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Keep It or Lose It: Preservation Strategies for Archaeological Sites

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Sevdalina Neykova

Munich, August 2018

To my grandmother

Abstract

Regardless of whether archaeological sites are buried or excavated, they are at a risk of loss, being affected by economic pressures and a range of environmental and social processes. Once lost, this part of the common historical heritage cannot be re-created. With regard to the need of sustainable site safeguard, this study investigates the different strategies to preserve a given site. It specifically engages with the concept of preventive conservation for archaeological sites as the basis of site preservation. For the field of archaeology, preventive conservation is discussed as equivalent to risk management. The study therefore clears which measures constitute the concept of risk management. Two case studies in Bulgaria exemplify that its establishment in the archaeological field is dependent on public support, and on the ethics of all professionals involved in site management. As prioritisation is a central step in risk management, a monitoring matrix including all elements relevant for prioritisation in the site conservation and safeguard is furthermore proposed.

Zusammenfassung

Ungeachtet dessen, ob archäologische Stätten im Boden liegen oder ausgegraben sind, sind sie einem Verlustrisiko ausgesetzt, da sie von umweltbezogenen Ursachen, wirtschaftlichem Druck und sozialen Prozessen betroffen sind. Einmal verloren, kann dieser Teil des gemeinsamen historischen Erbes nicht wieder ersetzt werden. Im Hinblick auf die Notwendigkeit einer nachhaltigen Bewahrung von Bodendenkmälern, beschäftigt sich diese Studie mit verschiedenen Strategien zu deren Erhalt. Sie befasst sich speziell mit dem Konzept der präventiven Konservierung und ihrer Etablierung als Basis für die Bewahrung von Bodendenkmälern. Für die Archäologie wird die präventive Konservierung als gleichwertig zum Risikomanagement diskutiert. Die Studie klärt, welche risikovorbeugende Maßnahmen das Konzept des Risikomanagements für die Archäologie bilden. Zwei Fallstudien in Bulgarien zeigen beispielhaft, dass die Integration des Risikomanagements im archäologischen Bereich von der Unterstützung der Öffentlichkeit sowie den ethischen Grundsätzen aller an der Bodendenkmalpflege beteiligten Fachleute abhängig ist. Da die Priorisierung ein zentraler Bestandteil jeder Schutzmaßnahme vor Ort ist, wird außerdem eine Monitoringmatrix vorgeschlagen, die alle für eine Priorisierung relevanten Elemente enthält.

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Chapter 1

Introduction

The Acropolis in Athens, the Colosseum in Rome and the Great Pyramids of Giza have long been admired and appreciated by societies. This holds true for a myriad of archaeological sites across the world, being valued for different reasons. Through the centuries of their existence, archaeological sites – these "*witnesses of the development of mankind"* [1] – have withstood erosion, earthquakes, sieges, and deliberate fabric disassembling. In the present, like in the past, they continue to be constantly threatened by nature and people. Practically every ancient monument is affected by deteriorative processes. And not surprisingly, statistics demonstrate that archaeological sites in different parts of the world are lost at a daily basis.[2]

Much of the damage to the remains of the past is inevitable. But there are processes that are controllable; there is damage that is preventable. And humankind has put great efforts in exercising control over the threats to the ancient fabric. Site preservation efforts have always had one point – to keep what has been inherited from the past.

There is no single answer to the question which is the best way to protect a given site. The answers depend on the nature of the factors influencing its survival. That is why, preservation efforts in the past and nowadays have been manifold – from enacting protective legislation, through remedial conservation, to adaptive reuse or site closure to the public. Either way, site preservation is an expression of a 'keep it or lose it' effort, where improper actions result into loss of the memories of the past.

But to exercise some form of preservation, first there should be something to preserve. For many, the 'birth' of an archaeological site starts with its excavation although this is not entirely true. Archaeological sites may be buried underground or may lay underwater. Their

study and excavation aim to reveal the past, and to communicate the acquired knowledge to those who might be interested. However, once excavated, the ancient fabric begins to deteriorate with the change of the environment in which it survived.[3] After the end of research, movable finds are usually transported to museums and depositories for further study, conservation and storage. The survival of the immovable one is on the other hand challenged by variable factors. Immovable remains are either destroyed, relocated, or left *in situ*. Their faith depends on the scopes of the archaeological research, on the management of the site, and on their significance. If conserved, the material left *in situ* is most often repaired – consolidated, reinforced, chemically or mechanically cleaned, hydrophobised, or restored.[4] These applications help to retain the original building substance and its appearance, to stabilise it, or to enhance it. Yet they bring the risk of failures, incompatibility, and further progressive deterioration. Moreover, these are reactive and deal with the damage rather than with its source.

In museums, risks accompanying remedial applications are avoided or postponed by preventive conservation. Preventive conservation encompasses indirect approaches that delay, mitigate or reduce the effects of hazards that damage the cultural property.[5] Its origins have been traced in Anglo-Saxon literature by Staniforth.[6] Being non-interventive, preventive conservation respects authentic evidence. It saves costs for remedies by establishing policies for display, storage, monitoring, maintenance, transport and handling of items.[7] The concept of preventive conservation, however, is not statuary – it evolved to include more conceptual meanings related to the sustainable management of cultural heritage.[8] Nowadays, its aim is not understood solely as to prolong the 'life' of heritage. It aims to do so for the benefit of people and for the cultural enrichment of the future generations.[9]

While the risk-preventive philosophy has significantly influenced the museum policies from the 1980s onwards,[10] the concept of risk avoidance through indirect measures has not impacted much the field of site preservation. It has, however, been recognised, that preventive conservation should not be confined to the museum field only, but should become relevant to the preservation of landscapes, and build heritage.[11] Indeed, the mass damage to archaeological deposits across the world is a clear sign for the need of a more sensitive approach to their preservation – one engaging with the prerequisites for deterioration. But can preservation activities different than the curative ones have a considerable impact on the safeguard of the archaeological fabric – a field dominated by remedies? What would the benefits for archaeological remains and their stakeholders be

from an ‘indirect preservation’ concept where risks factors are evaluated and managed? And how exactly are risks to the archaeological fabric prevented? Do risk-preventive approaches mirror the theory of preventive conservation in museums, or encompass different principles, knowledge and strategies?

The following study aims to research exactly this. It explores the different ways to preserve a given site, focusing on the role of preventive conservation in site preservation. The study discusses which risk-preventive measures constitute the concept of preventive conservation for archaeology and which are the factors putting obstacles in the path of prevention. According to the above-mentioned objectives, several research questions guide this work:

- Which are the most common threats affecting archaeological sites and how are these addressed?
- How risk prevention is relevant for the safeguard of ancient remains and their contexts?
- What is required to prevent risks to the archaeological fabric?
- Who plays a role in preventing risks to archaeological sites?
- Is *preventive conservation* a workable concept for the archaeological field, and if yes, how is it expressed?
- How to prioritise risks to archaeological sites as a step in their management?

A focus of this work is the site management in Bulgaria – a small country with a versatile but relatively unknown archaeological heritage. This heritage is under threat because archaeological studies are usually followed by neglect of the excavated resources, inappropriate use and questionable interventions. Two case studies in Bulgaria investigate how the ethics of the excavator and the public involvement in site management aid the avoidance of risks to archaeological resources. The analyses of the challenges in the site management practices in Bulgaria and the proposed legislative changes offer a better prevention of man-induced risks to country’s archaeological monuments in long term. As Bulgaria is not an isolated case of a country with site management deficiencies, it is presented against the wider picture of site preservation in Europe. Because the safeguard of a given place is, in any case, influenced by its stakeholders,[12] the relationship between the most important of those is investigated. Stakeholders’ conflicting values are the main factor challenging the administration of immovable archaeological heritage, not only in Bulgaria, but worldwide.[13] This realisation prompted for proposals how interested parties can develop partnerships to prevent the loss of historic values. Another objective of this

work is to engage parties in a discussion on the wider issues met by the archaeological heritage. Therefore, two stakeholder surveys accompany this study. The first engages with the integration of conservation ethics in archaeology and its benefits for the archaeological studies and for an improved site preservation. The second stakeholder survey investigates the factors relevant for prioritisation decisions in site management and conservation. Prioritisation is nowadays required in every site management context, as managers operate with limited resources. The process identifies the site or sites most in need of attention to avoid damage and to bring to a sustainable preservation outcome.

In the following text, direct site safeguard measures are understood as those interfering with the heritage fabric. Such are various conservation and restoration works. Risk-preventive procedures and risk management are discussed as part of the wider concept of site preservation. These do not alter the heritage fabric and are aimed at the source of deterioration, not at the damage itself. They may include courses of action or lack of action if this would benefit the safeguard of the authentic character of a given place.

The protection of archaeological remains located above or below ground is a central point of this research. In this respect, underwater sites are not exclusively dealt with, nor are movable objects uncovered during excavations. Prevention of risks to retrieved movable finds by planned excavation, packaging and transport policies has been extensively dealt with.[14]

Furthermore, this work does not focus on the role of disaster preparedness and response planning for the prevention of post-catastrophic risks to archaeological sites. The subject has been covered in numerous publications since the 1980s.[15]

The role of museums in the preservation of excavated material is only outlined. By ensuring favourable long-term policies and conditions for storage, exhibition and study, museum management prevents risks to movable items retrieved in archaeological studies. Museums' task is as well to preserve and disseminate information about the shared context of all excavated site features. Thus, they play a role in preventing dissociation of excavated materials from their context.

The Eastern philosophy of preservation of historic places is based on the retention of their spiritual meaning.[16] Continuation of a monument's 'spirit' is ensured by constant replacement of the original fabric, once it deteriorates.[17] This philosophy has not been considered here, as the research traces the Western traditions of safeguard of the authentic material aspects of heritage.[18]

This study is intended for specialists engaged with site excavation, conservation, management, administration, and public promotion. It is organised into nine chapters. After this introduction to the main objectives of the research follows a section presenting the wider research context of the work. Earlier work relevant to the current topic is discussed in the second and third chapters. For their research objectives, various governmental documents, online media articles and publications were considered. Personal communication with experts in the fields of archaeology, and archaeological conservation and management helped to trace the latest development in the respective fields. Chapter two outlines the main hazards affecting archaeological sites, and the strategies applied in their management. The next passage – chapter three – starts with a study of the clash between the two main philosophies in the care of monuments in the last two centuries – restoration and anti-restoration. It continues with the principles of site protection and management postulated in international charters and conventions in the more recent past. The following research of the diverse typologies of site management leads to a discussion about the roles of the site stakeholders for the prevention of risks to cultural property. The section concludes with a summary of the presented information and its relevance to the subsequent chapter focused on the governance of the Bulgarian archaeological heritage. This part aims to identify the main causes of concern in the national site management and to determine areas where a change is required to prevent further loss of historic values. Based on the conclusions from the fourth chapter, the vulnerable points in the management of archaeological remains in Bulgaria and the prerequisites for damage are further explored. In the course of this work, an important question emerged – is excavation required when management operates with restricted resources for post-excavation site care? In search for the answer, the fifth chapter critically assesses the objectives of archaeological studies and their outcomes when practiced without long-term site preservation agenda. The case study of the Eastern necropolis of Ancient Serdica in Bulgaria researches how the change of site significance affects the long-term management of a given place. How lack of professional ethics and site preservation concepts lead to the destruction of authentic evidence is furthermore illustrated. From there extends a discussion on the role of archaeological ethic in risk-preventive strategies, along with a consideration of the need for an integration of conservation ethics in archaeology.

The case study of the World Heritage Site of Ancient Nessebar in Bulgaria in the sixth chapter researches how site management planning can address hazards to archaeological remains induced by people. The role of communities in heritage preservation is further

explored in the public-engagement policies of the National Trust for Places of Historic Interest or Natural Beauty in England, Wales and Northern Ireland.

The clarification what is preventive conservation for the archaeological field in chapter seven follows a comparison between risk-preventive policies in museums and at archaeological sites. Its limitations and advantages when applied in site management are furthermore discussed.

Chapter eight is dedicated to prioritisation and decision-making in risk management for archaeological sites. It starts with a review of risk assessment and site value assessment and their significance for decision-making. A site stakeholder survey identifies the key factors relevant to an objective prioritisation in site management with sustainable, long-term results. It serves as a basis for developing a site monitoring tool including information on site condition, significance, risks, and management context.

A conclusion synthesises the main outcomes of the study and outlines the directions for future research. The text reflects on the different site preservation options, all playing an indispensable role for a long-term site safeguard. It sums up the conclusions drawn from each chapter, emphasising on the essential role of risk management in site preservation. To become a leading site governance principle, preventive conservation should be embraced by all parties involved in the site study, conservation and administration.

Note on the Used Terminology

The terms *preventive conservation*, *conservation* and *restoration*, *reconstruction* and *rebuilding*, *preservation*, *care* and *management* are often used interchangeably in conservation literature. Therefore, these and other relevant terms are discussed here.

Archaeological heritage and *archaeological sites*

According to its definition after the Valetta Treaty,[19] the term *archaeological heritage* encompasses:

> *"All remains and objects and any other traces of mankind from past epochs. /.../ structures, constructions, groups of buildings, developed sites, movable objects, monuments of other kinds as well as their context, whether situated on land or under water. "*

Portable finds, immovable structures situated underwater, below or above ground in rural or urban territories, and their contexts constitute archaeological heritage.[20] Archaeological sites are the remains of single monuments or ensembles of related places, including contexts where material has not been preserved – shafts, ditches, graves, trenches, trackways and pits.[21] Open air sites are the remains of past cultures exposed to deteriorative processes taking place above ground.

The terms *archaeological sites*, *archaeological resources*, *archaeological remains*, *built archaeological heritage*, *archaeological monuments* and *places of archaeological significance* are used interchangeably to avoid word repetition.

Conservation

The term *conservation* derives from *conservare (Lat.),* meaning *"to keep, to retain, to preserve"*[22], *"to keep in a certain state."*[23] Staniforth and Clark inform on the evolution of the term from *treatment* ensuring material preservation, to the broader *management of change*.[24] This transformation occurred after the revision of the Burra Charter in 1999 and the introduction of the concept of *cultural significance*.[25] The retention of age, history, authenticity and continuity have been identified as the primary tasks of conservation[26]:

> *"Conservation…all processes of looking after a place so as to retain its cultural significance. "* [27]

Restoration

Restoration aims at the re-establishment of lost fabric to retain or enhance the values of the cultural material.[28] It can, however, lead to a value loss, if it does not respect the original, and if not based on historic sources.[29] Restoration usually changes the appearance of an object or a place, and may bring back to light features that have been hidden during previous interventions.[30]

> *"Restoration – all actions directly applied to a single and stable item aimed at facilitating its appreciation, understanding and use. These actions are only carried out when the item has lost part of its significance or function through past alteration or deterioration. They are based on respect for the original material. Most often such actions modify the appearance of the item."* [31]

Preventive conservation

The only conservation approach avoiding alteration of the historic fabric is *preventive conservation*. It mitigates risks to heritage items by interfering with their surroundings,[32] and by *"adjusting the condition in which these are kept"*.[33]

> *"Preventive conservation - all measures and actions aimed at avoiding and minimizing future deterioration or loss. They are carried out within the context or on the surroundings of an item, but more often a group of items, whatever their age and condition. These measures and actions are indirect – they do not interfere with the materials and structures of the items. They do not modify their appearance."* [34]

Site preservation

Preservation is brilliantly described by Staniforth as a process *"making things last"*, with the clarification that preservation cannot hinder change.[35] *Archaeological site preservation* is understood as a process expressed through site care, including monitoring, maintenance, conservation (preventive and remedial), and restoration.

Site management

Site management guides every process taking place at archaeological sites and in their buffer zones.

Hazard and Risk

Hazard is a synonym of *agent of deterioration* or *source of risks*. Risks are the consequences of hazards that may introduce undesired change.

Risk prevention and Risk management

To a great degree, the two concepts overlap. Generally, risk prevention includes *"all techniques and management practices that help to prevent unnecessary or foreseeable risks."*[36] Risk management is *"the forecasting and evaluation of /…/ risks together with the identification of procedures to avoid or minimize their impact."*[37] Risk management aims not only to prevent risks before they take place; it might also be involved when negative events have already developed to prevent further, bigger damage or loss.

A full list of the used terminology is available in section Glossary of Terms. All terms included in the glossary are underlined throughout the following text.

[1] Demas and Roby 2015
[2] Darvill and Fulton 1998: Summary, xix; Darvill 1987: 1; Cleere (ed.) 1989: 10; Clark 2004: 208; Historic England 2008c: 3; ICOMOS Heritage at Risk 2001-2002
[3] Nardi and Schneider 2004: 160
[4] Matero 2006: 55; Feilden 1982b: 34-35; b: 23-77; 279-345; Petzet 2013: 46-47; 66; Staniforth (ed.) 2013: xiii
[5] Burmester 2007: 2; European Standard UNI EN 15898, 2011: 9; Redondo 2008; Ambrose and Paine 2012: 233
[6] Staniforth (ed.) 2013: xiv-xv
[7] Ambrose and Paine 2012: 234-235
[8] Lambert 2010; Caple 1994
[9] The Vantaa Document 2000: 9; Caple 1994: 65; de Guichen 1999: 5
[10] Staniforth (ed.) 2013: xvi
[11] Burmester 2007: 2
[12] Demas 2002: 31; Mason et al. 2003: 1; Norman 2007: 166; Sullivan 2010: 12; 15; Cleere 2010: 8
[13] de la Torre (ed.) 1997: 6
[14] Pedelì and Pulga 2002
[15] Matthews 2005; Feilden 1987: 15-36; Caple (ed.) 2011: 104-108; Ambrose and Paine 2012: 272-276
[16] Sullivan 1993: 16; Lowenthal 1985: in Staniforth (ed.) 2013: 20
[17] Stubbs 2009; Poulios 2010: 176-178
[18] Sullivan 1993: 16
[19] Council of Europe 1992: Art. 1, Paragraphs 2 and 3
[20] ICOMOS 1990: Art. 1; ICOMOS 1964: Art. 1
[21] Darvill 1987: 6
[22] Oxford Dictionary: Conserve
[23] Petzet 2004: 9
[24] Clark 2004: 203; Staniforth (ed.) 2013: xiii
[25] ICOMOS Australia 1979; revised 1999; Clark 2004: 203; Staniforth (ed.) 2013: xiii
[26] Berdicou 1990: 250; Clark 2004: 203; Poulios 2010: 170-172; 174-175; Zancheti and Similä 2012: v; 2
[27] ICOMOS Australia 1979; revised 1999: Art. 1: 1.4
[28] ICOMOS 1964: Art. 9; Berducou 1990: 255
[29] ICOMOS 1964: Art. 9
[30] Petzet 2013: 47; 2004: 11
[31] International Council of Museums - Committee for Conservation 2008
[32] European Standard UNI EN 15898 2011: 9
[33] Staniforth (ed.) 2013: xiii
[34] International Council of Museums - Committee for Conservation 2008
[35] Staniforth (ed.) 2013: xiii
[36] Risk prevention methods definition
[37] Google dictionary: Risk management definition

Chapter 2

Nature and People: Hazards to Archaeological Sites

The issues of the archaeological sites across the world are nothing new. History has known cases of intentional destruction of monuments centuries ago. The plundering of the royal tombs in Egypt and Alexander the Great's act of vandalism on the shrine of Asclepios in Ecbatana are only two examples. Archaeological ruins had also been damaged by natural manifestations. In the recent decades, risks related to pollution, urbanisation and land use have worsen. These coupled with mass excavation, inappropriate conservation and management, uncontrolled tourism, and social and political factors, have increased the threats to archaeological sites worldwide.

The possibilities to counteract the deterioration of the ancient fabric are also manifold. Some involve direct intervention, others – not. Their success depends on many factors, related mainly to the management of a given site.

2.1 Hazards and Risks

In the field of archaeological site preservation *hazard* is generally understood as a *cause of deterioration*.[1] The effects of hazards to archaeological remains are expressed by risks, where *risk* is generally perceived as either *"an area of uncertainty",*[2] or *"unpleasant/ unwelcomed event"*.[3] According to Keck, while this terminology is used in the theory and practice of conservation in the last decades, causes of deterioration and their effects have been largely understood in long bygone historical periods.[4]

Sites managed by Historic England are at high risk upon likelihood of loss, significant and non-recoverable damage of their fabrics and significance in near future. Medium risk characterises cases in which loss is possible in the foreseeable future if the hazard creating risk is not addressed.[5] This comes to demonstrate that management can minimise the level of risk.

Natural and human-related hazards endanger the archaeological sites across the world.[6] Studies suggest that a far greater number of sites are affected by human actions rather than by environmental factors[7] (Table 1). The ICOMOS Heritage at Risk Report 2001-2002 recognises mass tourism as a leading hazard to highly popular archaeological sites.[8] Sites located underwater are primarily endangered by looting and development of submerged infrastructure.[9] From these becomes evident that human actions indeed predominately damage archaeological sites.

2.2 Deterioration Caused by Nature. Preservation Strategies for Nature-Related Risks

Nature significantly affects cultural landscapes.[10] A notable historic example is Pompeii, buried under meters of lava upon the eruption of Vesuvius in 79 AD (Fig. 1).

Natural disasters being climatic disturbances (storms, floods) and geophysical events (earthquakes, eruptions, landslides, tsunamis)[11] and their impacts cannot be prevented, even if predicted. Some environmental factors can be, however, monitored and managed to prevent damage.[12] The impact of nature differs according to the typology of the natural hazards. The vulnerability of a given archaeological site from the elements depends on the local geological and environmental parameters, on the site condition and material characteristics, and on the level of site maintenance.[13]

2.2.1 Climate Change

A substantial part of the research on the way nature affects ruins is dedicated to the impacts of climate change. Observed and expected phenomena to excavated and buried archaeological deposits include increased erosion, flooding, change in soil water content

and temperature, and burial underneath flood water debris.[14]

Table 1 Common natural and human-related hazards endangering archaeological sites (data taken from various publications)[15]

Nature-related hazards endangering archaeological sites	Human-related hazards endangering archaeological sites
- Climate-related: climate fluctuations, wind-, rain-, sand-, and frost-induced erosion, floods, storms, see-level changes - Geophysical: earthquakes, volcanic eruptions, landslides, tsunamis - Wildlife and vegetation growth	- Management related: neglect, inadequate restoration and adaptive reuse, mass excavation followed by lack of conservation - Absence of community interest in site preservation - Treasure hunting - Land or marine use - Social conflicts - Issues of ownership - Pollution - Vandalism - Uncontrolled mass tourism - Urbanisation and industrialisation

Disaster preparedness and response planning can prevent post-catastrophic risks. Additionally, studies demonstrate that an investment in the reducing the consequences of disasters is cost-benefit compared to the invested value for recovery.[16] Despite these, such type of planning has been reported as a rare management priority.[17] The roots of the problem are related to the devotion of sufficient resources for the development of disaster plans. In addition, most managers refuse to invest in the prevention of events that may occur in the unobservable future, especially if costs for other activities must be prioritised.[18]

Fig. 1 The forum of the World Heritage Site of Pompeii ever threatened by an eruption of Vesuvius in the background

2.2.2 Earthquakes

Another common hazard threatening a substantial number of archaeological sites worldwide are earthquakes. Many territories with rich archaeological heritage are characterised with high seismicity – Italy, Greece, Turkey, Israel, Egypt, Iran, Iraq, Syria, Mexico, the Caribbean countries, Chile, Peru, Venezuela, Bolivia, Azerbaijan, China, Georgia, the Philippines, Indonesia, Haiti and more.[19] Emergency response planning has been found helpful to reduce earthquake damage, especially in preventing losses in the aftermath of an event.[20] Research on the structural integrity of historical ruins can be of help too, informing on the behaviour of monuments upon stress – by visual and material investigation, geological studies, and computer-based 3D analyses.[21]

Prevention of damage from earthquakes is usually ensured by structural stabilisation of sites or their geological bases.[22] Stabilisation may include addition of building material at the base of a monument, concrete piling, grout re-pointing, buttressing (Fig. 2 and 3), shoring, anchoring, introduction of reinforced bars and ties, bracing, and shear walls.[23] The most expensive and advanced stabilisation method is base isolation, where flexible pedestals support the base of a building, and permit its floating during an earthquake.[24]

Fig. 2 (left) and 3 (right) Structural stabilisation preventing wall collapse at the World Heritage Sites of Pompeii (left) and at the Villa San Marco, Stabiae, Italy (right)

All above-mentioned approaches require significant intervention to the original fabric. The main risk upon intervention is the loss of heritage value. Many structural stabilisation techniques are criticised as irreversible, expensive or locally unavailable, and leading to the introduction of new challenges.[25] The last is usually a result of their incompatibility to the original fabrics, or due to the fact that they are being designed to fit the needs of modern instead of historic constructions.[26] Therefore, two of the Getty Conservation Institute's (GCI) major research projects – the *Getty Seismic Adobe Project*, and the *Getty Seismic Retrofitting Project*[27] evaluated the use of contemporary and traditional materials in the seismic retrofitting of historic structures. Important aim in the projects was the preservation of site authenticity upon structural stabilisation. The specifics of monument retrofitting have additionally opened debates for the need of civil engineering studies dealing with the subject.[28] Further research is still required to evaluate the vulnerability of traditional constructions, many of which have been found to react different than expected in seismic events.[29]

2.2.3 Biodeterioration

Biodeterioration caused by bacteria, algae, lichens,[30] moss, fungus (Fig. 4), vegetation and wildlife, is another factor that triggers damage to either exposed or buried archaeological structures. It is dependent on the characteristics of the ancient materials and

on environmental and human factors.[31] Biodeterioration to the archaeological fabric can only be avoided by regular site maintenance.[32]

Vegetation may damage archaeological remains by covering them, thus causing physical and chemical structural disintegration.[33] If this is the case, vegetation removal by mechanical, physical, chemical, or biological methods, may be required. These should be conformed to the characteristics of the original substrate, the type of deteriorative cultures, and the dangers for people and wildlife that may result from a treatment.[34]

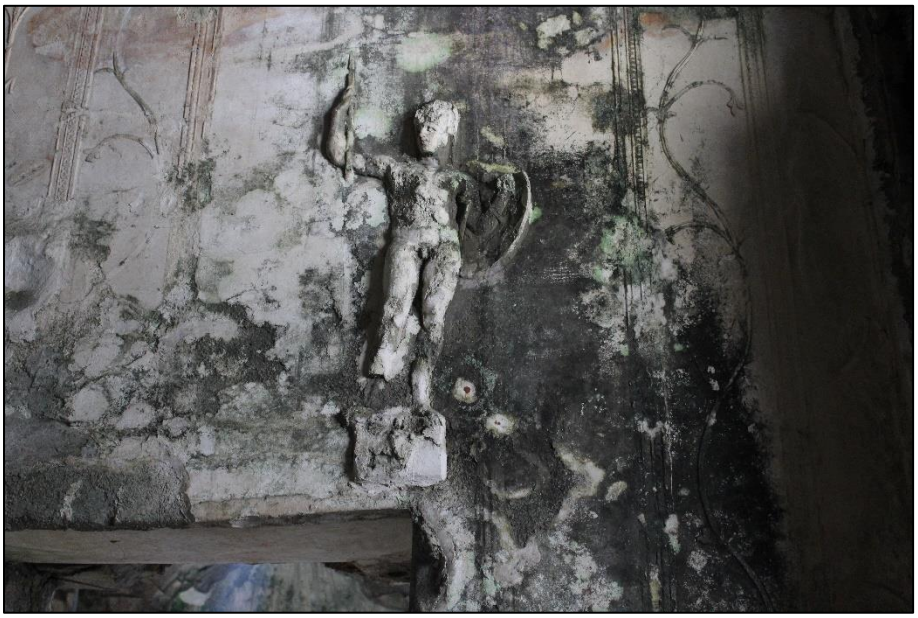

Fig. 4 Biodeterioration caused by microorganism growth in the suburban baths of the World Heritage Site of Herculaneum, Italy

On the other hand, absence of vegetation could also speed erosion processes.[35] Therefore, replanting vegetation[36] or creating vegetation barriers can be an effective approach to reduce wind- and sand-blown erosion to excavated sites.[37] Vegetation distribution in archaeological areas can be monitored on-site or by satellite to prevent an unwanted vegetation loss.[38]

Mechanical and chemical damage to archaeological structures are caused by animals and birds too.[39] Their management can be very complex due to ecology issues, or due to the ineffectiveness of common discouraging strategies[40] (Fig. 5). It may be implemented by barriers, repellents, sonic devices, hostile surfaces, encouraging the change of habitat,

closure of sites, or introduction of natural predators.[41]

Fig. 5 Common ways for discouraging the nesting of birds on archaeological sites may result ineffective. World Heritage Site of Herculaneum, Italy

2.2.4 Weathering

Archaeological sites are eroded by climate, land use, or visitor trampling.[42] The main causes of the weathering of the excavated fabric have been identified as water, wind and salts, combined with the effects of freeze-thaw cycles, deposition of pollutants, and biodeterioration.[43] Salts in porous materials constituting archaeological remains are carried by water.[44] Salt efflorescence or sub-surface salt crystallisation and dissolution occur upon freeze-thaw cycles and cyclic water evaporation, thus contributing to material degradation.[45] While some studies suggest keeping ambient relative humidity in certain ranges so crystallisation of salts does not occur,[46] the last is possible only in cases of enclosed archaeological sites where climate control is possible. Stewart et al. furthermore comment on the inability to isolate buried or exposed sites from water and humidity because of the various ways water presents in their environment – as rainwater, superficial condensation, springs, groundwater, and precipitation.[47]

Already eroded archaeological structures can be, however, stabilised by remedies

preventing further decay or collapse. These include surface consolidation, addition of building material, replacement of wall foundations, anchoring, filling of cracks, and slope stabilisation with gabions, seeded culture blankets, or breakwaters.[48] All these approaches hinder the risks to be visually intrusive, incompatible to the original, or irreversible.
In contrast to remains located above ground, protection of underwater sites from erosion is rarely practiced. Studies conducted in the 1980s report about the covering of submerged ruins with sand bags to reduce wave-induced erosion.[49] More recently, polypropylene nets, geotextiles and gravel have been used with the same scope.[50]

2.2.5 Flooding

Flooding is a hazard resulting from either natural factors or human actions, such as the construction of dams, absence of maintenance of water reservoirs, or changes in land use.[51] Egypt has a long history of floods affecting archaeological sites and solutions against this hazard. Natural flooding presents a threat to the Valley of the Kings and the Valley of the Queens,[52] where the painted decoration of many tombs had been damaged by past and recent events. A well-known example of site protection from dam flooding was the relocation of the Abu Simbel temples in 1968. The buildings were dismembered, moved and re-assembled to an artificial hill. Relocation is not an example for an indirect site preservation approach though. Due to impaired site authenticity and new risks associated with the disassembling and the new location, the approach has widely been described as interventive.[53] According to Feilden, relocation is a form of reconstruction of a given site at another location – an action leading to loss of essential cultural values.[54] On the other hand, landscaping and design of drainage patterns are able to prevent flooding to ancient monuments without affecting the site authenticity.[55] The management of excessive water at archaeological sites may also include pumping, construction of walls around site entrances, and introduction of drainage channels.[56] Construction of subsurface walls to block ground sources of water, use of drain blankets, and use of original (ancient) water drainage systems as complimentary to modern ones have also been implemented in site preservation projects.[57] Geophysical techniques, such as ground penetrating radar and geoelectric surveys are well suited to assess potential flood impact.[58] Construction of barriers, dykes and ditches is another measure to prevent flooding. To be classified as

indirect approaches, barriers should be raised upon threat, without otherwise affecting the aesthetical or the historical integrity of the cultural landscape. An example is the MoSE Project (Modulo Sperimentale Elettromeccanico) in Venice, where mobile gates isolate the lagoon upon a raised tide.[59] It is feared that the existence of the barriers will have a strong, long-term environmental impact on the Venetian Lagoon.[60] Another polemic concerns the cost of the project and its efficacy, according to the predictions for the sea-level rise in the twenty first century.[61] Despite project's controversies, the barriers are expected to play a role in the safeguard of the Venetian monuments for at least several decades.[62]

2.2.6 Understanding and Preventing the Impact of Nature

Strategies involved in understanding and preventing environmental impacts to archaeological sites include soil sampling, monitoring, maintenance, consolidation, relocation in museum environment (Fig. 6 and 7), construction of shelters and enclosures, and photography. Sampling of buried deposits and soil assists non-invasive or minimally invasive studies, informing on the site preservation condition, typology, size, and provenience of artefacts without the need to excavate.[63] Sampling proves to give accurate information when data is compared to evidences obtained from excavation.[64]

Photography helps to compare site condition at regular intervals, thus informing on the development of deteriorative factors.[65] Photographs in raking light help to define the degree of erosion of archaeological materials, thus reducing sampling and aiding monitoring.[66]

Monitoring itself helps to understand deteriorative processes by identifying sources of risk in the site settings.[67] It relies on regular monument inspection to define the moment in which actions must be taken.[68] Feilden specified several types of monitoring according to the condition of the remains and the speed of deteriorative forces – immediate monitoring to prevent damage, urgent one to avoid rapid decay, necessary (within 5 years), and desirable (when funds permit).[69] Regular monument monitoring is an important site management task in England, the Netherlands, Norway, Ireland, Denmark, and Sweden.[70] In England, it takes place every four years. The results inform on the required budget for the next four-year period of monitoring and monument repairs.[71]

In the last decade, monument monitoring has been aided by non-contact techniques determining the state of building materials – ultrasound, radar and sonic investigations, and

Scanning Laser Doppler Vibrometry (SLDV).[72] Wireless measurements monitor salt migration and crystallisation in porous materials.[73] Infrared Thermography aids the assessment of material deterioration by monitoring moisture levels in stone and masonry.[74] 3D Electrical Resistivity Imaging (ERI) identifies moisture sources in stone.[75] *In situ* material testing for liquid sorption is performed by Karsten tube.[76] Measurements with laser speckle interferometers, Free Water sensors, and Radiello sensors assess ever more precisely the impacts of climate change and pollution to cultural assets.[77] The quality and the effects of restoration applications are traced by non-destructive colour change measurements,[78] and acoustic emission identifying cracks or shrinkage in restoration materials.[79]

Fig. 6 (left) and 7 (right) Relocation in museum environment – the Porch of the Caryatides, the Erechtheion (left; replica), and the Porch of the Caryatides (right; original) displayed at the New Acropolis Museum, Athens

Regular and longer monitoring periods are advised given risks from technical faults in devices, varying environmental conditions, and difficulties in data processing and interpretation.[80] To obtain reliable data from monitoring, maintenance of equipment is also obligatory.[81]

Monitoring results determine the maintenance needs of a given place.[82] Maintenance is the *"regular set of actions aiming conservation of the present state of a built structure and prevention of new deterioration"*.[83] Yet it cannot entirely prevent deterioration and damage. An example is the deterioration of highly visited sites by trampling,[84] or cases in which deterioration is not dependable on maintenance, such as damage caused by natural

catastrophes. Maintenance aids studies of deterioration mechanisms to monuments and saves financial resources in the long term.[85] It can as well help to avoid hazards – by removal of the attractants for some agents of deterioration.[86] An example is the removal of food, garbage or vegetation that make sites attractive to animals and birds. Maintenance schedules depend on the condition of a given structure and the hazards that affect it.[87] Despite its importance, however, budgets for regular monument upkeep are often inadequate or lacking in site management planning.[88]

2.2.7 (Un)successful Preservation Measures: Shelters and Enclosures

As has been mentioned, monitoring and maintenance are of great importance to understand and prevent the impact of some hazards. But these are not universal cures. When natural weathering affects succeptable to degradation site elements, these are either relocated to museums or roofed by temporary or permanent shelters and enclosures (Fig. 8 and 9). According to De Caro, the earliest shelter at an archaeological site was a straw roof with wooden construction built over the Temple of Isis in Pompeii in 1777.[89] Since then, various types of roofs and enclosures had been built over ancient ruins across the world, combining different materials and shapes.

Fig. 8 (left) and 9 (right) *In situ* mosaics under a reinforced tent-like shelter at the archaeological site of Kourion, Cyprus (left). An enclosure at the World Heritage Site of Nea Paphos, Cyprus (right)

Sheltering a site element developed more or less as an alternative to relocation. It is viewed by many as a method preserving the authenticity of a monument, by providing a construction protecting the ruins from the elements. Numerous papers, however, address the issues of site sheltering, suggesting that it may introduce new risks to the remains.[90] Often criticised are the aesthetics of shelters, resulting in many cases too intrusive on the historical and natural contexts.[91] Shelters built to prevent direct rain, may be incapable to prevent from wind-driven rain erosion (Fig. 10), dust accumulation, thermal shocks, animal activity, flooding, vandalism and treasure hunting.[92] They have also been found incapable to replace regular site maintenance.[93] Of concern are issues related to shelter stability in harsh weather,[94] maintainability, supervision of the shelter construction, cost-effectiveness, effects on unexcavated remains, accumulation of water at the foot of the remains, and the need to include various experts in cases in which complex shelters are to be build.[95] The agreement of all major site stakeholders must be obtained when sheltering a site, otherwise important aspects may be overlooked.[96] Challenges related to enclosed shelters (enclosures) include the long-term behaviour of their construction materials, condensation and "chiaroscuro effect"[97] (Fig. 11).

Fig. 10 A roof at the site of Villa Arianna, Stabiae, Italy failing to prevent wind-driven rain deterioration to the columns stored underneath it. Damage is clearly visible on all columns' ill-protected side

Factors that are rarely addressed prior enclosing are future costs for maintenance, electrification, humidification, ventilation and air-conditioning.[98] Ignoring the need for a careful shelter planning, design, implementation and monitoring, roofs and enclosures may turn out disastrous for the condition of the site elements preserved underneath. Italy has long traditions in that respect. A survey of shelter performance across the country in the 1990s investigated the effectiveness of 222 shelters at 130 archaeological sites.[99] It concluded that neither of the shelters demonstrates ideal performance.[100] Corroded elements led to a roof collapse over archaeological layers at the Greek fortifications of the ancient town of Gela in Sicily.[101] The transparency of glass panels mounted on walls at the same site led to increased humidity and temperature in the space between the walls and the panels. This created a "greenhouse effect" – condensation and vegetation growth on the sheltered surfaces, creating a habitat for snakes, bats and insects. The same effect caused favourable environment for lizards, frogs and vipers at the theatre at Heraclea Minoa in Sicily after mounting Plexiglas elements on the theatre's seats.[102] The glass enclosure preserving some of the exceptional mosaics at the Roman Villa Romana del Casale, Sicily, suffered issues related to heat and light control, and material deterioration.[103] But problematic shelter performance is not a problem in Italy only; it is an issue in other countries too. A defected shelter caused water condensation on the surface of twelfth century Buddha rock-cliff sculptures at Odaka, Japan causing mold growth and salt efflorescence on site's fabric.[104]

There are as well shelters, effective for the purposes for which have been built. Concrete and metal shelters efficiently protected archaeological remains from fire in Mesa Verde National Park.[105] The monitoring of a modern roof with steel-truss girders in Pergamon has been reported as successful, as the roof performance proved no need of maintenance.[106] Shelters and enclosures with climate control and restricted public access are reported as an effective measure in reducing surface water condensation and related to it stone erosion in Ancient Egyptian cemetery at Saqqara.[107] None of these studies, however, disputes the aesthetics of the shelters, or the use of concrete and metal in their construction that may introduce challenges at a later stage. In Pergamon, the shelter construction involved a wall rebuilding with cement directly on top of the original remains.

Computer-based environmental simulations applied in shelter and enclosure design phases can aid a good shelter performance.[108] The need to understand the way shelter design influences a newly established microclimate is as well recognised.[109] Risks introduced by shelters have been discussed as preventable, if matters related to climate, geology, sub-

surface remains, shelter materials and shelter's cost in use are considered in the early phases of sheltering projects.[110]

Fig. 11 "Chiaroscuro effect" on a mosaic in enclosure at the World Heritage Site of Nea Paphos, Cyprus

A shelter can be an effective or ineffective site preservation measure depending on its performance. The most important question regarding shelters and enclosures, however, is whether they are indirect preservation measures. Both approaches require the use of modern materials. By sheltering, the aesthetics and the condition of archaeological sites are often altered. Almost all studies addressing shelters and enclosures, refer to them as preventive conservation applications. Agnew and Teutonico, however, conclude that sheltering is a remedy given its effects on the visual and material characteristics of sites and their landscapes.[111] The same discussion is valid for avalanche and flood protection walls, dikes, and dams protecting sites from extreme natural forces. Their potential to obstruct the cultural landscape is undisputable.[112] As with shelters, the abilities of these to prevent risks are related to adequate design, implementation and maintenance.

2.3 Damage Caused by People. Preservation Strategies for Human-Related Risks

Some human-related impacts to archaeological sites result from the consequences of modern life, such as pollution and urbanisation. Others, including mass tourism or neglect are management-related and can be controlled with proper policies and planning. The rest can be differentiated into deliberate or undeliberate damage.[113]

2.3.1 Armed Conflicts

Deliberate damage is exemplified when archaeological sites become targets in armed conflicts. Given the major loss of culturally significant places in social conflicts, the international conventions drafted to protect them seem to be incapable to prevent the detrimental effects of wars.[114] Thurlow[115] traced the development of the most significant of those – the Lieber Code (1863),[116] the Hague Convention from 1907,[117] the Fourth Geneva Convention (1949),[118] the 1954 Hague Convention,[119] the America's Law of Land Warfare (1956), and the World Heritage Convention (1972).[120] The documents deal with the issues of illicit excavations and traffic of cultural materials, and with the responsibilities of the conflicting parties in the prevention of destruction to cultural assets.[121] Being created after mass war damage, these documents are reactive despite having future risk preventive objectives.

Cultural losses in wars result from differences in heritage perception and valuation.[122] Therefore, most damage to sites during wars has been recognised as impossible to prevent due to the very nature of wars as conflicts targeting the physical and the cultural destruction of the enemy.[123] Among the different solutions to the issue are discussions on the responsibility of archaeologists in the protection of historic heritage in times of conflict,[124] and site-defence by neutral military bodies.[125] Enforcing the principles of the international treaties is suggested by Thurlow.[126] Establishment of prosecution authorities for witnessed cultural war crimes is argued as a strategy that may reduce the loss of cultural patrimony in future conflicts.[127] An interesting approach to the issue of preventing war destruction is to educate soldiers about the values of archaeology.[128] A sense of hope is provided by examples for the training of military and police units as part of the activities of The

International Committee of the Blue Shield (ICBS) in the USA, and in Austria, Italy, and England.[129]

2.3.2 Looting

Like war destruction, site looting is a complex issue, having very long traditions.[130] Plundering persists despite the adoption of the United Nations Educational, Scientific and Cultural Organization (UNESCO) Convention on the Means of Prohibiting and Preventing the Illicit Import, Export and Transfer of Ownership of Cultural Property in 1970.[131] Submerged sites are also often looted, despite being legally protected by the 1982 Convention on the Law of the Sea[132] and the UNESCO Convention on the Protection of Underwater Cultural Heritage.[133]

Looting of non-excavated archaeology prevents from understanding the original context of artefacts.[134] It is often commissioned from abroad or is a result of a poor standard of life in source countries where treasure-hunting provides income.[135] The USA, Northern and Western Europe, and lately the Far East, have been identified as the main destinations for illegally acquired archaeological objects.[136]

Weak or absent laws for protecting cultural property encourage treasure-hunting.[137] According to Marthari, while Greece introduced penalties to smugglers in its Law 2646 *"On Antiquities"* in 1899,[138] other states still have no legislation prosecuting illegal excavations.[139] Looting is a global problem, but it can be most successfully fought locally. Proposed measures include addressing social poverty in source countries,[140] and informing the international press about looted objects.[141] Local institutional cooperation, prosecution of dealers and buyers, and security measures at transportation points are discussed as approaches effectively combatting illegal traffic.[142] Legalising the trade of antiquities and the drafting of trans-boundary agreements have also been brought forward as measures to counteracting the issue.[143] Participatory education about the historical value of heritage in which locals influence site management, has been argued as preventing treasure-hunting.[144]

The United Kingdom can be praised for addressing the challenge of treasure-hunting across its territories by a non-standard approach. The Portable Antiquities Scheme (PAS) is a voluntary governmental program to document archaeological finds discovered by the members of the public in England and Wales.[145] The program is based on communication

between metal-detecting societies and Finds Liaison Officers (FLOs) at county councils or local museums to which finders can report discovered objects. The officers document the finds, while in most cases the objects remain property of the finders.[146] According to Pearce, this has solved issues related to the establishment of artefact context.[147] The case proves that despite the complexity of the issue, it can be addressed in a way that is beneficial for all conflicting parties. In general, however, prevention of treasure-hunting is challenging. The issue will persist as long as looting provides an income in source countries, and as long as there is an interest to obtain ancient artefacts illegally.

2.3.3 Vandalism

Vandalism has affected ancient remains since the end of the nineteenth century and its most common forms include graffiti, spray-painting and mechanical damages.[148] Nickens subdivides it to institutionalised, predatory, and malicious.[149] The categories cover damage associated with incorrect site management, treasure-hunting, and provoked or unprovoked actions.[150] The deliberate disassembly of archaeological structures for the use of building material for modern purposes can also be specified as vandalism. The issue is frequent across many Asian states.[151]

The control of vandalism has been found challenging for the reason that the hazard is difficult to predict.[152] Methods for site protection have become drastic – such as the installation of steel cages around submerged remains in Croatia.[153] The hazard has been found to result from the inability to appreciate the values of history and historic places.[154] Therefore, education encouraging respectful attitude to cultural heritage is recognised as the only reasonable form of prevention of vandalism to archaeological sites. Engagement of young people has been sought for in a few educational approaches concerned with excavations, archaeological workshops and with site volunteering.[155]

2.3.4 Pollution

Pollution has turned into a major issue in the preservation of archaeological sites over the last century. Its main sources are industry, transport, heating, and agriculture.[156]

Deposition of fine particles not only affects negatively monuments' aesthetics. It erodes the archaeological fabric.

Effective measure to reduce pollution damage to archaeological sites is to lessen contaminant levels on a local scale.[157] Relocation of contaminating industries, prohibition of fuel oil use,[158] forbid of car circulation and parking in site vicinity,[159] and strengthening environmental laws[160] have lessened drastically pollution damage to many archaeological properties across Europe.

2.3.5 Construction Projects

Modern constructions and urbanisation are among the factors that threaten innumerable archaeological sites across the world[161] (Fig. 12). It has been reported that the Netherlands have lost more than 30% of non-investigated archaeological deposits because of the need of new constructions.[162] Even the destruction of archaeological sites with recognised importance is guaranteed when financial issues justify development projects.[163]

Fig. 12 Urbanisation isolates the World Heritage Site of Villa Poppaea, Oplontis, Italy in its modern surroundings

A modern construction may require the partial or full removal of archaeological layers, or none of it. The greatest risk posed by a modern building project is the one of irretrievable loss of original substance. But an erection of a new building may lead to less recognisable threats when it does not require the removal of archaeology. Due to site inaccessibility once archaeological deposits are overbuilt, the effects of compression are practically unknown.[164] Negative consequences may include impaired archaeological stratigraphy and drainage patterns, below ground displacement of artefacts, deformation of burial layers, and alteration of the burial environment.[165]

The preoccupation for the fate of archaeology threatened by development was stressed out long ago. In 1833, the architect Johann Gotfried Gutensohn, and later in 1838 – the French archaeologist Raoul Rochette urged for the establishment of the Greek capital on the territory of modern Piraeus.[166] The fears that a modern city will be a constant threat to the ruins of the Acropolis, however, did not lead to an urban planning change. In fact, the integration of cultural heritage preservation and urban planning can decrease the risks to archaeological sites in development projects.[167] Additionally, various pre-construction and construction engineering operations can be re-designed to be less intrusive for buried deposits.[168] An example is the minimised construction damage to the ancient quartier in central Athens discovered during the construction of the New Acropolis Museum (Fig. 13 and 14). Site zoning has been found easier to implement and regulate, unlike the re-design or the relocation of the new construction.[169] Yet in practice, zoning respecting the fragility of the discovered structures is not always possible. Other approaches, such as raising construction's foundation, or building bridges above sites may prevent the destruction of the archaeological record. Their implementation, however, requires an on-time communication between developers and site management.[170]

2.3.6 Land Use

Land use often contributes to the erosion of buried archaeology.[171] In many cases, it is caused by deep ploughing[172] or chemical treatment of the soil. Damage can be prevented by modifying agricultural practices or by site monitoring, both with the agreement of the land-user.[173] Mutually beneficial approaches guarantee a high-quality farm production and a favourable soil environment in which archaeology survives.[174]

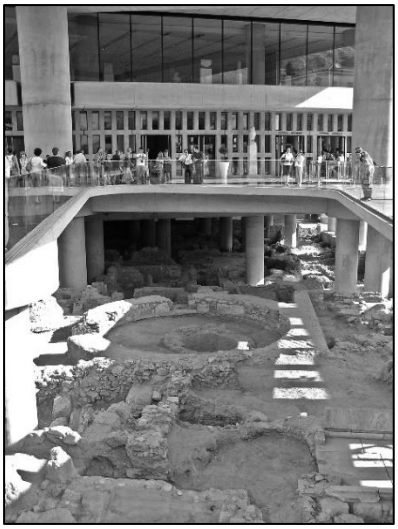

Fig. 13 (left) and 14 (right) The massive columns supporting the building of the New Acropolis Museum have been divided to three columns with smaller diameter to minimise damage to the remains of an ancient Athenian quartier

2.3.7 Mass Tourism and Site Contemporary Use

Like objects in museums for which damage can be caused by use,[175] conservation issues to archaeological sites have arisen with the site development for tourism. According to Siravo, numbers of visitors at archaeological landmarks grew rapidly from the 1980s onwards.[176] Not managed properly, mass tourism has contributed to the rapid decay of the archaeological fabric. Types of damage include mechanical deterioration, pollution, rise in humidity levels and associated with it microorganism growth, wearing, increased traffic, unreasonable reconstructions, local infrastructure transformation, and negative change of the values of the sites concerned[177] (Fig. 15 – 17). Irreversible changes caused by excessive visitation have often led to site closure to the public.[178]

Among the activities that may cause mechanical deterioration at sites is the use of ancient structures for cultural events. Concerts, theatre settings, movie productions and fashion shows use ancient structures as stages and background.[179] This use concerns most often ancient places of performance, such as theatres, amphitheatres, odeons, and stadiums. Their contemporary use is often viewed as sustainable preservation strategy with indisputable cultural, economic, and educational values.[180] With their modern utilisation, sites may

serve some of the purposes for which had been originally build. Usually, the robust material nature of such structures permits modern use without greater risks. Nevertheless, Papageorgiou-Venetas commented on the need of management control, aesthetical standards and moderate approach to heritage use to avoid the transformation of ancient sites into amusement parks.[181]

Cunliffe recognised that despite the hazardous nature of mass tourism, visitors rarely realise the impacts they impose.[182] Lack of communication and partnership between the cultural and the tourism sectors has been pointed as one of the factors leading to the development of non-sensible visitation. Absence of site management plans and lack of visitor capacity schemes before permitting visitation deepen the related challenges.[183]

Fig. 15 Even large-scale sites hardly endure the visitation of millions of tourists yearly – crowding at a tight entranceway at the World Heritage Site of Pompeii, Italy

Assessing the level of risk resulting from site visitation can be done by visitor behaviour observations and visitor surveys. The results of such investigations inform management strategies and point public's attention at site preservation challenges.[184] Site management planning and visitor impact assessment (VIA) are recognised risk-preventive strategies to mass tourism.[185]

Other approaches clarifying the visitor impact include monitoring of environmental parameters and pollution levels at sites.[186] If monitoring identifies threat, control measures can follow. An example for such is the placement of floor mats and grates at site entrances to reduce the transport of sand and dust by tourists.[187] Virtual reality tours to closed sites,[188] increased visitation fees,[189] and parking relocation have reduced negative effects related to

pollution or erosion and have allowed closed sites to be re-opened for restricted, closely monitored visitation.[190] Total forbid of public access, even if coupled with site replication, has been discussed as a drastic measure, unless compensated by providing accessibility to other sites.[191]

Fig. 16 Tourist touching a fragile wall painting at Villa Arianna, Stabiae, Italy

According to Collins, the desire for income welcomes an increasing number of tourists at archaeological sites, despite the understanding of its deteriorative effect to the vulnerable ancient fabric.[192] This has led to a realised paradox in which the income from visitation is later used to address the conservation of places deteriorated by mass tourism.[193] Mass tourism is also often advertised as triggering regional revitalisation. Studies, however, suggest that most often revenue is returned to national budgets without being used for conservation or for benefiting locals in a sustainable way.[194] In few cases, this has further resulted in community dissatisfaction with site management.[195] According to Silberman, this is a result of the ill-understood economic and social factors playing part in site tourism development by the side of heritage professionals who are not qualified to deal with the economics of heritage.[196] Touristic promotion of archaeology can contribute to a local economic revitalisation in case of highly recognised monuments. It needs though a comprehensive vision for the future regional development, well developed and managed touristic infrastructure, and a long-term planning on how to maintain the site values and to respect the site authenticity.

Fig. 17 Deteriorated floor mosaic at the site of Villa Arianna, Stabiae, Italy. Under the footsteps of visitors, fragile tesserae gradually disappear

2.3.8 Repair and Reconstruction

Archaeological sites are often conserved and restored to become more understandable and attractive to laymen.[197] The most widely performed conservation interventions are filling of lacunae, consolidation, cleaning, structural reinforcement, and detachment of decorative surface finishes and architectural elements. Repairs must comply with several ethical aspects, summarised by Feilden – reversibility, minimalism, and respect to the aesthetic, historic, and physical integrity of the cultural property.[198] If these principles are not observed, remedies can harm, resulting incompatible to the original fabric, irreversible, or detrimental to the site values[199] (Fig. 18 and 19). The extent of damage from remedial treatment has been found to depend on the chosen conservation materials and techniques, and on the experience and the confidence of the conservator.[200] The case of the Altamira cave is an example of restoration went wrong.[201] Its prehistoric paintings and ecosystem were irreversibly damaged by measures aimed at allowing visitation. Stabilisation of cracks with hydraulic cement and installation of timber cladding caused chemical damage and biological contamination to the cave paintings.[202]

Fig. 18 Melting in the summer, wax used to consolidate original wooden lintel at the WHS of Herculaneum has created aesthetical and material reversibility problems

Fig. 19 Salt efflorescence on a wall painting at the WHS of Villa Poppaea, Oplontis, Italy because of the use of cement in the villa's restoration

Another vivid example of the risks introduced with the use of incompatible restoration materials is the large-spread damage to the Acropolis monuments. The first restorations of the ancient buildings have been executed in the late nineteenth – early twentieth century by the archaeologist Kyriakos Pittakis and the architect Nikolaos Balanos.[203] The introduction of reinforced concrete buttresses and iron clamps to fasten stone members led to progressive deterioration of the site and its bedrock.[204] The attempts to eliminate the effects of these inappropriate interventions continue to this day. The monuments have later been also affected by seismic activity, biodeterioration, erosion, and pollution.[205]

Casanaki et al. summarise the way remedies fall on the losing side when compared to the effectiveness of indirect measures for the preservation of the Acropolis.[206] Ultrasonic measurements have been used to assess the condition of the marble and its static properties. Thus, they contributed to the development of earthquake loss prevention policies. To prevent the wearing of the ancient fabric, wooden walkways were introduced around the temples in 1977. Wooden sheds prevented running water and frost on the west frieze of the Parthenon and the Porch of the Caryatides in 1976 – 77. Relocation of sculptures and reliefs in a controlled museum environment took place in the end of the 1970s. Architectural elements in danger of collapse upon seismic events have been secured by reversible and non-intrusive temporary remedies.[207] But despite the history of conservation of the Acropolis, a remedial treatment should not be viewed as a necessary evil. Often, interventions are indispensable and needed. When suitable, however, these should not be regarded as an end point in the care for a given monument. Once conserved, the heritage fabric requires constant monitoring and maintenance.[208] Torraca expressed the inability of conservation to protect archaeological sites in their original settings forever by writing: *"Conservation is a perennial fight /.../, in principle, a losing one*."[209] In its essence, this sombre statement is true, if one looks ahead in the distant future. But maintained restored elements can ensure their function sometimes much longer than planned. Such a case is exemplified at the WHS of Herculaneum where reinforced concrete roof supporting lintels cause loads to the original brick walls. The lintels are irreversible and slowly decaying, but continue to perform a roof supporting function, being constantly maintained.[210]

Only conservation interventions that halt deterioration, are stable in long term, are compatible to the original, and preserve all its values have been defined as appropriate and ethical.[211] Choosing a long-term stable conservation material requires testing before use, competence, expert advice, laboratory simulations, material accelerated aging, monitoring, and re-treatment.[212] According to Petzet, an intervention should be preceded by *"methodically sound preliminary investigations and documentation of previous historic states"*.[213] The conservators' task of choosing the right intervention strategy has been aided by the recent modification of various remedies to allow lesser impact to originals and improved material stability.[214] But the impacts affecting negatively the historical fabric do not manifest themselves only during or after conservation; deterioration starts with the revealing of ancient structures in excavations. And negative impacts are much more difficult to deal with when the desire for exploration of the past and the need for preservation of that very same past collide.

2.3.9 Neglect after Study

Archaeological excavation can be rescue or planned. The former is employed in cases of modern development where terrains are cleared to build a new construction. Although rescue studies allow archaeologists to investigate a certain place before it is lost, they can be opposed by locals because of being regarded as facilitating unwelcomed development.[215] Planned excavation involves site studies in the course of a single or multiple excavation seasons. It aims exploration of a given site to answer a specific scientific question. If neglected after a planned excavation, exposed ruins are endangered by erosion, vandalism and looting.[216] Neglect has been found to be mostly linked to lack of finances for site maintenance after study.[217] It can as well result from a perceived low site significance – less valuable from historical or economical point of view remains are those being usually affected.[218]

Risks introduced to archaeological sites after or during excavation have been realised as preventable if less sites are excavated, or if excavation proceeds at a lower speed.[219] The principles of a number of international charters and conventions stand against excavation if it is not followed by maintenance, conservation, and management of the revealed items.[220] Preserving sites underground without excavating them has been advocated by the Athens Charter,[221] the Lausanne Charter[222] and the Valletta Treaty.[223] After the adoption of the Valletta Treaty, countries in Northern and Western Europe have started to manage extensively the archaeological sites on their territories in burial state.[224] In England, France, Norway and Bavaria, excavation permissions are dependable on research priorities and secured resources for post-excavation site conservation.[225] If resources are not available, site preservation in burial conditions is sought for. Yet in other countries studies neglecting the need of preservation are widespread, while the idea of restricting digging for preservation purposes – unwelcomed.[226]

The dispute on excavation versus preservation underground had started long ago. In the early years of the development of archaeology, the systematic excavations of Pompeii were questioned as being too expensive and threatening the integrity of the then-contemporary urban landscape.[227] Nowadays, the situation is reversed – the archaeological layers are those threatened if revealed without a long-term preservation strategy. Nevertheless, preservation of archaeology underground cannot entirely prevent sub-surface erosion, although it is a powerful measure against neglect. According to Stewart et al., while largely

stable, buried archaeological materials are still subjected to ground frost, physical forces, and to chemical and biological degradation processes.[228] But monitoring of the burial environment and the condition of the remains informs on the need to continue the preservation underground, or to excavate.[229] Determination of the preservation potential of a range of burial environments through soil monitoring has taken place underground and under water across the Netherlands, Denmark and Norway.[230] It has been argued that anoxic conditions often offer a slower decay rates compared to other environments, although these cannot always be regarded as the most favourable in regard to the preservation of all types of buried archaeology.[231]

Site preservation underground is also facilitated by non-destructive surveys involved in archaeological studies. These permit interpretation of evidence, planning of activities, and site monitoring.[232] Geophysical prospecting, aerial photography, field walking, and desk-based research are some of the most widespread archaeological non-destructive study techniques.[233]

Aerial photography and photogrammetry prevent loss of information about sites. From its earlier use from balloons above Stonehenge in 1906,[234] aerial photography has contributed to the mapping of entire landscapes.[235] It is informative on the distribution, typology and area of buried and excavated sites, thus helping their monitoring and conservation.[236] Photogrammetry has been used since the nineteenth century to document the condition of archaeological monuments and to reduce field survey time.[237] Being hardly feasible in urgent cases and in areas with dense vegetation,[238] nowadays aerial photogrammetry is complemented or replaced by aircraft-mounted lasers (Airborne Laser Scanning, ALS).[239] Laser scanning of large territories is cost-effective and provides for high-quality imaging.[240] Along with geoelectric surveys, magnetometry, radars and satellite photography, it has been successfully used to identify archaeological structures.[241] The combination of laser scanning and 3D modelling has contributed to the mapping, recording, and analyses of monuments.[242] Geophysical methods and remote sensing have offered numerous technologies to identify and characterise submerged archaeological structures too. Among these are Acoustic Tracking, Sidescan Sonar, Echo sounders, Sub-Bottom Profiler (SBP), Underwater Drop Cameras and Sleds, and Remote Operated Vehicles (ROVs).[243]

The combination of several geophysical techniques is advisable for the study of a site. This is dictated by the fact that the success of geophysics depends on soil typology, on the archaeological deposits, water content, climate conditions, vegetation type, budget and

time, and research objectives.[244]

North European countries lead the initiative of recording archaeological deposits by non-destructive imagery. The Netherlands and Bavaria have identified thousands of underground and underwater archaeological sites, mainly using non-destructive surveys. These have been digitised to inform land-users, forestry agencies and planners for the presence of deposits that need to be protected.[245] An initiative to identify and record the entire archaeological landscape by non-destructive means has recently been completed for Scotland[246] and has taken place across England and Wales by the Historic Environment Records (HERs) and the Welsh Government's historic environment service (Cadw).[247] Storage and retrieval of topographic data obtained by geophysical investigations and relevant to site management is provided by Geographic Information System (GIS).[248] Allowing data analysis by map overlapping, GIS traces changes to archaeological sites thus identifying potential hazards.[249] Its disadvantages are related to initial costs and lack of specialists.[250] Despite their indispensable use in the management of archaeological heritage, what still prevents the extensive use of advanced geophysics at a larger scale across the world is their cost, insufficient number of experts in many countries, and difficulties related to data processing.[251]

2.3.10 Reburials and Covers: The Alternative to Excavation?

Keeping archaeological deposits undisturbed is an alternative to heritage neglected after excavation. A reburial (backfilling) after study has also been widely advocated as such and has been practiced as a site preservation strategy since the rise of archaeology[252] (Fig. 20). The approach indeed has the potential to reduce the impact of some natural and human deteriorative factors after excavation.[253] Its development has been traced by Roby.[254] According to Roby, Mora – chief conservator at the Istituto Centrale del Restauro in Rome in the second half of the twentieth century – first proposed reburials in which specific fills and plastic nets were used.[255] Years later, the Getty Conservation Institute developed criteria for choice of reburial materials and designs.[256]

The most often used fills in reburials are sand and the soil that covered the remains before their excavation.[257] Others include tuff, perlite, vermiculite, bentonite and fired-clay pellets.[258] Separation layers in reburials are used for filtration and erosion control, for

Fig. 20 Reburial of tile floor with exposed sections for monitoring at the Royal Palace of the Alcáçova, Lisbon, Portugal

cushioning and soil reinforcement, as barriers to vegetation,[259] and as horizon markers.[260] Most often, these are plastic nets, synthetic fabrics, and geosynthetics.[261] (Fig. 21 – 24). In the practice of reburial, many of these have been found unsuitable and their use as separation layers is no more advisable.[262] Such are polyethylene and various geosynthetics contributing to the retention of water in layers of the reburial, thus favouring biodeterioration and salt efflorescence on the surface of the re-covered remains[263] (Fig. 25). Geotextiles containing natural fibres have been found to influence the preservation potential of soils, affecting their biological properties.[264]

Studies report that some geotextiles placed directly on the reburied archaeological items tend to cause stains or to stick, becoming difficult or impossible to remove.[265] A recent case in Manching, Bavaria, indeed demonstrated that when required, geotextile removal can be problematic, time-consuming effort. The case involved removal of top soil and geotextile laid in 2010 as part of the excavation project Gasleitung der Stadtwerke Ingolstadt. Agglutinated to the soil, the geotextile sheet proved impossible to be cut or removed by an excavation machine. Its manual removal was therefore required.

Fig. 21 – 24 Temporary and permanent erosion control nets (upper right), synthetic fabrics (upper left) and geotextiles (lower left and right) used in slope stabilisation and site reburial

Post-reburial deterioration of archaeological structures is also related to increased weight that may compromise fragile deposits, material compaction and erosion, and development of insect activity.[266] According to their design, reburials may not be able to protect from wave action and erosion, when used underwater.[267] Other reburial disadvantages are related to the fact that archaeological remains become inaccessible if not complemented with interpretation. [268] The method has as well raised questions about the use of non-biodegradable materials that contribute to environmental pollution.[269] Studies conclude that while reburials aim to stabilise the state of excavated remains, they are not able to mitigate all effects of excavation, such as thermal shock and rapid drying.[270]

Fig. 25 Post-reburial deterioration of archaeological remains induced by the use of polyethylene, Zusmarshausen, Germany. Photo: T. Riegg, ProArch GmbH. Courtesy of the Bayerisches Landesamt für Denkmalpflege

A neglected field is the re-excavation of reburials to monitor the environment they establish [271] (Fig. 26). Rare monitoring cases can be found in the USA, England, Turkmenistan and Tanzania, mostly performed by the GCI and HE.[272] The results from the studies conclude that the original burial environment cannot be recreated due to the influence of excavation and reburial to the chemical, physical and biological properties of the environment. Whether a reburial will impose new risks to the covered remains depends on the properties of its materials, on its planning, design, implementation, monitoring and maintenance. Fills and separation layers should provide liquid and water vapour transport, thermal insulation, chemical stability, light weight, low maintenance requirements, and reversibility.[273] The depth of a reburial must be compliant with its duration, while its materials should be chosen against a wide range of ethical, environmental and functional criteria.[274] Given the alteration to the values of a place when reburied, re-covering has been advised after consideration of alternatives.[275]

In Germany, the notion of *konservatorische Überdeckung* describes either the reburial of already excavated features, or an additional cover above identified but undisturbed archaeological layers. In the second case, the cover may consist of a layer or layers of soil,

sand, or gravel put on the top of the soil containing archaeology. Covering is often practiced in Bavaria on terrains containing archaeological remains that are to be used for modern development.[276] It aims reducing the interference between the new construction and the archaeological layers. It has been found that preserving a site *in situ* with the addition of a cover is less expensive than a total excavation and related to it material studies, conservation, and long-term storage. [277] In Bavaria, as in Britain, when modern constructions are to be built on archaeological terrains, geotextiles are often used in covers. Their application is usually coordinated with the archaeologist and the civil engineer involved in the development project.[278]

Fig. 26 An inspection of the effects of a long-term, maintained reburial at the World Heritage Site of Nea Paphos, Cyprus in which a synthetic fabric was used

Like the monitoring of reburials, studies on the effects of covers are very scarce and cannot be regarded as a conclusive proof for the general benefits or disadvantages of covers.[279] To effectively research covers' preservation potential and long-term effects to archaeology, purposeful site monitoring is required. The Early Medieval cemetery at Ehingen am Ries

in Bavaria provides a convenient case where a long-term site monitoring can be carried out.*

In August 2009, an Early Medieval cemetery dated to AD 500 – 750, located on a private terrain, was partially covered to permit the construction of a biogas power plant (Fig. 27).

Fig. 27 The terrain in Ehingen am Ries before its partial excavation and covering in 2009. Photo: J. Druckenmüller, KANT Archäologie GmbH. Courtesy of the Bayerisches Landesamt für Denkmalpflege

Only several graves which would have been affected by the new construction were excavated (Fig. 28). All retrieved finds are currently accessible in storage. The rest of the graves were localised by removal of the top soil but remained undisturbed (Fig. 29). Their preservation *in situ* was aided by a cover consisted of soil, a geotextile sheet, a 15 cm layer of sand, and a 40 – 50 cm layer of gravel (Fig. 30). Geotextile was used to increase the bearing capacity of the soil, as mentioned in site's excavation documentation. The decision

* The concept to monitor the site belongs to Dr. Jochen Haberstroh, Deputy-Head of the Archaeological Preservation Department, Bayerisches Landesamt für Denkmalpflege. The information concerning the past events taken place at the site was kindly provided in written form and in a personal communication in June 2015 by Dr. Haberstroh.

to cover the unexcavated graves was a result of a compromise, evaluated along with total excavation of the cemetery, and a forbid of the new construction.

Fig. 28 (left) and 29 (right) Excavated and non-excavated graves at Ehingen am Ries. Photos: J. Druckenmüller, KANT Archäologie GmbH. Courtesy of the Bayerisches Landesamt für Denkmalpflege

Since 2009, the cover has not been maintained or monitored by any means. Three alternatives could have resulted from its introduction. The first option is that the burial environment at the depth of the graves remained unchanged. As the original burial media was preserved without greater alterations, this is a likely possibility. In addition, deep archaeological layers should not be influenced by the properties of covers placed at a sufficient height above them.[280] Layers located directly under the cover, however, could have experienced change, such as desiccation.

The preservation properties of the burial environment in the covered area might have as well improved. This would be possible if the cover acted as an oxygen barrier. In the covered sections of the site, slowed soil erosion rates can as well be expected.

The third option is that the burial environment changed in a negative way. Possible issue might be the reduction of water content in the soil if the used geotextile is water impermeable or has a reduced hydrostatic pressure. If the cover triggered soil desiccation, altered corrosion and deterioration rates of buried organics and inorganics can be expected. Changed oxygen level in the soil under the cover would influence the microbiological properties of the media, favouring the development of microorganisms that can be affective to some organic materials.[281] Until begin of a monitoring, these options will continue to be equally likely.

Fig. 30 Stratigraphy of the cover introduced over one section of the site of Ehingen am Ries – soil, geotextile, sand and gravel. A section of the power plant is under construction. Photo: J. Druckenmüller, KANT Archäologie GmbH. Courtesy of the Bayerisches Landesamt für Denkmalpflege

The site presents a valuable opportunity not only to investigate the long-term effects of covers, but the effects of biogas production to buried archaeology too. These are generally unknown. The cover was implemented without evaluating any specific risks associated with the operation of the new construction. These range from risks of fire to increased humidity related to possible firefighting.[282] Soil contamination could follow as a result of

underground pipe fracture and spill of raw waste. As the cover was not specifically designed according the case, its properties may not be suitable to protect against these highly specific risks. Of concern are the chemical and physical properties of the used geotextile. These are vapour transport ability, temperature of melting, fire resistance, durability, puncture-tear resistance, tensile strength, chemical stability, and chemical filtering potential.[283] Effects of pressure from the additional weight of the power plant are possible. Material compaction of the cover is also likely.

If a site monitoring is ever established, it should follow the principles of monitoring campaigns executed elsewhere.[284] To evaluate the influence of the cover to the soil parameters, and respectively – to the buried archaeology, the monitoring should include[285]:

- Small-scale re-excavations;
- Repeated sampling of soil at fixed locations;
- Retrieval and investigation of dendroarchaelogical, paleobothanical, anthropological, and archaeological materials from covered and non-covered areas, and
- Burial and re-excavation of new items, comparable in technology and typology to the original ones.

Soil augering and a consecutive sample investigation will cut expenses for *in situ* monitoring equipment. Being re-excavated in all stages of the program, trenches will enable observation of buried remains. As original items need to be re-assessed during the entire program, the monitoring should include burial of new objects that can be used for laboratory investigations.

What weakens this potential project are the available mitigation strategies if a negative change of the burial environment is detected.[286] The cover cannot be removed, nor could land use changes be introduced. The monitoring data will not be therefore used to solve the issues at the site. It will be of use for the management of other archaeological sites in future.

Another possible obstacle for the implementation of the project is the agreement of the operator of the power plant. As the terrain is private, its long-term availability for study is questionable upon possible change of owners. If a long-term monitoring takes place, changes may occur due to new research agendas, the availability of the site for research, or technical development. The project will as well require a long-term institutional and individual commitment.

On the other hand, the need for a greater understanding of the influence of the burial environment on the condition of archaeology has been recognised elsewhere.[287] Given the rate of use of covers at archaeological sites in Bavaria, the understanding of their effects is imperative. This conceivable future case study can impact the scientific field by engaging with the advantages and the disadvantages of covering archaeological sites. It can additionally contribute to the investigation of the behaviour of geotextiles in buried conditions – an area with insufficient knowledge. Information retrieved during the project can advise other stakeholders or institutions.

The project will permit the monitoring of various materials and objects. Metal weapons, ceramic vessels, wood, bones, horn, amber, glass beads, and leather and textile rests associated with weapon scabbards were discovered in the excavated graves. Most probably, similar objects form part of the inventory of the unexcavated graves. Part of the cemetery lies in the neighbouring terrain. If required, comparison of the condition of archaeological objects in the different sections of the site is therefore possible.

The informational value of the project can be increased by tracing the use of fertilisers and the ploughing deepness at the neighbouring terrain. A possible sediment displacement as a result of the construction of the power plant can as well be researched. Such studies are extremely rare,[288] despite the availability of simple and inexpensive techniques to trace lateral soil displacement.[289]

The program might also identify changes in the burial conditions resulting from climate change patterns, if a monitoring of 50 years or longer takes place. If established, the case will illustrate how stakeholder cooperation can benefit the long-term site management.

The cemetery at Ehingen am Ries shares a common problematic with numerous other archaeological sites across the world. Covers and reburials isolate archaeological layers and permit the modern use of terrains. They aid site preservation with minimal resources and significantly decrease the harsh consequences of erosion and neglect. Yet the risk-preventive potential of covers and reburials depends on their design and particularities. Their design should be reversible, planned and executed as case-specific, and permitting monitoring and management. Soil properties should be assessed before interfering with a site to understand their change upon alteration.

When considering a reburial or a cover, attention should be paid to the use of geosynthetics, in particular those of geotextiles. These have been developed for the civil engineering field and not for archaeological conservation.[290] Their type, properties and influences are variable. Therefore, the use of geotextiles may not be appropriate at every site and must be

weighed against alternatives. If the buried items are largely stable, the soil is not aggressive, and the site does not need specific protection against deep-root vegetation or erosion, a geotextile avoidance should be considered. Attention must be payed when using locally available and cheaper materials, as these may not provide optimal preservation conditions.

♦

General conclusions can be drawn from this state of the art. Risks threaten archaeological sites throughout their entire existence, regardless of whether archaeological layers are undisturbed or excavated, managed or not. Three time frames in the 'life' of an archaeological site can be differentiated – the period in which a site is buried, the excavation, and the time after the archaeological research. Risks to buried remains arise through human activity and the change of the burial environment induced by people or nature. Destructive study can introduce a chain of risks, such as:

- Risks of mechanical damages during the archaeological prospection;
- Risks from the use of archaeological terrains for infrastructure development;
- Risks related to the material exposure to a new environment – shrinkage, breaking, cracking, flaking, disintegration, colour fading, biological infestation, etc.;
- Risks related to improper treatment of recently excavated materials – irreversible consolidation, inadequate packaging favouring biodeterioration, etc.;
- Risks related to the omission of factors, relevant for the post-excavation fate of the site. On many occasions, such omissions result from the urgency to excavate a site;
- Risk of loss of original evidence due to inadequate study and documentation;
- Risks related to inappropriate site reburial.

The post-excavation phase may be characterised by one or more perils:

- Damage of excavated materials during transportation to storage or conservation premises;
- Delay of conservation of the excavated features;
- Improper storage of retrieved objects;

- Improper conservation treatment of excavated resources preserved *in situ*;
- Misevaluation of factors affecting the site;
- Site neglect and abandonment;
- Tourism development at fragile archaeological remains;
- Cuts in budgets for site conservation and maintenance;
- Land use;
- Natural disturbances and human acts to exposed archaeological layers;
- Misevaluation of the site significance.

The more people interact with a site, the higher the risk of deterioration and damage. Compared to excavated remains, buried archaeological layers are exposed to much fewer threats. After archaeological research, the danger of losing original evidence rises, as risks related to erosion and inappropriate management are amplified. The excavation itself introduces risks, if not well planned and executed. Planning and stakeholder communication have greatest chance to prevent some perils if involved prior any intervention with the site and its context. This helps to evaluate all factors that may introduce risks to sites and to plan accordingly.

But the controllability and the preventability of many risks to archaeological deposits depend not only on planning. They also depend on the nature of the hazards that induce them.[291] Some types of intentional damage or risks resulting from the negligence of people can be prevented by improved managerial and legal policies. In isolated cases, certain natural hazards can be impeded through barriers. Yet in general, the natural environment cannot be controlled, nor could social conflicts be avoided. Loss resulting from war or vandalism, especially vandalism to isolated and hardly to monitor sites, is inevitable. The consequences of other hazards, such as pollution and climate change, can be reduced through cooperation or political initiatives at a local, national or international level.

Loss due to modern development is particularly challenging. Some damage can be avoided by on-time stakeholder communication, planning, zoning, and building control. But in a picture of destroyed memories of the past, ‘development’ could hardly mean spiritual or social advancement. Does deliberately destroying the physical remains of the past means that cultural identity is valued less and less for the sake of modern needs? The answer seems to be bound with the place that history and culture have in the life of people. Development and land use projects in which archaeology is affected are also often dictated by political and financial interests that are hard to challenge. Modern development, on the other hand,

often aims to make places more attractive to communities. Some contemporary projects may result the cultural heritage of the future societies. In that respect, development cannot be banned. There is, however, a need to progress in a way that respects old values.

When it comes to development projects, specific risks associated with modern constructions should be evaluated prior building over a site. In complicated cases, significant research time may need to be devoted for this objective. Specialist opinion about risks related to certain constructions and their exploitation can be obtained, regardless of whether it is provided in an official manner. Still, foreseeing risks or establishing their level can be difficult or impossible. In cases in which risk is unknown, terrain zoning can help to avoid or to minimise its level upon an event.

Tourism at archaeological sites is largely apprehended by conservators as hazard. Yet it contributes to the appreciation and the understanding of past cultures by communities. Closing a site for visitation because of preservation needs can as well be contradictory. It aims to save the site for future generations but deprives current ones from the rights to visit it. If places cannot be enjoyed, the values of closed sites for the current public is questionable. It is rather the wrong type of visitor management to be corrected when a site is damaged due to excessive visitation.

Keeping sites underground can indeed prevent many risks resulting from excavation and following improper management. But when the *in situ* material is sheltered or reburied to prevent neglect and subsequent erosion, arises the need to investigate the preservation potential of either of the approaches. The covering of archaeological deposits, regardless of whether it is executed before or after their study, helps to balance stakeholder interests and site preservation needs. Nevertheless, covers and reburials cannot ensure an environment in which the archaeological material remains protected by every hazard. Classified as *"experiments"*,[292] reburials should be implemented according to the specifics of sites and their environmental and management contexts. As the research on the appropriateness of the use of geotextiles in covers and reburials is inconclusive, their general behaviour should be further investigated through purposeful monitoring.

People are rightly regarded as a bigger threat to archaeological sites than the nature. The worst kind of a site destruction is not the one caused by an earthquake or a volcanic eruption. It is the intentional destruction by vandalism, war and neglect. Although the deterioration of the heritage fabric *in situ* is inevitable,[293] neglected excavated ruins are a symptom of management deficiencies. The thesis that neglect and following damage happens because of lacking resources for preservation reflects existing local management

challenges. Yet the true reason for a neglected archaeological monument is not the absence of means for its preservation. If scarce finances were to be blamed, the safeguard of archaeological sites would have been an issue in certain parts of the world only. Sometimes, it is the priorities in national politics to blame, if they do not support effectively cultural preservation. The question of safeguard of a given site is not a matter of costs. It is a matter of professional ethics, mentality and understanding the importance of the past for the present and for the future. It depends on planed work. The question of preservation or destruction of archaeological sites is a matter of social priorities and dialogue.

What ensures a future to the common archaeological heritage is a question with many possible answers. Keeping it instead of losing it, 'making it last' can be expressed by a remedy, such as the renewal of the eroded material at the base of the Great Sphinx of Giza, or by acting after the damage had already occurred – such as the closure of the Altamira cave to the public. By avoiding deterioration in first place – such as prohibitive policies, or by preparing for the worst, exemplified by the construction of protective barriers. There is no 'best' approach valid for all cases. The 'most appropriate preservation method' is a concept, differing for every single different archaeological site. But there are basic preservation principles valid for all archaeological remains in the world, regardless of their location, condition and threats. These safeguard basics are all indirect – do not interfere with the ancient fabric itself. Compared to remedies taking place after deterioration, these basics of site protection are risk-preventive, and, in most cases, their implementation does not lead to the introduction of new threats in future. These are:

- Avoiding interaction with the material of concern;
- Careful assessments and planning in cases of interference with the site or its surroundings;
- Strong protective legislation, and
- Sensitive management mirroring the postulates of the international documents engaged with site safeguard.

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Chapter 3

With *"an Eminently Cultural Purpose"*: The History of Site Preservation and Management

The history of preservation of archaeological remains started long ago and continues to develop nowadays. But one thing remains unaltered – the attitude toward monuments has always depended on the way they were appreciated. Higher significance guarantees attention. In mid and late nineteenth century, two opposing philosophies dominated the safeguard of archaeological sites – restoration and anti-restoration. In the twentieth century, a number of international charters and conventions paved the way for an interdisciplinary, well-thought approaches to preservation, respecting the specifics and the authenticity of every monument. In the recent decades, the need of a careful management planning has arisen, to ensure a sustainable current and future site management.[1]

3.1 Historical Notes on the Preservation of Archaeological Sites

According to Brown, the realisation of the significance of historic monuments for modern societies prompted for a development of a site preservation philosophy. [2] Recounting the study of the remains of ancient Rome during the Renaissance, Brown concludes that the value of a monument comes from the realisation that *"in the nature of things old work cannot be reproduced"*.[3] Judging archaeological sites according to their unique specifics, Brown discusses the role of the state, the private owner, and the public in monument preservation. The primary obligation of the state is found to be in the drafting

of strong protective national legislation. Private owners are regarded as having the ultimate word in ensuring proper attitude to the monuments in their lands. The public is described as the final arbiter on the matters of monument preservation.[4] The only danger in this thesis is in the fact that laymen might not recognise or respect heritage values.

But monuments of the past were valued and cared for not only by modern societies. There is a broad level of agreement that the concept of care to historic buildings dates back centuries ago, as examples for it have been found in Ancient Egypt, Rome and Greece.[5] The first applications of *protective* practices to build heritage are traced by Koller[6] and Staniforth.[7] In his paper *Learning from the history of preventive conservation*,[8] Koller revises planning, construction and maintenance practices preventing risks to the stable condition of historic edifices. Investigating Alberti and Vitruvius' texts on architecture, he differentiates between passive and active care for buildings.[9] Climate control, moisture barriers, building location, and quality of building materials are regarded as passive risk preventive measures. Active care anticipating and preventing undesired events is bound with regular monitoring, maintenance, and renewal of protective layers.[10]

Active and passive care are indeed at the base of the two main philosophies in the preservation of historic monuments throughout the last two centuries – restoration and anti-restoration.[11] The collision of their principles is discussed in the Getty Conservation Institute's publication *Historical and philosophical issues in the conservation of cultural heritage*.[12] The anti-restoration movement in mid and late nineteenth century was led by John Ruskin[13], Alois Riegl[14] and William Morris.[15] Ruskin and the Manifest of the Society for the Protection of Ancient Buildings from 1877 advocated for maintenance of historic buildings as a way to avoid falsifying restoration.[16] Thus they influenced the modern conservation theory and practice,[17] where regular care and conservation are regarded as the only approaches preserving authenticity.[18]

The principles of the French architect Eugène Emmanuel Viollet-le-Duc collided with the doctrine of the anti-restoration.[19] Le-Duc's monument restoration mixed authentic elements with hypothetical additions and fantasy.[20] He argued for a restoration of historic buildings as re-establishment of their *"finished state, which may in fact never have existed"*.[21]

The dogmatic nature of both philosophies in their pure form has been recognised elsewhere. While imaginative restoration erases the authentic character of a place,[22] the avoidance of any intervention to the ancient fabric has been criticised as being of little use in practical terms.[23] Remedies are unavoidable when deterioration cannot be ceased.[24] The need for the interaction with the authentic fabric should, therefore, be accepted, along with the risks that

come with it. To prevent negative change to the values of archaeological monuments induced by a treatment, wise planning and judgement, and control of remedies is required.[25] No matter the chosen safeguard philosophy – active or passive, significance always played a role in the decision to preserve a monument. Likewise, it was of major importance to that of movable items too. The life-line of objects of value was extended through regular care, including treating dust, pests, humidity, light, fire and abrasion.[26] Housekeeping – the practical care for buildings and valuable items in houses, libraries, cathedrals, and cabinets of curiosities, was introduced in England in the sixteenth century.[27] Strong parallels can be drawn between the objectives and the means of housekeeping and preventive conservation in museums. This branch of conservation relies exactly on the avoidance and treatment of risk factors to ensure that museum collections are saved for the future. But for a long time, the principles of prevention were obscured by the domination of remedies following the development of conservation materials and techniques from the late eighteenth to the late twentieth century.[28] Yet this dominance was questioned with the realisation of the risks that come with an intervention. The preoccupation about the safeguard of authenticity and material reversibility shifted once more the theory of conservation toward minimal intervention from the 1970s onwards.[29]

It is not clear when exactly the term *preventive conservation* emerged for the first time. According to de Guichen, the distinction between curative and preventive conservation was introduced in the museum practice in the late 1970s through the 1980s.[30] The contributions to the 1994 International Institute of Conservation (IIC) Congress in Ottawa – *Preventive conservation: Practice, theory and research*[31] - involved for the first time with the ethics, theory,[32] and history of preventive conservation,[33] to its practical aspects. This was the first publication entirely dedicated to preventive conservation in museums, churches, historic houses, and archaeological sites of closed type where environmental control is possible. Learning from past experiences and integrating them into the modern heritage management to reduce the overall risk to collections and sites was an important conclusion from the 1994 congress.[34] With time, preventive conservation became routinely established in museum practices.[35] Nowadays, it strongly influences the preservation of historic interiors,[36] but has not impacted much archaeological site preservation where remedies and management reactiveness predominate.

3.2 International Documents on the Aspects of Safeguard of Archaeological Sites

The principles of preservation and management of archaeological sites are outlined in several international charters and conventions drafted by the United Nations Educational, Scientific and Cultural Organisation (UNESCO), ICOMOS, and the Council of Europe. The most important and influential of those documents summarised elsewhere[37] engage with the ethics and the methodologies of interventions to immovable historical property.

The Athens Charter for the Restoration of Historic Monuments[38] established the theory of interdisciplinary approaches to site preservation.[39] As early as the 1930s, the document identified pollution as a major hazard to ancient monuments.[40] It recommended site preservation in burial conditions as opposed to the risks arising by excavation.[41]

International cooperation as a prerequisite for success in the safeguard of archaeological heritage was brought forward in the UNESCO Recommendation on International Principles Applicable to Archaeological Excavations, adopted in 1956.[42] The document focused on the regulations of the archaeological excavation, considering archaeologists' obligations to protect the excavated materials during *and after* research.[43] It took into account the challenges related to the need of management of excavated sites.[44]

The joint responsibility to preserve site values was also recognised by the ICOMOS 1964 International Charter for the Conservation and Restoration of Monuments and Sites[45] (see Appendix I). The charter defined restoration as applicable to ancient sites only if distinguishable from the original and encouraged the use of *anastylosis* to reconstruct ancient sites.[46] It furthermore considered the permanent maintenance of monuments as essential to their safeguard and encouraged site preservation *in situ*.[47] The document defined relocation and material consolidation as applicable only if site preservation cannot be guaranteed otherwise.[48]

The Convention Concerning the Protection of the World Cultural and Natural Heritage[49] focused on the management of historical and natural properties inscribed in the World Heritage List. Introducing the term Outstanding Universal Value in regard to the unique and irreplaceable characteristics of protected places, the document recognised the role of economic and social factors for the loss of heritage.[50]

In 1975, The European Charter of the Architectural Heritage[51] identified that built heritage is in danger of ignorance, obsolescence and neglect, ill-considered restoration, and land

use. It underlined that *"urban planning can be destructive when authorities yield too readily to economic pressures."*[52] The document advocated for integrated site conservation *in situ*, regardless the significance of sites.[53]

Australia ICOMOS Charter for Places of Cultural Significance from 1979[54] (see Appendix III) dealt specifically with issues in the preservation of the cultural heritage of indigenous groups. Being explicitly focused on the need to preserve all values of a place along with its material, the charter is regarded as fundamental in the conservation field. After a revision in 1999, it introduced the term *cultural significance* for places[55]:

> *"aesthetic, historic, scientific, social or spiritual value for past, present or future generations /.../ embodied in the place itself, its fabric, setting, use, associations, meanings, records, related places and related objects. Places may have a range of values for different individuals or groups."*[56]

The necessity to integrate the protection of archaeological heritage and urban planning was also commented in the Convention for the Protection of the Architectural Heritage of Europe from 1985.[57] The convention described monument safeguard as having *"an eminently cultural purpose"*.[58] It discussed the role of national legislation in the preservation of historic sites, and recognised the rights of communities in regard to ownership over historic assets.[59] The document emphasised on the need to promote heritage values among the public[60] – an issue later outlined in the Verona Charter[61] from 1997 as well.

The ICOMOS Charter for the Protection and Management of the Archaeological Heritage from 1990[62] (see Appendix II) referred explicitly to the joint responsibility to protect archaeological values.[63] Considering the limited resources with which site management operates, the document suggested the regular maintenance of monuments, regardless of their significance.[64]

The Valetta Treaty from 1992[65] stressed the importance of national cultural policies and administrative measures for the physical preservation of sites after their excavation, preferably *in situ*.[66] Resources for site management are specified as a prerequisite for excavation:

> *"Each party undertakes measures that /.../ the elements of the archaeological heritage are not uncovered or left exposed during or after excavation without provision being made for their proper preservation, conservation and management."*[67]

The Nara Document on Authenticity[68] accepted the growing importance of safeguarding the diversity of cultural heritage in a globalised world.[69] Placing authenticity at the centre of all heritage values, the document advised for the preservation of the genuine components of historic monuments in their cultural context.[70]

The contemporary use of archaeological sites is addressed by the Verona Charter on the Use of Ancient Places of Performance.[71] The document balanced between the issues resulting from site use against the rights of the public. It provided practical recommendations for a better visitor experience during performances, while preserving the authenticity and the condition of monuments.[72] Along with that, it argued for public awareness-raising about the general vulnerabilities of archaeological sites.[73]

All mentioned charters and recommendations emphasise on the fragile and non-renewable nature of archaeological sites. Discussing the ethics of interventions, they argue for integral site management, passing on *"to the future generations built heritage in its authentic state /.../ as an essential part of the memory of the human race".*[74] The main instrument for heritage protection is identified to be the integration of that very same heritage in communities' lives. Yet charters' postulates are hardily applicable in practice because of setting ideal standards, providing little guidance how these can be practically achieved. Apart from the danger that international charters may not be well transposed into national laws, they are often disregarded in times of conflicts, and have been found open for judicial interpretations.[75] Even the management of World Heritage Sites, recognised as belonging to all humankind, is in national authorities' hands. While charters focus on the general issues in the field, national laws are those that respond to the specific challenges met by archaeological sites in a variable local reality. Therefore, the beneficiary role of the international documents is to provide frames for the national heritage management legislation.

3.3 Management of Archaeological Sites

The need for management of archaeological monuments came with the recognition of their significance and vulnerability.[76] Britain's tradition of archaeological resource management dates back to the Tudor times, thus being one of the oldest existing.[77] The interest to study and protect archaeological sites had arisen significantly with the discovery

of Herculaneum and Pompeii in the eighteenth century,[78] but the expansion of the discipline worldwide occurred not earlier than the 1970s.[79] Site management differs in international context,[80] influenced by site typology, location, hazards, condition, cultural traditions and significance.[81] The values of a place usually play a significant part in forming governance concepts.[82]

Management of archaeological sites is the expression of care to the monuments of the past.[83] However, not every type of management could be classified as sensitive enough to prevent risks.[84] For that reason, management cannot be viewed as synonymous to preventive conservation.

The International Scientific Committee on Archaeological Heritage Management (ICAHM) defines archaeological heritage management as the *"protection and administration of archaeological heritage in its original environment and in its relationship to history and contemporary society."*[85] Management of archaeological sites is the governance and the administration of all issues and processes taking place at sites or influencing them. As such, it includes the study, documentation, identification, conservation, visitation, staffing, funding, maintenance, and the legal protection of sites.[86] Stakeholder communication, land use regulations, infrastructure development, public services, awareness-raising, and decision-making are as well covered by site management.[87] Site managers are often professionals from the fields of history, archaeology, conservation and architecture. It is believed, that these had received the knowledge and the experience to govern places of archaeological significance.[88] Yet considering that people with humanistic background are rarely educated in the economic and legislative issues affecting archaeological sites, site managers have often been found ill-prepared for the complexity of the discipline.[89]

Site management bodies operating internationally are UNESCO, ICOMOS, the International Centre for the Study of the Preservation and Restoration of Cultural Property (ICCROM), and the GCI. Their most important function in that respect is to provide a discussion on the general issues faced by archaeological monuments and the ways to address them. The organisations drive the field of site management forward, developing guidelines for site preservation, capacity building, and supporting the conservation of heritage worldwide.[90] The Council of Europe operates on a regional scale across member states of the European Union. Its role is more of a funder of heritage conservation projects than a body providing guidance in management practice. National, federal, land, and non-governmental institutions administer archaeological remains in local contexts. Their

responsibilities may include the drafting and the enforcement of legislation, and the control of scientific and practical approaches to site study, conservation and use. Regional heritage management on a federal principle is for instance viewed as unable to influence political processes affecting the field and to provide unified governance policies.[91] On the other hand, centralised management is regarded as inflexible, hindering the inclusion of the public in heritage matters, and impotent to reflect changing social contexts.[92] It may as well be prone to corruption or to be highly bureaucratic.

The National Park Services in the USA, Historic England and the National Trust, the GCI, and the site management system in Sweden exemplify well-developed site administration. Their policies involve stakeholder collaboration, awareness-raising across heritage agencies and public, and long-term site preservation objectives.[93]

The Swedish archaeological heritage management relies on cooperation between the cultural sector and the agencies administering policies impacting the national patrimony. Among these are forestry, agriculture, housing, construction planning, environmental protection, and transport.[94] A long-term view for the fate of cultural resources through 'one-generation' protection strategies is expressed. Policies are employed, monitored, and evaluated in one-generation time. Efforts are put in the education of communities and in the improvement of institutional cooperation.[95]

The GCI collaborates with national authorities in various countries to establish long-term site management mechanisms. The management planning adopted by the organisation considers local legislation, preservation resources and stakeholder involvement. The GCI assists authorities by raising decision-makers' awareness to heritage issues, and by training local specialists.[96]

Historic England and the National Trust promote volunteering at archaeological sites to encourage the contact between people and places. Successful management formulas combine the expertise of teams of specialists in archaeology, conservation, arts and crafts, civil engineering, architecture, climatology, chemistry, physics, and site administration.[97]

The site management in England handles all ecological, social, political, and cultural issues affecting heritage places.[98] A division of the national territories on the basis of distinctive natural characteristics helps to identify the specific threats and needs of sites in the respective zones.[99] Management addresses matters related to:

- Zoning of protected areas where development is forbidden;
- Forbid of potentially risky activities on sites and in their buffer areas;
- Control of wildlife population;

- Construction of sea defence barriers for heritage in coastal areas;
- Resolving questions of ownership of archaeological heritage;
- Long-term site monitoring;
- Awareness-raising among land-owners and land-users;
- Tourism control policies;
- Designation of areas containing archaeological remains, including water reservoirs and their shorelines;
- Field and aerial surveys for site identification, recording, and mapping;
- Land use regulations, including fencing, vegetation maintenance, drainage, control of pests and ploughing;
- Environmental protection; and
- Educational initiatives.[100]

The English site management system exemplifies what a great proportion of the state administration contributes to the preservation of heritage assets. Both administrative bodies and laymen play their role, as site management depends on their collaboration. Administrators and managers enjoy public support expressed through finances, time, motivation, and acknowledgement. Volunteers receive personal satisfaction by caring for the national heritage. This well organised system relays on assessment of the threats to sites, rigid policies, institutional coordination, and management initiative. Site monitoring on public and private land facilitates management decisions. England can be also praised for the fact that its biggest site management institutions are non-governmental public bodies with own revenue.[101] Millions of members, thousands of volunteers and site visitors advise the management of the properties.[102, 103]

In the 1980s, England, Wales and Scotland, and in 1992 – Northern Ireland, introduced the Field Monuments Warden. These monitor the condition of monuments on private land and assist landowners in heritage preservation matters.[104] The approach resulted successful and cost-effective, as it led to awareness-raising among landowners, and to an improved monitoring and protection of monuments.[105] Ireland introduced the system in mid-2000s. Despite operating without a legal statute, it led to positive results even when small-scale treatment depended on the will and the finances of landlords.[106]

But institutional coordination and public participation are not the only aspects of a good site management. Sound legislation plays a vital part in the governance of archaeological sites. It defines the directions and scopes of the management and provides practical

mechanisms for it. The variable nature of threats influencing heritage places demands for interrelated legislation for effective protection. Except for cultural heritage laws, relevant are environmental laws, building codes and spatial acts. An example of a compound legislative system concerned with archaeological heritage is the one in Bavaria, summarised in the management plan of the UNESCO World Heritage Site Old Town of Regensburg with Stadtamhof.[107] In Bavaria, archaeological site management considers:

- International conventions – the World Heritage Convention, the Hague Convention from 1954, the Charter of Venice, the Valletta Treaty, the Lausanne Charter;
- German Federal Legislation – the Federal Building Code (2004), the Federal Law on Nature Conservation and Landscape Protection (2009), and more;
- State Legislation – the Bavarian Law for the Protection and Preservation of Monuments (1973), the Bavarian Building Regulations (2007);
- Local regulations (By-Laws) – Land Usage Plans, By-Law on Using Public Roads and Spaces in the City of Regensburg for Special Purposes (2000), etc.

This legislative system could be rather perplexing, but the main mechanisms of site protection at regional level are found in the Bavarian Law for the Protection and Preservation of Monuments.[108] In its essence, this act is based on detailed definitions what constitutes built and archaeological monuments, on restriction of treatment that can lead to their damage,[109] and on the requirement of permission to execute any work which could endanger cultural property. As such is classified any disturbance to historic buildings, archaeological terrains, and their adjacent territories, including excavation. Disturbance permission can be denied if this is necessary to protect the monuments.[110] Various obligations and rights of private owners of historic monuments complete the law.

Site management needs constant resources – time, finances, and staff. Still, in certain cases, the capacities of the management body, or the quality of legislation, may be more important for an effective management than finances. Pompeii is a good example in that respect. The site management is aided by national and international public and private funding for conservation, in addition to European funds and total return of entrance fees.[111] Regardless of this, legislative obstacles and time-consuming tenders have led to pending issues related to the appointment of maintenance and conservation staff – a situation in which available funding cannot be used on time.[112] But Pompeii is an exceptional case. The management of the most archaeological sites across the world is characterised by a shortage of funds.

When finances are sought for, public-private partnerships are often welcomed.[113] These, however, are viewed as sustainable only when private parties ensure management experience and trained staff in addition to the financial support.[114] One such example is the *Herculaneum Conservation Project*, funded and managed by the Packard Humanities Institute. The partnership contributes to the development of local capacity-building, permitting a successful site administration after the end of the project.[115] While private financing backed by governmental control is viewed as a *"win-win situation"*, [116] involvement of the private sector is also recognised as capable to lead to unethical or inappropriate interventions.[117] Privatisation of any part of the stewardship of archaeological sites is described as a *"market sale of cultural property"* – an escape of the state from its role of a steward of public values.[118] Privatised archaeological resources are under the risk of losing authenticity as a result of economic exploitation. [119] Arguing against total privatisation in which the interests of the owner are put above those of the site, Comer accents on the need of alternative involvement of the private sector – as seeking political support for heritage preservation.[120]

Value-based management (value-driven management) and total site privatisation are two types of site administration that can be opposed (Fig. 28 and 29). Total privatisation centralises power in the hands of one stakeholder. On the other hand, value-driven management identifies site values and seeks for a compromise management decision taken by all site stakeholders for mutual benefits.[121] This governance type has been developed and practiced since the 1980s by the GCI.[122] It has been widely recognised as sustainable given its holistic approach and long-term objectives.[123]

Value-driven management has, however, been criticised for the presumption that communication and consensus among site stakeholders is possible. Consensus is challenging given the different agendas, objectives and interests of stakeholders.[124] The model has been identified as non-applicable to certain types of heritage sites, where one of the site values (respectively – one stakeholder group) prevails over the others, influencing the management of the place.[125]

Site management does not stand chances of success if operating under inadequate legislation or in a highly bureaucratic climate.[126] Another prerequisite for management failure is the impossibility to distinguish between operational and strategic governance.[127] The first deals with daily issues, while the second provides for directions of development, integrating them into regional and national development plans.[128] There are many other issues making archaeological heritage management challenging. It must balance between

the needs of all interested parties influencing the survival of a given historic place. Along with this, the values of the place must be preserved in a manner corresponding to the established legislative frame. The four most important functions of the site management, brilliantly summarised by Cleere – cultural, educational, economic, and academic,[129] are usually performed with restricted resources. Therefore, prioritisation is required in every site management decision.

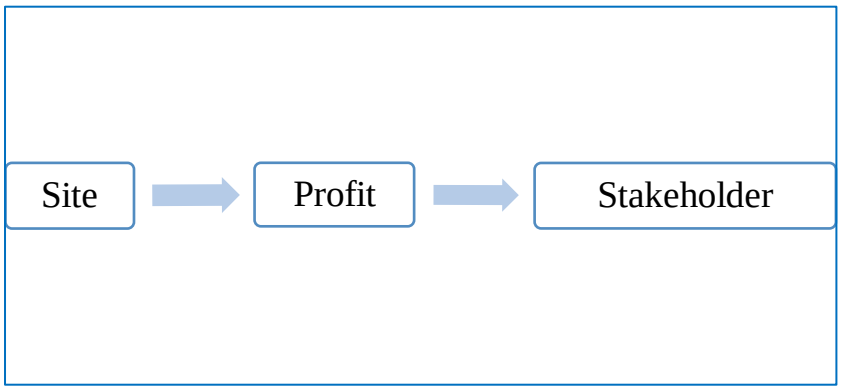

Fig. 31 Total site privatisation – the main stakeholder (site owner) profits from site use

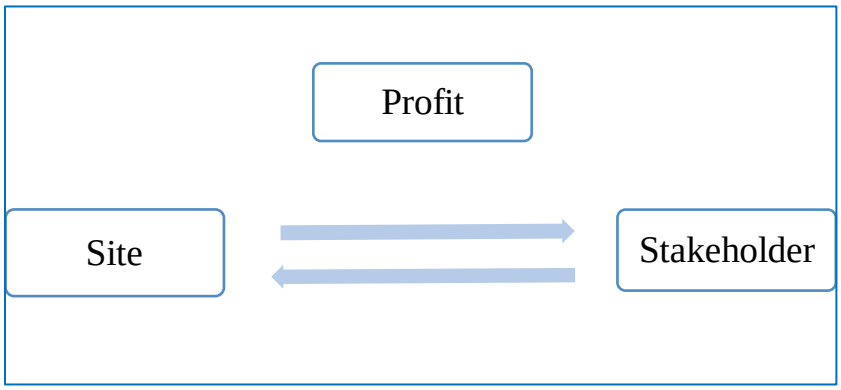

Fig. 32 Value-driven management – profit from site use is reinvested for site value maintenance

♦

It is surprising how the two, once opposing concepts of restoration and anti-restoration, respectively direct and indirect preservation approaches, can today be combined to contribute to a better, sustainable site safeguard. But although strongly advocated in the nineteenth century, the philosophy of anti-restoration has weaker positions in site management nowadays. On one hand, the predominance of invasive approaches is to some degree an expression of the reactiveness of many site management systems. The prevalence of interventions can be as well explained with their cost, which may be lower

than that of more expensive approaches having long-term, rather than short-term benefits. On the other hand, remedial treatments often follow because of otherwise uncontrollable processes affecting the archaeological fabric. As such, they are inevitable. Intervention is not necessarily bad if it is done in a sensitive way. But there is a need of a greater appreciation of the alternatives to the reactive approaches since remedies do not solve all challenges. This is exemplified in the numerous internationally valid documents that paved the way of the modern conservation theory. From the drafting of the Athens Charter onwards, these are less and less focused on interventions and their ethics. The latest charters and conventions advocate for a sensitive attitude to the irreplaceable characteristics of protected places, permanent monitoring and maintenance, and preservation of the authentic fabric in its context. These are all expressions of a much more apprehensive position regarding the needs of heritage and its stakeholders.

The former Director-General of ICCROM Stephano De Caro argued that *"cultural heritage preservation can be a catalyst for dialogue and peace",*[130] bringing the example of the architectural restoration of the European cultural landscapes after the World War II. Previously opposing sides collaborated for the cultural revival of Europe. Cultural experts should engage in a dialogue nowadays too, because communication is a substantial part of a sustainable site management. Positive examples demonstrate that a good site management also relies on professional interest and cooperation, purposeful funding, and regular investigation of deteriorative factors. Well functioning protective legislation and placing monuments in the centre of social life are other powerful methods of directing all processes affecting a certain place. In contrast, the shortcomings of many management systems are a result of legislative and operational imperfections, and insufficient stakeholder cooperation. As risks to sites result from environmental, economic, political and social processes, management must engage with the needs of the heritage and its stakeholders to prevent negative alteration. However, the fact that value-driven management is not being adopted on a larger scale draws the conclusion that people find it hard to address social phenomena affecting site preservation. This is as well valid for Bulgaria – a country whose archaeological heritage needs to be addressed in a way respecting old values and ensuring management benefiting sites, decision-makers, and public.

[1] Demas 2002: 27
[2] Brown 1905: 11
[3] Brown 1905: 53
[4] Brown 1905: 4; 31-33
[5] Brown 1905: 12; Caple 2011: 2-4; 14-15; Koller 1994: 1; Keck 1996: 281-282
[6] Koller 1994: 1-2
[7] Staniforth (ed.) 2013: xiv-xv
[8] Koller 1994
[9] Alberti 1485: in Orlandi and Portoghesi (eds.) 1966: 2-5; 13; Vitruvius: in Fensterbusch 1964: 4; 7; Koller 1994: 1-2
[10] Koller 1994: 1; 4-6
[11] Stanley-Price et al. (eds.) 1996: 308-322; Brown 1905: 46-57; Jokilehto 1999: 298; 315
[12] Stanley-Price et al. (eds.) 1996
[13] Ruskin 1849b: in Stanley-Price et al. (eds.) 1996: 322-323
[14] Riegl 1903: in Forster and Ghirardo 1982: 21-51
[15] Morris 1877: in Stanley-Price et al. (eds.) 1996: 308-309; 319-321
[16] Ruskin 1849a: in Staniforth (ed.) 2013: 2
[17] Jokilehto 1999: 315; 320
[18] Morris 1877: in Stanley-Price et al. (eds.) 1996: 319-321
[19] Stanley-Price et al. (eds.) 1996: 308-309; Petzet 2013: 13
[20] Thompson 1981: 18
[21] Stanley-Price et al. (eds.) 1996: 312
[22] Petzet 2013: 52; Petzet 2004: 10-11
[23] Carbonara 1976: in Stanley-Price et al. (eds.) 1996: 237-243
[24] van de Wetering 1989: 197
[25] Feilden 1982a: 24; Ashley-Smith 1999: 287
[26] Koller 1994: 1; Lambert 2010; Caple 2011: 5
[27] Lambert 2010; Staniforth (ed.) 2013: 33; Wirilander 2012: 168
[28] Koller 1994: 8; Stollow 1994: 116; Staniforth (ed.) 2013: xiv-xv
[29] Redondo 2008; Wirilander 2012: 169; Lambert 2010
[30] de Guichen 1999: 4
[31] Roy and Smith (eds.) 1994
[32] Clavir 1994: 53-57
[33] Koller 1994: 1-7
[34] Koller 1994: 6
[35] Burmester 2007: 2
[36] Historic England 2015b; Historic England 2017
[37] Demas 2003: 8-12; Matero 2006; 2008; Stubbs 2009; ICOMOS 2004; Wirilander 2012: 166; Liwieratos 2009: 21-22; Petzet 2013: 16-17; 20-40
[38] Athens Charter 1931
[39] Athens Charter 1931: General Principles V and VII; Conference Recommendation 1
[40] Athens Charter 1931: General Principle V
[41] Athens Charter 1931: Art. 4; Demas 2003: 9
[42] UNESCO 1956: Principles 15-18; ICOMOS Heritage at Risk 2001-2002
[43] UNESCO 1956: General Principles: points 4, 5 and 6
[44] UNESCO 1956: General Principles: points 4, 5 and 6
[45] ICOMOS 1964: Introduction
[46] ICOMOS 1964: Art. 15
[47] ICOMOS 1964: Art. 4 and 6
[48] ICOMOS 1964: Art. 7 and 8
[49] UNESCO 1972
[50] UNESCO 1972: Preamble
[51] Council of Europe 1975: Art. 1 and 6
[52] Council of Europe 1975: Principle 6
[53] Council of Europe 1975: Principles 1, 2 and 7
[54] ICOMOS Australia 1979; revised 1999
[55] Demas 2003: 10
[56] ICOMOS Australia 1979; revised 1999: Art. 1; Definition 1.2
[57] Council of Europe 1985: Art. 10.1

[58] Council of Europe 1985: Objectives of the Convention: point b
[59] Council of Europe 1985: Art. 3 and 4
[60] Council of Europe 1985: Art. 14 and 15
[61] Council of Europe 1997: Art. 2-3
[62] ICOMOS 1990
[63] ICOMOS Heritage at Risk 2001-2002; ICOMOS 1990: Art. 2, 4, 5, 6 and 8
[64] ICOMOS 1990: Art. 6
[65] Council of Europe 1992
[66] Council of Europe 1992: Art. 4
[67] Council of Europe 1992: Art. 3/ b
[68] ICOMOS 1994
[69] ICOMOS 1994: Principles 3 and 4
[70] ICOMOS 1994: Principles 4, 10, 12, 13; Demas 2003: 11
[71] Council of Europe 1997
[72] Council of Europe 1997: Appendix I, Point 1
[73] Council of Europe 1997: Art. III; Appendix I, Point 1, ii
[74] Council of Europe 1975: Art. 2
[75] Peek and Reye 2006
[76] Demas 2003: 4; Darvill 1987: 4; Kandulkova 2007: 4
[77] Darvill 1987: 3
[78] Brown 1905: 14-15; Kandulkova 2007: 4
[79] Cleere (ed.) 1989: 4-5; 15; Fagan 2003; Schaafsma 1989: 38
[80] Demas 2003: 5
[81] de la Torre (ed.) 1997: 12
[82] de la Torre and Mason 2002: 3
[83] Demas 2003: 4
[84] Oxley 2004: 72-73
[85] Biörnstad 1989: 72
[86] Sullivan 2010: 11; Cleere (ed.) 1989: 11; 24-26; 31; 72; 104; 136-140; Davis 1989: 276; Saunders 1989: 152-156; Alexander 1989; Demas 2003: 5
[87] Sullivan 2010: 11; Cleere (ed.) 1989: 11; 24-26; 31; 72; 104; 136-140; Davis 1989: 276; Saunders 1989: 152-156; Alexander 1989; Demas 2003: 5
[88] de la Torre and Mac Lean 1997: 13; Melucco Vaccaro 1999: 176-177; Saunders 1989: 160
[89] Sullivan 2010: 11; Matero 2006: 62; Cleere (ed.) 1989: 15; Saunders 1989: 161
[90] Demas 2002: 28; Avrami 2000; Palumbo et al. 2009: 340; 342; ICOMOS Heritage at Risk 2001-2002
[91] Römich 2002
[92] Liwieratos 2009: 84; 114
[93] Comer 2006b
[94] Europae Archaeologicae Consilium: Swedish archaeological heritage management system
[95] Gren and Norman 2010: 174
[96] Demas and Agnew (eds.) 2012: 1; Demas and Roby 2015
[97] Saunders 1989: 157
[98] Darvill 1987
[99] Darvill 1987: 31
[100] Darvill 1987: 49-50; 61-62; 89-91; 114-116; 130-132; 145-146; 161-163; Lee and Wilson 2004: 177
[101] Ryan 1969: x
[102] Historic England 2014
[103] The National Trust. "About us"
[104] Foley 2010: 87-88; Meenan 2010: 91
[105] Meenan 2010: 92-93; Foley 2010: 88-89
[106] Meenan 2010: 91-93
[107] UNESCO World Heritage Site "Old Town of Regensburg with Stadtamhof". Management Plan: 27
[108] Bavarian Law for the Protection and Preservation of Monuments 1973
[109] Bavarian Law for the Protection and Preservation of Monuments: Art. 4, Paragraph 4
[110] Bavarian Law for the Protection and Preservation of Monuments: Art. 10, Paragraph 1; Art. 7, Paragraphs 1, 2 and 4
[111] See Pompeii Sustainable Preservation Project and Grande Progetto Pompeii
[112] Discussions during the GCI course *Conservation and Management of Archaeological Sites with Mosaics* with Emanuela Santaniello, archaeologist, and Massimo Osanna, Director, Soprintendenza Speciale per i Beni Archeologici di Napoli e Pompei, Ercolano, September 2015

[113] Comer 2006b: 23
[114] Hadrill 2011: 28
[115] Jane Thompson, Project Manager, Herculaneum Conservation Project, Pers. Comm., September 2015
[116] van Oers 2009: 64
[117] Allsop 2012, in press
[118] Palumbo 2006: 35
[119] Palumbo 2006: 38
[120] Comer 2006b: 23; 28
[121] Demas 2002: 29; Castellanos 2002: 75; Mason et al. 2003: I
[122] Poulios 2010: 170; 172; Demas 2002: 29; Mason 2002; de la Torre (ed.) 2005; 2000: v
[123] Abungu 2006: 334; Brunning 2013; Charoenwongsa 2006: 40; Darvill 1987: 31
[124] Poulios 2010: 174-175; Simpson 2008: 10; Mason et al. 2003: I
[125] Poulios 2010: 170; 173
[126] Abungu 2006: 338; Trotzig 1989: 59; Sullivan 2010: 10; Liwieratos 2009: 114
[127] Liwieratos 2009: 115
[128] Abungu 2006: 338; Liwieratos 2009: 49; 113
[129] Cleere (ed.) 1989: 10
[130] De Caro 2016b

Chapter 4

The Good, the Bad and the Ugly: Site Management in Bulgaria

Bulgaria has a rich archaeological heritage from different historical periods. On the territory of the country, Prehistoric, Thracian, Greek, Roman, Thracian, Medieval, and Ottoman sites have been discovered. Their preservation status varies, because of natural, political and social processes that have an impact on the national heritage management agendas. Several Bulgarian sites have been included in the UNESCO World Heritage List and the UNESCO Tentative List decades ago, but a vast deal of the sites on national territory has not been studied. With their future research, the potential for acquiring knowledge on the course of history is great. But the preservation of that knowledge depends on the establishment of clear site identification, research and safeguard policies.

4.1 Development of Archaeological Site Management in Bulgaria

The development of archaeological site management in Bulgaria can be traced in publications of the National Academy of Arts[1] and the National Institute of Immovable Cultural Heritage (NIICH, formerly National Institute for the Monuments of Culture).[2] First attempts to preserve and popularise the national archaeological heritage have been made during the so-called Bulgarian Revival, lasting through the eighteenth – nineteenth century. This historical period ended with the liberation from Ottoman rule in 1878.[3] In 1911, the first law for protection of culturally significant monuments was drafted.[4] On its

basis, the institutions engaged with the management of the national archaeological monuments were developed.[5] After the Proclamation of Independency in 1908, the state encouraged excavation, the creation of museum collections, and the preservation of monuments through purposeful financing, training, and establishment of archaeological societies.[6] Archaeological monuments were perceived as emblems of national identity, significant for the self-affirmation of the nation after five hundred years under Ottoman rule.[7]

The conservation of archaeological monuments in the early twentieth century was undertaken by archaeologists, historians, and teachers.[8] After the World War I, site preservation activities acknowledged scientific standards, being executed by foreign specialists mostly.[9] In the period between the World Wars, the national archaeological heritage was systematically documented. The public interest in its preservation was a result of purposeful informational campaigns by the state and the local authorities.[10]

The national site management polices during the Communism regime (1946 – 1989) were characterised by systematic site registration, study, documentation, classification, and conservation.[11] These activities were heavily centralised. The institution that combined it – the National Institute of the Monuments of Culture (NIMC) – was established in 1957. Restored and partially reconstructed were the so-considered 'most important' archaeological sites – the Bulgarian medieval capitals and other sites, significant to the history of the nation.[12] This prioritisation was clearly linked to site significance, not to condition or vulnerability. The execution of massive reconstructions (Fig. 33) judged by present criteria as drastic to the character of places,[13] demonstrates that efforts were focused on site display, rather than on the understanding of deterioration mechanisms. Conservation education was initiated in 1972, after the inclusion of several Bulgarian monuments and sites in the UNESCO World Heritage List.[14] Nevertheless, since its establishment till nowadays, courses address the problematic of movable items predominantly. The conservation of immovable structures – historic and archaeological – is mainly addressed by architects.

Literature on the course of the field in the 1990s is scarce. A major economic and political crisis influenced the sector. The collapse of the existing political regime and the reorganisation of the state brought to vast cut-off of national subsidies for conservation.[15] The scientific approach to conservation was neglected to a point in which it began to be equated to craftsmanship.[16]

In more recent times, positive changes resulted from the improved financing of the sector

and training of conservators abroad.[17] Despite this positive turn, the current trend in the conservation practice in Bulgaria is still characterised with occasional material studies, and prioritisation of remedial, often unethical and irreversible interventions. Preventive conservation is hardly ever practiced in museums, let alone on historical and archaeological properties.

Fig. 33 Massive rebuilding of the Golden (Round) church at the archaeological site of Veliki Preslav, Bulgaria. Interventions of such type lack sensibility and completely obscure the survived original

4.2 Hazards to Archaeological Sites in Bulgaria

The archaeological heritage in Bulgaria faces no different challenges than sites elsewhere. The most reasons for its deterioration and loss are uncoordinated management and neglect after excavation [18] (Fig. 34). Demolition due to urbanisation, [19] treasure-hunting, [20] harsh environment [21] (Fig. 35), unsuitable shelters and enclosures, [22] earthquakes,[23] and deficit of resources for conservation[24] deepen the crisis. The *ICOMOS 2006 – 2007 Heritage at Risk report*[25] emphasised on the inability of the state to cope with the intentional destruction of archaeological and historical monuments in either private or

public possession. The unwillingness to enforce legal mechanisms upon violators of heritage is pointed out – an issue raising *"suspicions of corruption"*.

Heavy administrative procedures halt urgent conservation needs. Despite this, archaeological sites are being excavated on a mass basis.[26] Looting is often brought forward to justify large-scale excavations with heavy machinery.[27]

Fig. 34 Neglect after excavation has led to vandalism, erosion and partial loss at the necropolis of Roman Apollonia Pontica, Sozopol, Bulgaria

Infrastructure development contributes to a significant loss of archaeological sites. The ancient Thracian capital of the Odrysian kingdom – Seuthopolis, currently under the surface of dam Koprinka – is not a single example of the issue.[28] Antique and medieval settlements in the East Rhodope Mountains were partially or completely demolished for infrastructure development in the period 1970 – 1990.[29] A large part of the remains of the resettlements of the ancient Greeks on the Black Sea coast from the eight to the sixth century BC – Apollonia, Odessos and Dionisopolis, have been destroyed to develop tourist infrastructure in the more recent past.[30] The roots of the issue have been traced to the detachment of town-planning and cultural heritage protection, lack of archaeological remains cadastre, and absence of technical control in development projects.[31]

Earthquakes on the territories of Bulgaria and the neighbouring countries are considered among the factors with most significant negative consequences for the Bulgarian archaeological heritage.[32] The signs of seismic events on archaeological ruins have been investigated to assess the most common earthquake consequences.[33] The established cause-consequence chain cannot, however, be conclusive for all types of archaeological structures, since the reaction to seismic stress depends on site condition and geology. These two factors differ largely across the country.

A study by Tzenov and Botev focused on the management of seismic risk in Bulgaria[34] informs on the magnitude and the territorial distribution of seismic events across the country. By identifying the most active seismic zones, the article helps to determine the territories in which archaeological sites may be most susceptible to earthquake hazard. Some of the given recommendations concerning the management of seismic risk are applicable to archaeological sites. These are the classification of buildings, the update of cadastres, and the analysis of representative buildings.

Fig. 35 Environment is a factor influencing the condition of archaeological remains in Bulgaria - an archaeological complex in front of the St George Rotunda in Sofia

To be able to explain the critical condition of numerous archaeological sites across Bulgaria, one should not blame the nature only, but should trace back their past

conservation too. Incompatible techniques and materials coupled with lack of maintenance and delay of conservation after excavation, have contributed to loss of evidence. Literature sources refer to the use of *"special substance"* and *"materials according to the modern tendencies in conservation"*.[35] Concrete and cement have been used abundantly for structural stabilisation, capping, and reconstructions.[36] Roofs and enclosures above archaeological ruins have been reported as failing to prevent from the elements, ultimately becoming factors for deterioration.[37] Mass consolidation and hidrophobisation resulted negative for the condition and the aesthetics of many sites.[38] Microorganism growth and decay of *in situ* mosaics due to frost and lack of maintenance, complete the picture.[39]

Many recent archaeological reconstructions were implemented with the aim to develop sites for tourism. All have been approved by the Ministry of Culture and carried out with the financial support of the European Commission. Executed in contrary with the ethical principles of conservation, these reconstructions evidently violated authentic values. Their disturbing character became a reason for protest declarations from heritage organisations, such as the Bulgarian National Committee of ICOMOS, the Association of the Architects, and the Association of the Conservators/ Restorers. As a result, the Bulgarian archaeological heritage was later declared by ICOMOS as being in danger of *"irreversible loss of authenticity"*.[40]

4.3 Indirect Site Preservation Approaches in Bulgaria

The history of site preservation in Bulgaria is marked by several examples where indirect approaches have been applied. These have been implemented at places considered of exceptional significance upon their discovery. Some of the sites have been subsequently included in the UNESCO World Heritage List.

The Thracian Tomb of Kazanlak dated to the fourth – third century BC was uncovered by chance in 1944 during the construction of air-raid shelter.[41] It has been inscribed in the UNESCO World Heritage List in 1979. The tomb suffered changed microclimate after excavation. To cut moisture penetrating the tomb from above, its tumulus was removed. Since 1964, the site is enclosed and supplied with an automated climate control system. The tomb construction also helped for the monument preservation during the centuries. Vast quantities of gravel accumulated around its walls served as drainage and distributed

soil's weight. A thick layer of gravel covered with plaster helped for the drainage of the floors of the dromos and the burial chamber throughout the centuries.[42]

A study of the hazards deteriorating the Prehistoric painted figures of the Magoura cave exemplifies another indirect conservation approach. To preserve its bat guano drawings suffering from microorganism growth, the climate parameters in the cave and the impact of visitation were considered. Reduced numbers of visitors, increased air flow, and change of the artificial lightning system established unfavourable conditions for further biodeterioration.[43]

Active and passive electro osmotic methods were successfully applied to dry wet walls at historical sites in Bulgaria.[44] Excessive water was moved through the capillaries of the porous wall materials in the direction of the current – from the positive to the negative pole of an external electric source.

Madara is an archaeological site that includes the only rock relief in Europe from the early middle Ages – the Madara Rider (Fig. 36). It was inscribed in the UNESCO World Heritage List in 1979. The condition of the monument has been subject of extensive documentation and assessments since its discovery in 1872.[45] Endangered by wind- and rain-erosion and biological weathering, the relief was found to be susceptive to seismic activity as well. Carved on a rock flake partially detached from the main rock, the site is threatened by detachment as a result of accumulation of ice between the rock and the rock prism.[46] Studies for its safeguard involved measuring the speed of erosion,[47] geological investigations and research of tectonic forces,[48] and characterisation of the micro flora on the rock. The relation between environment and site was investigated through determination of the physical, chemical, mechanical and static properties of the rock.[49] Studies focused on the effects of rock's self-consolidation and biological sterilisation.[50]

The efforts to preserve the relief *in situ* started with rain water channelling and continued with the construction of a movable roof preventing running water on the surface of the rock. In 1983, vandalism led to a limitation of the visitor access to the relief. Projects for a movable enclosure, anchoring the rock prism, and consolidation of the existing cracks have been developed but their realisation is pending.[51]

The case exemplifies how indirect approaches led to the minimisation of the need of remedial conservation to the monument. The history of the site investigation proves that an inclusion in the UNESCO World Heritage List provides scientific attention and resources for preservation.

Fig. 36 The Madara Rider – a UNESCO World Heritage Site. Photo: I. Vanev, Institute of Art Studies – Bulgarian Academy of Sciences

4.4 Site Excavation and Post-Excavation Safeguard in Bulgaria

The organisation, coordination and implementation of the archaeological investigations on the territory of the country is entrusted almost exclusively to the National Institute of Archaeology with Museum (NIAM).[52] The growing number of excavations in the period 2006 – 2011 has been traced to a large-scale infrastructure development and increased residential construction.[53] Statistical data for the number of archaeological excavations for the period after 2012 are currently under publishing and at that point cannot be discussed here.

Statistics on the archaeological studies in Bulgaria reveal several alarming tendencies. The number of geophysical investigations and interdisciplinary studies is discouraging when compared with the number of excavated sites. The number of absolute dating, archaeometallurgy, DNA analyses, ethnology, geology, karstology, mineralogy, palaeontology, petrography, soil analyses, and tephrochronology is zero in at least one year during the discussed period.[54] This leaves an impression for archaeological studies focused primarily on excavation, while data interpretation is restricted. An article summarising important numbers related to the professional activity of NIAM for 2014,[55] demonstrates

that along with the continuous rise of the number of excavations, publications and presentations of archaeological studies have decreased considerably.

The percentage of conserved movable artefacts and immovable structures after excavation is unknown. Statistics on the involvement of conservation activities at archaeological sites lack. Generally, in archaeological publications, conservation is not discussed as a process playing part in the study of revealed materials. An article of Cholakov and Chukalev,[56] describes *"the basic groups of professionals involved in archaeological surveys"*. It fails to mention professionals participating in excavations, other than archaeologists. This suggests that in Bulgaria, excavation is perceived as 'archaeologists only' activity – one in which the role of other specialists is considered less significant. This thesis is supported by the fact that the scientific investigation of the excavated artefacts is dependent on the initiative of survey directors.[57] Being so, it is rare and unplanned. The same holds true for the conservation of excavated finds, despite the legal obligation to allocate 20% of excavation budgets for conservation. If it takes place, the conservation of *in situ* remains is usually performed in very short terms, similarly to the practices in the neighbouring countries.[58] Moreover, legislation does not discuss any technological and ethical criteria for interventions at archaeological sites.[59] Budgets are allocated primarily for the conservation of movable objects, while *in situ* remains are rarely considered.

Geophysical technologies have been applied for the identification, documentation, and condition assessment of sites prior and during archaeological excavations, as early as 1908.[60] Among these were photogrammetry, stereo mapping, and electromagnetics. Geophysics, however, have never been applied on a large-scale in Bulgaria. Describing their practical use aspects in archaeology, a study underlines their ineffective application and the negative tendency of use of geophysical devises by treasure-hunters.[61]

Statistics on the practice of reburial (backfilling) after excavation lack as well. Personal communication with archaeologists from NIAM reveals that most commonly, nylon is used as a separation layer in backfilling. It is usually placed in contact with the remains, most often without expert consultation. This practice led to a total loss of reburied structures after one year of re-cover at the site of Veliki Preslav.[62] Omission of backfilling is often a result of lacking time, staff and finances. The technology and challenges of reburials are recognised as practically unknown among the Bulgarian archaeological community.[63] This demonstrates that there is a need to understand the advantages and the downsides of this approach, and to plan better its logistics.

Lacking from archaeological publications, reburials have been discussed in the Bulgarian

conservation practice. Their opponent, Barov advocates for *in situ* conservation coupled with constant maintenance.[64] The reburial of ancient tombs is considered by Kitanov as challenging, risky, and practiced with unclear aims.[65]

Issues in the practical aspects of archaeological studies in Bulgaria are common. An equally serious challenge is the absence of a governmental policy for the preservation and management of archaeological heritage. According to Cholakov and Chukalev,[66] a national program will secure finances for surveys, investigation, conservation and public presentation of sites. However, the study fails to explain how the existence of a program will lead to a beneficial development, given that the issues of the sector are more complex. Among the persistent challenges are lack of cooperation between site stakeholders, and educational insufficiencies. It remains as well unclear who must initiate the formulation of a national site management program – the central site management body, or the scientific circles. Moreover, a site preservation program should rely on a sound legislation. The national cultural heritage legislation, however, lacks adequacy in the clarification of the state and the local authorities' responsibilities regarding the safeguard of archaeological heritage. The Cultural Heritage Law delegates some site management responsibilities to the National Institute for Immovable Cultural Heritage (NIICH).[67] According to the newest alterations to the law, however, the management of archaeological sites and historic monuments on public land is delegated to local municipalities in a try to decentralise the system of heritage governance.[68] As a result, the site governance across the country can be characterised with a varying sensitivity. Some municipalities manage archaeology at their territories better than others. An example is the municipality of Plovdiv, where many archaeological monuments are adequately conserved and exhibited. Used as gathering places for various cultural events, these are in the centre of the social and cultural life and are highly valued by locals and visitors alike (Fig. 37).

The management of monuments located on private land remains vague. Archaeological remains belong to the state while the terrain in which they are discovered – to private owners. When a development project in such cases is concerned, often parts of the revealed sites and monuments are disassembled and transported to museums. Museums, on the other hand, in most cases do not have the space to exhibit re-assembled remains. As a result, many discoveries lie forgotten and deteriorate in storages.[69]

The present cultural heritage act is as well week in formulating the rights and liabilities of private owners of heritage, while violators are almost never prosecuted.[70] In this respect, proposals for the privatisation of archaeological sites, or for establishment of public-private

site conservation and management initiatives as an escape from the lack of essential resources[71] omit some of the risks from such a strategy.

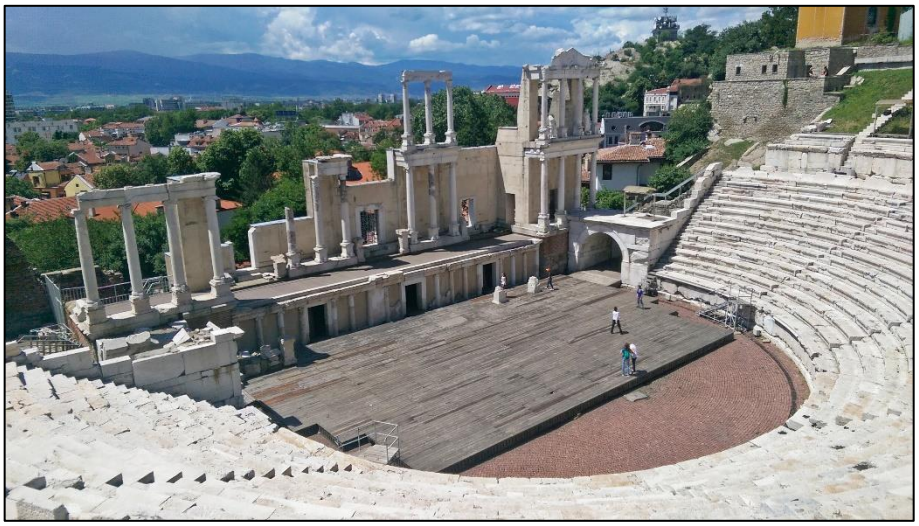

Fig. 37 The Roman Theatre of Plovdiv, first century AD

Some legal inconsistencies are obvious in the legislation concerning the profession of the conservator. The regulation of the conservation education is entrusted to the Ministry of Education. At the same time, the regulation of the conservation profession and its implementation is in the jurisdiction of the Ministry of Culture.[72] Legal inconsistencies permitting conservation by non-specialists is one of the main reasons for the execution of unethical and non-professional conservation of archaeological monuments.[73]

Site touristic development in Bulgaria is often misunderstood, found to take place *per se*, without marketing analysis and research on the interest in visitation.[74] 3D visualisation tools are virtually unknown in Bulgaria, despite their ability to meet the expectations of different visitor groups.[75] Identified is the need for heritage marketing involving the private sector and demonstrating local intangible traditions.[76]

♦

Studies have undoubtedly demonstrated, that the current national heritage management is weak.[77] The need for a comprehensive, well thought site management

system to prevent future risks and to combat already identified challenges is obvious. Governance issues range from absence of strategic policies, lack of qualified specialists in the cultural administration, and poor institutional environment and cooperation.[78] Scientific personnel, other than archaeological, is not involved routinely in excavations or in their planning. Educational programs for the values of cultural patrimony are rare which leaves sites detached by people. Most of these challenges result from imperfections in the heritage legislation whose effectiveness to protect the national cultural assets is questionable.

A ray of light in this grim picture is the management of several UNESCO World Heritage Sites which rests on interdisciplinary studies, well-thought decisions, and restricted interventions. The international attention involved in these cases is an additional line of protection – a guarantee that the monument authenticity will be protected. But mass excavation followed by either neglect or questionable interventions is not a sustainable way of site study and safeguard. On the contrary – it creates immense needs to manage everything that has been revealed and conceivably conserved. Indirectly, these issues can be addressed by site management in burial conditions and by a serious revision of the legislation concerned with the questions who can deal with heritage and how. For a real change bringing sustainable results, the country needs an impetus from within – a cooperation between decision-makers for a concept that will in future become the basis of a comprehensive site management strategy.

Bulgaria stands at a cross point between centralised and de-centralised site governance. Both approaches have their positives and negatives, but the efficacy of a decentralised management is still to be evaluated after several years of application. In the broader context of site management in Europe, Bulgaria is in a stage in which considerable challenges need to be faced to prevent the further loss of important evidence and values.

Leaving aside the risks resulting by nature, hardly to control social processes, or uncertain future circumstances, three main threats affect the archaeological sites on national territories. These are valid not only for Bulgaria, but for many site management contexts across the world:

- Site excavation without taking in consideration the need for further conservation and management of the revealed. This leads into the topic of ethics in archaeology, and the way they can become an instrument to prevent risks to archaeological sites;
- Site governance excluding main stakeholders from heritage matters. This

leaves out of sight the fact that people contribute to the challenges of heritage protection, but can as well become part of sustainable management solutions;

- The very interaction with sites and their contexts without relying on a stable protective legislation.

[1] Prashkov (ed.) 2003: 13-15
[2] Prouchvaniya i konservaciya na pametnitsite na kulturata v Balgaria 1974-1987
[3] Prashkov (ed.) 2003: 13
[4] Law of Antiquities 1911
[5] Bachvarova 1993
[6] Prashkov (ed.) 2003: 13-14
[7] Kandulkova 2007: 7
[8] Kandulkova 2007: 13
[9] Prashkov (ed.) 2003: 14
[10] Kandulkova 2007: 29; Klimova-Klisarova 1974: 147
[11] Prashkov (ed.) 2003: 13-14; Prouchvaniya i konservaciya na pametnitsite na kulturata v Balgaria 1974:8
[12] Prouchvaniya i konservaciya na pametnitsite na kulturata v Balgaria 1974:7
[13] Neykova 2009: 20-22
[14] Kandulkova 2007: 31-32
[15] Kantareva-Decheva et al. 2007: 209
[16] Prashkov (ed.) 2013: 15
[17] Boneva-Trayanova 2007: 63
[18] Stancheva 2007; Barov 1983; 1984; Kitanov 2006: 234;
[19] Barov 1983; Velkov 1984: 6-10; Kitanov 2006: 225-227; Ovcharov and Kodzhamanova 2003: 32, 43, 83, 87
[20] Khristov et al. 2008: 13; 42; Mateva 2011: 123-124
[21] Barov 1983
[22] Kitanov 2006: 228; 231; 233; Frangova 2013: 51-52
[23] Christoskov et al. 1995; Tzenov and Botev 2009
[24] Stancheva 2007: 1; ICOMOS Heritage at Risk 2006-2007: 42
[25] ICOMOS Heritage at Risk 2006-2007: 42
[26] Cholakov and Chukalev 2011
[27] Bozhikov 2004
[28] Chichikova 1970
[29] Ovcharov and Kodzhamanova 2003: 32, 43, 83, 87
[30] Velkov 1984: 6-10
[31] Konyarska 1984; Kitanov 2006
[32] Christoskov et al. 1995: 907
[33] Christoskov et al. 1995
[34] Tzenov and Botev 2009
[35] Lefterov 1987: 26
[36] Kasabova 1983; Lefterov 1987: 27-29
[37] Frangova 2013; Lefterov 1987: 27
[38] Kasabova 1983: 151-154
[39] Barov 1984
[40] ICOMOS Heritage Alert
[41] Vassiliev 1960: 5
[42] Zhivkova 1974: 40
[43] Kadiyski 1983
[44] Venkov and Staykov 1983
[45] Todorov 2003: 16; Archive of the National Institute of Archaeology with Museum. Protocols number 248/ 28.05.1924 and 311/ 25.12.1928
[46] Todorov 2003: 16
[47] Venkov 1983: 83-85
[48] Popov 1934a: 8; 1934b: 13-14
[49] Todorov 2003: 16-18
[50] Todorov 2003: 18-20
[51] Todorov 2003: 21
[52] Cholakov and Chukalev 2011: 87
[53] Cholakov and Chukalev 2011: 91
[54] Cholakov and Chukalev 2011: 89, Fig. 13
[55] Tzochev 2015, in press
[56] Cholakov and Chukalev 2011: 87
[57] Cholakov and Chukalev 2011: 87

[58] Hlouveraki 2016: 129
[59] Todorov and Pirovska 2016: 6
[60] Hadzhiev et al. 1974: 155; Gurkovski et al. 1976; Shmidek 1975; Shmidek and Postadzhiyan 1976; Vaklinov 1976
[61] Bozhikov 2004
[62] Petar Dimitrov, archaeologist at NIAM, pers. comm., 2014.
[63] Todorov and Pirovska 2016: 7
[64] Barov 1983
[65] Kitanov 2006: 231
[66] Cholakov and Chukalev 2011: 90
[67] Cultural Heritage Law. 2009: Art. 18: Paragraph 1; Art. 19, Paragraphs 1-1, 2, 4, 5
[68] Cultural Heritage Law. 2009: Art. 12: Paragraph 4-1 and 17: Paragraph 1, 2
[69] Ivan Vanev, chairmen of the Association of the Conservators/ Restorers in Bulgaria, pers. comm., 2018.
[70] Kantareva-Decheva et al. 2006: 207; 211
[71] Kantareva-Decheva et al. 2006: 211; Khristov et al. 2008: 45
[72] Ivan Vanev, chairmen of the Association of the Conservators/ Restorers in Bulgaria, pers. comm., 2018.
[73] Vanev 2013: 4-5
[74] Mateva 2011: 124-125
[75] Vlahakis et al. 2001
[76] Boneva-Trayanova 2007: 63-64
[77] Kantareva-Decheva et al. 2006: 207; 208; Khristov et al. 2008: 42-45; Stancheva 2007: 2-3
[78] Stancheva 2007: 3-4

Chapter 5

Time for a Change: About Ethics and Preservation

The first major factor affecting site preservation in Bulgaria is an excavation without a concept how the revealed places will be managed in future. The quality of archaeological work itself is another point of concern, as mentioned in the previous chapter. Archaeological work in general is dependable on the significance of the place that is being studied. The case study of the Eastern necropolis of Serdica discusses the relation between prevention of loss of archaeological evidence, site significance, and the quality of an archaeological study.

5.1 Case Study: The Eastern Necropolis of Serdica in Bulgaria

The Eastern necropolis of Serdica was excavated in the late ninetieth – early twentieth century. After their study, most of its grave monuments were either destroyed or backfilled. Only a small number of these are currently exhibited to the public. The case of the necropolis is a tale of archaeological ethics influencing the fate of places, and site significance as a factor shaping preservation agendas.

5.1.1 History of the Site and its Excavation

The basilica of St Sophia is one of the oldest preserved early Christian churches in Europe, dated to the sixth century[1] (Fig. 38). In the fourteenth century, the city of Sofia was named after it.[2] It is a monument of high artistic and historical importance, significant for

the development of the early Christian architecture. Under its foundations are preserved the remains of several earlier churches, along with burial monuments from the Eastern necropolis of Ulpia Serdica.[3] Ulpia Serdica was an important Roman settlement. The murals in several of the tombs of its Eastern necropolis evidenced the diffusion of the early Christian symbolic-decorative painting traditions in the lands of present-day Bulgaria.[4]

Fig. 38 Aerial view of the basilica of St Sophia in the end of the ninetheenth century. Author unknown. Photo courtesy of the National Institute of Archaeology with Museum, Sofia

In the period 1888 – 1925, several sections of the necropolis were discovered by chance, while digging for infrastructure purposes.[5] Many of the revealed sarcophagi, graves and vaulted tombs have been reburied, others – completely or partially destroyed.[6] Some of the discovered grave monuments have not been published or documented.[7]

The typology of the tombs was summarised during the systematic excavations of sections of the necropolis in 1910 – 1915[8] (Fig. 39 – 40). Short notices inform about their

dimensions, building techniques, and architectural characteristics.[9] Description of grave inventor that remained undisturbed by treasure-hunters in earlier times is scarce.[10]
The burial chambers of a limited number of tombs were painted. Aquarelle replicas of the painted decoration are housed at the National Archaeological Museum in Sofia (Fig. 41 – 43). It is not clear to what a degree these reflect the original colorite of the wall paintings.[11] The replicas do not provide an evidence for the inscriptions preserved in some of the tombs. Most of the aquarelles have rather the character of fast sketches. Only two of the decorated tombs survived destruction.

Fig. 39
Excavations of the Eastern necropolis of Serdica outside of the basilica of St Sophia. Year and author unknown

Photo courtesy of the National Institute of Archaeology with Museum, Sofia

More information on the characteristics of the site could have been available, if the earliest excavations considered a more profound study and documentation. Many questions related to the chronological development of the site remained unanswered. [12] The precise boundaries of the necropolis after its enlargement to the south in the fifth – sixth century are not known.[13] The dating of the necropolis is disputable,[14] along with the number of its grave monuments. Most of the publications about the earliest studies of the site do not concern its wider interpretation and significance. The only early publications that engage more profoundly with the site and its significance are Filov's *The Sofia's Church of St*

Sophia from 1913 and Miyatev's *The Decorative Painting of the Necropolis of Sofia* from 1925.

More recent activities led to further loss of important evidence. A poorly documented and backfilled in the early years of the twentieth century tomb, was partially destroyed in the 1990s due to construction works in its vicinity.[15] The burial monument had wall paintings depicting amphorae, birds, and the four archangels Gabriel, Michael, Raphael and Uriel.

It remains unclear whether some archaeological discoveries in the period 1911 – 1914 were related to the necropolis.[16] Information about discovered gravel monuments during the construction of the administrative buildings in the area in the 1940 – 1980s lacks as well. Only part of the survived tombs and graves under the St Sophia basilica are currently exhibited in an underground museum (Fig. 44 – 46).

Fig. 40 Excavations of the Eastern necropolis of Serdica in the basilica of St Sophia. Year and author unknown

Photo courtesy of the National Institute of Archaeology with Museum, Sofia

Fig. 41 Aquarelle of the chamber decoration of a destroyed painted tomb. Collection of the National Archaeological Museum in Sofia (Inv. № 108)

Fig. 42 Aquarelle of the chamber decoration of a destroyed painted tomb. Collection of the National Archaeological Museum in Sofia (Inv. № 268). Photos courtesy of the National Institute of Archaeology with Museum, Sofia

Fig. 43 Aquarelle of the chamber decoration of a destroyed painted tomb. Collection of the National Archaeological Museum in Sofia (Inv. № 104).

Photo courtesy of the National Institute of Archaeology with Museum, Sofia

5.1.2 The Fate of the Site: Circumstances and Tendencies

The circumstances that led to the regrettable fate of the necropolis have been discussed broadly.[17] According to Filov, its partial destruction was a result of the fast urban development of Sofia shortly after the Bulgarian liberation from Turkish rule in 1878.[18] As more pitiful than the material destruction of the monuments, Filov considers their obliteration from the public memory.[19] Miyatev,[20] Katsarov and Tachev,[21] and Stancheva[22] argue that the earliest excavations demonstrated low professional standards and limited scientific interest. The researchers failed to recognise the significance of the site and had no interest to argue for its preservation. Planned excavations took place after the destruction of a significant part of the necropolis.

Fig. 44 The remains of the first church that once stood on the place of the basilica of St Sophia are currently exhibited in an underground museum. The church has richly decorated mosaic floor in the technique *opus tesselatum*

The fate of the site is a classic example of three disturbing tendencies in the attitude toward archaeological heritage – destruction in the name of modernisation, disregard of the existent protective heritage legislation, and obscured archaeological ethics. Loss of original evidence would have been prevented if the study relied on sound methodology and ethics, and if a site preservation concept was in place.

Sacrificing historic monuments for modern needs has been a common practice in Bulgaria long after large sections of the necropolis vanished. Only a very small part of the national archaeological heritage has been preserved after the Liberation from Ottoman rule in 1878.[23] In present days, the national cultural authorities still support modernisation in cases in which heritage preservation clashes with urban development. An example of this policy is the construction of a section of the Maritza highway above the remains of the Roman Road *Via Militaris* that used to connect Singidunum (modern Belgrade) with Constantinople (modern Istanbul). Bulgaria refused to change road's bed, fearing loss of

Fig. 45 The tomb of Honorius dated to the 5th - 6th c. exhibited under glass construction near St Sophia basilica

finances for the implementation of the project. The section of the site located on Turkish territory was, however, preserved for future study. This is an example of different valuation of one and the same site because of differing cultural heritage politics in neighbouring countries. Bulgaria, however, is not isolated in that respect. Modernisation threatens heritage worldwide and the strategies to balance the values of the old and the new are limited. Often, sacrificing historical monuments for modern purposes is inevitable.

The case exhibits a disregard of the principles of the existing at the time Law of Antiquities.[24] The law defined irrefutably clear the principles of study and preservation of archaeological monuments, and the responsibilities of several bodies and individuals in that respect: [25]

> *"…when an antiquity is threatened by destruction /.../ the Ministry, /.../can order its relocation from one location to another."*[26]

Relocation technologies were available at the time but were never used to salvage any of the tombs. It is not known whether changes in the construction plans of any of the development projects have ever been discussed. This happened at a time in which the study of archaeological sites across Europe and Bulgaria itself had already reached higher standards. In the same period, the rock relief of the Madara Rider was discovered, immediately becoming a subject of sensitive safeguard efforts. During the nineteenth and the early twentieth century, Giuseppe Fiorelli and Amedeo Maiuri set high criteria to the study and the preservation of Pompeii and Herculaneum. In both cases, however, what

triggered protection efforts was the uniqueness of the places. In contrast – the significance of the Eastern necropolis of Serdica upon excavation was judged as too low to provoke an interest in safeguard. The values of the Eastern necropolis of Serdica were not recognised before gaining additional information about site's larger historical context. The significance of the site changed dramatically over the course of just a century. Decades had been dedicated to the conservation and the public presentation of the grave monuments that survived destruction.

Fig. 46 The interior of one of the few painted tombs from the necropolis that survived destruction. Currently exhibited under the basilica of St Sophia

In fact, the discovery of some of the tombs preceded the enforcement of the Law of Antiquities. But even so, some actions of the state authorities that would have permitted loss of original evidence have been omitted.

Large parts of the site were destroyed not only because of their perceived low value. To a great degree, this was a result of the prioritisation of modern development. Moreover, ever since gaining its national independence in 1878, Bulgaria lacked a concept for protection of archaeological heritage in the boundaries of urban layouts.[27] Without such a concept, any law concerning the preservation of ancient ruins is doomed to have only a marginal role, deciding on a piece-rate basis. Lack of strategic policies in this respect still

characterises the sector. One example is the case of the Western necropolis of Serdica. The more recent discovery of two of its tombs ended with their relocation at the courtyard of the National Museum of History. This is an example how monuments of such type can be treated, despite being cut from their original context. However, it is also an illustration of an absent comprehensive vision for the management of a site. No plans are in place for the treatment of tombs that might be discovered in future. Weaknesses in the attitude to archaeological heritage in urban territories were exemplified recently in the case of the extension of Sofia's underground transport network too. Compromising rich archaeological deposits, the construction of the second line of the city's metro system led to large-scale monument demolition. This was coupled with questionable restoration of *in situ* remains and pending decisions for the long-term storage of the discovered finds. This could have been spared with the relocation of the controversial subway station.

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The historic example of the Eastern necropolis of Serdica reaffirms that people are more destructive to archaeological heritage than the nature, taking rational decisions leading to loss. The case identified one of the major prerequisites for risk to archaeological sites – excavation without a site preservation concept. Preservation policies put in place before excavation can help to avoid many damages to the archaeological material. These are especially important when monuments in urban layouts are considered. In such cases, planning how to avoid destruction should be in place before any intervention. Avoidance of loss and damage can be aided by both direct and indirect methods – change of construction plans, relocation of site elements, site reburial, and an employment of less-intrusive building technologies.

Prevention of losses to archaeological sites depends also on the existence, the quality, and the observation of a legal heritage framework. This framework should engage with the responsibilities of all people interacting with a site and its contexts and should specify the extent and the character of permitted interventions.

When an archaeological site is excavated, its perceived significance is a factor shaping preservation agendas. Importance can also be a subject of dramatic change over time, due to political or social processes, or upon acquiring new archaeological information. Therefore, a site significance assessment considering possible future value change is a step

in preventing loss. The fate of the Eastern necropolis of Serdica teaches us that the significance evaluation of a given site cannot be done by archaeologists only. Analyses can be facilitated by desk-based research, literature survey, and geophysical prospection at a regional scale. In the future, to avoid loss of evidence, archaeological studies should provide a quality research and preservation of the recovered data and materials, regardless of the perceived site significance at the moment of excavation. This makes the archaeologist a steward of archaeological resources.

5.2 Ethics in Archaeology and Site Preservation

Ethics in archaeology have been described as *"the moral and professional responsibilities of archaeologists in their professional matters"*.[28] Discussions about this branch of the archaeological practice have arisen in the 1970s with a ground-breaking publication by Lipe[29] – an American archaeologist and cultural resource manager. Lipe was concerned with the preservation of sites and artefacts for future research. Acknowledging archaeologists' role in the exploration *and the management* of retrieved materials, he suggested excavation of non-threatened sites only when knowledge cannot be obtained by already studied examples.[30] Selectivity of excavation, sample-digging, and re-direction of financial resources to problem-oriented research only formed the basis of Lipe's theory about the integration of conservation ethics in archaeology.

The recent increase of interest in the subject of ethics followed studies on the archaeological responsibilities to indigenous rights, treatment of human remains, artefact ownership, illegal trade of antiquities, and stewardship of excavated remains.[31] A question of specific concern is the role of the archaeologist in the conduct of destructive prospection at sites that are not at risk, or when a site management planning is missing.[32]

5.2.1 The Stewardship of Archaeological Resources

Codes of ethics have been designed to regulate the archaeological profession. These have been described as rules, clarifying the responsibilities of archaeologists and the conduct of their duties.[33] Ethical approaches to the study, documentation and safeguard of terrestrial and underwater archaeological remains are also discussed in several international conventions and treaties. Among those are the Charter of Lausanne,[34] the Charter on the Protection and Management of Underwater Cultural Heritage,[35] the Venice Charter,[36] the Valletta Treaty, [37] the Recommendation on International Principles Applicable to Archaeological Excavations, [38] and the Convention on the Protection of Underwater Heritage. [39] The documents stressed the importance of monument preservation after excavation, and the necessity for thorough site documentation.[40] The archaeologists have been found as those that need to find a balance between the colliding interest for research and its restriction where post-excavation site care will be absent.[41]

An important study on the understanding of professional ethics has been conducted in the occupied Palestinian Territories (OPT).[42] It revealed that professionals often perceive ethics differently from what they are standardised to be about, sometimes barely recognising their importance. Excluding the subject from the agendas of educational programs have been found to deepen the issue.[43] Contrary, ethics are a paramount part of the archaeological education in many universities across the world, even if not included in specific courses. Among these are schooling institutions in the United States, Canada, Jordan and Egypt.[44]

A leading ethical principle in archaeology is the one of the long-term stewardship of excavated resources.[45] Archaeological stewardship refers to the professional and moral duties of the excavator to ensure the preservation of archaeological sites *"for the benefit of mankind as a whole"*:[46]

- European Association of Archaeologists – Code of Practice:[47]

> *"The archaeological heritage, /.../, is the heritage of all humankind. Archaeology is the study and interpretation of that heritage for the benefit of society as a whole. Archaeologists are the interpreters and stewards of that heritage on behalf of their fellow men and women. /.../ Given the limited nature of the archaeological resource, due concern should be given to its preservation, and it should not be destroyed merely to provide training. Preferably sites*

which are threatened or where there are pressing research interests should be chosen rather than unthreatened sites."

- Australian Archaeological Association – Code of Ethics:[48]

"Consonant with their obligations arising from government and international agreements, legislation and regulations, members will advocate the conservation, curation and preservation of archaeological sites, assemblages, collections and archival records."

"Members will endeavour to ensure that archaeological sites and materials which they investigate are managed in a manner which conserves the archaeological and cultural heritage values of the sites and materials."

- Society for American Archaeology – Principles of Archaeological Ethics:[49]

"The archaeological record, that is, in situ archaeological material and sites, archaeological collections, records and reports, is irreplaceable. It is the responsibility of all archaeologists to work for the long-term conservation and protection of the archaeological record by practicing and promoting stewardship of the archaeological record. Stewards are both caretakers of and advocates for the archaeological record for the benefit of all people; as they investigate and interpret the record, they should use the specialized knowledge they gain to promote public understanding and support for its long-term preservation."

"Archaeologists should reach out to, and participate in cooperative efforts with others interested in the archaeological record with the aim of improving the preservation, protection, and interpretation of the record. In particular, archaeologists should undertake to: 1) enlist public support for the stewardship of the archaeological record."

"Archaeologists should work actively for the preservation of, /.../, archaeological collections, records, and reports. To this end, they should encourage colleagues, students, and others to make responsible use of

collections, records, and reports in their research as one means of preserving the in situ archaeological record, and of increasing the care and attention given to that portion of the archaeological record which has been removed and incorporated into archaeological collections, records, and reports."

- England's Institute of Archaeologists – Code of Conduct:[50]

"/.../ because the historic environment is an irreplaceable resource, members both corporately and individually have a responsibility to help conserve the historic environment…."

"A member shall strive to conserve archaeological sites and material as a resource for study and enjoyment now and in the future and shall encourage others to do the same. Where such conservation is not possible he/she shall seek to ensure the creation and maintenance of an adequate record through appropriate forms of research, recording and dissemination of results."

- European Convention on the Protection of the Archaeological Heritage:[51]

"Recalling that the archaeological heritage is essential to a knowledge of the history of mankind. /.../. Acknowledging that the European archaeological heritage, which provides evidence of ancient history, is seriously threatened with deterioration because of the increasing number of /.../ clandestine or unscientific excavations /.../.

"To preserve the archaeological heritage and guarantee the scientific significance of archaeological research work, each Party undertakes:
i) to apply procedures for the authorisation and supervision of excavation and other archaeological activities in such a way as:
b) to ensure that archaeological excavations and prospecting are undertaken in a scientific manner and provided that:
- non-destructive methods of investigation are applied wherever possible;

- the elements of the archaeological heritage are not uncovered or left exposed during or after excavation without provision being made for their proper preservation, conservation and management;"

The principle of stewardship may be ignored in practice – when archaeologists consider their work done once an excavation is ended. It is, however, a question of ethics, management, and politics to excavate a site realising that it will be affected by destructive forces after study.

5.2.2 A Survey about Ethics in Archaeology in Bulgaria

The awareness about the principles of professional ethics among a part of the Bulgarian archaeological society was investigated by a dissemination of a questionnaire on the subject. The used research methodology has been developed by Al-Houdalieh for his study of the ethics in archaeology in the Occupied Palestinian Territories (OPT).[52] Some of the questions presented to the Bulgarian archaeologists concur to those in the Palestinian study. Employees of the Bulgarian National Institute of Archaeology were chosen as a target group due to the leading position of the institute in the archaeological practice in the country. The investigation allowed to explore the subject of ethics from archaeologists' point of view.

The research was anonymous and carried out in the period July – August 2014. The questionnaire contained 13 questions and was disseminated by hand to guarantee personal involvement and full confidentiality of the respondents (See Appendix IV for the Bulgarian and Appendix V for the English version of the questionnaire). The study was conducted in Bulgarian due to the various levels of English knowledge among the interviewees. The answers were furthermore translated to English by the author.

Of a total of 98 archaeologists employed at the three branches of the National Archaeological Institute, questionnaires were disseminated among 51. Returned filled questionnaires numbered 43 (26 women and 17 men). Those who rejected to participate in the research numbered three women and five men. Among the reasons stated were unwillingness or lack of time to participate, and lack of competence on the subject of ethics in archaeology.

Among the interviewees were archaeologists holding academic degrees obtained by three Bulgarian universities, senior and junior research associates, professors, associate professors, and assistant professors. Participated specialists with research fellowships in several foreign countries. Archaeologists with fellowships in Austria, Belgium, France, Germany, Greece, Hungary, Israel, Italy, Poland, Russia, Serbia, the United Kingdom, Turkey, the Netherlands, Japan, and the United States participated in the research. Of all interviewed, nine hold lectureships in six universities offering training in archaeology – five institutions in Bulgaria and one in Poland (Question 2).

Five different age groups had been chosen (Question 1) to evaluate the knowledge on archaeological ethics among different generations. Most interviewed resulted to be between 31 and 40 years old (19 respondents). The second largest group was that of the 41 – 50 years old (nine participants). The group of the 51 – 60 years old had eight interviewees. The groups of the over 61 years old had four respondents, and that of the 23 – 30 years – three.

The archaeological practice in Bulgaria is not obligatory bound with a membership in a professional association. Many of the respondents (19) are not members of any professional organisation (Question 3). 24 hold membership in at least one:

- The Bulgarian Archaeological Association – ABA (17 respondents);
- The European Association of Archaeologists – EAA (four respondents);
- The International Council of Museums – ICOM (three respondents);
- The World Archaeological Congress – WAC (two respondents);
- The Bulgarian Geological Society – BGS (two respondents);
- The Union of Scholars in Bulgaria (two respondents);
- The International Council of Monuments and Sites – ICOMOS (one respondent);
- The Society for Conservation GIS – SCGIS (one respondent).

Only two of the interviewed from the group of the 23 – 40 years old are members of the national professional archaeological association (ABA). This may be viewed as a sign of inability of the association to involve younger archaeologists into its principles and affairs. It may as well express the reluctance of younger archaeologists to be part of the professional *status quo*.

Of the 24 members of professional associations, twelve stated to know the codes of ethics of the respective organisations (Question 4). Here must be mentioned that the BGS and the

SCGIS do not have codes of ethics or practice. One admitted having a partial knowledge only. Eleven have no knowledge of the contents of the codes of ethics of their respective associations or are not aware that such codes exist. Those that are not members of any professional organisation stated to have no knowledge on any codes of ethics in the profession. Only two respondents in that group are well acquainted with the code of ABA and follow it.

Most of the participants (34; 79%) had not been introduced to the subject of ethics in archaeology during their studies (Question 6). Only nine stated the contrary. The predominant (seven) belong to the group of the 41 – to over 61 years old. Four have been introduced to the subject through university discussions, two – during field research, and one – from the position of his/ her lecturers on controversial matters in archaeology. The subject of matters was not provided. From the other two (group 31 – 40 years old) having received knowledge on the term from university lectures, one referred to the term not as *ethics in archaeology,* but as *"principles of preservation of cultural heritage"*. Thus, the participant demonstrated to have an understanding on the link between ethics and safeguard of archaeological resources. Generally, the responses demonstrate that the subject of ethics was rarely addressed in education curricula.

Asked to provide the official meaning of the term *ethics in archaeology* (Question 5), half of the interviewed (22) responded that they cannot provide an answer, or that have never heard that such a term exists. One archaeologist did not provide any answer at all. Despite the lack of discussions about ethics during their studies, 20 archaeologists responded that they are aware of the official meaning of the term. Of those 20, ten have no knowledge on the codes of ethics of their professional organisations. That might indicate that studies and codes of practice may not be the primary source of information regarding ethics in the profession. This is also demonstrated in the statements of five archaeologists who are familiar with the codes of ethics of their organisations but are unaware of the official meaning of the notion of *ethics in archaeology*.

Of the 20 participants that stated to know the official terminology, only ten answered which principal responsibilities of the archaeologist are covered by it. Various sources of information about the term were pointed. The international conventions on the protection of cultural heritage and foreign literature were identified as such from the most respondents. Professional discussions, the codes of ethics of ABA and EAA, personal experience, and

field work are other sources of information about the term. The ten participants answering the question understand ethics as:*

- Complete and reliable documentation of field work and discoveries; correct interpretation of retrieved archaeological information (three participants);
- Moral and professional responsibility of the archaeologist to the study of archaeological sites (two participants);
- *"Field work, participation in various scientific projects"* (one participant);
- *"Care for archaeological sites during and after excavations"* (one participant);
- *"Preservation of discovered antiquities"* (one participant);
- *"Prevention of damage or destruction to movable and immovable excavated remains"* (one participant);
- *"Preservation and protection of archaeological sites during all stages of their study – from identification to socialisation"* (one participant).

These results come to demonstrate that only a minor part of the interviewees is acquainted with the subject of ethics in archaeology. Even less have knowledge on what constitutes it. The ten provided answers reveal a different understanding of ethics – varying from various aspects of the archaeological work, to responsibility for the excavated remains.

Asked to provide an opinion on how the term *ethics* can be described even if its official meaning is not known (Question 7), four respondents did not answer. Most participants gave several meanings of the term, including:

- Responsibility of the archaeologist for the excavated remains **(**17 respondents);
- On-time publication of scientific results and respect of the copyrights of other archaeologists **(**16 respondents);
- Correct professional relations **(**13 respondents);
- Correct interpretation of scientific information acquired during excavations and its presentation to the professional community and the public **(**13 respondents);
- Correct excavation methodology, involvement of various specialists in the archaeological study **(**ten respondents);

* Cited answers are given in italics and quotation marks.

- Conducting studies according to the national legislation related to the archaeological profession **(**seven respondents);
- Professional competency and high standards of work, conduct of excavation regardless of political and economic environment **(**five respondents);
- Responsibility of the archaeologist against illicit excavations and illicit trade of antiquities **(**one respondent);
- *"Obtaining of maximum information from excavated materials having scientific value which can be of current interest for the society"* **(**one respondent);
- *"To not use professional status for personal benefits"* (one respondent).

Among the answers to this question were also several general descriptions. These put the accent not only on the legal and professional responsibilities of the archaeologist, but on his moral responsibilities too:

- *"A codex of norms, regulating the behaviour of the archaeologist regarding scientific work, archaeological resources, and the people the archaeologist works with"*;
- *"Ethics towards the scientific cognition"*;
- *"Ethical principles in archaeology are equivalent to the personal ethics"*;
- *"Balanced decisions"*, and
- *"Moral"*.

Seven participants (16 %) discussed the destructiveness of archaeology. The safeguard of excavated features was defined in their answers as a central scope of the archaeological ethic. These respondents described ethics as:

- *"A sense of responsibility for the excavated remains"*;
- *"Accenting on the conservation and preservation of the revealed materials instead of excavating continuously"*;
- *"Popularisation of the objectives of archaeology and the meaning of cultural-historical heritage among communities"*.

The answers to the question draw a picture of a professional community, part of which understands well the different moral obligations of the excavator. Some responses reveal, however, that a small number of archaeologists are prone to think in frames, understanding

ethics primarily as legal obligations. Observing legal regulations only narrows the responsibilities of the excavator once excavation is completed. Passing all liabilities for the retrieved materials to cultural heritage administrators and conservators is a withdrawal from stewardship once a site is unearthed. Knowing and observing legislation is a must, but ethics guide decisions once legal frames are insufficient.

One participant described the term *ethics in archaeology* as *"avoiding non-professional archaeological practices at sites which are considered less important from current point of view"*. Thus, the question of equal responsibility regardless of the site significance, was brought forward. In contrast, another respondent described archaeological ethics as *"obtaining maximum information from excavated materials holding scientific value that can be of current interest for the society. "* The matter of 'current value' is of huge importance in the archaeological practice. It is therefore questionable why so few of the participants brought it forward. Significance not only shapes professional priorities and policies. The practice of removal of archaeological layers to reach deeper, 'more important' ones, may present a moral dilemma.

None of the respondents touched the subject of treatment of human remains, discussed in the World Archaeological Congress' First Code of Ethics.[53] For one participant only, ethics include the liability of the archaeologist against plundering of sites and illicit trade of antiquities.[54] Two other archaeologists engaged with an explanation of the phrase *"responsibility for archaeological resources"*. This was described as *"observation of the Venetian convention",* and *"prevention of damage to movable and immovable remains"*.

Thirteen respondents (30 %) commented that ethics mean to present the information retrieved from studies to the wider archaeological society. Yet, only two of them brought upon the need to interpret excavation results to the broader public. None discussed matters related to the interpretation and safeguard of archaeological information in museums, or to the public accessibility to it.

Four of the interviewed commented to have received a general idea about professional ethics from the codes of ethics of ABA and EAA. ABA's Code of Ethics is directly translated from that of the EAA with some important exceptions, such as the reference to the Lausanne Charter[55]:

> *"/.../ the archaeological heritage should not be exposed by excavation or left exposed after excavation if provision for its proper maintenance and management after excavation cannot be guaranteed."*

The ABA's Code of Ethics outlines general issues only, despite referring in its Preamble to the role of the archaeologist in the stewardship of archaeological resources through study *and preservation* of finds and values.

Most of the participants (31; 72 %) did not refer to any moral dilemmas while practicing their professional duties (Question 8). Two did not answer the question. Ten (23 %) had moral dilemmas related to:

- Political and economic factors influencing decisions and affecting the quality of excavations;
- Impossibility to interpret archaeological data for the benefit of the wider public;
- Impossibility to acquire archaeological information obtained by other colleagues, and
- Violation of professional ethics by other archaeologists, leading eventually to personal confrontations.

Most of the interviewees recognised the existence of a link between ethics and improved preservation of archaeological resources (Question 9). 33 respondents (76 %) acknowledged that a better safeguard of archaeological evidence can be ensured by:

- Following strict personal and professional ethics;
- Communicating with cultural heritage administrators to reduce the destructive exploitation of sites;
- Accenting on long-term preservation policies for archaeological monuments;
- Creation of a professional ethical code;
- Recognition of the existence of moral norms across the professional community;
- Changing the view of archaeologists and society about the aims of archaeology;
- Introducing mechanisms of sanctioning upon unprofessional conduct;
- Obliging archaeologists to engage with the preservation of the resources they excavate;
- Publishing information retrieved in excavation, and
- Correct and independent interpretation of research results.

These answers indicate that most of the archaeologists realise that ethics can influence the preservation of archaeological resources in long term. Yet, three of the interviewed see a link between ethics and preservation in the strict observation of existing laws only. These opinions do not consider law imperfections.

For three respondents, there is no link between archaeological ethics and prevention of risks to sites. Their comments engage with the link between preservation policies, the quality of cultural heritage laws, and the availability of finances for site conservation. Without doubt, an improvement of the Bulgarian cultural heritage legislation is a must. Finances are also an important resource permitting regular site care. However, there are numerous examples of well financed archaeological sites, conserved with generous resources stemming from public sources. Among these are the Krakra Pernishki fortress, the King's Basilica in Veliki Preslav, the Yaylata fortress, and the remains of Ancient Serdica. The treatment of these places followed the existing national cultural heritage legislation. Yet, because the interventions were entrusted to building companies instead to trained conservators, site conservation resulted highly disappointing.

A foreign example of a site with massive budget is Pompeii. Finances for its conservation are provided from private crowdfunding,[56] international and national public sources,[57] and from public-private partnerships, such as the Pompeii Sustainable Preservation Project.[58] Yet, management challenges persist because of legislative imperfections, administrative burdens, and social-political issues that do not permit the investment of available resources. This comes to demonstrate that more money does not equal better preservation.

Many of the interviewed commented on the conflicts between the disciplines of archaeology and conservation (Question 10). According to 27 answers (62%), research and conservation are consecutive phases of one and the same process. This process has the safeguard of archaeological resources as a central objective. Regardless of this, for the respondents in this group, conflicts exist when it comes to:

- Absolutism in the principles of either of the disciplines;
- Poorly planned archaeological research;
- Poorly planned and financed conservation interventions;
- Lack of consensus between archaeologists and conservators on the required site conservation interventions;
- Incorrect interpretation of archaeological information in site conservation;
- Non-professional attitude of archaeologists toward excavated resources;
- Existence of personal conflicts between archaeologists and conservators.

13 other interviewees (30 %) commented that conflicts between the two academic disciplines exist due to:*

- Adequate excavation, but poor conservation **(**six participants);
- Violation of the ethics of archaeology and conservation **(**five participants);
- Lack of resources to conserve excavated features **(**three participants);
- Destructive nature of the archaeological research colliding with conservation principles **(**three participants);
- Lack of joint planning of archaeological research and preservation; separation of the disciplines of archaeology and conservation in practice and in academia **(**two participants);
- Lack of differentiated approach to the various categories of sites and their needs **(**one participant);
- Postpone of required site conservation treatment **(**one participant).

The general conflict between the two disciplines is the juxtaposition between the destructiveness of archaeology and the safeguarding principles of conservation.[59] Only three of all interviewees (~ 7 %) responded that the clash between the two fields is a result of the differences in the perception of the archaeological record. Often, archaeologists see a site primarily as a source of information about the course of history. For conservators, it is a place of knowledge that should be preserved to enrich the life of present and future communities. Yet, the provided answers pointed the main conflicts in the practices of the two disciplines in Bulgaria. On one hand is the challenging communication between professionals from the two disciplines. On the other – the realisation that cooperation can improve preservation practices.

Asked whether conservation falls behind the pace of archaeological research (Question 11), two participants did not provide an answer. Seven answered negatively. For one, this is valid in part of all cases. Another commented that conservation is a result of excavation. For 32 (74%), conservation falls behind the fast rates of excavation. Eight of the 32 respondents shift the responsibility to the administrative sector. The same respondents share the opinion that a joint pre-excavation planning can ensure a much-wanted integration of conservation and archaeology. According to the answers, conservation is falling behind because of:

* Multiple answers were given.

- Lack of conservation specialists;
- Absence of a national site preservation strategy;
- Slow administrative procedures in the authorisation of conservation projects, and
- Unethical political decisions influencing the safeguard of archaeological heritage.

The question whether an archaeological site should be excavated if there are no resources for its conservation and management (Question 12) polarised opinions. Four respondents did not answer. Six other made differentiation between planed and rescue studies. They shared the view that salvage excavation documents layers and features that will be otherwise lost. This group suggests continuity of rescue studies and restriction of planned research without site-specific, long-term management program. Five respondents think that excavation should not be restricted at all. Their answers reflect the opinion that if excavation complies with legislation, archaeological resources will not be lost. These answers do not take in consideration that the loss of evidence may result as a mismanagement after excavation. They demonstrate once again the tendency among part of the archaeological community to feel no obligations after end of excavation.

For one respondent, every case is specific. Therefore, the decision to excavate or not should be case-specific too, otherwise the archaeologist would be no different than the looter. One participant stated that the restriction of excavation is dependent on a changed stakeholder view on what constitutes a responsible attitude to heritage. This is furthermore defined as currently impossible, being *"too difficult"*. Three of the interviewed defined the question as *"tricky"* and *"unclear"*, responding that the possible answers are related to variable circumstances. For these respondents, excavation without loss of evidence is ensured by site reburial. This demonstrates lack of knowledge on the risks introduced from inadequately performed reburials. One participant answered that archaeological sites will continue to be damaged, regardless of whether being excavated or not. The respondent does not believe that the lack of provisions for long-term care should hinder excavation. The rest of the participants (22; 51 %) stated categorically that destructive study should not take place without long-term management vision and site care. Exceptions concern emergency cases, in which a site is threatened. Of those 22, one expressed the opinion that current legislation envisages adequate financial resources for conservation. The interviewee, however, omits the fact that this is relevant to short-term conservation practices and not to

long-term site maintenance needs. Three express the opinion that there is a clear conflict between the interests of archaeologists and site preservation when an excavation proceeds without resources for conservation. In such cases, excavations should be immediately discontinued. Of those three participants, two responded that this is currently impossible because of the human factor involved. One other thinks that archaeology is not an urgent science and that research must be performed only if a sound site management system exists. The interviewee proposed restriction of planned excavations and focusing on geophysics and limited site exposure.

Most of the respondents shared the opinion that a site should not be excavated unless threatened. Despite this, in the period 2006 – 2010, predominant on the territory of the country were the planned excavations and not the rescue ones.[60] Risks to the integrity of sites are often brought forward to justify excavation. In the *Ordinance for the Conduct of Field Archaeological Excavations* is noted that excavation should take place only for the needs of specific scientific task, if sites are threatened by destruction, or are subject of integrated conservation.[61] As per the Cultural Heritage Law, *integrated conservation* comprises measures regarding the use and adaptation of heritage sites for the needs of society.[62] According to the degree of threats, sites at risk may be[63]:

- Sites located in earthquake zones;
- Sites near major construction projects;
- Sites in and near zones with high risk of flooding or progressive geological and climate factors;
- Sites threatened by armed conflicts;
- Sites threatened by vandalism;
- Sites with seriously damaged integrity.

According to this specification, most sites on the territory of the country can be considered at risk and excavated. This leads to no practical limitation of excavation. Restriction may be also opposed because of the differentiated payment to archaeological specialists in and outside excavation seasons. The differences in the remuneration of archaeologists involved in rescue and planned excavations also caused tension in the professional society, bringing the question of neglected professional ethics due to wage limits.[64]

The need to include the topic of archaeological ethics in educational programs was recognised by the majority of the interviewed. 36 responded that education about ethics is

imperative, necessary, desirable, advisable, or possible. According to the answers, the initiative to integrate the topic must be taken by*:

- Universities (19 respondents);
- The professional association ABA (nine respondents);
- Lecturers in education programs (nine respondents);
- NIAM (seven respondents);
- Archaeologists and conservators (two respondents), and
- The Ministry of Culture (one respondent).

Three participants expressed doubt whether the topic should become part of education. They commented that the normative documents regulating the archaeological practice are *"good enough"*. Two others, both university lecturers, responded that the inclusion of the topic of ethics in education programs is unnecessary, one of which even wrote that this would be *"utopia"*. Two other participants did not provide an answer to the question, both lecturers in archaeology.

In conclusion, the research outlined several disturbing tendencies in the archaeological and conservation practices in Bulgaria. Alarmingly, its results revealed low valuation of the archaeological practice by archaeologists themselves. Personal opinions included:

- *"Neglected archaeological resources because of archaeologists' personal interests"*;
- *"Ethical principles in archaeology is a term which is incompatible with the Bulgarian archaeological practice"*;
- *"The practice of archaeology in Bulgaria violates moral norms"*;
- *"Archaeology is a destructive way of gathering information, especially in the way in which it is practiced in Bulgaria"*;
- *"Archaeologists in Bulgaria often demonstrate themselves no different than looters".*

Professional conduct in archaeology and observation of legislation are linked. Therefore, the legal frame under which archaeologists in Bulgaria operate was studied for the scopes of this research. The *Ordinance for the Conduct of Field Archaeological Excavations* defines the safeguard of retrieved cultural assets as one of the central aims of an

* Multiple answers were given.

excavation.[65] The document, however, does not define criteria for the use of mechanised techniques[66] which is generally considered risky for fragile remains. The ordinance brings upon the question of *"scientific-methodical level of excavation"* that must be guaranteed by the head of the research.[67] Yet, the term is not explained in detail which leaves open the interpretation of the notions 'scientifically' and 'methodically'. Thus, the quality of the research is left to the subjective ethics of the excavator. The ordinance also does not clarify how to proceed with excavated objects when no suitable conditions for their long-term storage exist. Still, geophysical investigations have not become obligatory in field campaigns.[68] Currently, archaeologists receive excavation permissions upon obligation to use 20% of the assigned budget for conservation of the retrieved features.[69] It is not clear how this amount was formed, as every excavation project has different conservation needs. In addition, delayed or restricted research budgets often require the change of excavation planning with a short notice.

It appears that some professional matters are not covered by regulative documents, being left to the personal judgement of the excavator. That makes existing legislation too general to be relied upon for conduct of excavations that prevent damage to the archaeological record.

In Bulgaria, ethics are primarily apprehended as correct excavation methodology, publication of research results, and good professional relations. These are indeed a substantial part of the professional moral norms, but do not reflect the multiple levels of the term *ethics in archaeology*. Excavating despite problematic site management is a moral dilemma that remained unrecognised by many of the participants in the survey.

An elaboration of the code of ethics of ABA could help to regulate archaeological studies. It could introduce practices leading to a higher self-evaluation of the archaeological community. The need to establish site excavation and documentation standards in Bulgaria is necessary too.[70] But ethical codes alone would not work mechanically for someone who is not taught in ethics while professionally educated. Therefore, teaching not only excavation standards but excavation ethics too should become part of archaeological educative courses. A creation of a body advising on the practices and dilemmas in the archaeological practice should also be considered. Establishments of such type can provide a platform for discussions on the ethics and the practical aspects of the profession.[71]

Of interest is the relationship between archaeologists and conservators.[72] The study of the ethics in archaeology in Bulgaria revealed gaps in the mutual understanding between these

professionals. Impaired communication is an obstacle to identify joint strategies for an improved site care.

The conflicts between the two disciplines have been broadly discussed in one of the issues of the GCI's Newsletter *Conservation Perspectives*.[73] Two of the articles in the issue demonstrate that an integration of the disciplines is possible if university programs and field campaigns are impacted.[74] Joint planning of excavation, conservation and site management bridge the gap between archaeologists and conservators.[75] Legal measures binding excavation with an obligatory conservation planning for all remains prevents post-excavation neglect.[76]

Archaeological conservation is often apprehended as a short-term technical activity aiming to return the original appearance of an excavated feature.[77] This happens when conservators fail to engage in communication about the objectives of their profession. Conservation is not a statuary concept; its ethics reflect its evolution. Ethics lead conservators in all decisions regarding what to preserve, how to do it, and to what degree to intervene with a historic object or a place. The primary goal of the discipline is to ensure the continuity of the material, the meaning, the original intention of the creator, and the significance of a cultural item.[78] And this continuity is not always ensured by a treatment, but at times – rather by a non-treatment. Conservation aims at transferring historical content to the future.[79] Nowadays, it acknowledges the public opinion applicable to resources of cultural significance in a changing social environment.[80] The respect for the irreplaceable nature of every material of culture, regardless its perceived value, is what guides conservation decisions.[81] Without excluding the importance of the extraction of knowledge from the study of the cultural fabric, conservation is not pointed at it. It is rather concerned with the safeguard of that very same knowledge. The transforming ethics of the discipline allow it to be looking to the future.

A question often arising in the conservation practice is how to preserve complex, multi-layer surfaces, with respect to all contexts. Such situations occur when an item has been overpainted in different historic periods and every additional layer represents valuable part of its history. In archaeology, the same dilemma is present when sites that existed for longer historical periods are being excavated. How much to excavate, how to prevent losses to all layers, or how to treat all levels equally ethically is challenging. Decisions are usually influenced by the scientific objectives of the research, or by social and political processes. The older layers, or those regarded as most informative about the history of the place, are usually considered of higher significance. Yet, every of the aspects of a given place might

result in greater importance if judged from a future point of view. Archaeology without preservation extracts knowledge about the past but leads to a tremendous loss of that very same past.

Most of Lipe's suggestions [82] in the 1970s were demanding. However, with the development of sampling and geophysical prospection, this is no longer the case. Yet, the need for a change in the management of archaeological sites should be recognised by all their stakeholders, not only by archaeologists. Lipe commented on the reluctance of some parties to welcome change,[83] but did not propose ways to encourage the debate for reforms across the heritage sector. His conservation theory succeeded though in changing the priorities of the archaeological practice in the USA, where currently planned digging is rare. [84] Management policies across several European countries also encourage the preservation of sites by leaving archaeology undisturbed. The tendency in Bavaria is to limit excavations to small areas only, if a destructive study is required.[85] Excavations at the World Heritage Site of Butrint in Albania have been restricted for years ahead, to focus on the conservation and the maintenance of the already excavated features.[86] The study and the management of archaeological sites in any part of the world can be transformed, if the advantages of site preservation underground are realised and communicated. Site preservation should be aimed in every research project. This would transform archaeology as serving present and future communities. One main component of the preservation concept is the archaeologist. He plays part in the safeguard of cultural values for the future, as much as conservators and cultural heritage administrators. Stronger integration of the concept of conservation ethics into the studies and the practice of archaeology will develop future professionals with greater sensitivity to the safeguard of the archaeological record.[87] If archaeological education accents on the significance of professional ethics and stewardship, it can escape stereotypes on the matter of what archaeology is about. Instead, it can discover the answer of what it can be, reflecting changed professional realities. The impetus for such a reform should come from within archaeological circles.

Among the many reasons driving archaeologists to excavate are financial benefits and the very personal need to excavate. Training courses may address the key point of site safeguard but will never solve issues in which finances dictate professional decisions. This is a different social dimension, where the improvement of the living standards of archaeologists depends on external factors. Moreover, restriction of destructive excavation for the need of preservation depends on managers leading the archaeological field. Nothing guarantees continuity in management policies if professional ethics differ from those of the

predecessor. Restriction of excavation can be imposed only in cases in which the study is not politically or socially dictated.

Archaeology is destructive and irreversible.[88] At the same time, it cannot be banned because it reveals the past and creates new values. Resolving the conflict between excavation and preservation is therefore not straightforward. This contradiction can be, however, balanced by providing alternatives to destructive excavation. Archaeological sites can be managed and studied while in buried state. Preservation underground coupled with non-destructive research and small-scale excavation provides value balancing – it prevents damage caused by mismanagement after excavation, while research questions are answered.

Less excavation ensures time for quality research which is imperative when interacting with non-recoverable assets. Destructive study should be permitted only if it can provide valuable new information, and only when the means for post-excavation care are in place. Archaeological sites are not cherished for their scientific potential only. The extraction of information they hold should therefore never be the only objective for excavation. Sites are appreciated for their beauty, significance, mastery, and for the senses they inspire long after scientific information is retrieved.

Excavation cannot and should not be fully restricted, as this will deepen the existing stakeholder tension. In certain occasions, it is inevitable. There is, however, a need to recognise that discoveries encompass numerous values. And research value cannot dominate the other dimensions of heritage significance.

Restricting destructive digging for the sake of risk prevention and site preservation raises questions about the future of professionals in the fields of archaeology and archaeological conservation. But even without limiting the number of excavations, both disciplines need educational reforms. Work possibilities will always exist for the study of sites that are in risk of damage, for public education, and for the care and management of excavated assets.

♦

The identified moral issues in the archaeological practice in Bulgaria are probably not alien to archaeological communities elsewhere. However, if an archaeological site is mistreated, often there are not just the archaeologists to blame. Although not explicitly discussed, the situation in the conservation of archaeological monuments in Bulgaria can

also benefit from a more systematic education in professional ethics. Ethics and professional conduct should also become a matter of intensified discussion among Bulgarian site managers too.

Ethics have a personal dimension that is different than the postulates of codes of conduct. But there are principles that should be respected in all cases. One of them is the stewardship of archaeological resources. If a site is to be excavated, objectification of the study and a planning for post-excavation care for all retrieved remains information and contexts ensures a future for all site values.

As a factor supporting the preservation of the archaeological fabric, context and values indirectly, ethics engage with the need of a more sensitive site study. They play a powerful role in preventing many risks related to excavation, and those leading to loss of original evidence. An ethical attitude to the remains of the past considers keeping archaeological deposits underground. It plans for the material preservation of all revealed site features and retrieved information. It continues with the employment of geophysical investigations replacing destructive study where this is feasible (Fig. 47).

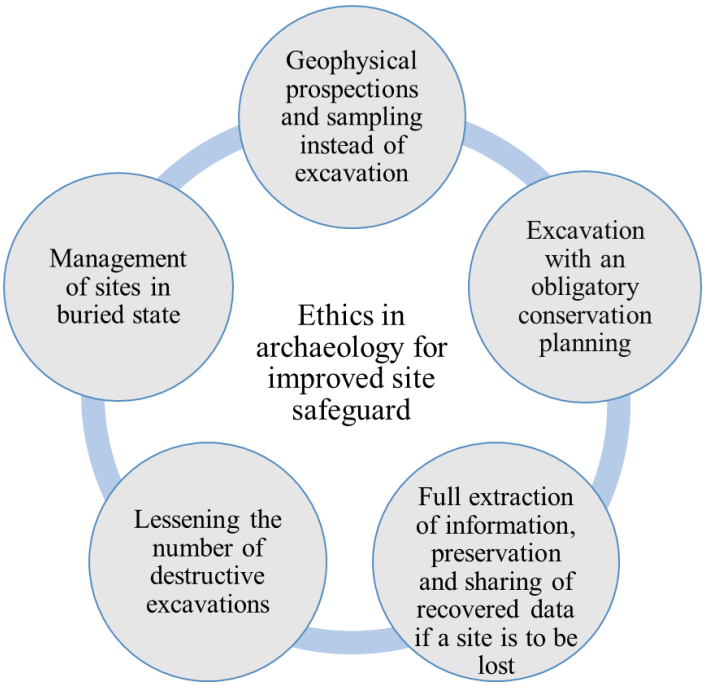

Fig. 47 Ethics in archaeology for improved site safeguard

The moment in which financial and ethical issues, and social priorities are pushing the archaeological field to reform has come. An arising question is the one of the importance of excavation to site stakeholders outside of archaeological circles – who, except archaeologists, needs excavation? Large-scale destructive studies become ever more expensive and unreasonable for site managers dealing with restricted resources. For conservators, the prosaic treatment of heritage values is unacceptable. If public money aids site study and management, archaeologists may face the need to justify the public importance of excavations. Excluding the public from heritage matters is a week point that should be of concern for every decision-maker, regardless of whether an archaeologist, a historian, a conservator, or an administrator. Because keeping communities out of important discussions regarding their own heritage leads, as to be discussed in the following chapter, to cutting the connection between people and places.

[1] Filov 1913: 144
[2] Filov 1913: 3
[3] Filov 1913: 49; Shalganov 1989: 64
[4] Miyatev 1925: 1
[5] Filov 1913: 66-108; Miyatev 1925: 2
[6] Škorpil brothers 1890: 46; Filov 1911: 269; 1913: 64;
[7] Filov 1913:101-102; Dobruski 1896: 435
[8] Gospodinov 1921: 54; Filov 1913: 65
[9] Gospodinov 1921; Filov 1913: 66-108; Katsarov and Tachev 1910
[10] Filov 1913
[11] Miyatev 1925: 3
[12] Shalganov 1989: 59; 64
[13] Filov 1913: 105; Shalganov 1989: 59; Stancheva 1989: 22
[14] Dobruski 1896: 439; Filov 1913: 103; Miyatev 1925: 106
[15] Kitanov 2006: 227
[16] Filov 1913: 61; 1911: 268-269; 1914: 278
[17] Miyatev 1925: 2; Katsarov and Tachev 1910: 23; Stancheva 1989: 16; Filov 1913: 1-2
[18] Filov 1913: 1-2
[19] Filov 1913: 2
[20] Miyatev 1925: 2
[21] Katsarov and Tachev 1910: 23
[22] Stancheva 1989: 16
[23] Rachev and Angelova 1956: 23-25
[24] Law of Antiquities 1911
[25] Law of Antiquities 1911: Art. 1 and 7
[26] Law of Antiquities 1911: Art. 9
[27] Kandulkova 2007: 32; Cholakov and Chukalev 2011: 90
[28] Al-Houdalieh 2013: 396
[29] Lipe 1974
[30] Lipe 1974: 213-214
[31] Karlsson (ed.) 2006; World Archaeological Congress 1990; ICOMOS 1990: Art. 6; ICOMOS 1964: General Principles; UNESCO 1956: Principle 9; Colwell-Chanthaphonh and Ferguson (eds.) 2008: 119-199; Ronayne 2008: 376-377
[32] Trotzig and Klockhoff 2004: 165-168; 174; Lipe 1974: 242; Fagan 2003; Australian Archaeological Association: Code of Ethics: Principle 2.2; European Association of Archaeologists 2004; West- und Süddeutscher Verband für Altertumsforschung 2007: 2
[33] Lawson 2006: 206; Al-Houdalieh 2013: 396; Beaudry 2009: 19, 26; Vitelli (ed.) 1996: 53-260
[34] ICOMOS 1990: Introduction; Art. 2
[35] ICOMOS 1996: Introduction; Art. 1, 2
[36] ICOMOS 1964: Art. 4, 6, 7 and 8
[37] Council of Europe 1992: Preamble; Art. 3-5
[38] UNESCO 1956: Principles 29-32
[39] UNESCO 2001: Art. 19-20
[40] ICOMOS 1990: Art. 2
[41] ICOMOS 1990: Art. 6
[42] Al-Houdalieh 2013
[43] Fagan 2003; Al-Houdalieh 2013: 404
[44] Al-Houdalieh 2013: 406; Eman Shahawy, archaeologist at the Alexandria Department of Antiquities, Egypt, Salah El-Masekh, archaeologist at the Supreme Council of Antiquities, Egypt, and with Abdullah Al Bawareed, archaeologist in the Department of Antiquities of Jordan revealed that the question of ethics is included in the archaeological education in Alexandria University, Cairo University and Sohag University in Egypt, and Muta University in Jordan, pers. Comm., April - May 2014
[45] Fagan 2006: 11; Scarre and Scarre (eds.) 2006: 9; 163-181
[46] Society for American Archaeology 1996: Principle 1; UNESCO 1972: Preamble; United Nations 1982: Art. 143; 303
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[63] Cultural Heritage Law 2009: Art. 49
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[65] Ordinance № N-00-0001, 2011: Art. 3: Paragraph 2
[66] Ordinance № N-00-0001, 2011: Art. 15: Paragraph 20
[67] Ordinance № N-00-0001, 2011: Art. 16: Paragraph 1
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[75] Closing the Divide: A Discussion about Archaeology and Conservation 2003
[76] Closing the Divide: A Discussion about Archaeology and Conservation 2003
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Chapter 6

The Future of the Past: Public Involvement in Site Management

The management of archaeological sites is usually influenced by several interested parties. Decision-makers developing legislation and management policies, site specialists, and communities, are the most important stakeholders. Of those, the public plays a special part. This part is unfortunately rarely recognised and foster although heritage belongs to present and future generations. Destinations with outstanding values belong to the entire humankind. Laymen provide financial support for heritage management. People also influence the historic landscape, either by caring for it, or by disregarding it. Directing that influence is one of the tasks of site management planning. The planning can combine strategic and every-day management policies to direct or restrain negative processes taking place at a site or in its vicinity. In most cases, an active public participation in the formulation and the execution of the management plan is required to do so. The case study of the World Heritage Site of Ancient Nessebar in Bulgaria investigates the main components that make a management plan an effective site preservation tool and an instrument fostering the link between public and heritage.

6.1 Case Study: The World Heritage Site of Ancient Nessebar in Bulgaria

The Ancient city of Nessebar is a World Heritage Site since 1983. Since the 1990s, the property suffered from uncontrolled urban development leading to pervasive value

deterioration. After an intervention from UNESCO, a new site management plan was created with the aim to harness negative processes. The strengths and the downsides of the management plan of Nessebar are analysed to propose directions for prevention of human-related risks to the property. The analyses refer to the extended version of the plan available at its official webpage.[1]

6.1.1 Background

The Ancient City of Nessebar situated on the Black Sea coast (Fig. 48 – 49) is an archaeological-historical ensemble coexisting with a modern urban environment. [2] Nessebar preserves archaeological structures dating from the Early Iron Age to the Middle Ages (Fig. 50 – 51), Early Christian basilicas and Medieval churches (Fig. 52 – 54). Its authentic vernacular architecture is representative for the period of the National Revival (1762 – 1878). [3, 4]

By the end of the 1980s, Nessebar was effectively protected from urban development and neglect through legal statute, regulated city layout, and active conservation.[5] This changed with the major political transformation in 1989. Rapid decrease of finances for maintenance led to a widespread site decay. More recently, conflicts between the site stakeholder groups, and an excessive use of the property,[6] challenged the site management.

In 2013, UNESCO announced that the integrity and the authenticity of Nessebar's historic fabric are threatened by an unauthorised development, mass tourism, and illegal transformation.[7] As a response, the local municipality undertook a demolition of illegal private properties, incompatible with the aesthetic and historic values of the property. This triggered a strong local reaction – the residents of Nesebar initiated a petition to exclude the site from the World Heritage List. Acts of vandalism to archaeological structures followed.

The recent elaboration of a management plan for Nessebar aimed to restrain the negative processes threatening the values of the property. It includes strategic objectives, operational policies and control mechanisms related to the study, sustainable use and management of the historic ensemble.[8] The plan also concerns in part the conservation of the site. It reviewed comprehensively the existing legal framework, use regulations, urban systems and services, site condition, values and economics, archaeological research policies, and

some hazards to the property. Various stakeholders contributed to its formulation. Proposals for short- (one year), medium- (five years), and long-term (20 years) site management were developed. A draft version of the document was debated at a public meeting. Some recommendations from locals were included in its final version. The plan is in line with the principles of the international conventions related to the conservation and management of cultural sites, and in particular – historic towns.[9] It bears a resemblance to the management plans elaborated for other World Heritage properties.[10]

Fig. 48 Map of Bulgaria with an indicated location of the World Heritage Site of Ancient Nessebar

6.1.2 The Finances

While identifying sources of national and international financing for site management,[11] the plan did not investigate how constant financial flow will be ensured for the period of 20 years. Operational costs, including those for conservation, are tentative, i.e. excluding expenditure for staffing, administration, technical equipment, etc. The need to assign certain activities based on tenders makes final costs unclear. Furthermore, the plan did not envisage how management continuation will be ensured upon sudden budget restraints. There is no provision of buffer budgeting to cover urgent costs in case of discontinued financial flow. Support from the World Heritage Fund is considered possible,

Fig. 49 Aerial view of the World Heritage Site of Ancient Nessebar. Source: Website of the Management Plan of the Ancient city of Nessebar. Year and author unknown

Fig. 50 Section of the fortified outer wall of the Ancient city of Nessebar

without consulting the kind of activities covered by the Fund. The fund only finances emergency assistance upon outbreak of natural catastrophes, war conflicts, development of management plans, training, education and research, and preparatory assistance for sites in the Tentative List. Ticket revenue has been identified as a source for finances for conservation and management. Yet relevant legislation does not currently permit the re-investment of ticket revenue directly, as finances are returned to the national budget.

Fig. 51 Section of the fortified outer wall of the Ancient city of Nessebar

Fig. 52 One of the emblematic medieval churches of Nessebar - the Church of St Sophia dated to the sixth century

Administrative obstacles and complex organisation of tenders also may affect the implementation of the plan. Some conservation activities taken place by far have not been financed by the state as planned, but by private bodies and international institutions. One example is the project for the 3D documentation, condition survey, structural stabilisation and conservation of the church St. John Aliturgetos – entirely financed by the US Ambassadors Fund for Cultural Preservation. If repeated as a tendency, this would be a

Fig. 53 Interior of the Church of St Spas with wall paintings dated to the beginning of the seventeenth century

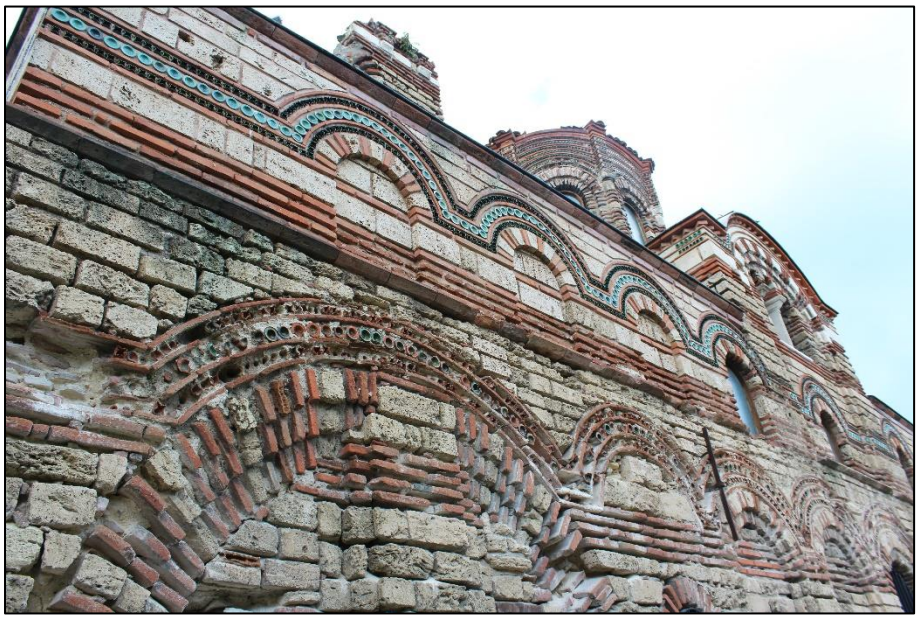

Fig. 54 Exterior of the Church of Christ Pantocrator dated to the thirteenth - fourteenth century

demonstration of the lack of state initiative to exercise proper care. This may furthermore lead to withdrawal of private funding upon realisation that national authorities are not concerned with the site management.

Ensuring a constant financial flow should be a priority in the drafting of operational management plans. Continuous funding guarantees that necessary treatments will be performed without the risk of failure due to financial collapse. Therefore, the success of Nessebar's governance depends on a revision of the funding mechanisms for site management.

6.1.3 The Values

The interrelated cultural values of Nessebar had a principal role in defining governance policies.[12] Yet it has not been clarified how these helped to develop management priorities.

A very perplexing hierarchical relationship between the different values of the place has been defined. It has not been explained how this value differentiation influences the site management. Ultimately, hierarchical value differentiation omits the fact that significance may change over the course of time.

Value assessment did not consider existing conflicts between the aesthetical, historical, and economical values of the place. How these conflicts will be addressed in future is also unclear. One example is the vagueness in respect to the issue of private real estate properties obscuring the authenticity of the place. Only part of these are legal. Bulgarian authorities expressed the position that some illegal constructions will be demolished, while others, in line with established aesthetical criteria – will be legalised.[13] According to the Chief architect of Ancient Nessebar, however, legal properties will not be subject to any changes, despite of their affecting presence[14] (Fig. 55). Other administrative and legal inconsistencies become obvious with the practically invalid temporary moratorium on modern constructions.

The management plan did not engage with the protection of the natural values and the biodiversity of the site. Nessebar is located along the Via Pontica Flyway – an important migration corridor for birds. Numerous species nest in the region of the South Bulgarian shoreline (Fig. 56), including rare and endangered ones. The absence of specialists in the fields of biological diversity and ecology in plan's drafting has been commented by the Bulgarian National Committee of ICOMOS.[15] If included in the drafting phase, their role would have been to assess the risks for the natural characteristics of the site, and to identify possibilities for their mitigation.

Part of Nessebar's archaeology has not been studied. The safeguard of its research value was overlooked by the management planning. Identification of buried and submerged sites on the territory and the aquatory of the historic property may lead to the plan's re-evaluation in future. Additional resources may need to be allocated to study and manage newly identified monuments. If the plan is complemented with measures against looting, erosion

Fig. 55 A visually imposing modern house opposite of the Church of Christ Pantocrator. For such buildings, new timber siding can help to conform to plan's regulations

and other hazards to unexplored areas, it can help in the avoidance of risks to the authentic site values.

6.1.4 The Capacity of the Personnel

The plan discussed the potential of the current municipality personnel to implement projected activities. Training of staff responsible for conservation and digitisation needs is envisaged. However, the plan did not concern the expertise of administrative and technical personnel to maintain digital spatial databases, to establish a public council, and to obtain international funding for site management. It remains unclear whether these activities will be implemented by new personnel or will be commissioned to external parties.

Expenses for the long-term maintenance of databases and those for additional staff have not been discussed. The need of repository for the documentation records of the site has not been commented in the document. An establishment of such repository could prevent dissociation of site-related information.

Fig. 56 Great black cormorant *(Phalacrocorax carbo)* on Nessebar's shore

6.1.5 Site Presentation and Interpretation

In the last years, the municipality engaged rather successfully with the renovation and the reorganisation of the site infrastructure and vendors' and tradesmen stalls and shops. This led to a significantly improved site appearance. (Fig. 57 and 58) Interpretation of buried archaeological structures, and care for some neglected ones (Fig. 59) will further enhance the values of Nessebar. The future establishment of a visitor centre has been promoted as an approach to improve the dialogue between site management, visitors and locals. The centre can also become a place where site's values and fragility are communicated to the public.

6.1.6 The Conservation

The management plan has put in time and financial frames the remedies required to preserve the most prominent monuments of Nessebar. Yet it did not comment whether interventions will be based on urgency or on monument significance. A uniform conservation strategy for the entire site has not been adopted. If such is developed in future, it should consider ethical and technological principles of interventions. Approaches to the limitation and control of remedial treatments should as well be included.

Fig. 57 The Church of Saint John the Baptist dated to eleventh century in 2006

Fig. 58 The Church of Saint John the Baptist dated to eleventh century in 2017

Even though no conservation planning exists, interventions to the historical fabric take place. Being held out by different institutions and individuals, these carry the risk to fail in reflecting a common conservation strategy.

The management planning envisages the establishment of a local conservation department, subordinated to the municipality. What is worrying is the insufficient length of the planned

Fig. 59 Neglected Early Byzantine baths built in the 6th c. and functioned until the end of the eight century. Some sections are preserved at a height of 3 m. The site has been revealed during excavation campaigns in 1973-1975 and 1998-2001

training of conservation specialists – two years only. The complex conservation challenges of the architectural monuments across the property require specialised knowledge.

Most of the envisaged conservation measures are reactive. Indeed, many of Nessebar's monuments require remedial treatment. Nevertheless, the plan omitted a comprehensive system for site monitoring and maintenance, apart from the treatment of encroaching vegetation. Thus, the development of threats and vulnerabilities across the site may remain unaddressed.

Several initiatives proposed by the plan can aid the prevention of risks to the property.[16] Through them, new values can also be identified:

- Elaboration of a digital map of the site;
- Geophysical investigation to identify underground and underwater archaeological monuments;
- Establishment of monuments' database;
- Improvement of protective legislation;

- Educative measures;
- Protection of sites against vandalism;
- Structural stabilisation of areas endangered by erosion.

The planned development of geodesic and cadastral maps of the property could prevent damage to monuments based on information about their location. The intended elaboration of photogrammetric and 3D models of the site can be used as a monitoring tool at a later stage. Enforcement and stabilisation of eroded areas will prevent greater damage and loss to the affected heritage fabric.

The document, however, failed to assess low-probability – high-consequences hazards for the territory, such as earthquakes and flooding. These leave the plan as insufficient in considering events that may have major negative effects on city's values. Although the municipality has an emergency preparedness plan for cases of earthquakes, fires, and flooding, the sums provided for the treatment of the post-catastrophic impacts are utterly insufficient.[17] This is a prerequisite for irreversible losses due to scarce resources for post-event urgent care.

The management plan includes provisions for archaeological excavations in some zones of the historic property.[18] Yet no policy statement exists why this is needed, especially when some already revealed monuments are neglected. Research campaigns will be provided with on-site conservation: *"temporary urgent rescue and preventive measures until the end of the research process."*[19] Further conservation and restoration needs have not been discussed in detail.

The adoption of programs for the sustainable use of privately-owned vernacular buildings has been envisaged. These have been designed to encourage the care to historical properties but did not investigate the potential risks from improper building use. The suitability of every vernacular building for modern use has not been investigated either. What could be more appropriate is the elaboration of a classification of historic buildings based on condition and original use. Properties' contemporary use, if conform to buildings' characteristics, can aid a sensitive management and the preservation of their authenticity.

It can be concluded, that the management plan, although aiming to establish preservation strategies, falls short for this objective. This can be changed with the adoption of a conservation plan and preventive conservation policies, the drafting of which is still pending.

6.1.7 The Stakeholders

Conservators, specialists in the fields of urban management and economics, sociology, and cultural anthropology did not take part in the drafting of the plan.[20] Their inclusion would have allowed a more precise formulation of management policies according to the needs of the site and its stakeholders. It is also notable that the Ministry of Tourism has been excluded from the dialogue on the future site management. Thus, the involvement of the state for the promotion of sustainable tourism polices cannot be guaranteed.

The state is one of the two most important stakeholders regarding the management of Nessebar. Its role as a principal of a distinctive patrimony had not been precisely identified in the plan. A capital role of the local municipality may lead to a positive development given the absence of the state from the governance of the site for decades. However, many legal, operational and financial aspects of the management are beyond the control of the municipality. Such are the development of a spatial planning act, and the improvement of the construction regulatory plans in Nessebar.[21] The challenges of the site are related to a complexity of social issues, lack of institutional coordination, and the demands of the modern life. These cannot be solved without political engagement.

Bulgaria still fails to ratify the management plan of Nessebar. This hinders the development of additional legislative acts concerned with the management and the safeguard of the property. The reason for the pending ratification has never been officially stated. The municipality can, however, follow the plan according to the existing possibilities and constrains. Alternatively, it can propose the establishment of a state-municipal management cooperation. Such partnership can ease some financial issues by directing tourist revenue to the municipality to ensure means for preventive and urgent care at least.

Analyses reveal that the locals' income from trade, gastronomy, and accommodation related to tourism, is not sustainable.[22] Additionally, legislation do not offer economic stimuli for private owners of heritage properties, such as tax reliefs.[23] Private owners cannot become beneficiaries in programs financing the conservation of cultural heritage, as this position is reserved to public bodies exclusively.[24] The management plan does not discuss the possibility to introduce financial help or advice for private owners either, following strategies developed in Central, Western and Northern Europe.[25] Without legal

mechanisms, initiatives to stimulate the care for Nessebar from private owners will be difficult.

Increase of the sensitivity of the local community for the management of the site has been sought for in the development of programs encouraging the occupation of vernacular buildings. [26] People will be financially stimulated to live and work in traditional architecture. Whether this measure will provoke proper maintenance to the properties remains to be seen.

Programs supporting the traditional local industries should furthermore analyse the economic benefits from the promotion of traditional products. At this point, a thesis that traditional products will be traded with a greater economic success than the widely available goods that are in the centre of trade in Nesebar, is not reliable (Fig. 60).

During the drafting of the plan, the local community has been consulted once only. This resulted in an insufficient engagement of the site management with the needs of the locals. It also has led to little public interest in the preservation of the site. In contrast, the management plan of another WHS comparable to Nessebar – the Old Town of Regensburg with Stadtamhof in Bavaria, was a joint initiative of administration and locals.[27] Regular stakeholder discussions ensured that public needs are put in the centre of the management of the historic property. Tangible benefits for the local community reaching far from allocation of maintenance funds secured a better urban and social environment.[28] The partnership between management and community was facilitated by advisory boards providing guidelines upon construction development, starting a business or buying a home in the old town.[29]

The municipality of Nessebar has an important task for the success of the plan – to engage the locals for a positive change. The decline of the site resulted from neglect by the state and a mistreatment by its residents. Without engaging into a constant dialogue on the problems of the community, challenges will not be resolved. Unfortunately, the plan has already met the discontentment of a part of Nessebar's community. Low living standard, persistent administrative issues and no compensations for restrictions are what the locals fear.[30] It is still to be seen whether Nessebar's community will be acknowledged by the institutions for a re-establishment of the lost connection between people and site. This could only be fulfilled if the site management considers the needs of the locals, and on an encouragement of community participation in the protection of the site. What the plan could therefore envisage are various benefits for the local community. These should not be understood only as finances stemming from the use of the site. The example of the WHS

Old town of Regensburg with Stadtamhof demonstrates that residents of historic areas can benefit from improved living conditions. These include a better local climate, mobility, air quality, improved living and retail environment, reduced noise levels, and easier access to child care.[31]

Fig. 60 Vending of widely available goods dominates the local trade. Traditional Bulgarian goods are available in highly restricted number of shops in Nessebar

6.1.8 Recommendations for the Future Management of the Property

The following recommendations aim to prevent risks and to enhance the values of the property by addressing issues met by its community and visitors. Several of the proposed improvements have be adopted by the example of the Management Plan of the WHS Old Town of Regensburg with Stadtamhof. In the Management Plan of Regensburg, these are discussed as *"fields of actions"*.[32]

Appointing a Site Manager

The proposed by the plan optimisation of the site management network[33] does not clarify which institution will have a leading role in the site governance process. An identification of a leading management party for this specific cultural property is important, as a strong input is expected to drive the development and the implementation of the plan. A reasonable step would be the appointment of a site manager, as the complexity of the issues affecting the property requires special attention, expertise, devotion and time.

Improvement of the Tourist Services

Tourists like to experience the local colorite – the specific characteristics of a given place. Nessebar is popular as a historic ensemble and a shopping destination, offering a variety of specialised tourist services and cultural events. In future, it can be as well advertised as a place demonstrating the intangible national heritage and the specific natural characteristics of the region.

Increased duration of visitor stay should be promoted by the introduction of educational programs, scientific congresses and workshops in the low season. Such transformation requires a close collaboration of the local municipality with the ministries of culture and tourism.

The improvement of the range of visitor facilities across the site will provide a more pleasant stay. The establishment of a visitor centre can be complemented with a provision of information to people with visual or hearing impairments.

Improvement of the Green and Mobility Urban Structures

While the urban and retail infrastructure across Nessebar have been partially corrected,[34] the historic town needs an improvement of its mobility and green facilities. Car parking is problematic at the territory of the site and the adjacent modern city. At the same time, most private garage spaces have been transformed into gastronomy or trade facilities. Alternatives for parking outside of the World Heritage area should be provided, as a restriction of the mobility of personal motorised vehicles in the old city has been planned.[35] Motorised transport to the historic property should indeed be restricted, not only because it threatens the aesthetics of the landscape. Its reduction can lower noise and pollution levels. The possibilities to use parking spaces in the old town should be revised. Vehicle access

for retail and gastronomy supply could be provided in specific time periods and restricted during the rest of the time. Residents should be stimulated to use municipal parking areas in the modern town at reduced prices or cost-free. Alternatives to the use of motorised vehicles could be considered.

The mobility of disabled residents and visitors is troubled in some areas of the old town, especially those connecting it to the sea promenade at the north and north-east parts of the peninsula. Installation of ramps in currently inaccessible locations should therefore be considered. The possibility for a visitation of the World Heritage area with a personal assistant can improve the access to the site and will support the establishment of new workplaces.

Rehabilitation of the greenery will promote enjoyment from living in an aesthetically pleasing area. Planting of vegetation can contribute to a better environment in the hot summer season. An improvement of the green infrastructure is highly desirable in the north part of the peninsula, where the green space adjacent to the sea promenade is neglected (Fig. 61). The area can be transformed into a place for sport, relax and enjoyment of the sea view by landscaping and adding of benches, alleys, or sport facilities.

Conservation and Maintenance of the Property

The renovation of historic houses is currently restricted for the needs of safeguard of fabric authenticity. Yet improvements would ensure the preservation of the housing function of vernacular architecture – one of the most important characteristics of the old town. A rehabilitation process, if launched, should follow preliminary established regimes on a house-specific base. Conflicts between preservation and use needs can only be prevented if rehabilitation procedures consider the condition, specifics, original purpose and the character of the houses. Planning, advising and controlling every procedure, cultural heritage specialists and energy management bodies should lead the process.

Nessebar's architectural ensemble was the reason for granting a World Heritage statute to the site.[36] Therefore, the preservation of its integrity should be a priority task. The future conservation plan for the property should include provisions for architectural documentation, monitoring, maintenance, and conservation – preventive and remedial. Monitoring and documentation of Nessebar's monuments will help to assess and follow the changes to their integrity. This will furthermore facilitate the prioritisation of required maintenance and interventions.

Fig. 61 The currently unused green area in the north part of the historic peninsula

Strengthening the Bond between the Community and the Site

Programs encouraging the closer connection between the site and its community have been developed in Nessebar and currently enjoy a great success among children and young adults. These can be re-designed to involve adults too, starting with the families of the participating children. Such an action will result beneficial in long term, preventing some risks related to neglect or vandalism. Cultural life can as well be enriched with exhibitions of local art in the historic area.

A feasibility study of the possibility to introduce locally grown food products in the food supply chain in the old and the modern towns is advisable. This can strengthen the link between community and site through support of local businesses.

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Management planning may not directly interfere with the heritage fabric, but it directly contributes to its preservation or loss. It does so by defining directions of development and by planning how negative tendencies are controlled, restricted, or avoided. The drafting of a management plan for the Ancient city of Nessebar was a

praiseworthy effort. To reverse persisting negative site-use tendencies and to prevent future risks to the values of the property, the local municipality should, however, initiate a stakeholder cooperation on local and national level. Currently, the plan is not a risk-preventive instrument, as it does not effectively address the needs of those that influence the place, and do not involve them in a discussion. For the advancement of the plan, the national legal frame needs to be complemented to encourage care to private monuments. Authorities should still be prepared for an inscription of Nessebar in the List of World Heritage in Danger. UNESCO recognises that the plan *"does not fully reflect current conditions, and requires up-dating."*[37] *"/.../ In the absence of substantial progress, the possible inscription of the property on the List of World Heritage in Danger will be considered. The grounds for this, /.../, would be: "lack of conservation policy; threatening effects of regional planning projects; threatening effects of town planning".*[38]

If complemented with conservation and monitoring strategies and with legal instruments to encourage site care from its residents, the management plan will become a tool to prevent human-related risks to the property. This, however, cannot be realised without a self-impetus for a change, and commitment by the side of the municipality to restrain illegal development.

A site visit in the summer of 2017 demonstrated that highly negative tendencies related to ambulant trade are contained. Site maintenance, however, is still insufficient. Some proposed by the plan strategies are unrealistic given the lack of municipality power to implement it. One such strategy is the forced renovation of real estate properties to comply with aesthetic requirements. Yet private owners cannot be forced to alter properties without legislative grounds for it. This demonstrates that the management of the site cannot be sustainable if the national legal frame is inefficient. An effective prevention of risks to archaeological heritage is therefore dependable on adequate legal provisions and mechanisms, and on the support of national authorities.[39]

To avoid risks resulting from an interrupted relation between people and heritage, site management must listen to the public voice. An involvement of the locals in the governance of a site raises the awareness about the challenges of heritage preservation. It offers a realisation of sensitive management policies.

6.2 Public Participation in Site Governance: An Expression of a Modern Management Vision

The ICOMOS Charter for Protection and Management of the Archaeological Heritage postulates:

> *"Active participation of the general public must form part of policies for the protection of archaeological heritage."*[40]

But allowing public participation in site management requires to leave behind stereotypes and established norms regarding the care for heritage. Involving every public member is not possible, as people have different interests. Therefore, interest in history, traditions and heritage should be fostered from an early age.

Neglected or violated archaeological heritage is a sign of community detached from its patrimony. Studies demonstrate that direct involvement of locals as a work force on sites may not stimulate a sense of ownership.[41] Therefore, sustainable public-involvement approaches should rather promote sentiment, enrichment and joy.[42] What can attract the public to heritage is to communicate sites as places where senses and ideas, fantasy and curiosity are unlocked through new experiences.

Management models linking contemporary life and heritage preservation are rare but powerful. They ensure the survival of cultural properties in a threatening social climate. The basic idea behind such type of management is to create a bond between people and sites.[43] The site management model of the National Trust of England, Wales and Northern Ireland is sustainable and popular among community members because it promotes heritage as having a place in modern life.[44]

6.2.1 The Site Management Model of the National Trust

The National Trust of England, Wales and Northern Ireland was established in 1895 with the aim to manage and protect Britain's heritage.[45] It administers gardens and parks, collections, natural assets, historic buildings and archaeological sites.[46] Depending mainly on private donations and membership taxes,[47] the Trust manages properties with public

support since its inception. Partnerships with UNESCO, Historic England, the Welsh Government's historic environment service (Cadw) and the Environment & Heritage Service of Northern Ireland help to develop and implement the best practices in site management in a local context.[48]

The Trust offers a wide variety of activities to engage laymen in the day-to-day running of properties – from gardening, tour guiding, costuming and story-telling, to conservation, writing of condition reports, inventory, and grant securing.[49] Volunteering, training and internships are advertised as methods to improve the own curriculum, social life and professional capacities.[50] Membership is encouraged by free entry or reduced taxation upon property visitation.[51]

Encouraging the contact of children with heritage and nature, the Trust engages families in counselling to make administered places more attractive to young people.[52] With the help of its members, the organisation has grown powerful enough to oppose Government's infrastructure development projects.[53] It permits only development that is not offensive to the values of managed properties, and that is desired by communities.[54] This demonstrates that the public has a significant power that permits it to oppose unacceptable planning imposed by a supreme party. The Trust has acknowledged the public as the biggest financial stakeholder in its operations, giving laymen the right to define its strategic policies.[55] By ensuring local support, the organisation secures care for remote sites by local volunteers. The public attention is directed to the vulnerability of the managed archaeological and historical remains by media coverage and short documentaries. This communication is an honest way to demonstrate the practical difficulties of heritage preservation. The approach raises the public sensitivity to the matters of historic protection and wildlife conservation. An active communication in social media helps to bring places closer to people, demonstrating their natural beauty, or revealing important historical details.

The policy of the National Trust exemplifies an open-minded approach to the question of who can take part in the care and governance of heritage. It demonstrates that public participation strategies can be designed and adopted for every community member. It proves that archaeological sites are places of identity, enjoyment, study, creativity, and can offer an escape from the pressures of the daily life. Community participation in site management transforms laymen from a hazard into helpers. By giving people the feeling of ownership of heritage, the National Trust fosters passion for history and nature. The model allows laymen to feel bound with the past and its traditions, and to identify with them. This, without doubt, is reflected by an aspiration to cherish heritage and to care for

it. The involvement of the public has made this management model effective in the provision of sustainable care for heritage in a long run.

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The National Trust is an institution existing for more than 120 years. During that time, it purposefully worked to attract public support. Recent campaigns aimed at environmental preservation proved that an engagement for the public benefit is possible in Bulgaria too. These consecutive campaigns received significant media coverage and support from private businesses and public bodies. The case of Ancient Nessebar gives a possibility to introduce small-scale volunteering initiatives in the cultural sector too. Such an undertaking will encourage the sense of initiative among volunteers. It might as well turn out sustainable for the site care in the long run, especially in the face of future financial cuts for management.

In the past decades, the control of Nessebar isolated the most important stakeholder – the locals. Because of this isolation, people became a hazard. They forgot that only the retention of the values of a given place ensures a return of benefits.[56] Management planning can address the challenges met by archaeological sites and their communities.[57] However, it can only do so if it cherishes the link between people and places.

The prevention of risks to archaeological sites is a process in which all stakeholders are regarded and respected. As much as it depends on managerial efforts, it pivots around public support. To raise the public awareness and to promote a contact between people and heritage indisputably hinders many dangers to the monuments of the past (Fig. 62). Public involvement in heritage management makes people feel acknowledged by institutions and cherished for their contribution. It might be challenging, but it offers a coordination of the vision of administrators and specialists with that of the locals.[58] Cutting the link between communities and their heritage does not lead to sustainable solutions, on the contrary – it leads to disinterested public ignoring the need for preservation of the past. On the other hand, including laymen in partnerships with heritage management provides collaboration in which neither side is passive, and in which every voice is heard. Involving the public in the care for a given place ensures the historical continuity of that very same place. It is a task for the staff engaged with the study, conservation and management of cultural property.

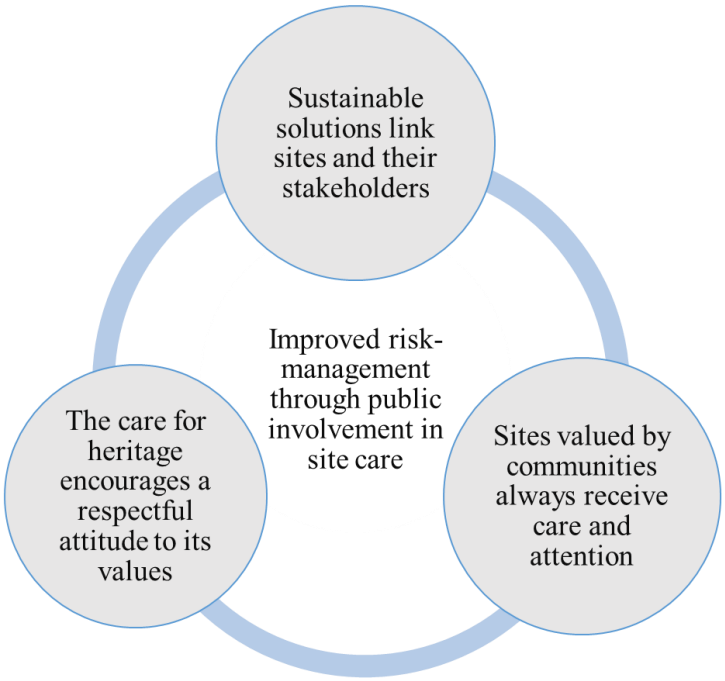

Fig. 62 Public involvement in site management as supporting the prevention of risk to monuments

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[32] UNESCO World Heritage Site "Old Town of Regensburg with Stadtamhof". Management Plan: 50-71
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Chapter 7

Comprehending and Managing Risks: Preventive Conservation for Archaeological Sites

Archaeological sites disappear every day for different reasons. If a site is completely lost, its original values can never be recreated in a copy or replica. Because when a site is destroyed, the genuine spirit of the place perishes together with its material. Therefore, preventing the factors leading to loss becomes so important for the archaeological field – it is the only way to keep a place instead of losing it. This makes preventive conservation – the indirect process directed to all factors threatening heritage sites – so valuable and relevant for the field of archaeology.

The basic preservation principles valid for every archaeological site are all indirect – do not interfere with the ancient fabric. And they aim to avoid threats and deterioration for the benefits of sites and their stakeholders. The 'indirect preservation' process is constant. For archaeological sites, it relies on regular site monitoring and management planning. Keeping archaeological deposits underground ensures that all their original characteristics are preserved to the future in their integrity. Enforcement of protective legislation helps to control threatening factors. Professional ethics and public involvement in heritage management additionally aid those policies. But can all these indirect preservation approaches be summed up under the term *preventive conservation for archaeological sites*?

7.1 Definitions of Preventive Conservation

The care for objects and places of value has been exemplified centuries ago,[1] but *preventive conservation* is a recent term derived from the museum context.[2] Conservation,

restoration and preventive conservation have been compared to medical concepts – medicine, plastic surgery and preventive medicine respectively. [3, 4] The last is expressed by practices that help to avoid a disease.[5]

Despite its common use in the cultural heritage field, the term *preventive conservation* has no single definition.[6] It has been referred to as a process, a measure, an activity, a policy, a duty, holistic approach, complex of actions, or a program.[7] Preventive conservation definitions range from *"ensuring that the museum's collections are displayed, handled, stored, and maintained in sustainable ways that do not lead to damage or deterioration, and that they are preserved, as far as possible, in an unchanging state."*,[8] to *"loss control"*[9] and keeping objects in an environment similar to their original one.[10] Ambrose and Paine extent the meaning of the term, equating it to *common sense* in museum practice, where every staff member knows and applies risk-preventive policies.[11] ICOM-CC includes in its definition public-awareness policies and legal compliance. According to its definition after the ICOM-CC terminology, preventive conservation is restricted to those measures that *"do not interfere with the materials and structures /…/ and not modify their appearance"*.[12] Yet this definition takes some more unrestricted position to the concept of indirect approach. Some remedies, such as the application of protective coatings, are discussed as preventing damage. These involve direct interference with the material of concern and may lead to further conservation issues. Levin's description adopted by the Getty Conservation Institute addresses the objectives of preventive conservation as applicable to entire collections, and not only to single objects.[13] The same principle is embraced by Burmester, where remedial treatment and ageing processes to museum collections are avoided by analyses, assessments and improved conditions in galleries and depositories, and during transport.[14] Burmester actually adopts a definition pointing to the extended feasibility of the approach as aimed to *"den dauerhaften Erhalt von Kulturgut"*[15] *(„the permanent preservation of cultural assets"*).

Seeking to prolong the existence of the cultural fabric and values, preventive conservation is an ongoing process that relies on pro-active and prohibitive policies, and on planned procedures for the management and use of cultural assets. It requires the cooperation of museum staff at all levels and includes the notion of *"working effectively in the area of museum management"*.[16]

Publications in which the term *preventive conservation* is discussed in relation to the non-museum field are rare. One notable exception is Corfield's article *Preventive conservation for archaeological sites*.[17] It follows a HE research about the preservation of organic

materials in waterlogged environments. Preventive conservation is understood as comprehending the factors that damage archaeological sites to ensure site preservation *in situ*.

In the terminology characterising the archaeological heritage management, the term *preventive* is being most often replaced by *protective*. Protective approaches to archaeological sites include both indirect and remedial measures. Site reburial, [18] sheltering, [19] and repairs and retrofitting, [20] mirror some of the practical conservation demands in the field. Site monitoring and maintenance are required to follow the progression of affective processes and to minimise their effects.[21] Sandbag buttressing and clay capping[22] are in most cases temporary stabilisation measures aimed at reduction of the level of certain risk. The technique of excavation is a powerful measure to prevent the loss of evidence due to inappropriate or ill-timed revealing of structures.[23] Conservation and management planning, [24] and regulatory measures, such as site access restrictions and zoning[25] minimise many of the factors that may lead to unwanted events and deterioration. Pedelì and Pulga define as preventive measures the physical protection and the maintenance of uncovered ruins between excavation seasons.[26]

Historic England bounds protection with site management – decaying submerged sites are not considered at risk if they are subject to planned study, recording and administration.[27] HE also recognises that natural processes, such as erosion, cannot be prevented, discussing some of the limitations of risk prevention in the field.[28] Supporting this thesis, other studies define as preventive only those measures that minimise human-caused deterioration. [29] These studies do not refer explicitly to the avoidance, blocking or elimination of risk factors, but to the restriction of their effects. This could be interpreted rather more a reactive than a pro-active preventive approach. In cases in which vandalism has been identified as deteriorative factor to monuments, a policy for increasing the public awareness about the value of the sites is recognised as preventing future risks. [30]

For Manders, the preservation of underwater archaeological sites *in situ* enables reduction of deterioration and permits future research.[31] A few limitations of this measure are pointed, among which costs for *in situ* conservation and management, and insufficient research capacity.[32]

Feilden proposes seven approaches to the protection of historic structures – *prevention of deterioration, preservation, consolidation, restoration, rehabilitation, reproduction,* and *reconstruction*.[33] They are all described as leading to loss of value but are justified for the aims of heritage safeguard.[34] In this systematisation, both *prevention of deterioration* and

preservation refer to preventive conservation. The first concept is defined as *"protecting cultural property by controlling its environment, thus keeping agents of decay and damage from becoming active".*[35] Preservation is described as keeping an object in the same state with the aid of maintenance, management, and cleaning schedules.[36]

7.2 The Agents of Deterioration

Agents of deterioration, despite the context in which manifested, are often interrelated. Those affecting museum collections – physical forces, criminals, fire, water, pests, contaminants, radiation, incorrect temperature, incorrect relative humidity, and dissociation[37] – are relevant to archaeological sites too. However, several specific to the archaeological context hazards can be added – *inadequate management, archaeological excavation* and *differing stakeholder values*. A site management is inadequate, when it permits the neglect of properties, their inappropriate use, or when it lacks public-awareness activities. Archaeological excavation is considered a hazard if unethical, if executed without conservation planning, and if not followed by a presentation of the research results to those who might be interested, including the wider public.

Compared to biodeterioration of museum collections, biodeterioration at sites is caused by a larger number of species. Dissociation in the archaeological field refers to absent or incomplete site documentation, or loss of records, knowledge, evidence and finds. The physical forces affecting archaeological properties can be differentiated to:

- caused by people – traffic vibrations, engineering operations, etc.; and
- caused by nature – geophysical loads, landslides, etc.

7.3 The Limits of Prevention

Management policies and non-invasive technical approaches help to avoid deterioration in the museum context. The existence of a building envelope, showcases, packaging, security and the possibilities for change of location, decrease risk exposure levels, and enable control of most hazards.[38]

On the other hand, the levels of control of risks to archaeological structures are significantly reduced. The archaeological material left *in situ* deteriorates continuously, regardless of the context in which sites are situated. Its ever-lasting existence cannot be ensured by any means, preventive or remedial. Risk prevention can only slow deterioration rates but cannot avoid all damage.

Some of the limitations in preventing human-related risks to sites are similar to those in museums. They are linked to the inability to predict or to hinder certain actions, such as vandalism and terrorism. Security is usually ensured only at highly popular and visited destinations. Hindering damage to monuments in wars where archaeology is deliberately attacked because of its cultural meaning is almost impossible. Public involvement and education about the values embedded in cultural heritage are impotent in the face of armed conflicts because the values of historical places are perceived differently by the various society groups. Education might also be missing in countries with devastated social systems, and in regions that have been facing social conflicts for decades.

Nature and its consequences cannot be controlled or modified. Archaeological remains cannot be isolated from water by any means. Unless sites are enclosed or are of closed type (tomb, grotto, cave), control of temperature, relative humidity, light or air flow and filtration is also impossible. Non-invasive solutions against natural hazards, such as slowing erosion rates through planting of vegetation, or control of vegetation through animal grazing, can be employed on a limited basis only. The concept of indirect risk-preventive approach in the field of archaeology has, therefore, its limitations. Preservation of sites exposed to the elements in their original settings usually comes at the cost of adding something new. Material stabilisation, fabric maintenance, barriers and enclosures are introduced when indirect approaches reach their limits. These interventions contradict with the philosophy of preventive conservation leaving the material of concern intact and not modifying its appearance. But their potential to prevent greater damage or loss cannot be ignored. In many cases, these are inevitable but should always be weighed against their specific risk-preventive potential. As these methods may introduce new risks in future, a constant monitoring and management of their outcomes is required.

7.4 The Concept of Preventive Conservation for Archaeological Sites

In the archaeological preservation, hazards and risks have been addressed for centuries by various indirect or direct measures. These, however, have not been called *preventive conservation*, but rather – different expressions of site protection. Indeed, the prevention of risks to the archaeological fabric can be done either directly or indirectly. But the avoidance of all possible damages to the exposed archaeological material cannot be ensured by purely indirect approaches. In this sense, the concept of preventive conservation for archaeology differs from the one valid for museums. The acceptance of the absolute principles of non-contact risk prevention valid in museums are hardly applicable to the archaeological world where the material is exposed to a wider range of hazards with limited opportunities for effective, non-contact only, risk prevention.

For archaeological sites, preventive conservation is mainly expressed through managerial policies and can be equated to *risk management*. According to the generic guidelines on risk management,[39] the concept is explained as *"the identification, evaluation, and prioritization of risks followed by /.../ economical application of resources to minimize, monitor, and control the probability or impact of unfortunate events or to maximize the realization of opportunities."*[40] Applied for the field of site preservation, risk management is a constant process engaging with social risks and those environmental risks that can be addressed. It spans through the entire existence of archaeological sites. It begins before any interference with the historic fabric, to foresee and avoid risks arising during and after excavation. It reaches from the first moment in which a site is detected and continues during and after excavation. It influences single sites and archaeological ensembles situated in natural and urban landscapes, and under water.

Preventive conservation for archaeological sites excludes actions that jeopardise the site authenticity. It includes some direct interventions to the excavated historic fabric, such as maintenance, to prevent greater damage and loss of original material and values. But excludes those interventions whose outcomes are unclear and those that may in future introduce new risks. It aims to prevent damage before it occurred but may include measures taken after deterioration had already been manifested to avoid greater loss.

Preventive conservation calls for a site management promoting sustainable preservation philosophy. Every site stakeholder has its role for the prevention of risks. Administrators

and politicians provide adequate site-protective legislative frame. Professionals guarantee an ethical treatment of a site. The archaeologist prevents damage related to inadequate or unneeded excavation. Conservators' and architects' role in preventing risk to archaeological sites is in the planning, implementation, or the restriction of interventions. Management involves stakeholders in communication for consensus-building and prioritises the care to monuments to those most in risk of deterioration.

Preventive conservation for archaeological sites is not opposed to remedial conservation. But stronger integration of preventive conservation in site management ensures more sustainable, long-term site preservation.

Preventive conservation is linked to the wider concept of ensuring a place of the archaeological heritage in the life of people. It offers tools for bringing site stakeholders on one table for their benefits, and for those of sites.

Preventive conservation for archaeological sites includes only those approaches dealing with the source of risk and aiming to preserve the integrity and the authenticity of the historic fabric and its context. It involves:

- site monitoring for risk identification;
- prioritisation procedures to evaluate threats and focus on actions dealing with risks;
- site preservation underground to prevent risks related to inadequate study and post-excavation management;
- enforcement of protective site management legislation;
- planning procedures regarding every interference with the archaeological fabric and its context, including excavation and conservation;
- site maintenance to prevent unwanted deterioration or greater loss.

Professional ethics lead preservation decisions. They are the means through which an improved material preservation is ensured indirectly. Ethics cannot be regarded as preventive conservation though, but rather as means aiding it. Public awareness-raising is another mean to point the attention to the vulnerabilities of archaeological resources and to the ways of dealing with them. Additionally, people-centred site management approaches provide a place and a function of sites in the lives of laymen.[41] As such, they strengthen the bond between communities and sites, thus facilitating the site management (Fig. 63).

Preventive conservation for archaeological sites is a constant risk management. Expressed mainly through restricted interference with the heritage fabric, it aims to preserve the authentic nature of archaeological sites in their original settings.

Legislative policies, planning procedures, and site monitoring and prioritisation, are the backbone of preventive conservation for the archaeological field. Site governance in burial conditions avoids risks related to destructive study. Monitoring and emergency preparedness follow the development of hazards and aid the avoidance or the minimisation of their effects to the archaeological fabric. Site governance operating under clear legislation ensures that risk-preventive strategies to archaeological sites are fully deployed. Planning procedures prevent the development of potential risks upon time and financial constraints, or stakeholder objections when the interaction with the archaeological record is inevitable. Prioritisation in site management engages with decisions what should be treated first to avoid loss, damage or deterioration.

Preventive conservation calls for public involvement in site care, encourageing the link between people and heritage that ensures the historical continuity of places. It demands for enforcement of professional ethics as ethical attitudes plan for the material preservation of all revealed site features and retrieved information.

Preventive conservation requires an appreciation of the values of sites by all their stakeholders and understanding of the importance of monument preservation in the long run. It is dependent on cultural, social, environmental and development agendas.

7.5 The Relevance of Preventive Conservation for the Field of Archaeology

Preventive conservation is of lesser significance for the preservation of deposits that are subject to rescue excavation. A salvage study has a restricted time frame in which every decision is taken upon urgency. Because of the need to meet all site stakeholder interests, in rescue archaeology is often sacrificed. In such cases, preventive conservation is expressed through a thorough site documentation, and preservation of as much material as possible.

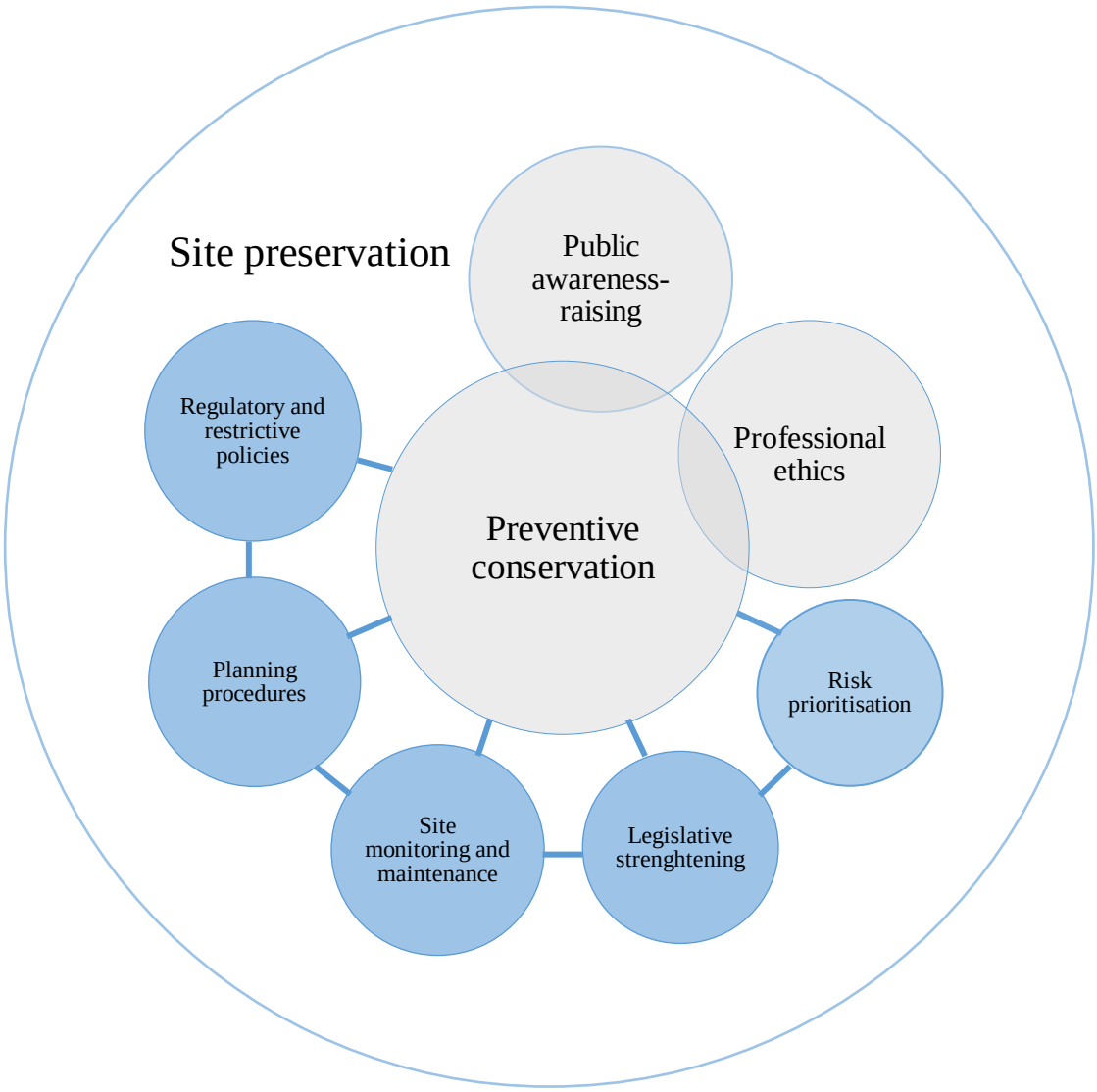

Fig. 63 The process of preventive conservation for archaeological sites influenced by professional ethics and public awareness-raising

Preventive conservation is, however, fully relevant for the preservation of non-excavated resources – by preventing interaction with the archaeological fabric, ensuring at the same time retrieval of information on the course of history. This offers a pragmatic site management, balancing between the stakeholder needs and site preservation. Nevertheless, when heritage is managed in burial conditions, new risks to *in situ* assets may be introduced unwillingly. In such a case, risk management follows the development of undesired effects to introduce aversive policies when this is required.

Preventive conservation offers a sensitive and sustainable approach to the management of excavated remains. Through forbidding policies and regular site care, interventions are limited or postponed. Thus, the interaction with the heritage fabric is restricted, as well as the new risks that may be introduced by it. At the same time, risk management multiplies the benefits of already executed conservation campaigns. When a sensitive intervention is monitored and maintained, a site preserves its values. Preserved authentic site characteristics benefit current and future site stakeholders.

The relevance of preventive conservation for the archaeological field will arise. In Europe, the preoccupation for cultural assets in the twentieth century was witnessed after the unrecoverable loss caused by the World Wars. In his essay from 1985 *The Past is a Foreign Country*, Lowenthal wrote:

> *"In the face of a massive change we cling to the remaining familiar vestiges. /.../. Nothing so quickens preservation sympathies as the fear of imminent extinction, whether of a building, a bird, or a folkway. /.../ The more the past is destroyed or left behind, the stronger the urge to preserve and restore."*[42]

People will be inevitably forced to embrace systematic risk management when losses due to wrong decisions in the past become painfully obvious. Without risk management, archaeological sites will face ever more drastic influences in the time ahead. One of those influences will be the effects of climate change to archaeological deposits and excavated monuments. As a global phenomenon, climate change is expected to challenge the most the management of heritage in coastal and permafrost areas. This will require the devotion of sufficient resources for risk management and site study. In that respect, preventive conservation should plan for the management of risks related to faster erosion rates and changed humidity and temperature levels ahead in time.

Many circumstances stand in the way of the establishment of preventive conservation in local contexts. When management and stakeholders back unsustainable policies, preventing damage and loss to cultural resources becomes a chimera. An impossibility to establish stakeholder consensus inevitably affects risk-avoiding policies. Preventive conservation calls therefore for understanding and compromises, share of power, and a realisation of the need for a change in the treatment of cultural resources. Some of the clashes between site stakeholders can be counteracted with the inclusion of an interested public in the site management process. Public awareness-raising is therefore one of the first steps that site managers should undertake to start transforming society members into helpers.

Preventive conservation requires professional competence. Avoidance of risks to archaeological contexts demands for an education of future specialists, engaged with the environmental, social, political and economic agendas influencing site preservation.

7.6 The Cost of Preventive Conservation

Studies comparing the costs for remedial and risk preventive activities for the archaeological field are scarce. An article dealing with the matter of expenditure comparison is the one of La Rocca and Nardi *Preventive conservation and restoration: A matter of costs*.[43] Yet it compares costs relevant to movable archaeological items, not to sites. Nevertheless, it can be presumed that by diverting resources from excavation, treatment and storage of retrieved materials to preservation of sites in burial conditions, maintenance and monitoring, preventive conservation saves resources in the long run. The paradox is, that the initial costs for developing and establishing policies for pre-disturbance surveys, monitoring, technical analysis, disaster response planning, construction of barriers, safety improvements, or changing the status of land containing archaeological remains, may be high. In medium and long term, it should result more economic by avoiding costs for the recovery from damage. Long-term expenses for preventive conservation should not be excluded from the equation, however. These may be related to maintenance, surveying, data storage and management, material investigation, and staffing.

7.7 The Notion of *Long Term*

Preventive conservation ensures that site authenticity and integrity are preserved for the future. Yet nowhere in published literature could one find an explanation *which future* is targeted, nor an interpretation of the notion of *long term*. In a risk management method developed for museum collections, Michalski and Pedersoli considered a span of time between 1 and 60 000 years for a hazard to occur, or for a cumulative process to cause total loss of the cultural material.[44] In museum management, long term is at best considered a period of 100 years. Yet given that management policies and staff change, long term would

be the period until the management vision and the personal caring for the heritage material are changed.

The long-term prevention of risks for archaeological sites is rather bound with the site management planning. Although archaeological sites had survived for thousands of years, many management plans set a limit of looking ahead in the future for a maximum of 20 years. An example for such a plan is the one of the Ancient Nessebar. The considerations resulting from the workshops of the first expert/stakeholder meeting for the management plan of the archaeological areas of Pompeii, Herculaneum and Torre Annunziata propose site management activities in a five-year frame.[45]

To plan in long term in the field of archaeology means to take measures that an archaeological site is preserved for the next generations – i.e. to have a look in the future for at least several decades ahead. However, the prediction of arising challenges is limited by administrative and urgency factors, budgeting, development processes, rapid deterioration of building materials, and the possibility for an outbreak of natural or social catastrophes. Planning for 20 to 30 years ahead is difficult even for sites with an outstanding significance. Because of their importance, it could be assumed that resources for their care will be always provided. There are, however, numerous examples for the opposite – Pompeii, Herculaneum, and Ancient Nessebar, despite their statute, have suffered damage because of mismanagement and lack of governance and maintenance. It seems therefore illogical to extend the planning of long-term prevention of risks in archaeology to 100 years or more. The concept of *long term* in archaeology can be rather bound with the ability to preserve sites in one-generation time, and to deliver them to the next generation. This defines long term as a period of around 20 years.

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Prevention has been recognised as the basis of cultural property protection.[46] Indeed, for either museum collections or archaeological sites, it is precisely that. Yet the way it is expressed in these two contexts is profoundly different. Differences between preventive conservation in museums and at archaeological sites begin with the context in which indirect preservation efforts take place. In museums, the prevention of risks takes place *ex situ*, after the separation of the movable items from their authentic settings. For archaeology, preventive conservation aims to preserve evidence in its original context.

Preventive conservation for archaeological sites is not a matter of technologies; it is a matter of policies. It is constant risk management taking place throughout the entire existence of an archaeological site. In contrast to indirect museums practices, preventive conservation for the field of archaeology encompasses some intervention, when this is required to avoid further deterioration and more severe loss to the excavated material located *in situ*. This includes site maintenance but excludes other interventions that interfere with the aesthetics of monuments or those hindering the risk of new deterioration.

The less people interact with sites, the less will be the number of risks. Therefore, preventive conservation aims at lowered interaction with the heritage fabric. When an intervention is inevitable, legislation and planning procedures become crucial to prevent the loss of evidence.

Preventive conservation cannot improve the legibility of previously non-restored archaeological remains. Where original dismembered material is accompanied by two- or three-dimensional reconstructions, this limitation is omitted. Digitisation and documentation aimed at preserving the informational value of heritage offer a digital access to sites and their settings.

In museums and at archaeological sites, the control of risk factors depends on the type, the aims and the capacity of management. To benefit a given site, preventive conservation demands therefore for a sound administrative organisation and purposeful efforts. As it requires resources for the constant assessment and management of affective factors, preventive conservation can hardly be applied in contexts characterised with a shortage of funds.

Effective prevention of risks to archaeological sites obliges for an ethical and thoughtful approach to the historical fabric. Integration of conservation ethics in the archaeological practice can transform the archaeological profession as respecting the rights of current and future generations. However, it cannot be expected that ethics will lead every study. Therefore, the management body has the most important role, setting policies and controlling every interaction with a site and its context. It provides a management frame in which preventive conservation is implemented. While the manager-in-chief has the leading role in promoting risk preventive policies, their enforcement depends on all staff members and site stakeholders.

Risks to archaeological sites are prevented only when the environmental and social issues threatening heritage are addressed. If a given stakeholder is isolated, he will inevitably challenge the site management in future.[47] Therefore, the management of risks for

archaeological monuments depends on the participation of all interested parties in the site governance. Consensus between parties will always be troubled by conflicting interests. It is a mirage when one stakeholder dictates the course of management – a situation in which the different values of someone 'above' lead to persistent challenges. To overcome this, a balanced approach to the site governance is required – one in which all voices are heard and one in which more stakeholders are empowered.

Preventive conservation has long-term benefits. Therefore, it develops in a long-term frame. It is not restricted to a given treatment at a certain time; it is not a finished work. It differs from site management, as the type of management itself might introduce risks to heritage places. It is not synonymous to preservation, as preservation encompasses a wider range of indirect policies and direct intervention to maintain heritage under the influence of inevitable change. Its establishment is facilitated by public awareness-raising and is dependable on professional ethics. To be applicable to the reality of many site management contexts, the process of preventive conservation first demands for a change in the thinking and working across the cultural sector.

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[26] Pedelì and Pulga 2002: 3; 6-7
[27] Historic England 2008a: 2
[28] Historic England 2008a: 2
[29] Ramirez and Valcarce 2003: 32; Pedelì and Pulga 2002: 5; Thompson 1981: 10
[30] Ramirez and Valcarce 2003: 33
[31] Manders 2008: 32
[32] Manders 2008: 33
[33] Feilden 1982a: 27-30
[34] Feilden 1982a: 27-30
[35] Feilden 1982a: 28
[36] Feilden 1982a: 28
[37] Michalski 1994: 10; Waller 1994: 12; 1995: 22; 1996: 2
[38] Waller 1995: 24-25
[39] ISO 31000/ 2009 in Wikipedia
[40] ISO 31000/ 2009 and Hubbard, D. 2009: 46 in Wikipedia
[41] UNESCO 1972: Art. 5: 1
[42] Lowenthal 1985 in Staniforth (ed.) 2013: 23
[43] La Rocca and Nardi 1994
[44] Michalski and Pedersoli 2009
[45] UNESCO 2012
[46] Furrer 2008: 160
[47] Demas 2002: 32

Chapter 8

The Art of Decision-Making: Prioritisation and Monitoring in Site Management

In most cases, site managers operate with restricted resources. Hence, the management of risks to archaeological sites requires for prioritisation. As an essential part of risk management, prioritisation engages with decisions what to be addressed first. A next step would be the monitoring of risk to define the outcomes of a prioritisation decision. Therefore, the current chapter investigates those factors that influence prioritisation decisions in site management. These served as a basis for the development of a site monitoring tool. The monitoring matrix proposed here is not designed to lead prioritisation decisions. Rather, it is an auxiliary tool that summarises information on what lies ahead of managers.

8.1 Ways to Prioritise

In site conservation and management, prioritisation is influenced by operational and administrative factors, social processes, and a number of places whose challenges must be addressed. 'Correct' prioritisation in the field would be the situation in which resources are directed to the site most in need, where damage is avoided while outcome is sustainable. The Council of Europe's Recommendation NO. R (93) 9 indicates that site vulnerability and values should guide the prioritisation process:

> *"In recognition of the variety and extent of architectural heritage, priority should be given to those buildings and objects of greatest importance and to those most in risk."*[1]

But whether risks and significance are the only factors that should guide prioritisation decisions is discussed in the following text.

8.1.1. The Concept of Risk. Risk Assessment and Prioritisation in Site Management

To prioritise risks, risk assessment facilitates decision-making in preventive conservation for movable heritage since the 1990s.[2] In most of its formats, it relies on mathematics to rank hazards and their impacts.[3] The following section deals with the applicability of existing risk assessment models for prioritisation in site management.

The conceptual meaning of *risk* includes both positive and negative nuances related to a chance for a win or a loss. In risk assessment-related literature, definitions of risk suggest an uncertain nature of an unwanted event that may involve loss, harm, damage, cost, or danger over a specific time period.[4]

In preventive conservation, risks are perceived as negative influences and consequences only. Despite this, by exploring the potential of risks, the exposure to danger can be minimised due to improved understanding of risks and mitigation options. Examples for risks in the field are breakage of an object due to mishandling, colour fading upon light exposure, or pest infestation due to increased temperature and relative humidity combined with the presence of attractants. According to Ashley-Smith, risks can be equated to costs.[5] Logically, preventing risks should save costs for the recovery from incidents and damage.

According to Historic England and *The Monuments at Risk Survey, "risk can broadly be equated with the concept of* (monument) *vulnerability"*.[6] Vulnerability can generally be explained as the site susceptibility to deterioration and damage.[7] The notion of *zero-risk* has been discussed as a term that is very far from the reality of site preservation, where deterioration and some types of damage cannot be mitigated.[8]

An accurate definition of risk assessment provides Beardsley:

> *"scientifically based process of establishing the physical facts about risk – defining probable effects, weighing evidence, discovering who might be exposed, and calculating estimates of possible harm. "*[9]

In risk-related literature the terms *risk assessment* and *risk analysis* often overlap.[10] Rowe[11] divides risk assessment into:

- Risk identification – the determination of potentially harmful events;
- Risk estimation – the investigation of material vulnerability and paths of deterioration; and
- Risk evaluation expressed by risk acceptance or measures addressing the risk.

Other studies adopt four steps in risk assessment.[12] These differ by Rowe's stages terminologically but comprise the same notions and concepts. Furthermore, the typology of risk assessment differentiates between quantitative and qualitative models.[13] Both types have been developed for environmental and nuclear safety studies, and for business risk analysis.[14] Quantitative (probabilistic) models are criticised for their uncertainty and subjectivity.[15] Many of these use complex mathematics, such as risk assessment models based on the calculation of expert opinion.[16]

Qualitative assessments estimate the level of risk relying on data for threats, vulnerability and available methods of control.[17] An example of a qualitative model used in preventive conservation is the one in which decision-making is analysed with the help of diagrams called decision trees.[18] The simplest decision chooses between two options, where the risk of selecting the wrong one is 50:50.[19] According to Teygeler, Vose first combined the positives of qualitative and quantitative assessments.[20] Vose argued for the use of quantitative data when available, and qualitative assessment when data is missing. If risk estimation results uncertain, consultation with experts is recommended.

In preventive conservation for movable heritage, risk assessment is being used on a world scale.[21] According to Ashley-Smith, Baer introduced risk assessment to the field, while the Waller – Michalski model gave an impetus for its wide use in museums.[22] Waller and Michalski considered nine agents of physical deterioration: physical forces, criminals, fire, water, pests, contaminants, radiation, incorrect temperature, and incorrect relative humidity.[23] The tenth agent causing non-physical deterioration was introduced by Waller as *custodial neglect,* and later changed to *dissociation*.[24] It is being understood as loss of objects or object-related information, or inability to associate objects and data.[25] Waller divided risks according to their frequency and manifestation – catastrophic and rare, severe and sporadic, and gradual and constant.[26] Magnitude of risk depends on the probability or extent of the hazard, the succeptable fraction of the cultural material, and the expected loss in value. The loss of value is defined as the *"reduction in the value of a collection for its*

intended purposes".[27] Five stages of hazard control are proposed by Michalski – avoidance, blocking, detecting, responding, and recovering.[28]

Some of the limitations of this model were identified by its authors. One of them is the perplexing estimation of loss in value.[29] Another is the impossibility to quantify precisely all risks.[30] The scoring of risks involving value estimation has also been criticised for the unclear relation between loss of condition, loss of utility and loss of value.[31] The loss of utility-loss of value relationship is not always straightforward given the large variability of objects and collections, and the values they hold. The definition of value as the *"potential to be useful"*[32] does not reflect the profound meaning of the term. It does not encompass the existence of values that are not related to use, such as symbolism, aesthetics, delight, and enjoyment. A mathematical tool for risk assessment is in general incapable to comprise all the subjectivity in value judgements. For some, breaking a vase may result in total loss of value, as the object loses its primary purpose. But for others, if the vase can be restored, it might only suffer a minor loss of value.

An important study of Baer follows the development of risk management as a choice of an alternative against identified risks.[33] According to Baer, the level of controllability of risks is what determines the chosen risk management strategy – non-controllable risks are accepted while the treatment of other events requires direct or indirect control. Examples for hazard elimination and risk level change are given, respectively – moratorium on site visitation and relocation of environmentally susceptible parts to museums.[34]

It has been discussed that people intervene against a hazard when having a feeling of personal efficacy, i.e. if an action can make a difference.[35] In heritage management, this explains the reluctance to address certain harming natural or social phenomena. Starr and Rogers draw the conclusion that the public perception of hazards and risks is shaped by hazard identification and risk manageability.[36] If people believe that risks are manageable, they are perceived as having a low probability.[37] In practice, the relation between risk identification, risk assessment and risk management is unclear.[38] Managers do not always prioritise the risk with the highest identified magnitude. Decisions depend on broader factors, such as cost-effectiveness, resources to counteract risks, stakeholder opinion and public interest, and urgency of the required action.[39] Available time to deal with a given hazard can be added to the list of decision-shaping factors. Taylor discusses other possibilities – to choose an option that deals with several risks at a time or to investigate a certain risk more profoundly.[40] A manager might treat the risk that affects a larger or a significant section of a site or a collection. Most often, however, managers and

administrators have been found to respond to the most obvious issues and to neglect *"the dimensions of the problem which are more remote in time and place"*.[41] This may lead to a greater damage at a later stage due to the omission of the future potential of a given hazard. Financial constrains may lead to the adoption of the cheapest risk-averting solution, rather than to the choice of the most appropriate one.

When considering the possible use of risk assessment in the field of immovable heritage, of concern is not only the relation risk assessment – risk management. The inconclusive nature of risk assessment, its subjectivity, and perplexing mathematics also play a part.[42] These question the automatic transfer of the 'movable heritage' risk assessment format to the archaeological sector. In fact, for determining the level of risk for a given monument, risk assessment has been used in highly differing formats and on rare occasions only.[43] Differing management contexts are one of the reasons for this. The estimation of risk of ploughing damage to sites in arable landscapes in England considers site vulnerability, environmental context and site management context.[44] Another risk model developed for submerged sites in the Venice lagoon overlaps site distribution and environmental data.[45] The magnitude of risk is a product of the exposure of sites to risk factors, site vulnerability, risk typology, archaeological value, and uncertainty. Here, archaeological value is understood as *conservation status* rather than as *site importance*.[46] At the WHS of Herculaneum, overlapping maps with hazards and decay inform where to prioritise interventions to prevent damage. This facilitates the monitoring of the site and helps to identify areas where further research is required.[47] Interventions are decided upon condition and risk only, which may leave areas with higher significance unattended. A similar system is adopted for scheduled monuments and sites in England – important historic places that are routinely assessed. Hazards, site condition and rate of decay are traced to identify large-scale threats that should be managed to reduce risks. This approach has been introduced in 1994 with the first nationwide survey of the condition of archaeological sites *Monuments at Risk Survey* (MARS). Followed by the *Heritage at Risk Programme* (HAR), MARS was the first step in a process that informs present assessments about the effectiveness of past management.[48] Sites addressed with priority are those at a high risk of loss or serious damage in three to five years, regardless of the type of hazard.[49]

What is left unexplored in all mentioned formats is how the significance of a place influences the addressing of risks. The systems are as well inconclusive which hazards should be dealt with priority – events causing cumulative damage to a larger number of sites, or those causing rapid damage to a smaller number of important places. The

comparison of different typology of hazards affecting a single site is also unclear. None of the formats discusses whether the development of simultaneous hazards should be prioritised against single events.[50]

Despite its deficiencies, and even though *"risks can never be measured precisely"*,[51] risk assessment informs on the vulnerabilities of the historical material and on the threats to it. It can therefore be helpful in shaping management decisions.[52] Choosing to counteract to an obvious hazard without assessing all other possible threats, site managers might favour unsustainable strategies.

Prioritisation in site conservation and management could not, however, rely only on risk assessment. While risk probability can be expressed in numbers, site values cannot. A wide range of additional factors influence decision-making in the field. These are related to the management context of a given site and the influence of different stakeholders to its governance. Moreover, uncertainty will inevitably characterise the prioritisation process regarding archaeological sites. It could be linked to the lack of data, to the vulnerability of the monument, or to a different perception of hazards.[53] Even if risk assessment is performed by several specialists with different backgrounds to reduce uncertainties, risks of intentional harm could still be omitted.

The field of archaeology would rather benefit of a simpler approach, based on qualitative information predominantly. Repeated observations and investigation of options for improved care are aspects that could be easily communicated to all site stakeholders.

8.1.2 Site Values, Significance Assessment and Prioritisation in Site Management

Threats and damage are not the only factors influencing site conservation and management. In practice, prioritisation in the field is often related to the values of a place. Sites addressed with priority may be those having high significance, those that have the potential to bring back invested resources, or those whose significance is expected to rise in time.

The values of an archaeological site can be defined as the material and non-material characteristics that distinguish it among other places. While some studies equate *value* to *utility* and *usefulness*,[54] de la Torre and Mason give a more profound and comprehensive

definition of the term. Value is described as *"a set of positive characteristics or qualities perceived in cultural resources by individuals or groups"*.[55] The term *cultural significance* expresses *"the importance of a site as determined by the aggregate of its values"*.[56] The value of archaeological sites is related to their significance for people as carriers of identity, to their research potential or economic use.[57] Archaeological sites are valued because they are the physical remains of past époques and civilisations, and cannot be replaced if lost.[58] The values of historical monuments have been found to be subjected to damage and loss, just as their fabric.[59] Ebnöther and Thurnherr even argue that the main challenge in cultural property protection is the preservation of value before anything else.[60] This thesis can be supported given that the material evidence is usually neglected when its values are not recognised.

It has been widely agreed that the value judgement is subjective.[61] It is dependable on the wider significance of a given place for its stakeholders and their conflicting interests.[62] Subjectivity in value perception has been furthermore identified as the main obstacle for the establishment of a single framework of heritage value typologies.[63] This is demonstrated by the existence of numerous value classifications, in which similar concepts are masked behind variable terminology.[64]

Two of the simplest differentiations of site values are proposed by Feilden and Mason.[65] Feilden identifies cultural, use, and emotional values, subdividing them to minor categories encompassing different meanings. The two principal value categories discussed by Mason are socio-cultural and economic. In Mason's typology, cultural value characterises every heritage site. It refers to the *"shared meaning associated with heritage that is not related to chronological aspects"*.[66]

The *Principles of Conservation of Heritage Sites in China* refer to historic, artistic and scientific values of archaeological sites.[67] This categorisation omits the economic values of heritage which are indisputably brought forward in site management decisions. Yet site economic values are studied in deep by Mourato and Mazzanti and by Sullivan – by investigating the relationship between the economic and non-economic use of heritage places.[68]

Values are interrelated. They can be conflicting or mutually dependable. Age value, if not complemented with other meanings, such as research value, economical potential, aesthetics or historical significance, can hardly trigger preservation efforts. A value conflict demonstrates itself when sacred sites are over-developed for tourism, or where archaeology disrespects the spiritual meaning of a given place to its indigenous community because of

research potential.[69] The economics of heritage often conflict with its socio-cultural characteristics. Yet economic potential has been discussed by Sullivan as directly stemming from the existence of other values.[70] The successful handling of value conflicts has been argued as being dependable on the cultural matureness of the site management.[71]

It has been recognised, that the values of a given monument influence its conservation and management.[72] The opposite is true too, as conservation also influences the values of a given monument. Some studies support the thesis that conservation enhances value, especially the economic one.[73] It must be noted, however, that this is dependable on the quality and the sensitiveness of interventions. Conservation that is not sensitive leads to loss of material, evidence, character, and thus to loss of value. An example for intervention that led to loss of value is the one of the archaeological remains of Ancient Serdica in Sofia, Bulgaria. Original material was removed and replaced with modern one. Thus, the intervention rather contributed to the loss of original, age, aesthetical, and research values, and to loss of the authenticity and the character of the place (Fig. 64).

Fig. 64 Part of Ancient Serdica after intervention, Sofia, Bulgaria

Assessing the values of archaeological remains has been found as relying on textual, pictorial, oral, historical, ethnographic, and building technologies data, as well as on the site rarity.[74] It has been recognised that an assessment of site significance starts with value identification.[75] There are no common site value assessment procedures, but criteria for value judgment have been identified in a number of research studies.[76] These are related to the physical condition, the characteristic elements, the vulnerabilities, and the rarity of sites.

Research, education and display potential, and public interest complete the number of criteria for value assessment. Indeed, when including archaeological sites in the World Heritage List, UNESCO considers historical, aesthetic, natural, symbolic and educational values, as well as the integrity, authenticity, and rarity of places.[77] Site scheduling in England and Wales embraces similar criteria.[78] Mason concludes that a value characterisation should consider the significance ascribed to a site when discovered, and its significance change in future.[79]

Literature on practical value assessment is scarce. A study by Mason differentiates between quantitative and qualitative methodologies.[80] Mathematical models are discussed as able to score economic site values but are regarded as unsuitable for analyses of cultural and spiritual characteristics. The ways in which participatory methods, expert analyses, and surveys on hypothetical choices inform value judgements, are furthermore revised.[81] Other publications engage more profoundly with the link between values and mathematics, summing perception and intrinsic values of places.[82] These are criticised for being unable to score the material characteristics of unexcavated sites.[83] Numerical expression of values, although considered practical by some, does not reflect the deepness of the immaterial, material, emotionally linked and changeable characteristics what actually values are. Value assessments therefore, should not be reduced to numbers.

8.1.3 Prioritisation in Medicine – Comparable to Prioritisation in Site Management?

Outside heritage management, prioritisation is a daily task in the medical field. Insufficient resources, raising costs and number of patients, and urgency of the required treatments dictate the need to prioritise. Healthcare is also a field where practitioners encounter ethical dilemmas in addressing the needs of patients. Parallels can be therefore drawn between medicine and site management.

The most widespread prioritisation system in medicine is triage. Its main decisive factor is the likelihood of survival – resources are allocated to patients with greater chances to live.[84] Decision-making in advanced triage is facilitated by prioritisation charts assigning colours to the different categories of severity of condition.[85]

In site conservation, triage would be reciprocal to condition assessment, where treatment is prioritised according to types of damage and fabric vulnerability. Condition assessment is indeed a suitable first step for a management prioritisation. But it should not be the only factor for it, as other factors are relevant for an objective decision-making. These are identified in the following survey, investigating how and why different stakeholders prioritise certain sites instead of others.

8.2 Survey on the Prioritisation in the Conservation and Management of Archaeological Sites

How people prioritise the conservation and management of archaeological sites was researched in the period October 2015 – January 2016. The survey involved 80 people of seven different nationalities. Nationals of Bulgaria, Germany, Egypt, Serbia, Jordan, Italy and Greece participated in the research. It was aimed at the three professional categories that are most often involved in site conservation and management – archaeologists, conservators and architects. Every of these groups had 20 respondents. Of all specialists taking part in the survey, three are currently site managers in three different countries. Additionally, 20 laymen with educative and professional background outside the field of site preservation were included as a separate survey group. Investigating the public opinion helped to trace the differences in site valuation between laymen and professionals.

The survey followed a *"stated-preference method"*[86] in which the participants were in a hypothetical situation and had to make a choice. Photographs of sections of ten archaeological sites were presented to the respondents (See Fig. A6-1 to A6-10, Appendix VI). The chosen archaeological sites are in Bulgaria, Greece and Italy. Participants had to choose one site to be conserved with priority. Before making a choice, people were informed that the decision depended on them only, and that resources were available for addressing the needs of one site only. Questionnaires were disseminated electronically after a short explanation of the aim of the survey.

One group of photographs comprised images with common damages or clearly identifiable hazards. Another group showed places where deterioration and risk factors were not superimposed, but where site aesthetics were clearly attested. World Heritage Sites and places with regional or national significance were chosen for the research. Some of the sites

are situated in urban environments, others – in rural. Several are parts of larger archaeological ensembles, having group values. Two are still partly unexcavated. Several of the properties are important for local economies as tourist landmarks. Others have religious significance.

In the first part of the survey, participants had to prioritise only based on the images. In the second part, the same decision had to be made after providing participants with short information about the significance, risk factors, and condition of the sites. Dividing the survey in two parts helped to understand how decision-making is influenced by available information.

58 out of 80 participants returned filled questionnaires (Table 2). The interviewed from the group of the laymen proved to be the most active and interested of all. The architects demonstrated very little interest in the survey. All respondents made a prioritisation decision. 56 out of 58 respondents prioritised one site within 10 minutes. This demonstrates that people can make complex decisions rather fast in a hypothetical situation.

8.2.1 Decision-Making in the First Part of the Survey

Different factors influenced decisions in the first part of the survey (Tables 3, 4 and 5). Conservators prioritised predominantly based on site condition. The factors shaping the decision-making in this group were:*

- Deteriorating condition – twelve participants;
- Types of damage that may lead to further damage or to non-recoverable loss of fabric or information about the site – ten respondents;
- Urgency of the required treatment – 16 respondents;
- Visible risk factors affecting site condition and/ or values – 14 participants.

Among other factors, site aesthetics was a criterion for choice for eight specialists in this group. Rarity or importance seem to fall out of the main criteria for choice for this group, as four participants only prioritised on its basis. One of the respondents in the group noted that her choice was entirely influenced by the WH status of the chosen property.

* Multiple answers were given.

Table 2 Number of participants according to profession and gender

Group	***Disseminated questionnaires***	***Returned questionnaires***	***Men***	***Women***
Archaeologists	20	14	6	8
Conservators	20	16	4	12
Architects	20	8	2	6
Public	20	20	14	6
Total	**80**	**58**	**26**	**32**

In the first part of the survey, six conservators prioritised sites with very complex problematics, where interrelated hazards have triggered large spread damage. Four others chose places where no alternatives to *in situ* preservation exist, such as relocation to museum, or reburial. Three respondents commented on the destruction of original context upon relocation of features to a museum environment. In their answers, relocation was regarded as *"unwanted"* and *"posing risks for the condition"* during detachment. The question of sustainability and price of conservation was brought forward by one conservator only. Eventually, this conservator chose a site that is easy to monitor and maintain after intervention. Another participant noted that in either context, sites that are upon acute danger of loss, regardless of their significance, should be addressed.

A factor influencing decision-making for 16 conservators was the lack of detailed information on the site condition. This again demonstrated that condition was a main decisive factor in the group.

The group of the architects provided few responses. Similarities with the answers of the conservators predominated. For the architects, the most stated criteria for choice were as follows:

- Urgency of the required treatment – six participants;
- Types of damage that may lead to further damage or to non-recoverable loss of fabric or information about the site – four participants;
- Visible risk factors affecting site condition and/ or values – four participants.

It was difficult to judge on the decisions in this group as one participant only commented further on his choice. He noted he would direct all available resources to a place that have never been conserved. All architects choose sites exhibiting damage that needs to be addressed in short term to avoid loss. For six participants, lack of information on the significance of the places was a factor hindering the decision-making. For other six, those were rather the risks threatening the sites of concern.

Table 3 Decision-making factors in the first part of the survey

Decision criteria	***Archaeologists***	***Conservators***	***Architects***	***Public***
Site importance	50%	12.5%	25%	30%
Site aesthetics	28.5%	50%	-	30%
Site rarity	35%	12.5%	-	30%
Deteriorating condition	42%	75%	25%	20%
Urgency of the required treatment	28.5%	100%	75%	20%
Types of damage that may lead to further damage or to non-recoverable loss	14%	62.5%	50%	60%
Visible risk factor affecting site's condition and/ or values	42%	87.5%	50%	30%
Information about the site	14%	12.5%	-	40%

Site importance, deteriorating condition, and visible risk factors did slightly prevail over other criteria for prioritisation in the group of the archaeologists. These were decision-making factors for more than a half of the respondents in this group. Urgency and damage that may leave to a greater damage and loss were of significance for four, respectively two participants. Absence of information on the condition and the risks affecting sites were obstacles for the decision-making for all respondents. The archaeologists had no difficulties to make a prioritisation decision because of lacking information on the site rarity. Most

probably, this is conditioned by the fact that at least part of the group recognised all pictured places.

Table 4 Factors that complicated decisions in the first part of the survey

Factors	***Archaeologists***	***Conservators***	***Architects***	***Public***
Lack of information about site condition	71%	100%	50%	40%
Lack of information about site rarity	-	62.5%	25%	40%
Lack of information about site significance	14%	68%	75%	40%
Lack of information on risks affecting the sites	64%	50%	75%	30%
Lack of information on the management context of the sites	28%	50%	25%	10%

The public expressed a great interest to participate in such kind of a research and commented the most on the way decisions were made. Several respondents expressed willingness to take part in other similar surveys in future. Others asked why the public opinion is never considered in 'real life' site management decisions. The public brought upon questions on the feasibility and the cost of conservation, unlike the other three groups. The sense to invest in something that appears to be lost interested more than a half of the respondents. The significance of archaeology for regional economic development, and the obtaining of private and public funding for site conservation were also commented in answers.

For twelve public 'representatives', a deterioration that may lead to further damage or loss should be considered with priority. In this respect, the answers did not largely differ from those of the 'specialists' groups. The more the public knew about a given site, the less it

was interested to invest in it. The challenges of popular and 'more important' sites were commented as receiving enough attention already.

Table 5 Other factors influencing decisions in the first part of the survey

Group	***Other factors influencing decisions***
Archaeologists	• Patriotic feeling
Conservators	• Challenging or complex treatment
	• Need to correct past conservation mistakes
	• Need to re-open the place for tourism
	• No other alternatives for preservation apart from preservation *in situ*
	• Sustainability and cost of conservation
	• WH status
	• Irreversibility of loss
Architects	• Need to invest in places that have not been conserved by far
Public	• Potential for site development for tourism
	• Financial aspects of conservation
	• Social aspects of conservation
	• Need to invest in places that are less known
	• Patriotic feeling
	• Need to invest in places that can be preserved with less resources
	• Need to invest in places that require complex treatment
	• Need to invest in places that cannot be otherwise funded

Six participants prioritised places that have been recently excavated and are currently considered of lesser significance compared to WH sites. According to those answers, prioritised should be sites that cannot be otherwise financed, or monuments whose touristic promotion can contribute to the economic welfare of a given region. These results differ, however, greatly from the answers of the group in the second part of the survey, when eight

participants prioritised a site of a greater significance than the one chosen in the first part of the research.

Financial and social aspects of heritage were of interest for the decisions in this group. How much conservation will cost was a subject discussed from roughly 40% of the laymen. On the matters of costs of intervention, the public was divided in two. Three respondents noted that a site with more complex needs, respectively requiring a higher investment, should be prioritised. The same number of people commented that the most effortless and inexpensive interventions should be implemented first.

The members of the public prioritised very different sites – places that have a potential for touristic development, WH sites, and monuments with strongly attested aesthetical value. Six participants from the group commented that aesthetics was the main factor shaping their decisions when information for the places is lacking. The absence of knowledge about the cost of conservation was commented by four participants as hindering their decisions.

8.2.2 Decision-Making in the Second Part of the Survey

All participants from the groups of the conservators, the archaeologists, and the public took part in the second part of the survey. Of all architects, only one did. After being given basic information for the concerned sites, participants were asked to prioritise again. A comparison between the sites chosen in every of the groups is provided in Table 6.

The larger part of the respondents – 35, took the same decision. Of those sixteen who prioritised a different site, twelve choose a site of a greater significance (Table 7). The site that was prioritised most often in both parts of the survey was the rock relief of the Madara Rider in Bulgaria, a WHS. At the end of the survey, it was chosen by 20 participants – approximately one third of all respondents. Most people who choose to prioritise it, commented that the uniqueness of the place lead their choice. In addition, its challenging conservation issues combined with the risk of total loss, made it a preferable choice for prioritisation.

The suburban baths of Herculaneum were prioritised by nine participants. The site was found special in terms of aesthetics, mysticism, history, and condition. Prioritisation was guided by the beauty of the place, and by the urgency of the required treatment to avoid collapse and significant loss.

Chosen by six participants in the second part of the research, followed the medieval church located at the Black Sea shore. This choice indicates that people tend to prevent certain, total losses, despite the temporary effect of interventions.

In the second part of the survey, most participants prioritised WH sites (35) over non-WH (16). Moreover, two of the three prioritised sites with a final highest score are WH sites. This is an indicator that WH status receives superior attention.

Table 6 Comparison of chosen sites from total number of people in the first and the second part of the survey

Site	***I part of the survey***	***II part of the survey***
A medieval church in Southeast Bulgaria, located on the Black Sea coast	8	6
A medieval church in in Northeast Bulgaria, part of Veliki Preslav	-	-
Herculaneum's suburban baths, part of a WHS	7	9
Pompeii, WHS	2	4
Part of Ulpia Serdica in Sofia	6	4
The Western gate of Ulpia Serdica, Sofia	5	2
The Acropolis in Athens, WHS	8	2
The rock relief Madara Rider, WHS	12	20
The temple of the Olympian Zeus, Athens	10	4
A wall painting in Villa San Marco, Stabiae	-	-
Total	**58**	**51**

When describing their decision-making, members of all groups used the following expressions:

- *"Its aesthetics attracted me"*;
- *"Its beauty left me without words"*;
- *"The site simply captured me as a view"*;

- *"It grabbed me"*;
- *"I think that dimensions and aesthetics are the first thing taken into account when making such kind of decision"*.

Table 7 Comparison of positions in both parts of the survey (58 respondents in total)

Changed or retained prioritisation decision	***Number of people***
People who prioritised a different site after being given additional information	16 (27.58%)
People who prioritised the same site after being given additional information	35 (60.34%)
People who did not participate in the second part of the survey	7 (12.06%)

These comments are a sign that personal feelings contributed to the taken decisions. The same is valid for prioritisation based on patriotic feelings.

Hazards and risks seem to have lesser significance for prioritisation than site values and condition. This is contradictive, given that deteriorating condition is a result of an active hazard. Most probably, this is a result of a different perception and visibility of hazards. Visible or clearly distinguishable factors leading to damage are of concern, while potential risks seem to have been omitted in answers.

Several conclusions can be drawn from this survey:

- Conservators and architects prioritise places that are threatened by certain loss instead of monuments threatened by potential damage;
- Conservators prioritise mainly based on site condition. When taking a decision, they are likely to choose sites exhibiting conservation challenges;
- Architects prioritise based on hazards and damage that needs to be urgently dealt with;
- Archaeologists prioritise based on widened criteria – site condition, importance, and risks;
- The public is interested by the financial aspects of conservation, and by the potential of development of places for visitation;

- Stakeholders respond to visible, easily identifiable hazards, major damages, and risk factors that are manageable;
- Archaeological sites with strongly attested aesthetics are likely to draw attention for investment;
- Complete information about the historic properties may or may not be a decisive factor in decision-making;
- Stakeholders tend to prioritise sites deteriorated by several, interrelated hazards. Nevertheless, in this survey, this might be more a result of an intuitive choice, rather than of a rational decision-making;
- Prioritisation decisions are to a point a product of personal views and perceptions. Therefore, the more stakeholders participate in the decision-making, the greater are the chances for an objective decision.

The survey excluded politicians – the stakeholder who is often a decision-maker when it comes to 'real-life' site management and budgeting. In that respect, it cannot give a picture of prioritisation, influenced by another powerful party. Nevertheless, the survey shed light on the opinion of the four other basic groups of site stakeholder. One archaeological site was finally prioritised based on a majority of answers. Yet the research is not conclusive on whether prioritisation consensus would have been reached in a real situation, where stakeholders are directly confronted.

The survey is indicative on the subjective and objective factors influencing prioritisation. The objective factors having a greatest weight in deciding are site rarity, condition, and aesthetics. All objective factors influencing prioritisation decisions are summarised in Fig. 65.

In a real situation, it can be expected that if a site is rare and rapidly deteriorating, it will be prioritised among other places. Another category of monuments that are to be expected to receive greater attention are those upon a danger of loss or a major damage, despite their significance. Sites with strongly attested aesthetical values are highly appreciated, both by specialists and public. This is indicative for the importance of aesthetics in decision-making when information about risks, deterioration and significance is unavailable. Undoubtedly, unparalleled archaeological sites that are highly vulnerable in short or medium term should be dealt with priority.

♦

In conclusion, prioritisation is not straightforward, and like professional ethics – it is subjective. Nevertheless, there are many factors that are relevant for a justified prioritisation decision-making. The exploration of the attitudes of a larger, diverse group, revealed that people with various backgrounds can have an opinion on the questions of heritage preservation, even if part of this group is not directly involved in the care for cultural patrimony. In consequence, real decision-making should also be a product of a group decision, taking in consideration the opinion of different parties to avoid prevailing personal judgements.

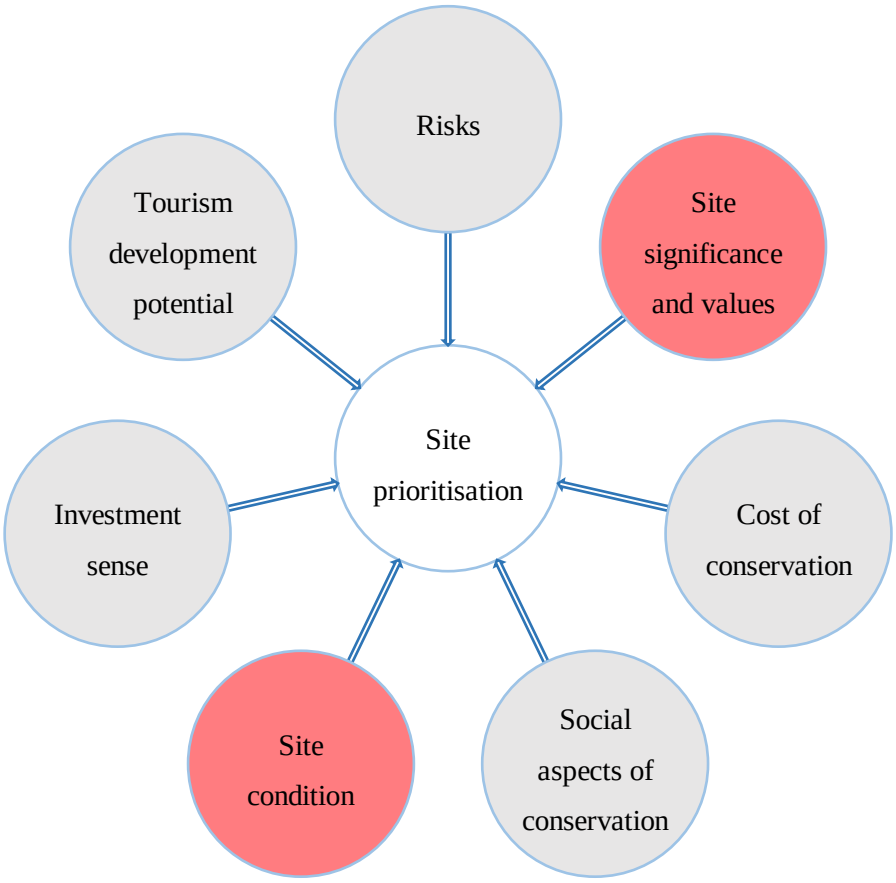


Fig. 65 Objective factors influencing prioritisation decisions in site conservation and management

8.3 Monitoring Chart for Archaeological Sites

Monitoring archaeological remains and their surroundings is a risk management tool. It evaluates the condition of sites and their contexts and follows the development of factors that may threaten them. The monitoring tool proposed here (Table 8) is not designed to lead prioritisation decisions. Rather, it is an auxiliary tool that summarises information on what lies ahead of managers.

The first section of the matrix includes general site information. A segment for condition assessment follows. This section is based on prioritisation schemes used in triage. Condition assessment clarifies what is the potential for future damage if hazards are not addressed. It also classifies types of damage and helps to prioritise those that may lead to irrecoverable loss.

For cultural heritage materials, the term *damage* is understood as deterioration or loss of fabric, value, information, and usefulness.[87] At archaeological sites, the damage that cannot be avoided, is reparable, or follows because of an action aimed to prevent greater damage, is tolerable. Damage acceptability can be influenced by site' scale and features, and by the subjectivity of the person apprehending a site. Some past damages may add to the historical, informational and research values of monuments.[88]

Types of damage to movable objects have been differentiated by Keene.[89] This system is adapted here to classify damages to archaeological sites:

- **Major structural damages** are characterised by a variety of conditions that usually lead to rapid loss of material. Large disruptions or lacunae, detachments, major splits and distortion are indicative for a fast-progressing major damage. Deep cracks or multiple minor cracks in supporting members, corrosion of elements in supporting members, and severe crumbling are signs of structural weakening, demanding immediate intervention. Delamination of sculptural decoration or decorative layers endanger the aesthetical and research values of sites, as it leads to loss of cardinal elements, vital for the appreciation of a given place. Structural weakening of foundations or ground is among the most severe and difficult to address major structural damages;
- **Minor structural damages** affect isolated areas. They can be manifested by crumbling, small lacunae, or small-scale detachments. Bulges and depressions

Table 8 Site monitoring chart

Date of the monitoring						
Name of the site						
Site typology						
Site area						
Chronology						
Ownership	Private		Public		Shared	
Location and exposure	Geographical coordinates	Above ground	Below ground	Under water	Combined	
Condition	Level1 (best)	Level 2	Level 3	Level 4	Level 5 (worst)	
Report on condition						
Declined/ improved condition						
Site use	Public display	Research	Living	Work	Faith	Other
Land use/ Marine use	Agriculture	Rural	Urban	Industry	Gardens/ parks	Other

Site management	Monitoring routine	Maintenance routine	Assessment	Other
Management body				
Site stakeholders				
Hazards	Visible/ Known	Potential	Past damaging events	
Risk	High	Medium	Low	Unknown
	Loss or major damage in short term (up to 5 years)	Threat of large-spread damage in medium term (up to 15 years) or upon sudden event	Threat of isolated damage in long term (20 years and more)	
Vulnerability				
Significance	Category I (highest)	Category II	Category III	Category IV (lowest)
Recommended actions in time				

and minor cracks in non-supporting members, make up another group of minor structural damages;

- **Chemical deterioration** is most often expressed by salt efflorescence or corrosion. Layer detachment, crumbling material and fissures are signs of progressive damage due to chemical factors. Various stains from biological factors can also indicate a chemical deterioration;
- **Biological attack** is manifested in several ways, including pest infestation, animal burrowing, encroaching vegetation, or a surface attacked by lichens or mould;
- **Surface damages** include conditions that may deprive the aesthetical characteristics of a site if unaddressed. Flaking of paint layer, crazing and powdering are the most common of them;
- **Unsuitable conservation** can lead to numerous damages, the most common of which are misalignment, failure of adhesives, and aesthetically or chemically unsuitable additions. The level of site maintenance after conservation, determines to a certain extent the durability of those in time. Unsuitable interventions may trigger aesthetical or even large-spread structural damage;
- **Disfigurement** can be a result of natural processes, previous interventions, or vandalism. It is most often characterised by scratches, fading, staining, or abrasion;
- **Accretions** can be caused by either biological or chemical factors, and include dirt, various encrustations, and deposits. Black crust is a result of high pollution levels for a prolonged period. It disrupts the aesthetics of decorative elements, in addition to the damages it causes on a chemical level.

The condition assessment section in the monitoring matrix is divided in five categories. A different colour is assigned to every of them:

- **Level 1 (green)** – characterised with no or negligible damage and stable general site condition. Accretions and vegetation may still be present;
- Characteristic for **level 2 (yellow)** is small-scale deterioration that may develop in a problematic condition in medium to long term. Level 2 would require further research to establish the potential severity of future damage, or the speed of deterioration;

- **Level 3 (orange) –** features ascertained damages affecting smaller areas and having the potential to influence the values of the site if not addressed in short to medium term. Condition may include minor structural damages, detachment of non-decorative elements, accretions or biological attack;
- **Level 4 (red)** is characterised with damage with a potential to lead to non-recoverable loss in short term. Typically includes structural weakening or static problems, affected key site elements, deterioration causing a site closure, and other large-spread damages from either natural or human-related factors;
- **Level 5 (black)** comprises archaeological sites that will be lost in short to medium term. These are monuments that are affected by natural factors, vandalism and intentional disassembling beyond repair. Often, these are sites on seashores that are subject of wave erosion, and severely weakened remains that cannot be structurally reinforced.

Depending on the way they affect the archaeological fabric and values, incompatible old interventions may indicate any of the condition levels, except for level 1. If a failure of an adhesive, anchor, or a consolidant is observable, it may indicate condition level 2, 3, or 4, depending on where and how large the damage is. If incompatible intervention causes structural damage to the original, then the condition of the site will fall under level 4. If salt efflorescence due to the introduction of cement in contact with original material is visible, then the condition may fall under levels 2 or 3. It can develop into level 4 if it is accompanied with disintegration of decorative layers that are important for the aesthetical and historical values of the site.

Prioritised should be types of damage that may lead to greater damage and non-recoverable loss, especially loss of authenticity. Condition putting in danger staff and visitors or leading to site inaccessibility should be as well priority for treatment. Any damage affecting important historical evidence or key site elements must be dealt with priority.

Site condition assessment relies on visual inspections, photographing and documentation at regular periods, and evaluation of the state of building materials, ground and past interventions. Where there is inability to reach a site, aerial photography can assist the assessment process. It can as well aid risk management by identifying and tracing changes to the surroundings of archaeological monuments. At large and complex sites, or when a greater number of places must be assessed, condition assessment can be facilitated by GIS operated systems and mapping.[90] Grouping sites based on material and construction

typologies allows for their direct comparison.[91] For buried sites, general condition assessment can be performed only if geophysical investigation or sampling are informative on the typology and the state of the buried materials.[92]

Condition assessment should be performed by an architectural conservation specialist. A geologist assesses terrain stability. Architects and civil engineers evaluate the condition of presenting domes, arches, and vaults.[93] The expertise of material scientists may be required in cases in which the scale of material deterioration needs to be further researched.

A section summarising the change in condition compared to previous assessments is also included in the monitoring matrix. The results in it inform on the speed of deterioration of observed phenomena.

The most common types of site and land use are summarised in the next section of the matrix. These have been developed for Historic England's surveys on Scheduled Monuments at Risk.[94] By including information on the use of a site, potential sources of concern can be determined. The step is also helpful in identifying other stakeholders whose cooperation is needed to address existing challenges.

In the monitoring chart, risk is differentiated into high, medium, low, and unknown. Sites at high risk are those affected by a large-spread or advancing damage that is expected to lead to loss in short term. Monuments at medium risk are those in danger of significant damage in medium term or upon sudden event. Contexts at low risk are those threatened by isolated damage in long term (20 years and more). Greater value should be assigned to cumulative hazards. Higher risk value would place an archaeological site in a list of a higher priority for risk treatment. A hazard dealt with priority should be the one endangering a larger number of places and contexts, especially if it hinders the potential to degrade the cultural fabric significantly in short to middle term. Where equally important monuments threatened by different hazards are compared, prioritised should be the site that is at risk of damage in shorter term.

The collective judgement of conservators, archaeologists, and site managers is required to assess risks correctly. The assessment of specific risks might require the expertise of external specialists. Documental and oral records on past events, and traces on the archaeological remains should be considered for that aim. Digital predictive modelling helps to establish the level of risk by overlapping site location maps with environmental, pollution, and use data maps.

Mathematics in this step can inform on the probability of a given event. Yet they cannot be entirely relied upon to estimate the consequences of a hazard, especially when the simultaneous incidence of several hazards is concerned.

Risks from vandalism can be identified but estimated with difficulty. The same is valid for risks that may lead to catastrophic consequences. Risk estimation for terrorism and war destruction remains a burden, unless the monitored sites are in an area that is already in a state of social unrest. In general, high risk of destruction or damage for sites in war zones should be considered. This is also valid for archaeological remains in arable lands where there is no management addressing damage related to agricultural practices. Neglect should be of a main concern as it may trigger all forms of damage. For buried remains, general risk assessment can be performed by evaluating land use practices, the burial depth and the typology of the remains.

Condition and risk assessments are not enough to judge on when making a prioritisation decision. Site significance and site management context are of equal importance for a decision-making. The assessment of significance judges on the importance of a given site among others. Attention should be paid to monuments with challenging condition, considered of lesser significance from a current point of view. In such cases, a possible value rise in future must be considered. Value may rise upon future research and increase of presentation potential. Change in significance should as well be considered for the next site categories:

- Archaeological ensembles whose group value may rise upon the discovery of other related remains;
- Sites with elements and building techniques that are not explained by contemporary science. Examples for such places are Pumapunku in Bolivia with its sophisticated engineering technology and unclear abandonment, the Nazca geoglyphs, with the different explanations for their purpose, Sacsayhuaman in Peru with its construction theories, and more;
- Sites whose use is unclear;
- Unexcavated remains, which are known to be representative for a culture or a historical period.

Little can be done to ease prioritisation decisions where there is a potential for value rise in future. In complicated cases, a consultation with a different decision-making group, or with additional experts, can be valuable. To avoid an overlooking of places of lesser significance

from a current point of view, managers should adopt policies addressing the needs of places from all significance categories.

The proposed monitoring chart includes four value categories:

- **Category I** encompasses places of outstanding importance and other exceptional examples of a given culture;
- **Category II** comprises sites of high national or regional importance. These are well preserved examples, informative for rare traditions or having non-characteristic features or planning. Included in this category are archaeological ensembles with group value, and monuments popular among tourists;
- In **Category III** are grouped places with non-determined significance, or value that may rise in future. Other examples are sites that are relevant to an archaeological ensemble, and well-preserved ruins that may provide future research or visitation;
- **Category IV** includes non-exceptional sites, common for a given region or nation. Regardless of their state of preservation, these hold informational value.

According to Demas, assessment of significance is a comparative approach, where assigning value is done by comparing places in the same archaeological and historical context. [95] From this follows, that people well acquainted with the typology of archaeological sites on a given territory should be involved in significance assessment. Those are usually site managers and archaeologists. The final judgement usually falls on the site management authority.[96] External stakeholders can provide a broader view on the site significance, when complex sites used for a variety of purposes are assessed.[97] The overall significance of unexcavated remains can be judged upon by geophysical studies, sampling, or small-scale excavations.

The section for recommended actions in time at the bottom of the chart aims to provide managers with basic orientation about the complexity of the required activities. These may include various management options, maintenance, remedies, or further analyses to understand the deterioration patterns.

Not every monument though can be monitored. Site monitoring could be unfeasible due to monument inaccessibility, agreement of stakeholders, available resources, etc. Monitoring can also omit damages at micro level if not complemented with material analyses. The same is valid for the evaluation of hazards and risks. Hazards may not be instantly recognised if

not obvious, or where they have not been previously identified. As risks involve chance, they may result more or less destructive than expected. Nevertheless, monitoring and risk evaluation are powerful site management tools, informing managers on the wider picture of threats and vulnerabilities they have to deal with. But it has been discussed that prioritisation in site conservation and management cannot be done without assessing the site management context.[98] This is a step where *"the constraints and opportunities that will affect the conservation and management of the site"*[99] are identified. The analyses of the site management context are comprised by several steps:

- Assessment of available resources;
- Identification of external factors impacting the site management;
- Assessment of previously implemented projects;
- Assessment of project's impact value.

These have been developed for prioritisation in business management and are considered after deciding on management goals and time frame.[100] Available resources are understood as finances, time, facilities, staff and competences to perform certain projects if prioritised. Upon lack of resources, other stakeholders that can provide it should be identified. Factors influencing the site management can be other powerful stakeholders, legislation, social processes, etc. In many cases, these must be addressed to allow the implementation of a certain conservation or management project.

Evaluation of the outcomes of past projects informs on the results (short- and long-term) of previously prioritised projects. This is of great help for managers, as it facilitates future planning, and evaluates possible risks, advantages and disadvantages. This is a step in which changes to improve the site management performance, or to amplify the positive results of projects are considered.

The value of a prioritised project comprises all direct and indirect project benefits. These can vary between return of invested resources, to increased competence across the management body.[101]

An additional step in the assessment of the site management context should be added – a stakeholder consultation. It is a stage in which stakeholders, neutral bodies, or experts are consulted to advice on the advantages or disadvantages of projects. Here, the agreement of other parties to cooperate for the implementation of a project is also obtained.

♦

Prioritisation in site conservation and management should be a subject of a debate, whenever possible. The decision of what should be addressed first may be dictated by external stakeholders and processes, such as political influence, or social backing for a project. In such cases, the prevention of damage to a given place by its prioritisation cannot be guaranteed. Prioritisation cannot escape from wrong judgement and cannot prevent all damage and loss. Damage may still result from unexpected or non-addressable events, or upon pending care. But it is required in the world of today, where site managers operate with insufficient resources.

Summarising objective data about the remains of concern, and evaluating the effectiveness of past decision-making, is the right way to prioritise. If a prioritised conservation or management project has an expected long-term value, receives stakeholder support, and resources for its implementation are available, it will most probably be sustainable.

The integration of site monitoring tools is possible and desirable in every management system. The proposed monitoring tool is designed to inform site management decisions, not to identify conservation and management priorities directly. Without aiming to set site monitoring standards, the chart is simple, and can be easily communicated to various stakeholders. The tool escapes from the complexity of numerical risk assessment and is usable in either digital or paper form. The matrix facilitates future assessments and gives the possibility to evaluate the benefits and the disadvantages of past actions. Based on the data incorporated in it, the allocation of resources for site management can be justified. By summarising all information required for a justified risk-preventive action, the chart is of use to the prevention of risks to archaeological sites.

The proposed matrix might, in some local contexts, not encompass all the required factors for site monitoring. In such cases, however, it permits additions. It can as well be tailored in accordance to already accepted categorisation of site significance, hazards, or condition.

The archaeological sites on the territory of Bulgaria are not monitored. Exception is valid for all national sites included in the UNESCO World Heritage List, monitored at regular intervals by UNESCO-ICOMOS missions. Seeking decentralisation of heritage management activities, the latest alterations of the cultural heritage legislation entrusted site monitoring to the local municipalities.[102] Along with possible advantages related to a greater initiative to care for the local resources, this is a prerequisite for a different attitude

towards the cultural monuments in the different state regions. So, the effectiveness of this measure should be further evaluated. Regular assessment requires sound legislative frame that clears unambiguously the ownership of monuments and the responsibilities of their stakeholders.

In Bulgaria, however, monitoring at a small scale, or at certain sites upon initiative is currently possible. But before initiating site monitoring campaigns on a local or national scale, the national registry of archaeological sites – the Archaeological Map of Bulgaria[103] – should be complemented and seriously improved to allow for uses, different than a simple localisation of archaeological monuments. The currently available map is also restricted for users, apart from archaeologists in scientific institutions.[104] A different use model is exemplified by the Bavarian equivalent of the Archaeological Map of Bulgaria – the Bayerischer Denkmal-Atlas. The atlas is digitally accessible by every potential user – a scholar, an interested member of the public, or an investor that likes to know whether the terrain he would like to purchase contains archaeological layers or other historic monuments. So, the atlas' value increases with the amount of its users. Such maps can, in principle, incorporate large amounts of digital data and their use for site monitoring is greatly advised. Inclusion of data for hazards, site significance and condition, can permit a site vulnerability assessment. When hazards for larger territories are known, assessment can identify the level of risk for different categories of monuments. This furthermore permits the evaluation of management strategies to reduce the risk level.

[1] Council of Europe's Recommendation NO.R (93) 9: Appendix: Principles and Measures II-2
[2] Meadowcroft and Cruickshank 2001: 39; Baer 1991: 27
[3] Baer 1991: 33
[4] Denenberg et al. 1974: 4; Knight 1921: 233; Ashley-Smith 1999: 16; 18-19; Teygeler 2005: 138; Gratt 1987: 242
[5] Ashley-Smith 1999: 8
[6] Historic England 2008a: 4; Darvill and Fulton 1998: 218
[7] Historic England 2008a: 4
[8] Darvill and Fulton 1998: 29
[9] Beardsley 1987: 141
[10] Gratt 1987: 241; Teygeler 2005: 139; Ashley-Smith 1997: 123
[11] Rowe 1977: 25
[12] Pavlova 1987: 313; National Research Council 1994: 26-27
[13] National Research Council 1994: 26
[14] Teygeler 2005: 139
[15] Vesely 1984: 153; 156-157; Teygeler 2005: 139; Mosleh and Apostolakis 1984: 110; 121-122
[16] Mosleh and Apostolakis 1984
[17] Teygeler 2005: 139
[18] Ashley-Smith 1999: 36-44
[19] Ashley-Smith 1997: 124; 1999: 37
[20] Vose 2001: in Teygeler 2005: 139
[21] Ashley-Smith 1999: 345
[22] Ashley-Smith 1997: 123
[23] Waller 1994: 12; Michalski 1990: 589; 1994: 10
[24] Taylor 2012: 301; Waller 1994: 12
[25] Waller 1994: 12; 1996: 2
[26] Waller 1994: 12; 1996: 2
[27] Waller 1996: 14
[28] Michalski 1990: 589; 1994: 10
[29] Waller 1996: 4
[30] Waller 1996: 3
[31] Bulloc 2012: 307
[32] Ashley-Smith 1999: 8
[33] Baer 1991: 27-32
[34] Baer 1991: 27-30
[35] Fischhoff et al. 1983: 243
[36] Starr 1987: 64; Rogers 1985
[37] Starr 1987: 64; 70
[38] Crandall and Lave (eds.) 1981: 16-17; O'Riordan 1985
[39] O'Riordan 1985: 978-979
[40] Taylor 2012: 301
[41] Katz and Kahn 1966: 289: in Wright 1987: 141
[42] Neykova 2012: 51; Taylor 2005; 2012: 299-301
[43] Darvill and Fulton 1998: 216
[44] Lambrick 2004: 191-192; Historic England 2008a: 2; Historic England 2008b
[45] Carlon et al. 2012
[46] Carlon et al. 2012: 195
[47] Ascanio D'Andrea, Information manager and survey archaeologist, and Jane Thompson, Project Manager, Herculaneum Conservation Project, Pers. Comm., September 2015
[48] Historic England 2008b: 48
[49] Darvill and Fulton 1998: 219
[50] Ashley-Smith 2000: 15
[51] Whyte and Burton 1980: 3
[52] Ashley-Smith 1997: 123
[53] Rogers 1985
[54] Ashley-Smith 1999: 8; de la Torre (ed.) 1997: 8
[55] de la Torre and Mason 2002: 4
[56] de la Torre and Mason 2002: 4
[57] de la Torre and Mac Lean 1997: 5; de la Torre (ed.) 1997: preface; 8; Chapman 1998: 106; 127; Mason

2002: 12; 33; 36
[58] Brown 1905: 5; de la Torre and Mac Lean: 1997: 5
[59] de la Torre and Mac Lean 1997: 5-6
[60] Ebnöther and Thurnherr 2008: 49
[61] Manders 2008: 34; Mason 2002: 9; 20; de la Torre and Mac Lean 1997: 7
[62] Feilden 1982b: 245; Mason 2002: 8; de la Torre and Mason 2002: 3; Avrami et al. (eds.) 2000: 9
[63] Mason 2002: 9
[64] Demas 2002: 35-38; Deeben et al.1999
[65] Feilden 1982b: 245; Mason 2002: 10
[66] Mason 2002: 11
[67] ICOMOS China 2002: Art. 3
[68] Mourato and Mazzanti 2002: 51-76; Sullivan 2006
[69] Cabeza 2006: 126; Sullivan 2006: 145-146
[70] Sullivan 2010: 12
[71] Feilden 1982b: 245; de la Torre and Mason 2002: 3
[72] Matero 2006: 55; Mason 2002: 5; de la Torre and Mason 2002: 3; Clark 2004: 203; Stubbs 2009: 33; Cunliffe 1995b: 136
[73] Clark 2004: 204
[74] Miller 2007: 215
[75] Demas and Agnew 2006: 65
[76] Wainwright 1989: 165-166; Darvill 1987: 34, 35; Judge 2008: 195-220
[77] UNESCO 2015
[78] Breeze 2006: 59
[79] Mason 2002: 8
[80] Mason 2002
[81] Mason 2002: 15-17
[82] Deeben et al. 1999; Kars et al. 2004: 11-12
[83] Kars et al. 2004: 11-12
[84] Iserson and Moskop 2007: 277-279 and Chipman et al. 1980: 99-100 in Wikipedia: Triage
[85] Christian et al. 2006: 1378; Burstein and Hogan 2007: 25, Fig. 2-5; Aacharya et al. 2011: Table 1; Fig. 3
[86] Mason 2002: 22
[87] Ashley-Smith 1995; 1999: 99; Waller 1994: 13
[88] Ashley-Smith 1999: 101
[89] Keene 2002: 144-146; 2011: 399-400
[90] Cleere et al. 2006: 6-8; Darvill and Fulton 1998: 30; 35-36; 216; 243
[91] Feilden 1982b: 35
[92] Canti and Corcoran (eds.) 2015: 22-41
[93] Feilden 1982b: 38
[94] Historic England: Scheduled Monuments at Risk Surveys
[95] Demas 2002: 38
[96] Demas 2002: 39
[97] Demas 2002: 39
[98] Mason 2002: 5-8; Demas 2002: 40-41
[99] Demas 2002: 40
[100] Alexander 2015
[101] Alexander 2015
[102] Cultural Heritage Law, 2009: Art. 12, Paragraph 4-1; Paragraph 6
[103] Archaeological Map of Bulgaria
[104] Kecheva, N. Archaeological map of Bulgaria

Conclusion

Archaeological sites are historic evidences, places of identification with ideas, personages or époques, places of recognition of humanity's development. Their preservation encompasses the safeguard of all genuine site characteristics – material, values, original intention, intangible traditions, and significance.

Many hazards related to nature and people affect the fragile historic fabric. From 'closed' to open-air structures, there is a variety of situations in which this fabric can be negatively altered. But the literature review pointed out the main, universally-valid factors leading to loss of cultural values. The first of those is the absence of site preservation concepts put in place prior excavation. Obscured archaeological ethics, lack of awareness-raising initiatives, and site stakeholder conflicts complete the picture.

Change in the field of the preservation of archaeological monuments is inevitable. But people have the power to direct the change. The protection of unexcavated archaeological deposits and that of revealed structures can include many options and strategies, some remedial, some – indirect. Both play an indispensable role in site safeguard. But direct intervention with the authentic fabric, although often required, is ever more unsustainable. Clearly, there is a need to re-think the concept of archaeological site preservation in changing environmental and social contexts. Indirect preservation practices escape questionable interventions by evaluating and managing risks. They reduce the chance of mistakes. As such, they form the basis of site preservation and hold the potential of resulting more beneficial in long term. Within this context, risk prevention and management could take over remedies. They have a leading role in site governance, managing the factors leading to loss. But to fulfil this role, preventive conservation should be embraced by all parties involved in site study, conservation, and management.

In site management, risks are constantly changeable. Therefore, the concept of preventive conservation for archaeology differs from the one valid for the museum field. However, as in the museum, preventive conservation for archaeological sites is a complex, versatile and flexible approach managing risks constantly. It is the constant risk management of foreseeable risks and those unfavourable events that cannot be avoided, including risks

resulting from preservation interventions. It is a comprehensive strategy concerned with most of the man-made processes that may endanger a given place. As a time-related process, it encompasses interrelated policies allowing the site stakeholders to be looking ahead in the future. Management of social agendas, institutional coordination and legislative strengthening form the base of risk management. Site preservation in burial condition, coupled with policies for ecology, land use, and spatial planning, ensure that in the future, less archaeological deposits will be at risk of loss. As a substantial part of risk management, monitoring traces the processes that may threaten the archaeological resource and informs on the need of intervention. It requires expertise, devotion, finances, stakeholder communication and time. But the purely indirect philosophy of preventive conservation from the museum context is not workable for the archaeological field. Because risk management in archaeology, especially the management of risk of loss or that of greater damage, might involve the maintenance of the historic fabric, i.e. – a direct interaction with the material of concern.

Preventive conservation is of relevance for all processes taking place at a given site – before excavation to material storage in museums. It is expressed through site management in burial conditions and reduced interaction with the archaeological fabric, planning and legislative strengthening, safe packaging of retrieved materials, site maintenance and risk prioritisation. Preventive conservation benefits sites and their stakeholders by protecting the site values. Its main aim is to create a better 'human environment' in which sites survive. But the need for communication, compromises and agreements between site stakeholders makes the establishment of preventive conservation in site management challenging. Risk prevention is highly restricted in rescue studies where stakeholder consensus is not possible, or where decisions are taken upon urgency. In salvage and planned archaeological studies, all risks that may arise in future can rarely be foreseen. Preventive conservation in archaeology is also influenced by local factors. There is no risk prevention without an impetus to introduce changes, without a public support, or where social conflicts have devastated culturally entire generations. In the archaeological field, the controllability of many factors triggering damage and loss is restricted. The levels of control of those factors are far fewer than in museums. In certain cases, as in war conflicts, there are none.

The answer of the question *When the destruction of archaeological sites becomes inacceptable?* may vary. For a member of an indigenous community, destruction of neither part of a cherished site is acceptable. For the developer of a modern construction, partial to full destruction may be permissible. It clearly depends on the finances put in the

construction project, the public need for it, or the personal profit. A non-interested community member may be indifferent on such matters. This reflects the different valuation of archaeological resources – a fact that influences their preservation. When archaeological sites lose their meaning for people, the risk of loss arises. Avoidance of loss is ensured when a site has a place in the life of its society. But what guarantees the continuation of the message embedded in a given place? And how could we make sure that this message will be understood by those coming after us? How could we protect our knowledge from oblivion? The answer of these questions, asked by Burmester in his *Deep time: Ausstellen als Risiko und Notwendigkeit* regarding movable items, is only one – by securing the content of the archaeological monuments in long term and by disseminating it. By making sure that the archaeological material – the carrier of the content of a given place – is preserved. Because when the material is lost, our *"deep time message"*, as Burmester calls it, collapses.[1]

The example of the management policy of the National Trust demonstrates that site preservation begins with the affirmation of the place of history in the lives of people. Educational and volunteering campaigns among communities are therefore required to nurture the link between sites and their stakeholders and to establish risk management in practice. Managerial efforts should be pointed to those members of the public that have the interest to engage in site care – locals, indigenous groups, and parties that can influence the directions of the site management. To address the loss of heritage values, specialists and management should engage the public in a discussion on the wider significance of archaeological sites for communities. By being socially engaged and by directing resources from excavation to awareness-raising and site care, site management establishes preventive conservation in practice.

In the context of site management in Europe, Bulgaria is in a stage in which considerable changes need to be faced to prevent the further loss of authentic evidence. As seen in chapters four and five, still, the loss of archaeological sites is part of the reality and Bulgaria is not isolated in that respect. Destruction can be a result of a number of reasons, many of which cannot be addressed at all. But loss is preventable when professional standards in archaeology meet high criteria. When an archaeological monument is well researched and documented, information that may be of interest in future can be recovered, even if the monument does not exist anymore. Therefore, the prevention of risks to archaeological remains is strongly related to the issue of professional ethics in archaeology. The survey in the fifth chapter revealed that ethics are multifaceted. Yet, material preservation is a central

ethical point and should be aimed in every archaeological study and after it. The transformation of the discipline as more sensitive to material preservation issues depends on educational reform, legislative upgrade, and personal judgement. The development of excavation criteria as a measure against the introduction of risks should be further researched. These criteria must be a product of a professional debate on what is permissible at archaeological sites, given the new public and professional demands to their management.

Resolving the dilemma of destructive study versus underground preservation is not straightforward. When buried archaeology is at risk of damage or loss in short term, it should be excavated. But when remains lay undisturbed and unthreatened, it is better to be left underground. When research potential dictates excavation, the most cherished from archaeological point of view sites are exposed to greatest risk after study if post-excavation management is absent or inadequate.

The establishment of preventive conservation in the archaeological field depends on the consensual contacts between archaeologists and conservators, specialists and public, site managers and politicians. It relies on public support, and on the ethics of all professionals involved in site management. It is a shared responsibility of all site stakeholders. It has, however, little chances of becoming a guiding preservation principle without the engagement of decision-makers. Archaeological heritage governance depends on political agendas, support, and often even on personal political judgement. Future studies should therefore address the opportunities to collaborate closely for a political support to change the way in which heritage sites are perceived and managed. Political backing is more than necessary in Bulgaria, where professionals and decision-makers must cooperate to develop and establish a national program for site governance. The strategy should acknowledge and protect the values of heritage places from the moment of their identification. First and foremost, however, the country needs a revision of the legislation concerned with the aspects of interference with archaeological sites. Only when site governance operates under clear legislation, site preservation strategies – direct or indirect – can be fully deployed. Political input is also a prerequisite for the success of the management plan of Ancient Nessebar: the case demonstrates how vital the role of the state in the management of a place with outstanding values is. Unfortunately, in the case of Nessebar, this role is in the present moment unclear. The fact that there is a significant progress in the management of the property does not exclude the need for further improvement.

As demonstrated in chapter eight, if approached, the public can support managers in a justified prioritisation decision-making. Prioritisation in site conservation and management is a complex process that cannot guarantee the avoidance of all damage. But a public involvement in it reflects the wider opinions on what should be protected with priority and why. The process should take in consideration many factors reflecting the preservation needs of sites and the needs of their stakeholders. Among these are site condition, significance and use, risks, and costs. Availability of resources, economic and social aspects of conservation, should as well be evaluated before prioritising.

It is more than necessary to lead the field of site preservation towards a culture of prevention. Because without risk prevention and management, there is deterioration. Because more important from the study or the development of a given site for visitation is the very preservation of that site. Efforts and resources should be directed from intervention to risk management for both buried and excavated contexts. The following conclusions offer a perspective on the benefits of the stronger establishment of preventive conservation in site management:

Site localisation and recording prevent the loss of buried and excavated archaeological evidence

Surveying is the first step in preventing risks to archaeological sites. Inventorying data related to the location, type, area, significance and condition of archaeological structures facilitates site management. It clears the archaeological, historical and environmental site context, and identifies hazards to sites. If buried archaeological layers have not been largely disturbed and soil conditions allow for it, geophysical techniques can be used to study and monitor archaeological deposits indirectly, and to facilitate the identification of the most proper protective regimes. They save time and work force, and avoid ethical issues associated with destructive site study.

Losses of archaeological sites are losses of the mankind. Planning, budgeting and documentation are the key elements of prevention

The loss of an archaeological site is unrecoverable. As an integral part of every excavation project, planning, surveying, and budgeting evaluate possible outcomes to avoid the loss of authentic evidence.

Excavation planning prevents the development of potential risks for the archaeological resource upon time and financial constraints, or stakeholder objections. It ensures less

stressful work at the site. Starting with a clear objective for research, excavation planning prevents damage by clearing procedures for:

- Ethical treatment of the excavated resources;
- Sound field documentation;
- Material recovery and appropriate long-term storage;
- Dissemination of research results.

Prevention of risks to sites during and after excavation requires constant financial provision for the entire length of the excavation project, and for the study, storage, conservation, maintenance and management of all excavated resources. Excavation, conservation and management planning agreed by all stakeholders before the start of the research ensure that the needs of the site *and* its stakeholders will be met. By taking in consideration the public opinion, management planning reduces the negative influences resulting from a broken connection between heritage and people.

Preventive conservation is the communication tool between the material world – sites, objects, and contexts – and their stakeholders

By managing risks for the benefit of sites and all interested parties, preventive conservation facilitates the stakeholder collaboration. Stakeholder communication identifies the specific needs of sites and the most appropriate site safeguard policies. These policies respect all site values, because a place with preserved values benefits its stakeholders.

Education about the ethics of archaeology prevents inappropriate professional practices

Education about the archaeological obligations for the historic record offers sensitive work practices. Professional issues that may affect sites are regulated by codes of ethics. The content of the codes and their observation are of paramount importance for the practicing of the profession in a way that respects the uniqueness of every heritage item or place. By addressing stakeholder partnership, professional education reflects the new demands to heritage preservation in a complex social climate. It teaches for a recognition of other rights in site study and management.

The investigation, conservation and management of archaeological sites have legal boundaries and time frame

Legal instruments ensure that every action at a given place is decided, planned, implemented, supervised, and monitored according to the specific needs of the place in its wider environmental and social context. Risks are addressed before leading to loss when all factors influencing site preservation are evaluated, and when every interference with the archaeological fabric is placed in a time frame.

Archaeological museums disseminate knowledge about archaeological sites to a wider auditory

Preservation of all information retrieved during excavation, and public access to it, prevent dissociation of excavated contexts. When archaeological information and excavated materials are publicly accessible, people are enriched with knowledge about the course of history.

Legislation is a leading factor for the preservation of site integrity and for the avoidance of man-related risks to property

Legislation provides an administrative frame for all processes affecting a site, especially "*where heritage meets competitive use"*.[2] It can prevent risks to archaeological sites if:

- Defines which elements constitute archaeological sites, context, records and buffer zones;
- Clears the responsibilities of individuals and institutions concerned with the management of archaeological sites;
- Provides legal guidance for the management of archaeological sites located in private land, including clearing the rights and the obligations of the owner;
- Specifies actions that are not allowed at archaeological sites and in their buffer zones;
- Specifies matters concerning the conservation tenders, as these often do not address the urgent need of care in the period between end of excavations and begin of conservation;
- Specifies the extent and the character of permitted interventions to archaeological sites;

- Ensures that only individuals with professional qualification are involved in site identification, excavation, conservation and management;
- Introduces site conservation, monitoring and maintenance as integral parts of an archaeological research, without which excavation should not be permitted;
- Integrates urban planning, land use policies and site preservation;
- Encourages the cooperation between heritage management and laymen[3];
- Ensures statutory protection of archaeological sites from the moment of their identification;
- Prioritises the use of geophysical investigations instead of field excavation;
- Distinguishes between imminent threats to archaeological sites and hazards that have the potential to develop threats in future;
- Engages with the provision of suitable conditions for the long-term storage of excavated artefacts;
- Clears the time frame in which conservation of excavated finds takes place;
- Necessitates documentation standards for field campaigns;
- Clears the ownership of territories containing archaeological records;
- Reflects the principles for site management set in the international conventions;
- Imposes adequate legal measures to violators of archaeological sites[4];

In case of politically divided or occupied states, legislative acts should ensure basic political and professional collaboration for the most urgent preservation actions. Nevertheless, this may be impossible upon a developing military conflict or social unrest.

Site conservation and management are integral parts of every excavation project

The conservation and management of all excavated finds and structures is obligatory. Provision of resources for the safeguard of sites before their excavation provides a continuation of the site fabric, values, and significance.

Without risk management, archaeological contexts will continue to be damaged and lost. As for the scopes of site preservation in general, Greene objectifies it in his paper *Preserving which past for whose future?*[5]:

> *"Why preserve? Some regard the answer as self-evident, but others have to be persuaded. To this question an economic planner may reply, "Because cultural*

> *tourism brings in hard currency from abroad." A political leader may respond, "To reinforce national identity". A university archaeologist, "For purposes of future research". None of these alone is a sufficient reason to preserve cultural resources."*

Indeed, these reasons do not encompass all possible answers to the question *Why archaeological sites should be preserved*? The remains of the past cannot be replaced if lost. Their safeguard is a cultural obligation that guarantees a preservation of identity.

[1] Burmester 2002: 81-82
[2] Vollmer-König 2010: 494-495
[3] Sullivan 1993: 19
[4] Sullivan 1993: 19
[5] Greene 1999: 54

Appendices

Appendix I

ICOMOS

INTERNATIONAL CHARTER FOR THE CONSERVATION AND RESTORATION OF MONUMENTS AND SITES

(The Venice Charter 1964)

IInd International Congress of Architects and Technicians of Historic Monuments, Venice, 1964.
Adopted by ICOMOS in 1965.

Imbued with a message from the past, the historic monuments of generations of people remain to the present day as living witnesses of their age-old traditions. People are becoming more and more conscious of the unity of human values and regard ancient monuments as a common heritage. The common responsibility to safeguard them for future generations is recognized. It is our duty to hand them on in the full richness of their authenticity.

It is essential that the principles guiding the preservation and restoration of ancient buildings should be agreed and be laid down on an international basis, with each country being responsible for applying the plan within the framework of its own culture and traditions.

By defining these basic principles for the first time, the Athens Charter of 1931 contributed towards the development of an extensive international movement which has assumed concrete form in national documents, in the work of ICOM and UNESCO and in the establishment by the latter of the International Centre for the Study of the Preservation and the Restoration of Cultural Property. Increasing awareness and critical study have been brought to bear on problems which have continually become more complex and varied; now the time has come to examine the Charter afresh in order to make a thorough study of the principles involved and to enlarge its scope in a new document.

Accordingly, the IInd International Congress of Architects and Technicians of Historic Monuments, which met in Venice from May 25th to 31st 1964, approved the following text:

DEFINITIONS

Article 1.
The concept of a historic monument embraces not only the single architectural work but also the urban or rural setting in which is found the evidence of a particular civilization, a significant development or a historic event. This applies not only to great works of art but also to more modest works of the past which have acquired cultural significance with the passing of time.

Article 2.
The conservation and restoration of monuments must have recourse to all the sciences and techniques which can contribute to the study and safeguarding of the architectural heritage.

Article 3.
The intention in conserving and restoring monuments is to safeguard them no less as works of art than as historical evidence.

CONSERVATION

Article 4.
It is essential to the conservation of monuments that they be maintained on a permanent basis.

Article 5.
The conservation of monuments is always facilitated by making use of them for some socially useful purpose. Such use is therefore desirable but it must not change the lay-out or decoration of the building. It is within these limits only that modifications demanded by a change of function should be envisaged and may be permitted.

Article 6.
The conservation of a monument implies preserving a setting which is not out of scale. Wherever the traditional setting exists, it must be kept. No new construction, demolition or modification which would alter the relations of mass and colour must be allowed.

Article 7.
A monument is inseparable from the history to which it bears witness and from the setting in which it occurs. The moving of all or part of a monument cannot be allowed except where the safeguarding of that monument demands it or where it is justified by national or international interest of paramount importance.

Article 8.
Items of sculpture, painting or decoration which form an integral part of a monument may only be removed from it if this is the sole means of ensuring their preservation.

RESTORATION

Article 9.
The process of restoration is a highly specialized operation. Its aim is to preserve and reveal the aesthetic and historic value of the monument and is based on respect for original material and authentic documents. It must stop at the point where conjecture begins, and in this case moreover any extra work which is indispensable must be distinct from the architectural composition and must bear a contemporary stamp. The restoration in any case must be preceded and followed by an archaeological and historical study of the monument.

Article 10.
Where traditional techniques prove inadequate, the consolidation of a monument can be achieved by the use of any modern technique for conservation and construction, the efficacy of which has been shown by scientific data and proved by experience.

Article 11.
The valid contributions of all periods to the building of a monument must be respected, since unity of style is not the aim of a restoration. When a building includes the superimposed work of different periods, the revealing of the underlying state can only be justified in exceptional circumstances and when what is removed is of little interest and the material which is brought to light is of great historical, archaeological or aesthetic value, and its state of preservation good enough to justify the action. Evaluation of the importance of the elements involved and the decision as to what may be destroyed cannot rest solely on the individual in charge of the work.
Article 12.
Replacements of missing parts must integrate harmoniously with the whole, but at the same time must be distinguishable from the original so that restoration does not falsify the artistic or historic evidence.

Article 13.
Additions cannot be allowed except in so far as they do not detract from the interesting parts of the building, its traditional setting, the balance of its composition and its relation with its surroundings.
HISTORIC SITES

Article 14.
The sites of monuments must be the object of special care in order to safeguard their integrity and ensure that they are cleared and presented in a seemly manner. The work of conservation and restoration carried out in such places should be inspired by the principles set forth in the foregoing articles.

EXCAVATIONS

Article 15.
Excavations should be carried out in accordance with scientific standards and the recommendation defining international principles to be applied in the case of archaeological excavation adopted by UNESCO in 1956.

Ruins must be maintained and measures necessary for the permanent conservation and protection of architectural features and of objects discovered must be taken. Furthermore, every means must be taken to facilitate the understanding of the monument and to reveal it without ever distorting its meaning.

All reconstruction work should however be ruled out "a priori". Only *anastylosis*, that is to say, the reassembling of existing but dismembered parts can be permitted. The material used for integration should always be recognizable and its use should be the least that will ensure the conservation of a monument and the reinstatement of its form.

PUBLICATION

Article 16.
In all works of preservation, restoration or excavation, there should always be precise documentation in the form of analytical and critical reports, illustrated with drawings and photographs. Every stage of the work of clearing, consolidation, rearrangement and integration, as well as technical and formal features identified during the course of the work, should be included. This record should be placed in the archives of a public institution and made available to research workers. It is recommended that the report should be published.

Appendix II

ICOMOS

CHARTER FOR THE PROTECTION AND MANAGEMENT OF THE ARCHAEOLOGICAL HERITAGE (1990)

(Lausanne Charter)

Prepared by the International Committee for the Management of Archaeological Heritage (ICAHM) an approved by the 9th General Assembly in Lausanne in 1990.

INTRODUCTION

It is widely recognised that a knowledge and understanding of the origins and development of human societies is of fundamental importance to humanity in identifying its cultural and social roots.

The archaeological heritage constitutes the basic record of past human activities. Its protection and proper management is therefore essential to enable archaeologists and other scholars to study and interpret it on behalf of and for the benefit of present and future generations.

The protection of this heritage cannot be based upon the application of archaeological techniques alone. It requires a wider basis of professional and scientific knowledge and skills. Some elements of the archaeological heritage are components of architectural structures and in such cases must be protected in accordance with the criteria for the protection of such structures laid down in the 1966 Venice Charter on the Conservation and

Restoration of Monuments and Sites. Other elements of the archaeological heritage constitute part of the living traditions of indigenous peoples, and for such sites and monuments the participation of local cultural groups is essential for their protection and preservation.

For these and other reasons the protection of the archaeological heritage must be based upon effective collaboration between professionals from many disciplines. It also requires the co-operation of government authorities, academic researchers, private or public enterprise, and the general public. This charter therefore lays down principles relating to the different aspects of archaeological heritage management. These include the responsibilities of public authorities and legislators, principles relating to the professional performance of the processes of inventorisation, survey, excavation, documentation, research, maintenance, conservation, preservation, reconstruction, information, presentation, public access and use of the heritage, and the qualification of professionals involved in the protection of the archaeological heritage.
The charter has been inspired by the success of the Venice Charter as guidelines and source of ideas for policies and practice of governments as well as scholars and professionals.

The charter has to reflect very basic principles and guidelines with global validity. For this reason it cannot take into account the specific problems and possibilities of regions or countries. The charter should therefore be supplemented at regional and national levels by further principles and guidelines for these needs.

DEFINITION AND INTRODUCTION

Article 1
The "archaeological heritage" is that part of the material heritage in respect of which archaeological methods provide primary information. It comprises all vestiges of human existence and consists of places relating to all manifestations of human activity, abandoned structures, and remains of all kinds

(including subterranean and underwater sites), together with all the portable cultural material associated with them.

INTEGRATED PROTECTION POLICIES

Article 2.
The archaeological heritage is a fragile and non-renewable cultural resource. Land use must therefore be controlled and developed in order to minimise the destruction of the archaeological heritage.

Policies for the protection of the archaeological heritage should constitute an integral component of policies relating to land use, development, and planning as well as of cultural, environmental and educational policies. The policies for the protection of the archaeological heritage should be kept under continual review, so that they stay up to date. The creation of archaeological reserves should form part of such policies.

The protection of the archaeological heritage should be integrated into planning policies at international, national, regional and local levels.

Active participation by the general public must form part of policies for the protection of the archaeological heritage. This is essential where the heritage of indigenous peoples is involved. Participation must be based upon access to the knowledge necessary for decision-making.

The provision of information to the general public is therefore an important element in integrated protection.

LEGISLATION AND ECONOMY

Article 3.
The protection of the archaeological heritage should be considered as a moral obligation upon all human beings; it is also a collective public responsibility. This obligation must be acknowledged through relevant legislation and the provision of adequate funds for the supporting programmes necessary for effective heritage management.

The archaeological heritage is common to all human society and it should therefore be the duty of every country to ensure that adequate funds are available for its protection.

Legislation should afford protection to the archaeological heritage that is appropriate to the needs, history, and traditions of each country and region, providing for in situ protection and research needs.

Legislation should be based on the concept of the archaeological heritage as the heritage of all humanity and of groups of peoples, and not restricted to any individual person or nation.
Legislation should forbid the destruction, degradation or alteration through changes of any archaeological site or monument or to their surroundings without the consent of the relevant archaeological authority.

Legislation should in principle require full archaeological investigation and documentation in cases where the destruction of the archaeological heritage is authorised.

Legislation should require, and make provision for, the proper maintenance, management and conservation of the archaeological heritage. Adequate legal sanctions should be prescribed in respect of violations of archaeological heritage legislation.

If legislation affords protection only to those elements of the archaeological heritage which are registered in a selective statutory inventory, provision should be made for the temporary protection of unprotected or newly discovered sites and monuments until an archaeological evaluation can be carried out.

Development projects constitute one of the greatest physical threats to the archaeological heritage. A duty for developers to ensure that archaeological heritage impact studies are carried out before development schemes are implemented, should therefore be embodied in appropriate legislation, with a stipulation that the costs of such studies are to be included in project costs. The principle should also be established in legislation that development schemes should be designed in such a way as to minimise their impact upon the archaeological heritage.

SURVEY

Article 4.
The protection of the archaeological heritage must be based upon the fullest possible knowledge of its extent and nature. General survey of archaeological resources is therefore an essential working tool in developing strategies for the protection of the archaeological heritage. Consequently archaeological survey should be a basic obligation in the protection and management of the archaeological heritage. At the same time, inventories constitute primary resource databases for scientific study and research. The compilation of inventories should therefore be regarded as a continuous, dynamic process. It follows that inventories should comprise information at various levels of significance and reliability, since even superficial knowledge can form the starting point for protectional measures.

INVESTIGATION

Article 5.
Archaeological knowledge is based principally on the scientific investigation of the archaeological heritage. Such investigation embraces the whole range of methods from non-destructive techniques through sampling to total excavation.

It must be an overriding principle that the gathering of information about the archaeological heritage should not destroy any more archaeological evidence than is necessary for the protectional or scientific objectives of the investigation. Non-destructive techniques, aerial and ground survey, and sampling should therefore be encouraged wherever possible, in preference to total excavation.
As excavation always implies the necessity of making a selection of evidence to be documented and preserved at the cost of losing other information and possibly even the total destruction of the monument, a decision to excavate should only be taken after thorough consideration.

Excavation should be carried out on sites and monuments threatened by development, land-use change, looting, or natural deterioration.

In exceptional cases, unthreatened sites may be excavated to elucidate research problems or to interpret them more effectively for the purpose of presenting them to the public. In such cases excavation must be preceded by thorough scientific evaluation of the significance of the site.

Excavation should be partial, leaving a portion undisturbed for future research.
A report conforming to an agreed standard should be made available to the scientific community and should be incorporated in the relevant inventory within a reasonable period after the conclusion of the excavation.
Excavations should be conducted in accordance with the principles embodied in the 1956 UNESCO Recommendations on International Principles Applicable to Archaeological Excavations and with agreed international and national professional standards.

MAINTENANCE AND CONSERVATION

Article 6.
The overall objective of archaeological heritage management should be the preservation of monuments and sites in situ, including proper long-term conservation and curation of all related records and collections etc. Any transfer of elements of the heritage to new locations represents a violation of the principle of preserving the heritage in its original context. This principle stresses the need for proper

maintenance, conservation and management. It also asserts the principle that the archaeological heritage should not be exposed by excavation or left exposed after excavation if provision for its proper maintenance and management after excavation cannot be guaranteed.

Local commitment and participation should be actively sought and encouraged as a means of promoting the maintenance of the archaeological heritage. This principle is especially important when dealing with the heritage of indigenous peoples or local cultural groups. In some cases it may be appropriate to entrust responsibility for the protection and management of sites and monuments to indigenous peoples.

Owing to the inevitable limitations of available resources, active maintenance will have to be carried out on a selective basis. It should therefore be applied to a sample of the diversity of sites and monuments, based upon a scientific assessment of their significance and representative character, and not confined to the more notable and visually attractive monuments.

The relevant principles of the 1956 UNESCO Recommendations should be applied in respect of the maintenance and conservation of the archaeological heritage.

PRESENTATION, INFORMATION, RECONSTRUCTION

Article 7.
The presentation of the archaeological heritage to the general public is an essential method of promoting an understanding of the origins and development of modern societies. At the same time it is the most important means of promoting an understanding of the need for its protection.

Presentation and information should be conceived as a popular interpretation of the current state of knowledge, and it must therefore be revised frequently. It should take account of the multifaceted approaches to an understanding of the past.

Reconstructions serve two important functions: experimental research and interpretation.
They should, however, be carried out with great caution, so as to avoid disturbing any surviving archaeological evidence, and they should take account of evidence from all sources in order to achieve authenticity. Where possible and appropriate, reconstructions should not be built immediately on the archaeological remains, and should be identifiable as such.

PROFESSIONAL QUALIFICATIONS

Article 8.
High academic standards in many different disciplines are essential in the management of the archaeological heritage. The training of an adequate number of qualified professionals in the relevant fields of expertise should therefore be an important objective for the educational policies in every country. The need to develop expertise in certain highly specialised fields calls for international co-operation. Standards of professional training and professional conduct should be established and maintained.

The objective of academic archaeological training should take account of the shift in conservation policies from excavation to in situ preservation. It should also take into account the fact that the study of the history of indigenous peoples is as important in preserving and understanding the archaeological heritage as the study of outstanding monuments and sites.

The protection of the archaeological heritage is a process of continuous dynamic development. Time should therefore be made available to professionals working in this field to enable them to update their knowledge. Postgraduate training programmes should be developed with special emphasis on the protection and management of the archaeological heritage.

INTERNATIONAL CO-OPERATION

Article 9.

The archaeological heritage is the common heritage of all humanity. International cooperation is therefore essential in developing and maintaining standards in its management.

There is an urgent need to create international mechanisms for the exchange of information and experience among professionals dealing with archaeological heritage management. This requires the organisation of conferences, seminars, workshops, etc. at global as well as regional levels, and the establishment of regional centres for postgraduate studies.

ICOMOS, through its specialised groups, should promote this aspect in its medium- and long-term planning.

International exchanges of professional staff should also be developed as a means of raising standards of archaeological heritage management.

Technical assistance programmes in the field of archaeological heritage management should be developed under the auspices of ICOMOS.

Appendix III

Australia ICOMOS

The Australia ICOMOS Charter for Places of Cultural Significance
(Burra Charter)

First adopted in 1979 at the historic South Australian mining town of Burra. Minor revisions were made in 1981 and 1988, with more substantial changes in 1999. Following a review this version was adopted by Australia ICOMOS in October 2013.

PREAMBLE

Considering the International Charter for the Conservation and Restoration of Monuments and Sites (Venice 1964), and the Resolutions of the 5th General Assembly of the International Council on Monuments and Sites (ICOMOS) (Moscow 1978), the Burra Charter was adopted by Australia ICOMOS (the Australian National Committee of ICOMOS) on 19 August 1979 at Burra, South Australia. Revisions were adopted on 23 February 1981, 23 April 1988, 26 November 1999 and 31 October 2013.

The Burra Charter provides guidance for the conservation and management of places of cultural significance (cultural heritage places), and is based on the knowledge and experience of Australia ICOMOS members.

Conservation is an integral part of the management of places of cultural significance and is an ongoing responsibility.

Who is the Charter for?
The Charter sets a standard of practice for those who provide advice, make decisions about, or undertake works to places of cultural significance, including owners, managers and custodians.

Using the Charter
The Charter should be read as a whole. Many articles are interdependent.
The Charter consists of:
• Definitions Article 1
• Conservation Principles Articles 2–13
• Conservation Processes Articles 14–25
• Conservation Practices Articles 26–34
• The Burra Charter Process flow chart.
The key concepts are included in the Conservation Principles section and these are further developed in the Conservation Processes and Conservation Practice sections. The flow chart explains the Burra Charter Process (Article 6) and is an integral part of the Charter. Explanatory Notes also form part of the Charter. The Charter is self-contained, but aspects of its use and application are further explained, in a series of Australia ICOMOS Practice Notes, in The Illustrated Burra Charter, and in other guiding documents available from the Australia ICOMOS web site: australia.icomos.org.

What places does the Charter apply to?
The Charter can be applied to all types of places of cultural significance including natural, Indigenous and historic places with cultural values. The standards of other organisations may also be relevant. These include the *Australian Natural Heritage Charter, Ask First: a guide to respecting Indigenous heritage places and values and Significance 2.0: a guide to assessing the significance of collections.* National and international charters and other doctrine may be relevant. See australia.icomos.org.

Why conserve?
Places of cultural significance enrich people's lives, often providing a deep and inspirational sense of connection to community and landscape, to the past and to lived experiences. They are historical records

that are important expressions of Australian identity and experience. Places of cultural significance reflect the diversity of our communities, telling us about who we are and the past that has formed us and the Australian landscape. They are irreplaceable and precious. These places of cultural significance must be conserved for present and future generations in accordance with the principle of inter-generational equity.

The Burra Charter advocates a cautious approach to change: do as much as necessary to care for the place and to make it useable, but otherwise change it as little as possible so that its cultural significance is retained.

DEFINITIONS

Article 1. Definitions
For the purposes of this Charter:

1.1 *Place* means a geographically defined area. It may include elements, objects, spaces and views. Place may have tangible and intangible dimensions. Place has a broad scope and includes natural and cultural features. Place can be large or small: for example, a memorial, a tree, an individual building or group of buildings, the location of an historical event, an urban area or town, a cultural landscape, a garden, an industrial plant, a shipwreck, a site with in situ remains, a stone arrangement, a road or travel route, a community meeting place, a site with spiritual or religious connections.

1.2 *Cultural significance* means aesthetic, historic, scientific, social or spiritual *value* for past, present or future generations. Cultural significance is embodied in the *place* itself, its *fabric, setting, use, associations, meanings, records, related places* and *related objects*. Places may have a range of values for different individuals or groups.

The term *cultural significance* is synonymous with *cultural heritage significance* and *cultural heritage value*. Cultural significance may change over time and with use. Understanding of cultural significance may change as a result of new information.

1.3 *Fabric* means all the physical material of the *place* including elements, fixtures, contents and objects. Fabric includes building interiors and subsurface remains, as well as excavated material. Natural elements of a place may also constitute fabric. For example the rocks that signify a Dreaming place. Fabric may define spaces and views and these may be part of the significance of the place.

1.4 *Conservation* means all the processes of looking after a place so as to retain its cultural significance.

1.5 *Maintenance* means the continuous protective care of a place, and its setting. Maintenance is to be distinguished from repair which involves restoration or reconstruction.

Examples of *protective care* include:
• maintenance - regular inspection and cleaning of a place, e.g. mowing and pruning in a garden;
• repair involving restoration - returning dislodged or relocated fabric to its original location e.g. loose roof gutters on a building or displaced rocks in a stone bora ring;
• repair involving reconstruction - replacing decayed fabric with new fabric
1.6 *Preservation* means maintaining a place in its existing state and retarding deterioration.
It is recognised that all places and their elements change over time at varying rates.

1.7 *Restoration* means returning a place to a known earlier state by removing accretions or by reassembling existing elements without the introduction of new material.

1.8 *Reconstruction* means returning a place to a known earlier state and is distinguished from restoration by the introduction of new material. New material may include recycled material salvaged from other places. This should not be to the detriment of any place of cultural significance.

1.9 *Adaptation* means changing a place to suit the existing use or a proposed use.

1.10 *Use* means the functions of a place, including the activities and traditional and customary practices that may occur at the place or are dependent on the place. Use includes for example cultural practices commonly associated with Indigenous peoples such as ceremonies, hunting and fishing, and fulfilment of traditional obligations. Exercising a right of access may be a use.

1.11 *Compatible use* means a use which respects the cultural significance of a place. Such a use involves no, or minimal, impact on cultural significance.

1.12 *Setting* means the immediate and extended environment of a place that is part of or contributes to its cultural significance and distinctive character. Setting may include: structures, spaces, land, water and sky; the visual setting including views to and from the place, and along a cultural route; and other sensory aspects of the setting such as smells and sounds. Setting may also include historical and contemporary relationships, such as use and activities, social and spiritual practices, and relationships with other places, both tangible and intangible.

1.13 *Related place* means a place that contributes to the cultural significance of another place.

1.14 *Related object* means an object that contributes to the cultural significance of a place but is not at the place. Objects at a place are encompassed by the definition of place, and may or may not contribute to its cultural significance.

1.15 *Associations* mean the connections that exist between people and a place. Associations may include social or spiritual values and cultural responsibilities for a place.

1.16 *Meanings* denote what a place signifies, indicates, evokes or expresses to people. Meanings generally relate to intangible dimensions such as symbolic qualities and memories.
1.17 *Interpretation* means all the ways of presenting the cultural significance of a place. Interpretation may be a combination of the treatment of the fabric (e.g. maintenance, restoration, reconstruction); the use of and activities at the place; and the use of introduced explanatory material.

CONSERVATION PRINCIPLES

Article 2. Conservation and management
2.1 Places of cultural significance should be conserved.

2.2 The aim of conservation is to retain the cultural significance of a place.

2.3 Conservation is an integral part of good management of places of cultural significance.

2.4 Places of cultural significance should be safeguarded and not put at risk or left in a vulnerable state.

Article 3. Cautious approach
3.1 Conservation is based on a respect for the existing fabric, use, associations and meanings. It requires a cautious approach of changing as much as necessary but as little as possible. The traces of additions, alterations and earlier treatments to the fabric of a place are evidence of its history and uses which may be part of its significance. Conservation action should assist and not impede their understanding.

3.2 Changes to a place should not distort the physical or other evidence it provides, nor be based on conjecture.

Article 4. Knowledge, skills and techniques
4.1 Conservation should make use of all the knowledge, skills and disciplines which can contribute to the study and care of the place.

4.2 Traditional techniques and materials are preferred for the conservation of significant fabric. In some circumstances modern techniques and materials which offer substantial conservation benefits may be

appropriate. The use of modern materials and techniques must be supported by firm scientific evidence or by a body of experience.

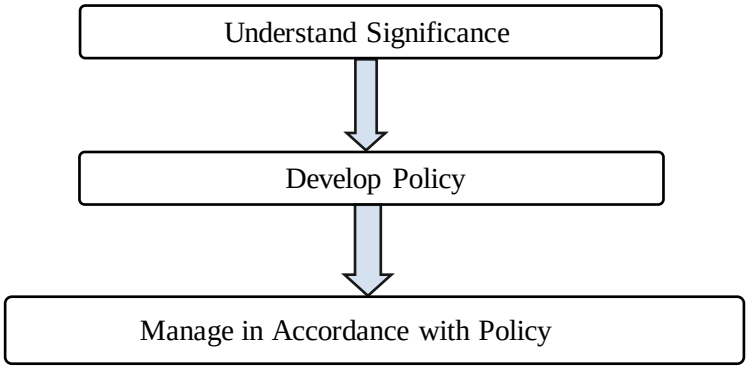
Article 5. Values
5.1 Conservation of a place should identify and take into consideration all aspects of cultural and natural significance without unwarranted emphasis on any one value at the expense of others. Conservation of places with natural significance is explained in the Australian Natural Heritage Charter. This Charter defines natural significance to mean the importance of ecosystems, biodiversity and geodiversity for their existence value or for present or future generations, in terms of their scientific, social, aesthetic and life support value.
In some cultures, natural and cultural values are indivisible.

5.2 Relative degrees of cultural significance may lead to different conservation actions at a place. A cautious approach is needed, as understanding of cultural significance may change. This article should not be used to justify actions which do not retain cultural significance.

Article 6. Burra Charter Process
6.1 The cultural significance of a place and other issues affecting its future are best understood by a sequence of collecting and analysing information before making decisions. Understanding cultural significance comes first, then development of policy and finally management of the place in accordance with the policy. This is the Burra Charter Process.

6.2 Policy for managing a place must be based on an understanding of its cultural significance.

6.3 Policy development should also include consideration of other factors affecting the future of a place such as the owner's needs, resources, external constraints and its physical condition.
The Burra Charter Process, or sequence of investigations, decisions and actions, is illustrated below and in more detail in the accompanying flow chart which forms part of the Charter.



6.4 In developing an effective policy, different ways to retain cultural significance and address other factors may need to be explored.

6.5 Changes in circumstances, or new information or perspectives, may require reiteration of part or all of the Burra Charter Process. Options considered may include a range of uses and changes (e.g. adaptation) to a place.

Article 7. Use
7.1 Where the use of a place is of cultural significance it should be retained.

7.2 A place should have a compatible use. The policy should identify a use or combination of uses or constraints on uses that retain the cultural significance of the place. New use of a place should involve

minimal change to significant fabric and use; should respect associations and meanings; and where appropriate should provide for continuation of activities and practices which contribute to the cultural significance of the place.

Article 8. Setting
Conservation requires the retention of an appropriate setting. This includes retention of the visual and sensory setting, as well as the retention of spiritual and other cultural relationships that contribute to the cultural significance of the place. New construction, demolition, intrusions or other changes which would adversely affect the setting or relationships are not appropriate. Setting is explained in Article 1.12.

Article 9. Location
9.1 The physical location of a place is part of its cultural significance. A building, work or other element of a place should remain in its historical location. Relocation is generally unacceptable unless this is the sole practical means of ensuring its survival.

9.2 Some buildings, works or other elements of places were designed to be readily removable or already have a history of relocation. Provided such buildings, works or other elements do not have significant links with their present location, removal may be appropriate.

9.3 If any building, work or other element is moved, it should be moved to an appropriate location and given an appropriate use. Such action should not be to the detriment of any place of cultural significance.

Article 10. Contents
Contents, fixtures and objects which contribute to the cultural significance of a place should be retained at that place. Their removal is unacceptable unless it is: the sole means of ensuring their security and preservation; on a temporary basis for treatment or exhibition; for cultural reasons; for health and safety; or to protect the place. Such contents, fixtures and objects should be returned where circumstances permit and it is culturally appropriate. For example, the repatriation (returning) of an object or element to a place may be important to Indigenous cultures, and may be essential to the retention of its cultural significance. Article 28 covers the circumstances where significant fabric might be disturbed, for example, during archaeological excavation. Article 33 deals with significant fabric that has been removed from a place.

Article 11. Related places and objects
The contribution which related places and related objects make to the cultural significance of the place should be retained.

Article 12. Participation
Conservation, interpretation and management of a place should provide for the participation of people for whom the place has significant associations and meanings, or who have social, spiritual or other cultural responsibilities for the place.

Article 13. Co-existence of cultural values
Co-existence of cultural values should always be recognised, respected and encouraged. This is especially important in cases where they conflict. For some places, conflicting cultural values may affect policy development and management decisions. In Article 13, the term *cultural values* refers to those beliefs which are important to a cultural group, including but not limited to political, religious, spiritual and moral beliefs. This is broader than values associated with cultural significance.

CCONSERVATION PROCESSES

Article 14. Conservation processes
Conservation may, according to circumstance, include the processes of: retention or reintroduction of a use; retention of associations and meanings; maintenance, preservation, restoration, reconstruction, adaptation and interpretation; and will commonly include a combination of more than one of these.

Conservation may also include retention of the contribution that related places and related objects make to the cultural significance of a place.
Conservation normally seeks to slow deterioration unless the significance of the place dictates otherwise. There may be circumstances where no action is required to achieve conservation.

Article 15. Change
15.1 Change may be necessary to retain cultural significance, but is undesirable where it reduces cultural significance. The amount of change to a place and its use should be guided by the cultural significance of the place and its appropriate interpretation. When change is being considered, including for a temporary use, a range of options should be explored to seek the option which minimises any reduction to its cultural significance. It may be appropriate to change a place where this reflects a change in cultural meanings or practices at the place, but the significance of the place should always be respected.

15.2 Changes which reduce cultural significance should be reversible, and be reversed when circumstances permit. Reversible changes should be considered temporary. Non----reversible change should only be used as a last resort and should not prevent future conservation action.

15.3 Demolition of significant fabric of a place is generally not acceptable. However, in some cases minor demolition may be appropriate as part of conservation. Removed significant fabric should be reinstated when circumstances permit.

15.4 The contributions of all aspects of cultural significance of a place should be respected. If a place includes fabric, uses, associations or meanings of different periods, or different aspects of cultural significance, emphasising or interpreting one period or aspect at the expense of another can only be justified when what is left out, removed or diminished is of slight cultural significance and that which is emphasised or interpreted is of much greater cultural significance.

Article 16. Maintenance
Maintenance is fundamental to conservation. Maintenance should be undertaken where fabric is of cultural significance and its maintenance is necessary to retain that cultural significance. Maintaining a place may be important to the fulfilment of traditional laws and customs in some Indigenous communities and other cultural groups.

Article 17. Preservation
Preservation is appropriate where the existing fabric or its condition constitutes evidence of cultural significance, or where insufficient evidence is available to allow other conservation processes to be carried out. Preservation protects fabric without obscuring evidence of its construction and use. The process should always be applied:
• where the evidence of the fabric is of such significance that it should not be altered; or
• where insufficient investigation has been carried out to permit policy decisions to be taken in accord with Articles 26 to 28.

New work (e.g. stabilisation) may be carried out in association with preservation when its purpose is the physical protection of the fabric and when it is consistent with Article 22.

Article 18. Restoration and reconstruction
Restoration and reconstruction should reveal culturally significant aspects of the place.

Article 19. Restoration
Restoration is appropriate only if there is sufficient evidence of an earlier state of the fabric.

Article 20. Reconstruction
20.1 Reconstruction is appropriate only where a place is incomplete through damage or alteration, and only where there is sufficient evidence to reproduce an earlier state of the fabric. In some cases, reconstruction may also be appropriate as part of a use or practice that retains the cultural significance of the place. Places with social or spiritual value may warrant reconstruction, even though very little

may remain (e.g. only building footings or tree stumps following fire, flood or storm). The requirement for sufficient evidence to reproduce an earlier state still applies.

20.2 Reconstruction should be identifiable on close inspection or through additional interpretation.

Article 21. Adaptation
21.1 Adaptation is acceptable only where the adaptation has minimal impact on the cultural significance of the place. Adaptation may involve additions to the place, the introduction of new services, or a new use, or changes to safeguard the place. Adaptation of a place for a new use is often referred to as 'adaptive re----use' and should be consistent with Article 7.2.

21.2 Adaptation should involve minimal change to significant fabric, achieved only after considering alternatives.

Article 22. New work
22.1 New work such as additions or other changes to the place may be acceptable where it respects and does not distort or obscure the cultural significance of the place, or detract from its interpretation and appreciation. New work should respect the significance of a place through consideration of its siting, bulk, form, scale, character, colour, texture and material. Imitation should generally be avoided.

22.2 New work should be readily identifiable as such, but must respect and have minimal impact on the cultural significance of the place. New work should be consistent with Articles
3, 5, 8, 15, 21 and 22.1.

Article 23. Retaining or reintroducing use
Retaining, modifying or reintroducing a significant use may be appropriate and preferred forms of conservation. These may require changes to significant fabric but they should be minimised. In some cases, continuing a significant use, activity or practice may involve substantial new work.

Article 24. Retaining associations and meanings
24.1 Significant associations between people and a place should be respected, retained and not obscured. Opportunities for the interpretation, commemoration and celebration of these associations should be investigated and implemented. For many places associations will be linked to aspects of use, including activities and practices. Some associations and meanings may not be apparent and will require research.

24.2 Significant meanings, including spiritual values, of a place should be respected. Opportunities for the continuation or revival of these meanings should be investigated and implemented.

Article 25. Interpretation
The cultural significance of many places is not readily apparent, and should be explained by interpretation. Interpretation should enhance understanding and engagement, and be culturally appropriate. In some circumstances any form of interpretation may be culturally inappropriate.

CONSERVATION PRACTICE

Article 26. Applying the Burra Charter Process
26.1 Work on a place should be preceded by studies to understand the place which should include analysis of physical, documentary, oral and other evidence, drawing on appropriate knowledge, skills and disciplines. The results of studies should be kept up to date, regularly reviewed and revised as necessary.

26.2 Written statements of cultural significance and policy for the place should be prepared, justified and accompanied by supporting evidence. The statements of significance and policy should be incorporated into a management plan for the place. Policy should address all relevant issues, e.g. use, interpretation, management and change. A management plan is a useful document for recording the Burra Charter Process, i.e. the steps in planning for and managing a place of cultural significance (Article

6.1 and flow chart). Such plans are often called conservation management plans and sometimes have other names. The management plan may deal with other matters related to the management of the place.

26.3 Groups and individuals with associations with the place as well as those involved in its management should be provided with opportunities to contribute to and participate in identifying and understanding the cultural significance of the place. Where appropriate they should also have opportunities to participate in its conservation and management.

26.4 Statements of cultural significance and policy for the place should be periodically reviewed, and actions and their consequences monitored to ensure continuing appropriateness and effectiveness. Monitor actions taken in case there are also unintended consequences.

Article 27. Managing change
27.1 The impact of proposed changes, including incremental changes, on the cultural significance of a place should be assessed with reference to the statement of significance and the policy for managing the place. It may be necessary to modify proposed changes to better retain cultural significance.
27.2 Existing fabric, use, associations and meanings should be adequately recorded before and after any changes are made to the place.

Article 28. Disturbance of fabric
28.1 Disturbance of significant fabric for study, or to obtain evidence, should be minimised. Study of a place by any disturbance of the fabric, including archaeological excavation, should only be undertaken to provide data essential for decisions on the conservation of the place, or to obtain important evidence about to be lost or made inaccessible.

28.2 Investigation of a place which requires disturbance of the fabric, apart from that necessary to make decisions, may be appropriate provided that it is consistent with the policy for the place. Such investigation should be based on important research questions which have potential to substantially add to knowledge, which cannot be answered in other ways and which minimises disturbance of significant fabric.

Article 29. Responsibility
The organisations and individuals responsible for management and decisions should be named and specific responsibility taken for each decision.

Article 30. Direction, supervision and implementation
Competent direction and supervision should be maintained at all stages, and any changes should be implemented by people with appropriate knowledge and skills.

Article 31. Keeping a log
New evidence may come to light while implementing policy or a plan for a place. Other factors may arise and require new decisions. A log of new evidence and additional decisions should be kept. New decisions should respect and have minimal impact on the cultural significance of the place.

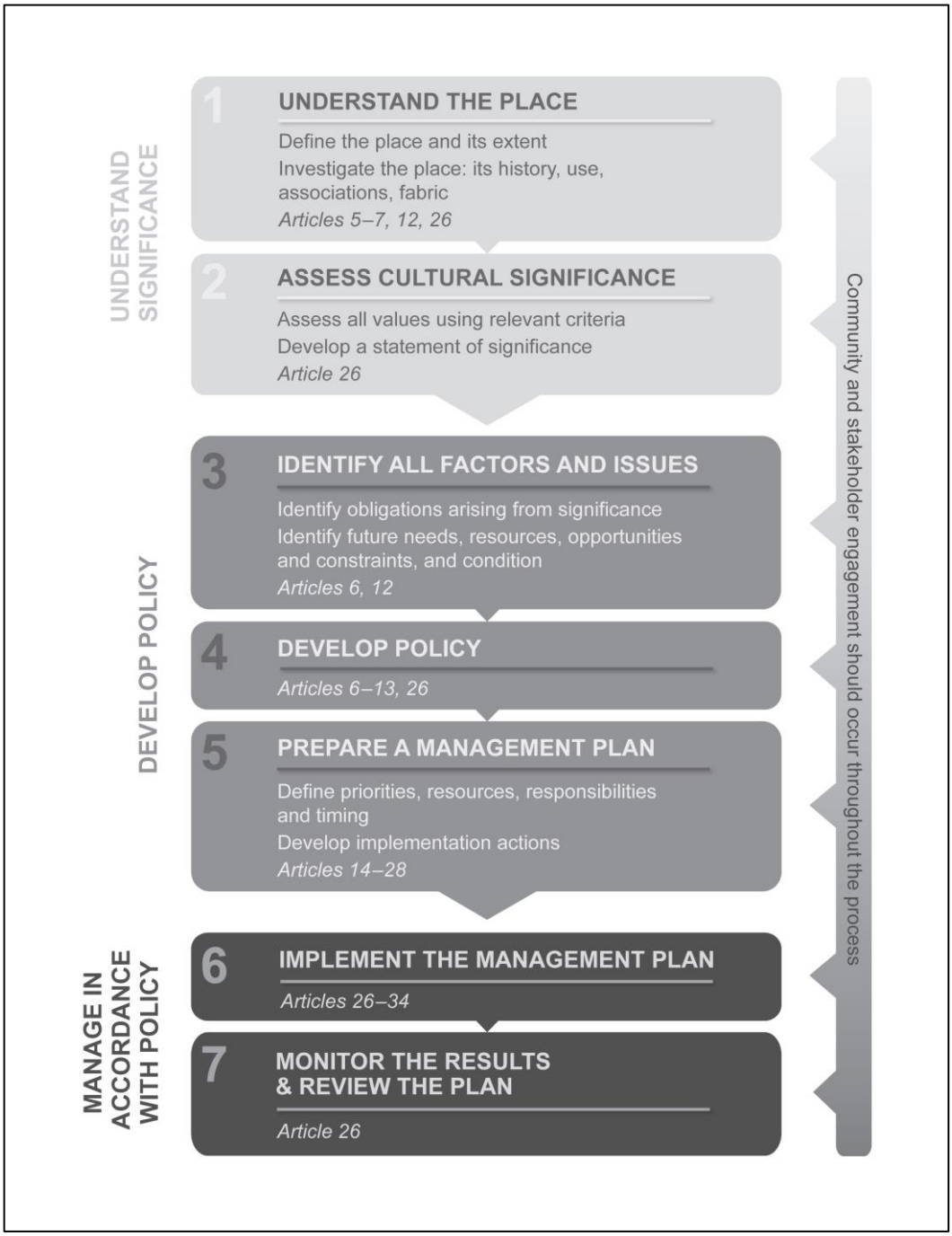
Article 32. Records
32.1 The records associated with the conservation of a place should be placed in a permanent archive and made publicly available, subject to requirements of security and privacy, and where this is culturally appropriate.

32.2 Records about the history of a place should be protected and made publicly available, subject to requirements of security and privacy, and where this is culturally appropriate.

Article 33. Removed fabric
Significant fabric which has been removed from a place including contents, fixtures and objects, should be catalogued, and protected in accordance with its cultural significance.
Where possible and culturally appropriate, removed significant fabric including contents, fixtures and objects, should be kept at the place.

Article 34. Resources
Adequate resources should be provided for conservation. The best conservation often involves the least work and can be inexpensive.

The Burra Charter Process
Steps in planning for and managing a place of cultural significance



Appendix IV

Етични стандарти и принципи в археологията

Настоящото проучване се извършва във връзка с докторската дисертация на Севдалина Нейкова с тема „Preventive Conservation for Archaeological Sites" в Technical University of Munich, Мюнхен, Германия. Проучването е анонимно и ще бъде използвано единствено за целите на докторската дисертация на С. Нейкова.

Моля, не използвайте източници на информация докато попълвате въпросника.

1. Възраст (Моля, подчертайте): 23 – 30 г./ 31 – 40 г./ 41 – 50 г./ 51 – 60 г./ над 61 г.

2. Преподавате ли в университет? Ако да – в кой университет?

3. Членувате ли в професионална организация? Ако да – в коя?

4. Запознати ли сте с етичния код на професионалната организация, в която членувате?

5. Запознати ли сте с понятието „етични принципи в археологията" и кои основни отговорности и задължения на археолога са застъпени в него? Ако да – от какви източници сте запознат с него?

6. Застъпена ли бе темата „етични принципи в археологията" по време на Вашето обучение? Ако да – по какъв начин (курс, лекции, устни дискусии и пр.)?

7. Как разбирате понятието „етични принципи в археологията"? Моля, дайте общо определение, ако не сте запознати с официалното значение на термина.

8. Имали ли сте морални дилеми или трудности по време на изпълнение на професионалните Ви задължения? Ако да – от какъв тип (политически и икономически фактори, влияещи върху решенията Ви, конфликти с местно население и пр.)?

9. Смятате ли, че етичните принципи в археологията могат да допринесат за по-адекватно в дългосрочен план опазване на движими и недвижими културни археологически ценности? Ако да – как?

10. Смятате ли, че съществува конфликт между целите на академичните дисциплини „археология" и „консервация"? Ако да – какъв е той според Вас?

11. Смятате ли, че консервацията на археологически ценности изостава в сранение с темпото, с което се извършват археологически проучвания, като по този начин се способства за увреждане, деструкция и загуба на археологически ценности?

12. Смятате ли, че е възможно археологически обект да не бъде проучван ако неговото дългосрочно опазване не може да бъде гарантирано (не са осигурени финансови, човешки, технически и управленски ресурси за това)? Смятате ли, че тоталната загуба на археологически ценности е оправдана в името на тяхното археологическо проучване, ако дългосрочното им съхранение не може да бъде гарантирано? Моля, обосновете отговорите си, независимо дали те са положителни или отрицателни.

13. Смятате ли, че е възможно и/ или наложително понятието „етични принципи в археологията" да бъде включено в учебните курсове по археология? Ако да – кой трябва да инициира неговото включване в учебните програми?

Appendix V

Ethical Principles in Archaeology

The current research is conducted in relation with the doctoral dissertation *Preventive Conservation for Archaeological Sites* of Mrs Sevdalina Neykova – a doctoral candidate at the Technical University of Munich, Germany.
The following research is anonymous. Its results will be only used for the purposes of the doctoral research.

Please, do not use any written or digital sources of information while taking part in the research.

1. Age (please underline): 23 – 30/ 31 – 40 / 41 – 50 / 51 – 60 / over 61

2. Do you teach in a university offering education in archaeology? If yes – in which one/ ones?

3. Are you a member of professional organisation/ organisations? If yes – of which one/ ones?

4. Are you aware of the code of ethics of the organisation/ organisations you are a member of?

5. Are you aware of the term 'ethical principles in archaeology' and the basic responsibilities and obligations of the archaeologist it covers? If yes – which are your sources of information?

6. Was the subject of ethics in archaeology addressed during your education? If yes – how (courses, lectures, formal or informal discussions)?

7. How do you understand the meaning of the term 'ethical principles in archaeology'? Please, give a general description if you are not aware of its official meaning.

8. Have you had moral dilemmas or conflicts in your work? If yes – what kind of difficulties and dilemmas you have had (political and economic factors influencing your decisions, conflicts with local communities, etc.)?

9. Do you think that any ethical principle in archaeology may contribute to more adequate preservation of archaeological resources in long term? If yes – how?

10. Do you think that there are conflicts between the objectives of the academic disciplines of archaeology and conservation? If yes – which are these conflicts?

11. Do you think that the pace of conservation of archaeological materials is falling behind the one of excavation, which contributes to damage, destruction and total loss of archaeological resources?

12. Do you think that it is possible to avoid an archaeological research if a site's long-term preservation cannot be guaranteed (there are no financial, human, technical and managerial resources for it)? Do you think that the partial or total loss of archaeological resources is justified for the need for archaeological research? Please, explain your answers, regardless of your position on the matter.

13. Do you think that it is possible and/ or necessary to introduce the subject of ethics in educational programs in archaeology in Bulgaria? If yes – who should initiate its introduction?

Appendix VI

Prioritisation in the Conservation of Archaeological Sites

This research is conducted in relation with the doctoral dissertation *Preventive Conservation for Archaeological Sites* of Mrs Sevdalina Neykova – a doctoral candidate at the Technical University of Munich, Germany.
The following survey is anonymous. Its results will be used only for the purposes of the doctoral research.

Instructions:

Ten archaeological sites across Europe are presented on the following pictures. Every of the places requires an urgent conservation treatment or a management action of different type. Imagine that you are an archaeological heritage manager having resources (finances, staff and time) to address the conservation issues of **one site only**. Which will be that site?

Assume that the decision depends **on you only**.

After you have taken your decision, please fill the questionnaire at the end of the file. Only then read the information provided at the end of the questionnaire.

Please, do not use any written or digital sources of information while taking part in the research.

Fig. A6-1 Site 1

Fig. A6-2 Site 2

Fig. A6-3 Site 3

Fig. A6-4 Site 4

Fig. A6-5 Site 5

Fig. A6-6 Site 6

Fig. A6-7 Site 7

Fig. A6-8 Site 8

Photo: I. Vanev, Institute of Art Studies – Bulgarian Academy of Sciences

Fig. A6-9 Site 9

Fig. A6-10 Site 10

The chosen site to be addressed is (please indicate the number of the site):

Approximately how long did it take for you to make the decision?

Which of the below-stated criteria shaped your decision (please underline):

- Site importance
- Site aesthetics
- Site rarity
- Deteriorating condition
- Urgency of the required treatment
- Types of damage that may lead to further damage or to non-recoverable loss of fabric or information about the site
- Visible risk factor affecting site's condition and/ or values
- Information about the site
- Other (please indicate):

Did any of the below-stated presented an obstacle or a difficulty when you were taking your decision (please underline):

- Lack of information on the exact condition of any of the sites
- Lack of information on the rarity of any of the sites
- Lack of information on the importance of any of the sites
- Lack of information on risks affecting any of the sites
- Lack of information on the management context of any of the sites
- Other (please indicate):

Other comments you would like to leave:

Would your decision be different if you knew the following information before doing the survey?

Site 1 is a medieval church in South East Bulgaria, located on the Black Sea coast, partially collapsed due to wave and tidal damage. The church is part of a recently discovered archaeological ensemble, consisted of remains of buildings dated back to the Roman times and the Middle Ages. The church contains a sacred well located in its altar and was once decorated with wall paintings of high artistic value.

Site 2 is a medieval church in North East Bulgaria, part of the archaeological ensemble of the second Bulgarian Medieval capital - Veliki Preslav. The remains of the church dated to the tenth century are threatened by land sliding, vandalism, neglect, and earthquakes.

Site 3 are Herculaneum's suburban baths – part of the UNESCO World Heritage Site of Herculaneum in Italy that suffered the eruption of Vesuvius in 79 AD. The baths, as well as entire Herculaneum, exhibit remarkable state of preservation. After suffering damage in previous restoration treatments and extensive decay related to mass tourism, the baths have been closed for visitation since a decade. Currently, they are characterised with heavy structural and static issues leading to loss of fabric, as well as with constant relative humidity of above 90% causing extensive microbiological growth on decorated surfaces.

Site 4 is Pompeii – a UNESCO World Heritage Site located near Naples, Italy. The site is a unique ensemble of exceptionally well-preserved architecture, mosaics, frescoes, and movable finds. It is heavily affected by inadequate management, mass tourism, and unsatisfactory maintenance leading to irreparable loss of original fabric in exceptionally great proportions.

Site 5 is a part of Ulpia Serdica – a Roman town, the remains of which are in the historic centre of Bulgarian's capital Sofia. The site has been partly destroyed in a contemporary development project. The remains deteriorated rapidly after excavation due to pending conservation treatment.

Site 6 is the Western gate of Ulpia Serdica. Discovered several decades ago, the remains have been continuously damaged by vandalism, encroaching vegetation, neglect, and pending management.

Site 7 is the Acropolis in Athens – a UNESCO World Heritage Site containing the remains of several ancient buildings of great architectural and historic significance. It has been heavily damaged a century and a half ago in restoration treatments introducing reinforced concrete and iron to fasten original stone members. The site is continuously deteriorating due to the action of earthquakes, pollution, biodeterioration, and wind and rain erosion.

Site 8 is the rock relief of the Madara Rider – a UNESCO World Heritage Site in North East Bulgaria. It is considered unique since no other site of such type has been discovered by far. Hazards related to monument's statics, and microbiological and wind erosion, threaten its survival.

Site 9 is the temple of the Olympian Zeus in Athens – a monumental ancient building, currently important for Hellenic neopagans worshipping Zeus. The site is deteriorated by the heavy polluted environment of central Athens.

Site 10 is a wall painting in the Roman Villa San Marco at Stabiae, Italy, damaged by salt efflorescence related to rising underground water and past restoration introducing cement in the reconstructed sections of the villa.

If this information was available to you before the survey, how it would affect your choice:

List of Figures

All photographs are by the author, unless stated otherwise.

List of Appendix Figures

All photographs are by the author, unless stated otherwise.

List of Tables

All tables are by the author, unless stated otherwise.

List of Used Abbreviations

AAA - Australian Association of Archaeologists
ABA - Bulgarian Archaeological Association
ALS - Airborne Laser Scanning
BGS - Bulgarian Geological Society
BLfD - Bayerisches Landesamt für Denkmalpflege
Cadw - Welsh Government's historic environment service
CCHSBM - Committee on Conservation of Historic Stone Buildings and Monuments
EAA - European Association of Archaeologists
ERI - Electrical Resistivity Imaging
FLOs - Finds Liaison Officers
GIS - Geographic Information System
HAR - Heritage at Risk Program
HE - Historic England (formerly English Heritage)
HERs - Historic Environment Records
ICBS - International Committee of the Blue Shield
ICCROM - International Centre for the Study of the Preservation and Restoration of Cultural Property
ICOM - International Council of Museums
ICOM-CC - International Council of Museums - Committee for Conservation
ICOMOS - International Council of Monuments and Sites
ICAHM - ICOMOS International Committee for Archaeological Heritage Management
IIC – International Institute of Conservation
IMIA - International Association of Engineering Insurers
IR - Infra Red
MARS - Monuments at Risk Survey
MOSE - MOdulo Sperimentale Elettromeccanico
NGOs - Non-Governmental Organisations
NIAM - National Institute of Archaeology with Museum
NIICH - National Institute for Immovable Cultural Heritage
NIMC - National Institute of Monuments of Culture
OPT - Occupied Palestinian Territories
OUV - Outstanding Universal Value
PAS - Portable Antiquities Scheme
RH - Relative Humidity
ROVs - Remote Operated Vehicles
SBP - Sub-Bottom Profiler
SCGIS - Society for Conservation GIS
SLDV - Scanning Laser Doppler Vibrometry
SONAR - SOund Navigation and Ranging
UK - United Kingdom
UNESCO - United Nations Educational, Scientific and Cultural Organization
USA - United States of America
VIA - Visitor Impact Assessment
VOC - Volatile Organic Compound
WAC - World Archaeological Congress
WHS - World Heritage Site

Glossary of Terms

Adobe architecture: structures made by unfired mud bricks. The earth to produce the brick is usually mixed with fibrous materials before forming and drying.[1]

Acoustic emission: radiation of acoustic waves in solids occurring when a material experiences irreversible changes in its internal structure, such as cracking or plastic deformation due to aging, temperature fluctuations, or mechanical stress.[2]

Acoustic tracking (underwater acoustic positioning system): a system for positioning of underwater objects and structures operating through divers or remotely operated underwater vehicles by means of acoustic distance measurement.[3]

Adaptive reuse: *"a conversion of outmoded or unused structures, such as buildings of historic value, to new uses."*[4]

Airborne Laser Scanning (LiDAR): scanning of parts of the ground with laser from an aircraft. In the field of archaeology, the technique helps to identify surface and sub-surface archaeological remains by creating digital model of a landscape. This remote sensing technology measures the distance to a given target by illuminating it with a laser. Software than produces a picture of the target by measuring the time between sending out a pulse and the light that bounces back.[5]

Aerial photography: for the field of archaeology, aerial photography refers to taking photographs of part of the ground from an aircraft or a drone to identify archaeological features located above- or underground, and to monitor their condition of excavated monuments.

Anastylosis: (*Greek*) *"reassembly of ruined monuments from remaining but displaced fragments and elements."*[6]

Anchoring: connecting separate building members, such as stone blocks, with various fittings.

Archaeological excavation: *"any research aimed at the discovery of objects of archaeological character."*[7]

Augering: collection of soil strata from various depths by boring in the ground with an instrument consisted of horizontal handle and a long vertical hollow tube (auger). Once augered, the soil can be examined *ex situ.*

Authenticity: *"the quality of being genuine or original."*[8]

Base isolation: a technique in which flexible pedestals at the base of a building absorb part of the energy of an earthquake thus preventing the deformation of the building.[9]

Bracing (Cross bracing): a system of intersecting diagonal supports utilised to reinforce build structures.[10]

Breakwater: a barrier, such as embankment or sea wall, built to protect a coast or harbour from the force of waves.[11]

Burial environment: the physical, chemical, and biological particularities of soils, influencing their preservation potential.

Buttressing: providing a built structure with a support against it to prevent collapse.[12]

Cabinets of curiosities: collections in the homes of aristocrats or "learned gentlemen".[13]

Capping: a coating layer applied on the top of a wall aiming to prevent its erosion. Capped layers are more succeptable to degradation than original masonry. They erode gradually while protecting the original underneath.

Chiaroscuro effect: (*It.* Light-dark effect) an effect caused by a combination of light permeable and non-permeable materials in enclosure constructions. Due to the transparency of some materials, different sections of the archaeological structures are subject of heating from light radiation. The effect is not only visually disturbing but may also create conservation issues for light- or heat-susceptible materials.[14]

Condition assessment: *"a record of the state of the critical aspects of the place at a given time."*[15]

Conservation:

1. *"All the processes of looking after a place so as to retain its cultural significance."*[16]

2. *"All efforts designed to understand cultural heritage, know its history and meaning, ensure its material safeguard and, as required, its presentation, restoration and enhancement."*[17]

3. *"All measures and actions aimed at safeguarding tangible cultural heritage while ensuring its accessibility to present and future generations. Conservation embraces preventive conservation, remedial conservation and restoration. All measures and actions should respect the significance and the physical properties of the cultural heritage item."*[18]

Conservation planning: a process deciding on the steps, practicalities, obstacles, and possible outcomes of conservation intervention.[19]

Conservator: *"a person responsible for the treatment, preventive care, and research of cultural and natural heritage"*. Conservator's main objective is to ensure long-term preservation of the resources of concern.[20]

Cost in use: in the field of architecture, the term is used as synonym to maintenance costs.

Cultural heritage: *"monuments: architectural works, works of monumental sculpture and painting, elements or structures of an archaeological nature, inscriptions, cave dwellings and combinations of features, which are of outstanding universal value from the point of view of history, art or science;*

groups of buildings: groups of separate or connected buildings which, because of their architecture, their homogeneity or their place in the landscape, are of outstanding universal value from the point of view of history, art or science;

sites: works of man or the combined works of nature and of man, and areas including archaeological sites which are of outstanding universal value from the historical, aesthetic, ethnological or anthropological points of view."[21]

Cultural war crime: a term encompassing all types of intentional destruction of cultural heritage during armed conflicts.[22]

Decision-making: a cognitive process resulting in choice of a course of action among several alternatives.[23]

Decision tree: a decision-support tool representing in a graph all possible outcomes of a decision.[24]

Designation: *"the recognition of particular heritage value(s) of a significant place by giving it formal status under law or policy intended to sustain those values."*[25]

Desk-based research: study of literature sources, cartographic research, etc.

Drain blanket: a layer of impermeable material placed directly on the foundation of a built structure to facilitate the drainage of its foundation and/or embankment.[26]

Dromos: (*Greek:* avenue) a corridor or passage leading into a chamber of an ancient temple or tomb.[27]

Echo sounder (SONAR): *"a type of sonar used to determine the depth of water by transmitting sound pulses into water. The time interval between emission and return of a pulse is recorded, which is used to determine the depth of water along with the speed of sound in water at the time."*[28]

Electrical Resistivity Imaging (Electrical resistivity tomography): *"geophysical technique for imaging sub-surface structures or deeper sections of materials by the use of electrical resistivity measurements made at the surface of materials".*[29]

Elgin Marbles (Parthenon Marbles): a collection of Classical Greek marble friezes, sculptures and inscriptions of the Parthenon, the Propylaea, and the Erechteion at the Acropolis in Athens.[30]

Estimation: *"a rough calculation of the value, number, quantity, or extent of something"*[31]

Ex situ: (*Lat.*) "off-site"
Exposure: *"the fact or condition of being affected by something or experiencing something"*[32]

Forum: (*Lat.*) a public square in ancient towns, serving for various social and political purposes.[33]
Free water sensors: sensors measuring the volume of water content in materials.[34]
Freeze-thaw cycles: cycles of temperature and relative humidity change during which porous materials shrink and relax.

Gabion: a specific type of container filled with earth, stones, or other material. Often used in civil engineering works for preventing slope erosion.[35]
Geoelectric survey (Electrical resistance survey): a method using electrical resistance meters (metal probes) for detecting and mapping the geoelectric resistivity of buried archaeological structures.[36]
Geographic Information System (GIS): *"computerized systems that allow the user to work with, interrelate, and analyse virtually all forms of spatial data"*[37]
Geosynthetics: woven and non-woven polyester or polypropylene membranes, developed for the civil engineering and for isolation of hazardous waste. They are divided to geotextiles, geomembranes, geocells, and geogrids.[38]
Geotextiles: manufactured materials made of synthetic or natural fibres with a trade name and specific properties for use underground. They can be either woven or non-woven and are used for increasing the stability and to decrease wind and water erosion of earth layers or foundations.[39]
Greenhouse effect: an effect occurring in greenhouses and other structures built with transparent materials. Solar radiation passes through the transparent material, reducing airflow and warming the greenhouse.[40]
Groundwater level: a term used to describe the level, either below ground or above ground, at which soil or rock is saturated. This is also referred to as **water table** and represents the top of the saturated zone.[41]
Grout re-pointing: *"the process of renewing /.../ the external part of mortar joints in masonry construction"* that had decayed.[42]
Guano: excrement of seabirds and bats.[43]

Heritage protection: *"the means of care for natural and cultural heritage values and fabric; includes legislation, policies and management frameworks"* [44]
Horizon marker: a layer or an object in a reburial that identifies the boundary to which it has been previously excavated or pointing the imminent proximity of the archaeological structures that were reburied. As horizon markers are usually used a range of geotextiles and other synthetic textiles, sand and gravel layers, and non-contextual objects.[45]
Hydrostatic pressure: the pressure exerted by a fluid at equilibrium at a given point within the fluid, due to the force of gravity. Hydrostatic pressure increases with depth.[46]

In situ: (*Lat.*) "on site"
Infrared Thermography: the detection of infrared energy emitted from an object or material, and the display of an image of temperature distribution on that material.[47]

Karsten tube: *"an equipment for measuring the degree or water penetration into building materials"*[48]

Laser speckle interferometer: a non-contact equipment detecting voids between the layers of a wall. In conservation, Laser Speckle Interferometry permits detection of zones with detachment of wall paintings from walls, without a contact with the wall paintings themselves.[49]

Magnetometry: *"magnetic survey for defining areas of past human activity. It uses the ferrimagnetism of ferric materials - the ability to exhibit spontaneous magnetization in which two types of ions of unequal magnetic moment are polarized in opposite directions"*[50]

Maintenance: *"the continuous protective care of the fabric, contents or setting of a place. In technical terms maintenance consists of regular inspections of a monument or site and may involve small-scale treatments (e.g. surface cleaning, renewal of protective coatings, etc.). Preventative maintenance is a powerful tool to prevent decay and avoid large-scale conservation-restoration treatments."*[51]

Management of archaeological sites: *"making choices about what happens to a place and taking action to make those things happen. Management includes assessing significance; deciding to open or not open a site to visitation; site conservation; site excavation; arranging access rights or means to achieve access; deciding to take no action; and other activities"*[52]

Management plan: a document dealing with various questions related to looking after heritage. Goes further than conservation planning, including economic, social and political contexts affecting the preservation and the use of heritage.[53]

Monitoring: repeated standardised *"measurement of changes, which permit to evaluate changes occurring on a heritage asset"*[54, 55]

Monument: *"all old buildings and other memorials of the bygone days"*[56]

Municipium: (*Lat.*) free city in the Roman Empire under the Roman law, having its own local government.[57]

Opus tessellatum: (*Lat.*) *"pavement made of small, regularly-shaped, usually quadrangular, elements (generally 4 to 20 mm wide) placed side by side in rows. These elements, called tesserae, are obtained by cutting different materials, such as stone, glass, and ceramic."*[58]

Outcome: "*a result or effect of an action"*.[59]

Outstanding Universal Value (OUV): a type of value ascribed by UNESCO to cultural and natural heritage places, characterising them as exceptional or outstanding from a global perspective.[60]

Photogrammetry: *"the science of making reliable measurements by the use of photographs and especially aerial photographs."*[61]

Polychromy: paint layers on a surface.

Preservation: "*the protection of cultural property through activities that minimize chemical and physical deterioration and damage and that prevent loss of informational content. The primary goal of preservation is to prolong the existence of cultural property."*[62]

Radiello sensor: an equipment for sampling of gases and other materials for contamination.

Reburial (backfilling): the re-covering of excavated archaeological features with fill materials.[63] Backfilling usually refers to the process of re-filling excavated trenches with the previously excavated soil, while reburial refers to a systematic intervention in which specific materials are used and a stratigraphy is followed. The terminology in other languages includes "coppertura prottettiva" (Italian), "re-entiero" (Spanish), etc.[64]

Reconstruction: *"re-creation of a non-existent building on its original site. Based upon historical, literary, graphic and pictorial as well as archaeological evidence, a replica of the original is built using both modern and/or traditional methods of construction."*[65]

Redox potential (reduction potential; reduction/ oxidation potential): feature of soils and aqueous solutions that defines the type of chemistry in their environment. Redox potential defines whether reduction or oxidising conditions are prevalent in soils and water.[66]

Reinforcing bar (rebar): *"a steel bar or a mesh of steel wires used as a tension device in reinforced concrete and reinforced masonry structures to strengthen them"*.[67]

Relative humidity: the ratio of water vapour in the air to the amount that it could hold it fully saturated. Not to be mistaken with *absolute humidity* – the actual mass of water in the air regardless of temperature. Temperature (T) is a factor that influences relative humidity since

the ability of air to hold water vapour increases or decreases with an increase or lowering the temperature respectively.[68]

Remedial conservation: *"all actions directly applied to an item or a group of items aimed at arresting current damaging processes or reinforcing their structure. These actions are only carried out when the items are in such a fragile condition or deteriorating at such a rate, that they could be lost in a relatively short time. These actions sometimes modify the appearance of the items."*[69]

Remote Operated Vehicles (ROVs): unoccupied, remotely operated vehicles intended for underwater investigations.[70]

Replication: *"the process whereby an exact copy of an object, building or structure is produced"*[71]

Restoration: *"a remedial process aiming to return an object or a monument to a known historical condition, based on respect for original material and authentic documents. It must stop at the point where conjecture begins, and any additional work which is indispensable must be distinct from the architectural composition and must bear a contemporary stamp."*[72]

Risk: *"the potential for realization of unwanted, negative consequences of an event"*[73]

Risk assessment: *"the systematic process of evaluating potential risks"*.[74]

Salt efflorescence: crystallisation of soluble salts on the surface of porous materials, associated with salt dissolution in water, and its migration towards material surface.[75]

Scanning Laser Doppler Vibrometry: a method for non-invasive structural and material investigation. *"The operating principle is based on the Doppler Effect, which occurs when light is back-scattered from a vibrating surface."*[76]

Seeded culture blanket (erosion control blanket): *"preformed protective blanket of plastic fibres, straw or other plant residue designed to protect soil from the impact of precipitation and overland flow, and retain moisture to facilitate establishment of vegetation."*[77]

Seismic retrofitting: a modification of existing structure to make it resistant to seismic activity, ground motion, or soil failure due to earthquakes.[78]

Shear wall: *"a structural system composed of /.../ panels to counter the effects of lateral load acting on a structure."*[79]

Shoring: supporting a build structure or trench with shores to prevent collapse.[80]

Sidescan Sonar: *"a system for detecting objects on the seafloor"*[81] through transmitting sound energy and analysing the returned signal.[82]

Site management context: political, social, environmental, and financial climate in which site management operates.

Soil hydrology: the movement of water in the soil.[83]

Steel-truss girder: support beam in construction strengthened with interconnected members (trusses). *"Trusses are typically (but not necessarily) composed of triangles"*.[84]

Sub-Bottom Profiler: a system for identifying and characterising layers of sediment or rock under the seafloor.[85]

Sustainable: *"something that is carried out in a way that considers the future generations".*[86]

Tephrochronology: *„geochronological technique that uses layers of volcanic ash from a single eruption to create a chronological framework in which paleoenvironmental or archaeological records can be placed"*.[87]

Tie: a joint, linear structural component designed to resist tension. Usually made of galvanised or stainless steel. It provides a continuous structural load transfer path from one part of a build structure to another.[88]

Timber siding: an overlay of timber on the facades of a building.[89]

Triage: (*Fr.*) a system for prioritisation in the urgent medicine in which the order of treatment of patients is based on the severity of patients' condition.[90]

Tumulus: (*Greek*) *"a mound of earth and stones raised over a grave or graves"*[91]

Underwater Drop Cameras and Sleds: equipment for visual investigation of the bed of water reservoirs.

Upgraded biogas: gas that has been cleaned from carbon dioxide in order to increase its caloric

value.[92]

Valuation: *"the awareness or acknowledgment of the quality, nature, excellence, or the like of something"*[93]

Value-based management (Value-driven management): *"The coordinated and structured operation of a heritage site with the primary purpose of protecting its heritage significance as defined by designation criteria, government authorities or owners, experts of various kinds, and other citizens with legitimate interests in that place."*[94]

Volatile organic compounds (VOC): *"organic chemicals that have a high vapor pressure at ordinary room temperature. Their high vapor pressure results from a low boiling point, which causes large numbers of molecules to evaporate or sublimate from the liquid or solid form of the compound and enter the surrounding air, a trait known as volatility."*[95]

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