of the archaeological site in question. In this sense, the relationship with the *carrying capacity* of the archaeological site represents a challenge for the designer. In some cases, the specialised technical solution is hidden or creatively elaborated in order to semantically 'distance' it from the reasons that determined it in the first place – the overcoming of architectural barriers – and from those users who are meant to benefit especially from it – vulnerable and disabled persons. This design approach, which may be defined as “mimetic”, is particularly useful in places of cultural interest. In other circumstances, however, the system of constraints of the place of interventions or special motivations, may induce the

designer to recur to additions, either permanent or temporary, which visibly add to the structure parts and/or devices for satisfying specific requirements. This design approach can be defined as “prosthetic”. Often in the architectural project both design approaches are applied in synergy with each other (Lauria, 2012).

Since the quality of an intervention for increasing the degree of accessibility is often measured in centimetres, the quality of the work and its control assume a fundamental importance for making sure that in the transition from the design indications to their application a loss of information and errors in their realisation does not take place. It is thus necessary that the person in charge of the works, if it is not the same as the designer, should have the adequate qualifications for understanding the intentions and purposes of the the design and carry out a strict supervision during the execution of the work.

The monitoring phase is based both on *internal* and *external* inputs. *Internal* inputs derive from the assessment of the quality of the process developed and of the results obtained. The evaluations and suggestions from the visitors represent an essential source of information; the *external* inputs depend on elements that are independent from decision making processes carried out by the *Work group*. For example, new regulations, new products, new technological solutions, new organisational practices, etc. On the basis of the results of the monitoring phase the process continues on to the Access Review, with which an AP cycle is concluded and a new one is initiated.

#### 4 CONCLUSIONS

The value of archaeological sites is not only historical, artistic and scientific; they often express as well strong values in educational, community and identity terms, and may represent a precious social and economic resource for a community. All of these values together, with the obvious differences between one case and other, concur to the definition of the meaning that we can attribute to archaeological sites (Shannon, 1997).

Accessibility, in the wide definition described in this article, can represent an extraordinary resource for the valorisation of an archaeological site.

Raising the degree of accessibility of an archaeological site is, as we have seen, a difficult challenge which is strictly linked to some *intrinsic features* of the site, such as its reachability and its 'carrying capacity', as well as to some *extrinsic factors* such as the quality of the project (architectural and communicative), the availability of financial resources, the quality of management practices, etc..

For controlling this complexity and obtaining quality objectives and coherent results during the process of valorisation of an archaeological site, it can be very useful to have access to an adequate tool to follow all stages from programming to implementation of accessibility interventions such as the one described briefly in this paper.

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# REHAB 2017

## 3<sup>rd</sup> International Conference on Preservation, Maintenance and Rehabilitation of Historical Buildings and Structures

*REHAB 2017 - 3rd International Conference on Preservation, Maintenance and Rehabilitation of Historical Buildings and Structures* aims to proceed with the discussion on built heritage and the preservation of its legacy, that was established in the previous editions of the event. The importance of conservation of historical constructions (built landscape, urban fabrics, buildings, and engineering works) are of utmost importance to preserve the cultural references of a community and was deeply discussed in March 2014, in Tomar, and July 2015, in Porto.

Under the main topics of discussion, subjects of preservation and rehabilitation methodologies and technologies, as well as the importance of the economic and social impacts of preservation practices are here covered as the main leading guidelines for the conference debate.

Furthermore, different communities' scales (local, regional, national or even worldwide) and authenticity interpretation raise different questions and approaches, and therefore different solutions that are worthy to study, to compare and to experience.

The sustainability approach is again covered, highlighting the importance of the commitment between heritage preservation and technical requirements related to its occupancy and use, such as energy efficiency or materials recovery.

Inclusivity is also an important aspect to be discussed as public historic sites and buildings need to be adapted to receive different kind of visitors (children, elderly or handicapped persons) and to establish an adequacy with the perceiving of the physical environment and information contents.

As a Special Chapter, Earthen Buildings are brought into a particular approach highlighting the complexity of their preservation, maintenance and rehabilitation. Earthen buildings techniques are in many cases of a great importance for local economies and access to housing.

The Editors