Bewahrung archäologischen Kulturguts
für die Nachwelt

Restaurierungs- und Rekonstruktionsprojekte
der Deutschen Archäologischen Instituts (DAI)
Preserving Archaeological Heritage for Posterity

Restoration and Reconstruction Projects of the German Archaeological Institute (DAI)
Preserving Archaeological Heritage for Posterity

Since the beginning, excavation work has belonged to the main tasks of the German Archaeological Institute (DAI). Inevitably linked with this is the preservation of the archaeological monuments entrusted to its care. Restoration as well as the sustainable conservation of a ruin site therefore represent a task which becomes increasingly important. The responsible management of an archaeological site is a major challenge for a research institute operating worldwide, even more so as the preservation of ruins, without affecting their ‘ancient’ quality, belongs to the most complex problems in the preservation of historical monuments and sites. In addition, conservation and restoration projects are very costly. However, they also represent an important part of foreign cultural policy because they contribute directly to the preservation of cultural heritage in the respective host country and, moreover, to the development of tourism. In this respect, they further the overall reputation of the DAI to a higher degree than actual research work.

This brochure takes a look for the first time at the manifold, already successfully completed restoration projects of the DAI. It particularly aims to show the large tasks which need to be addressed in the future and for which the DAI relies on financial support and sponsorship.

We would be happy to welcome new sponsors who support the DAI in its demanding undertaking to not only research but also to preserve archaeological cultural assets for posterity.

Ulrike Wulf-Rheidt

Donations are tax-deductible.

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(Independent of project)

ZV 91890136 – Preserving Cultural Assets + Site (i.e. Pergamon)

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1. Aizanoi, Turkey: Colonnaded street from late antiquity
2. Aizanoi, Turkey: Partial reconstruction of the colonnaded street
3. Pergamon, Turkey: Modern roofing to shield the Roman mosaics of Building Z

You too can support the DAI in its worldwide effort to preserve archaeological cultural assets for posterity by making a donation. Each contribution helps to save our common heritage.
The Rome department of the DAI carried out a survey on behalf of the Soprintendenza Archeologica of the arena and the underground structures of the Colosseum and put forward a proposal for the reconstruction of a new arena floor. The investigations brought to light that the wooden arena floor had been renewed three times in antiquity. The floor was presumably so badly damaged by an earthquake at the end of the 5th century AD that it was not repaired again and the basement was filled in.

The initial idea of covering the entire underground structure, which spans an area of 2,700 square metres, was abandoned for technical reasons because a significant part of the monument would not have been visible anymore as a consequence. In addition, the complete covering would have required supports in the corridors of the underground structure as the ancient masonry is not statically loadable. This, however, would have disturbed the visual impression of the underground structure. A technically feasible but very elaborate solution would have been to support the complete covering with a girder construction. However, the maximal span of approximately 44 metres would have resulted in very large cross sections of the girders so that the new covering would have risen more than one and a half metres above the level of the ancient edge of the arena.

For this reason it was suggested to the Soprintendenza to cover only the eastern section of the underground structure which had been destroyed during the excavations of 1875 and, spanning an area of 440 square metres, corresponds to one seventh of the total area. No high standing walls were preserved in this area which offered the opportunity to place the necessary supports for the covering on the foundations of former walls in order to keep the corridors free from installations. It was also possible here to restore the ancient level without any difficulties.

This partial reconstruction of the arena floor now enables visitors to move around the arena, to experience the spatial impression and to study close up the underground structure.

The restoration work at the Colosseum in Rome was initiated by a generous donation from the Banca di Roma and completed in the year 2000.
The theatre of Teano was probably destroyed by an earthquake at the beginning of the 4th century AD. It escaped extensive stone robbery in the subsequent periods and today represents one of the most important archaeological monuments in Central Italy, both in terms of its state of preservation and the number of large-scale structural members found.

In particular, this holds true for the façade of the stage building which is preserved in its collapsed state and comprises all the structural members belonging to the classical Roman order.

In cooperation with the Rome department of the DAI the Soprintendenza di Napoli and Caserta is planning the anastylosis of the stage building, that is, the re-assemblage of extant parts, though taken out of context, of the theatre. The drawing documentation, which includes detailed observations of more than 80 workpieces, serves as a basis for this, allowing the attribution and placement of each individual building part.

Anastylosis projects should blend into their surroundings after their completion and not appear out of place. With a height of approximately 23 metres, the façade of the stage building could no doubt appear out of place, even more so as parts of the stage building would need to be rebuilt too in order to provide its structural stability.

Therefore, one needs to proceed with great caution in planning the reconstruction of the building.

The project shall be implemented in the next few years. To date, however, there is no firm financing commitment.

Planning costs: 25,000 €
The Temple of Olympian Zeus in Agrigento – The Resurrection of the Gigantic Supporting Figures

The ›Olympieion‹ in Akragas is third largest cult building in the Greek world. The building project was begun immediately after the victory over the Carthaginians at Himera in 480 BC.

The unusual proportions and original architectural features such as the supporting figures (telamones) between the columns make it unique in Greek architecture.

Visitors, however, will only see a couple of ruins of the former edifice which is mainly due to recent destruction. Many ashlars of the temple, for example, were taken away in the 18th century and used for the construction of the getty in the harbor of Porto Empedocle.

At the request of the Parco Archeologico e Paesaggistico della Valle dei Templi di Agrigento, the Rome department of the DAI is participating in a preliminary survey for the restoration of the temple in Agrigento. In addition to evaluating the restoration programme, some open questions concerning the monument remain and need to be clarified. The archaeology and the building history of the monument will therefore be investigated before the urgently needed restoration work begins.

At the same time, more than 90 fragments of the male supporting figures which were attached to the exterior walls of the temple shall be put into order and re-assembled on the north side of the temple. In order to gain a better impression of the remains, it is planned to place special emphasis on the north eastern corner of the monument as well as on parts of the cella. The same applies to the altar which is barely discernable among the ashlars lying around the temple. In addition, one of the 8 metre tall male supporting figures shall be erected on the north side.

All these measures pursue the objective to recreate the unity of the monument in the eye of the visitor. Information boards and the erection of construction members will contribute towards a better understanding of the temple by visualising the dimensions of individual building parts as well as of the whole monument.

Financing requirement: 25,000 €
The important Greek colonial city of Metapontum lies, completely destroyed since late antiquity, in an alluvial plain at the Ionian Sea. Since 1967 the Rome department of the DAI DAI has been working together closely with the Italian directorate of ancient monuments and historic buildings in the excavation and representative restoration of central areas of the city as well as in the research of its urbanistic context.

The excavation of the large city sanctuary with three peripteral temples and a multitude of smaller cult places and of the adjacent agora, the civic centre of the city, brought to light a unique group of buildings. With its complex building history and rich furnishings, this compound serves as an important example of the centre of a Greek planned city.

In view of the extensive destruction it was desirable to carry out a representative restoration of the remains. Thus, the fundamental decision was made to erect – in close reference to the remaining foundations – parts of the order of the most important buildings in the form of partial reconstructions and architectural samples. The extent of the restoration was oriented towards the amount of preserved and reusable original building parts and towards the importance of the individual building within the whole complex.

Special emphasis was placed on the so-called Ekklesiasterion theatre on the agora, a multi-functional assembly hall with a long and eventful history. For centuries it had been the centre of public life in the city, presenting an exceptional case in the entire Greek world. Focusing on two important building phases, the complex was therefore partially reconstructed and made accessible again. Original building parts, additions made of a specially manufactured artificial stone and new pieces made of selected natural stones adhering to the original shapes create a new entity.

The significance of the great temples on the other hand was highlighted through the erection of a limited number of architectural samples which comprised original parts and casts of the more fragile building members. Special care was taken to keep the total volume of invasive measures in a proportionate balance; illustrated charts complement the information.

The Archaeological Park has existed in this form for 25 years and has lost none of its appeal to visitors. On the contrary, the reconstruction measures, in particular the additions made of artificial and natural stone, have aged well and confer an own new dignity on the complex.
Famous for its monumental temples, the large Greek colonial city in the southwest of Sicily has been investigated since 1971 by the Rome department of the DAI and the Sicilian directorate of ancient monuments and historic buildings. Since 1996, the emphasis has been placed on the excavation of the agora, the civic centre of the city. The investigation of the walls on the acropolis and in particular of the structures surrounding the North Gate, one of the most important fortification works of the Classical period, resulted in extensive restoration measures from 1988–1992. The objective was to renovate and reconstruct the complex structure and to make it accessible to visitors. It was thereby decided to avoid intensive measures such as can be seen in the anastylosis reconstruction of the early classical Temple E in the extra-urban sanctuary and of Temple C in the city sanctuary, both of which are now regarded as particularly negative examples due to their deep and ultimately destructive impact on the original building remains. Instead, the fortifications were carefully cleared and restored in many individual places; some of the original remains were re-assembled step by step while retaining the outline of the ruins. At the same time, a system of visitor pathways, sparing the ruins and accompanied by information boards, was installed in the fortifications and extended later on to the whole acropolis. Only one particular detail, namely the remarkable upper story of a turret covered in glistening white plaster, was erected as an illustrative architectural sample in close proximity to its original location. Current excavations in the vast area of the city outside the acropolis are conditioned by historical circumstances. These areas were abandoned after the catastrophic destruction of the city through the Carthaginians in 409 BC and exposed to systematic stone robbery soon afterwards. Such findings allow archaeologists to gain an abundance of information about the life of the city before the destruction, but they also pose specific problems for the conservation and reconstruction of the derelict landscape. In view of the importance of the findings it is highly desirable, however, that they should be made accessible to visitors and that the accessible zones should be extended over the whole area of the city. This would enable visitors to experience a large Greek planned city in entirely new dimensions. The DAI takes part in these measures as decisively as in the restoration of the walls. The implementation of the project is in progress but there is no firm financing commitment to date.

1. North fortification of the Acropolis, the restored outer defences (1992)
2. The reconstructed architectural sample of the stuccoed upper storey of a turret in the west wall of the acropolis (1995)
3. North fortification of the acropolis, reconstruction model
The Rome department of the DAI has been working in Chimtou, the Roman town of Simitthus, since 1965. The German research started on the ancient marble quarries of Chimtou from which the famous yellow Numidian marble or giallo antico was extracted. The investigations were then extended to Hellenistic temple of the Numidian king Micipsa, the ancient city, the aqueduct and the Roman bridge across the Medjerda. The labour and quarry camp was also excavated. From the 1st to the 3rd centuries AD it accommodated the prisoners condemned to the dangerous work in the quarries; today, it presents an exceptional monument of the Roman world on account of its good state of preservation. After a study period, the work was taken up again in 2008 with the aim of conducting further research on the ancient town in the pre-Roman phases of the Punic and Numidian period.

Parallel to the excavations, the DAI initiated a restoration programme as early as the 1980s which, in conjunction with the activities of the DAI in Carthage, is regarded as exemplary in Tunisia to this day. Thus, the unique Numidian grave monuments which were discovered under the Roman forum were conserved and made visible within the surrounding Roman structures. The foundations of the Hellenistic temple on the peak of the marble mountain were also conserved and a modern museum established on the site in a joint German-Tunisian venture. Ten years after its opening, it is still regarded as one of the most prized museums in the South Mediterranean region. Next to the scholarly evaluation and publication of older works, future tasks will include protecting the monuments of the German excavations from deterioration, restoring them and making them accessible to the public. The work will be carried out together with young Tunisian professionals experienced in the conservation of ancient monuments, thus offering the opportunity of basic and advanced training for Tunisian colleagues. It will focus on the conservation, restoration and development of the labour and quarry camp as well as on the excavation sections with Numidian settlement finds to the north of the forum. An archaeological round tour will enable visitors to Chimtou to look around the archaeological site more easily in future and offer information on the outstanding monuments which range in time from the 4th century BC to the French-Algerian War.

Financing requirement: 140,000 €
The Philippeion is one of the historically most important buildings in Olympia; it owes its existence to King Philipp II who dedicated the building to the Sanctuary of Zeus in the 4th century BC.

It was a victory monument as well as a heroon; in its interior were five gold and ivory statues of the royal family made by the sculptor Leochares.

The architectural history of the building is also of great interest. It belongs to the rare type of late classical circular buildings. It differs from its predecessors in Delphi and Epidauros in the application of the Ionic order, displaying an individual style in the execution of details and contrasting with other buildings in the style of Attica, Asia Minor or the Aegean Islands. Another specific feature is the use of different building materials. The steps were made of marble, the column bases and capitals of close-grained limestone, the column drums and parts of the entablature, by contrast, of shell limestone. The restoration plan intended to integrate as many available parts of the original building as possible while avoiding substantial additions executed in new materials.

Following these guidelines, it was possible to assemble one third of the stepped foundation with two complete column bays and three column stumps on it. The ensemble is able to convey an impression of late classical architecture to visitors while standing in fascinating contrast with the surrounding buildings.

Planning for the project began in 1999; its realisation was made possible by the generous donation of the Anastasios G. Leventis Foundation. The partial reconstruction was completed in 2005 and has been among the most frequently photographed objects in the sanctuary ever since.

1 Drawing of the reconstructed parts
2 Overall view of the partial reconstruction (2005)
3 State of preservation of the foundation (1987)
Restoration Work at the Votive Monument of the Ptolemies in Olympia

In many respects, the votive monument of the Ptolemies in front of the Echo Hall occupies a prominent position among the monuments of Olympia. Its 20 metre wide base is the largest of the numerous votive bases in the sanctuary; the two Ionic marble columns with a height of 8.5 metres, second in length only to the columns of the Temple of Zeus, are characterised by their sophisticated architectural design. Moreover, the monument which was erected in 270 BC belongs to the best preserved buildings in Olympia. It was built in honour of the Egyptian king Ptolemy II Philadelphos, one of the most powerful successors of Alexander the Great, and his wife and sister Arsinoë.

The large number of individual parts, which are securely attributable to the building, as well as its historical importance and its special position in architectural history, especially in regard to the typology of bases, thus justify the reconstruction of the Hellenistic monument. Situated in a prominent location, it is also easily visible to all visitors. Aiming for an overall impression dominated by original parts rather than additions executed in new materials, one can take only a partial reconstruction into consideration. The columns, for example, which consist of two stylobate blocks, a base, eight column drums and a capital each, are not at all equally well preserved. The facing slabs of the socle are also full of gaps while its interior blocks are even completely missing.

The programme therefore intends to reconstruct only the better preserved column and a part of the base. Visitors will nevertheless be able again to experience the monumentality of the building. Necessary additions to the columns shall be carried out in marble, the missing blocks of the pedestal will be made of shell limestone. Artificial stone will only be used for smaller repairs.

Initial financing has been secured through a donation of the Regula Pestalozzi Foundation. The work on the project began in 2009.

Financing requirement: 100,000 €
The Temple of Zeus is the largest sacred building in the sanctuary of Olympia. It is considered to be a perfect example of Dorian temple architecture in regard to its sophisticated design which is evident in every single detail and the quality of its execution. The interior of the building which was erected between 470 and 456 BC accommodated the 12 metre high gold and ivory statue of Zeus made by Phidias, one of the seven world wonders of antiquity.

The aim of the anastylosis (partial reconstruction) was to give a third dimension to the temple, of which only the foundations are preserved, and to emphasise the significance of the ruin in doing so. Despite the large number of surviving construction members, there is a lack of two neighbouring columns and their corresponding entablature. It was therefore impossible to reconstruct a complete column bay which would have been desirable for a better understanding of the architectural structure. Instead, an original column in the northwest corner of the temple was chosen for reconstruction as the foundation of the cela is very well preserved in this area. The 10.56 metre high column consists, just as the rest of the building, of porous and brittle shell limestone; the only exception are the roof and the sculptures which are made of marble. The damaged parts of the column drums and the capital were therefore restored with a specially developed artificial stone whose main components are finely ground stone and hydraulic lime. These casts were then reworked with traditional craft techniques while the missing parts were newly made from imported limestone.

The step-by-step assembly began in 2000. The work was completed in 2004 on the occasion of the Olympic Games held in Athens. It was financed by the Leventis Foundation and the Theodor Wiegand Society.
Further Restoration Work at the Temple of Zeus in Olympia

Following the reconstruction of a column of the Temple of Zeus which attracted much public attention and which met with great approval, further measures are planned in order to help visitors visualise the former shape of the temple. The measures are also aimed at providing significant original building parts with a better protection against weathering and damage.

The first concern is to clear the colonnade from arbitrarily positioned building parts in order to make the ground plan of the temple more noticeable and to improve the circulation pathways for visitors. In connection with this, the building parts belonging to the ophistodomos (rear hall) shall be newly arranged in connection with this. It is planned to return the two well preserved capitals lying in front of the western side of temple to their original location. The lack of original building members, however, precludes the complete reconstruction of the rear cella wall.

The only practical solution lies in the erection of column stumps which necessitates the replacement of the missing drums of the northern column with stone replicas. Such a careful interference has the further advantage that the fine details of the capitals may be seen at close range.

The columns on the south side of the temple which have remained in their collapsed state are also taken into account; our programme intends to stabilise them with earth mounds and to conserve the stucco on the underside at the same time. Further measures, however, are not intended as this most impressive testimony to the destruction of the temple should be left unchanged.

The financing of the project has been granted by the Levantis-Foundation. The proposal has been accepted by the relevant Greek authorities; clearing work and restoration of the damaged building members will begin shortly. 

Financing requirement: 60,000 €
The temple at the approach to the Bend Pyramid in Dahshur (approximately 2600 BC) is the oldest decorated temple in an Egyptian pyramid precinct. The relief stones are of great significance for our understanding of Egyptian temple decoration. They throw a light on the ideology of early pharaonic kingship as well as on the economic and administrative penetration of the country. From a formal perspective, the architecture of the temple holds a key position in the development of the canonical Egyptian pyramid precinct.

Large parts of the pyramid precinct including the temple were already excavated in the 50’s of the 20th century. Surprisingly, however, recent research of the Cairo department has brought to light a 140 metre long vaulted temple approach made out of mudbricks which leads towards cultivated land and ends in a rectangular precinct, probably an old harbour. It was very fortunate that the excavations uncovered a large number of new relief fragments from the temple. This enables a new start to reconstruct and study this significant building.

The limestone ashlars of the temple have been badly damaged by climatic conditions and need to be urgently consolidated. Moreover, the newly found relief stone and statue fragments, damaged by the saline desert soil, need to be restored in order to preserve these valuable monuments. Initial samples have shown that excellent results may be obtained here. In order to make the whole exceptional temple ensemble visible again, it is also intended to restore the mudbrick houses of the priests which lie inside the precinct wall. In addition to this, wall charts containing basic information for visitors will be set up in the restored complex.

1 Temple with the Bend Pyramid in the background
2 Plan of the temple at the approach to the Bend Pyramid
3 Nile deity, offering papyrus

Financing requirement: 350,000 €
The Museum in Elephantine – An Architectural Gem is Restored

The Aswan region – embedded in the spectacular rocky landscape of the First Nile Cataract – has always played a significant role as the southern frontier of the Egyptian settlement area. A close series of archaeological and historical monuments bear witness to this position throughout change and continuity.

Unfortunately, the buildings from the colonial period were recklessly and almost completely destroyed at the turn of the 19th to the 20th century although the structure and the riverfront view of the modern town received their characteristic features at that time.

The last remaining and clearly visible building from this period is represented by an office building of the Ministry for Water Management, built in 1906, which sits majestically on the eastern bank of the island of Elephantine overlooking the river and the city of Aswan.

Today, the location is used as the main building of the archaeological museum of Elephantine, exhibiting finds from the 5000 year old history of the region. Since 2006, the DAI has been supporting the efforts of the Supreme Council of Antiquities to restore and refurbish the old museum. Due to its outstanding significance, the DAI conducted a architectural study on the building in 2009 which was accompanied by a preliminary examination of relevant restoration issues. The findings clearly showed that a range of conservation measures are urgently required for the oldest building stock. In particular, the original wooden furnishings need to be consolidated and cracks and flaws as well as the original colouring of the building need to be restored. After restoration, the old building will be representative of an entire period in the history and development of the region, figuring as an architectural gem in the vista of the island. As the centre of the new museum it will also be in the focus of many visitors.

1 The historic museum building on Elephantine
2 Figurine ‘hurait holder’
3 View into the wooden entablature
4 Groundplan of the building

Financing requirement: 120,000 €
A remarkable part of the archaeological heritage in the area of Aswan consists of a large number of rock inscriptions from Pharaonic times. They were carved into boulders and rock faces in the vicinity of the stone quarries and thoroughfares of Aswan, often concentrated in certain places. The earliest inscriptions date from the 3rd millennium BC, the majority however dates to the 2nd millennium BC. The texts refer to gods, kings and officials of the old Egyptian state, some of them also recount historical events. They are an important source of evidence for the reconstruction of the Egyptian state apparatus, local religious and cult practices as well as the Pharaonic foreign policy. The textual monuments are severely threatened through the rapid growth of the city of Aswan and are currently in danger of being destroyed.

The Cairo department of the DAI and the Supreme Council of Antiquities have therefore formed a long-term cooperation project which pursues the scientific documentation and publication of the rock inscriptions. The project also deals with issues of site management and the conservation of the inscriptions.

We are currently dealing with the protection of two especially valuable inscription groups. One of them, located in the heartland of the ancient quarry area, is arguably the most spectacular inscription group of the region as it alone comprises four historically important steles of kings from the 18th and 19th dynasty (15th to 13th centuries BC). The second group of inscriptions is located in the village of Gebel Tagug on the southern edge of the city centre of Aswan. The inscriptions here date from the Middle Kingdom (approximately the 18th and 17th centuries BC) to the Roman imperial period. They list the names of families of quarry workers and military men employed in transportation, thus offering a vivid illustration of the long history of quarrying in the Aswan region.

Both inscription groups are situated in densely populated areas and are exposed to severe destructions through pollution and waste incineration. Protective measures are urgently needed to preserve them. To this end, a solid fence shall be put up around the inscriptions while information boards, together with flyers in Arabic, English and German, will explain the significance of the site and of the inscriptions. This will also raise the awareness of the local population to the value of these monuments.

Financing requirement: 45,000 €
Medieval Aswan was surrounded by a vast Islamic necropolis. The important complex has largely disappeared under the modern settlement, only to the south of the city has a larger area been preserved. This is the so-called Fatimide cemetery, the earliest graves of which date back to the 7th century and hence to the beginnings of the islamisation of Egypt. It is characterised by domed mausolea which commemorate members of the prophet’s family and still serve as places of veneration today. There are also numerous historic and modern single burials. The preservation of this unique necropolis is existentially threatened through the decay of the tombs, the rapid growth of the city of Aswan and also through its continuous use as a burial place. Since 2006, the Cairo department has been working together with the Egyptian Council of Antiquities on the scientific documentation and research of these tombs. Initial restoration work has been carried out but further restoration measures, especially on the structurally badly damaged domed buildings, are necessary to secure the cemetery on a long-term basis. The realisation of a monument preservation project compiled by us will secure the preservation and the conservation of the tombs and mausolea and create clearly designated areas for the relatives of the interred and pilgrims. It is also intended to make the cemetery accessible to tourists, providing a route guidance system and other amenities. By this means it will be possible to preserve one of the most significant medieval cemeteries of Egypt.

Financing requirement: 65,000 €

1 Islamic necropolis in Aswan, general view from the south. The medieval domed tombs rise above the shallow single burials
2 The preservation project intends to connect the Islamic cemetery with existing tourist attractions in Aswan such as the Nubian Museum and the public gardens (left) and the pharaonic obelisk quarry (right)
3 Mausoleum M 31 and the destroyed dome. Further mausolea are in danger of collapsing
4 Veneration of saints. Believers sprinkle blue indigo powder over the grave of an imam, asking for divine intervention and justice
Excavations at the Stone Age mound of Göbekli Tepe in the Turkish Euphrates region have brought to light findings of such richness and monumentality as to change our view of the development of sedentary and agricultural societies in central issues. There were groups of hunters who were capable of hitherto unknown and also quite unexpected achievements, especially within the area of architecture.

The preservation and touristic presentation of the megalithic monuments requires, first of all, various stone restoration measures. The largest stone circle excavated so far has an inner diameter of 20 metres. Its basic fabric has been preserved in excellent condition due to the fact that it had been completely backfilled in Neolithic times. The central pillars, however, have been pushed into an unstable lateral position through the lateral earth pressure exerted over thousands of years. The tilt had to be realigned in order to completely excavate the interior of the structure. As the protection of the surrounding archaeological finds had priority, however, it was not possible to work with large machinery. By means of foot-operated winches and some solid cubic metres of timber both pillars could be realigned vertically and the excavations could continue. Similar work will be necessary over the further course of the excavations, as well as the professional repair of broken pillars that, for example, has already been carried on the monumental central pillars in structure C.

Further to the continuation of these measures it is urgently required to provide the stone and mud walls with a sustainable and long-term protection from weathering. Temporary shelters were erected since the beginning of the excavation in order to protect certain excavation areas from weathering. These need to be replaced by a permanent und extendable protection roof fulfilling certain museological requirements. Non-intrusive circulation pathways should enable visitors to experience the findings without hindering further archaeological investigations.

In 2011, a selection committee selected from submitted tenders a design which meets the high requirements demanded by this sensitive site. The design shall be realised with sponsorship funding in the next few years, enabling us to preserve this unique site for posterity.

Finance requirement: 2,000,000 €
The Lion Gate in the south-western Upper City of Hattuša, the capital of the Hittite empire in the Bronze Age, is among the most impressive monuments of ancient Near Eastern art. The originally parabola-shaped roof of the gate and the mighty lions lining the gateway are an exceptional testimony to the Bronze Age art of stone masonry in Anatolia and beyond. The monumental gateway figures, however, were badly damaged in a devastating fire. Moreover, vandalism led to the loss of the head of the left lion.

In 1970, the cracks were filled with a polyester resin based stone filler to prevent further decay of the monument. The joints, however, have lost their properties and their colour since then and impair the visual appearance of the monument; it became necessary therefore to renew them using modern methods and materials. After a comprehensive damage assessment was carried out in 2009, the Faculty of Conservation and Restoration at the University of Applied Sciences Erfurt developed a method on the basis of samples for removing the old adhesives as carefully as possible. In contrast to previous procedures, it enables one to dissolve the former adhesives without leaving any residues behind or adding further damage to the stone.

Cracks in the stone are filled with an acrylate dispersion bound mortar which matches the colour of the surrounding stone, thus achieving not only the long-term consolidation of the material state but also improving the visual appearance of the monument and its impression on visitors. At an unknown point of time before the discovery of Boğazköy by Charles Texier in 1834, the head of the left lion was destroyed through vandalism. Aiming to restore the original appearance of the gate and to convey a vivid impression of its monumentality to visitors, the missing head of the left gate lion was reconstructed following the better preserved right lion, adjusted in size and modelled out of mineral stone restoration mortar.

The work combines the highest standards in the restoration and conservation of cultural monuments with visualisation issues, thus contributing towards the touristic use and development of this significant site.

Financing requirement: 40,000 €

1 Lion Gate
2 Filling in cracks with mortar
3 Reconstructed lion’s head
German archaeologists have been working in Pergamon, the Hellenistic royal capital and Roman metropolis on the west coast of Turkey, since 1878. Next to the discovery of outstanding works of art such as the Pergamon altar, the extensive excavations have shown that Pergamon presented an ancient cultural metropolis of international standing.

From the beginning, the objective of our work has been to secure the excavated monuments in the long term and to make them accessible to visitors. The DAI has gained international recognition with several successfully completed projects.

The archaeology and the building history of a structure are always investigated before the conservation begins so that research, preservation and presentation may enter into a fruitful relationship.

A further principle is the use of local materials and the employment of local craftsmen. For more than 30 years we have been training stonemasons within the framework of our conservation projects. We would like to continue this tradition of a workshop with masons and apprentices.

We are currently working on the conservation of the Red Hall, a sanctuary for Egyptian deities from the Roman imperial period (2nd century AD), which will be turned into a museum. The project has been included in the Ernst Reuter Initiative for Intercultural Dialogue and Understanding in 2008, thus figuring as a flagship of German culture and sciences in Turkey.

Over the course of the next few excavation seasons the particularly endangered south eastern section of the Red Hall will be secured and presented to visitors. The southern round tower, already completed in 2009, and the planned complete reconstruction of the southern temenos wall, a massive retaining wall, are a focal point here. In addition, one of the nearly 8 metre high supporting figures in the south court of the Red Hall will be reconstructed using original parts, a project of high didactical value for visitors.

Looking to the future, comprehensive restoration works are planned in the Hellenistic gymnasion and in the House of Attalos, an especially well preserved ancient residence. Completed, ongoing and planned measures serve to preserve this exceptional ensemble of ancient architecture, which is in danger of deterioration.

Financing requirement: 450,000 €

1 Red Hall, restoration work at the southern round tower
2 House of Attalos, excavation in 1907
3 Reconstructing the supporting-figure
4 Endangered temenos wall
5 Sculpture fragments in the south court of the Red Hall
The ancient Greek city of Priene, situated in western Turkey about 80 kilometres south of Izmir, was excavated by German archaeologists at the end of the 19th century. At that time, just under half of the area of the city that had been founded in the 4th century BC was laid open. Due to its originally well preserved building remains and the appearance of its public buildings and residential quarters, Priene is regarded as the prime example of a late Classical and Hellenistic city (4th – 1st centuries BC). The excavation site continues to be intensively researched by the DAI to this day.

The site, however, presents certain challenges concerning the conservation and restoration of its architectural monuments. This is due, for example, to the stone material and somewhat unstable construction of the residential buildings. The conservation and restoration measures of the last few decades pursue two objectives. Firstly, to visualise the structure and the appearance of ancient buildings as well as the urbanistic context of the city without disturbing the park-like character of the excavation site with disproportionate complete reconstructions. Secondly, to control the increasing threats posed by weathering, visitors behaviour and vandalism to especially endangered areas.

In recent years such measures have focused on various sanctuaries, the theatre, the bouleuterion (assembly hall), a Byzantine church and selected residential buildings. The so-called Upper Gymnasium belongs to the most impressive and highest standing municipal buildings in the ancient city centre. It is the older one of two building complexes of this type in Priene. Dating to the 4th or 3rd century BC, it originally served the sporting education and teaching of future citizens. In the Roman imperial period, it was reshaped into a public bath and then used in various ways as was usual in this period. In fact, the functions of Roman baths are nowadays often compared with the functions of a cultural centre.

Despite its prominent position in the cultural and architectural history of the city and its central location, the building has never been thoroughly investigated before. A requirement for this would be the securing of the acutely endangered structure; especially the Roman imperial walls on the north side display cracks and blemishes which require permanent securing. An appealing and vivid presentation of the structure would also enable visitors to experience this ancient cultural centre in its entirety.

The Upper Gymnasium in Priene – The Preservation of an Ancient Cultural Centre

Financing requirement: 25,000 €

1 Temple of the Egyptian Gods. Erection of the eastern stair wall
2 Insula E 13 to the east of the Upper Gymnasium. Assembling architectural fragments from the façade of a monumental house
3 Temple of the Egyptian Gods. Repair work at the podium
The cemetery of the Sabean period at the Awam temple in the oasis of Marib has been the subject of research since 1997. The cemetery was used at the same time as the sanctuary and offers valuable insight into the development of Sabean burial customs from the 8th century BC to the 4th century AD.

The tomb groups are represented by above-ground mausolea with several storeys and clearly separated burials. They were accessed by a system of narrow alleys. Installations and alterations of younger tombs often block these alleys and, today, convey the impression of a labyrinth-like complex. The walls of the older tombs were mostly constructed in the double-shell-technique, using tuff or roughly hewn limestone on the interior and meticulously worked limestone ashlars on the exterior. Some tombs had lime mortar or mud plaster on their interior walls which may have been painted red. Beam holes and supports indicate the position of the former storeys even today. Thus, some tombs possessed three or four storeys, partly above-ground and partly below the exterior walking surface. All in all, the buildings reached a height up to 10 metres.

It is urgently required to secure the wall copings in order to stop further deterioration of the monuments. A well-suited lime mortar called qadad, which had already been used in Sabean times, is available for caulking. Parts of the lime stone walls were badly damaged in a devastating fire in antiquity. Some stones need to be replaced or consolidated with epoxyde resin for their preservation. It is, moreover, necessary to restore the plaster and the colouring in the interior tomb chambers. It is also intended to provide the cemetery with hedges as a protection against the sand of the nearby dunes and to build mud-brick walls along the edges of the archaeological trenches to prevent them from collapsing. Visitor pathways, stairs and ramps will provide access to the buildings.

Financing requirement: 350,000 €
In the 5th and 6th centuries AD, the Sabaeans constructed a dam called al-Mabna in the second largest wadi of Marib, the wadi Jufaina. The new dam relieved the famous Great Dam of Marib and opened up new agricultural grounds. The dam, impressive even today, offers insight into the last development stages of Sabean irrigation technology and the eventual failure of an initially successful irrigation concept.

Al-Mabna constitutes a system of three dam walls and three – initially four – discharge buildings. The main dam with a length of 190 metres, a height of 8 metres and a maximum width of 3,5 metres originally blocked the wadi completely. The other two dam walls, measuring more than 200 metres in length, followed the natural form of the terrain; they served to canalise and impound the water which was conducted via the discharge buildings into the main canals.

The discharge buildings are built in an especially stable manner as they sustained the highest water pressure. Mighty limestone ashlars originating from older buildings, mainly out of use temples, were used for their construction. The use of spolia, however, did not allow a precise fitting so that the facades had to be plastered with mortar to prevent water from penetrating into the joints.

The dam walls on the other hand are constructed in the so-called habl technique; rough lava chunks form the core of the wall which is covered with a several centimetres thick layer of qadad, a Sabean lime mortar in use since the 1st century BC. For reasons of stability, the walls consist of several such lava-qadad layers.

Next to the archaeological and architectural study of the dam, we need to carry out comprehensive restoration works on individual building parts. It is necessary, for example, to consolidate some of the walls, to pile up the interior filling again and to secure the outer façades with qadad.

Financing requirement: 250,000 €
Sirwah – The Preservation of an Exceptional Cultural Centre

The city of Sirwah, situated 40 kilometres west of Marib, represents a Sabaean centre of a special kind. Although rather small with an area of only 3 hectares, it was the site of an elaborate building programme conducted by the Sabaean rulers. At the beginning of the 1st millennium BC, sacral buildings, dominating the townscape, were erected throughout the city. The largest of these sanctuaries is a well-preserved temple dedicated to the highest Sabaean god Almaqah. Next to the research on this sanctuary, consolidation and restoration measures have been carried out here since 2004. In doing so, we deliberately avoid reconstructions.

The work comprises the consolidation of the limestone flooring in the courtyards by exchanging destroyed slabs with new stone materials, by rejoining cracks with lime mortar and by filling larger cracks and flaws with a mixture of lime mortar and acrylate resin. The large inscription stones of the Sabaean rulers Karib’il Watar and Yithar’amar Watar bin Yakrumalik received a temporary roof for their protection and the inscriptions were consolidated with dispersed lime hydrate and mortar. The wall copings are caulked with qadad, a traditional lime mortar in use from Sabaean times until today, to prevent water from penetrating into the fabric and to stop salts from spreading to the wall surface.

Pillars were re-erected in the interior of the temple to provide a better understanding of the whole structure. This took some effort as the pillars were mortice locked in the ground with stainless steel anchors. By means of quantitative ultrasound measurements, the six monumental monolithic pillars of the propylaea that weigh up to three tonnes were checked for possible cracks and flaws. Only afterwards were they laid out in order to dowel the cracks with stainless steel rods.

The objective of the work is to preserve the Yemenite cultural heritage and to make the ruin accessible to tourists.

Financing requirement: 25,000 €

1 View into the interior of the temple with propylaea (8th/7th century BC)
2 Rejoining cracks in the limestone flooring in the inner courtyard of the temple
3 Temporary roof covering the reports of the accomplishments of two Sabaean rulers
The Five Pillar Building in Sirwah – Securing the Oldest Stone and Timber Architecture in South Arabia

The Five Pillar building in the north of the city of Sirwah is the oldest Sabaean pillar building with a presumably sacral function. By means of 14C samples, its construction could be dated to the years around 900 BC, the early Sabaean period. It was never built over and can thus be exposed completely. Its state of preservation is unique for South Arabia; in some parts, the building reaches a height of more than 10 metres from the foundation of the podium to the original wooden roof beams of the ground floor. The building represents the oldest stone and timber architecture in South Arabia, which, so far, has only been attested from the mid-1st millennium BC onwards.

Horizontal and vertical acacia wood beams were built at regular intervals into the interior and exterior walls. The walls were plastered with loam, only the corridor was faced with limestone in-between the framework.

The architectural design of the façade is without parallel as far as the monumental corner and median risalits are concerned. Many timbers survived the destruction of the building through fire; elsewhere, the position of former beams are indicated by recesses in the wall. The door frames were made of carefully mortised wood beams that are remarkably well preserved.

Above all, it is necessary to restore the remaining wood beams. Next to the excavations, the wooden artifacts will be consolidated with paraloid and cellulose mortar in order to enable the documentation of badly scorched areas as well as the block excavation of certain areas. Disintegrated beams which had a supporting function will be replaced with new acacia wood. The dry stone walls will then be consolidated with mortar while the facing slabs of the corridor will be newly set. An overall roof will protect this exceptional monument against the rain.

Financing requirement: 500,000 €

1 The original wood and limestone facing of the corridor
2 The wooden doorframes, nearly 3000 years old, are well preserved despite the damage
3 View from the east on to the entrance with the monumental staircase and stone portal (approx. 900 BC)
4 Stone and timber construction of the walls; acacia wood was used for the timbers (approx. 900 BC)
The site of Yeha, situated in the western highland of Tigray, was the political and religious centre of a kingdom named Di’amat which emerged in the 8th century BC. Today, a number of monumental buildings still bear witness to the splendid layout of the city. The Sana’a branch of the Orient department together with the Ethiopian Department of Antiquities have been conducting archaeological and architectural research here since 2009.

The “Great Temple” of Yeha, the building stock of which is extremely endangered, dates to 7th century BC and was dedicated to the Sabaean main deity Almaqah. With a wall height of more than 14 metres it represents the highest known Sabaean sanctuary on either side of the Red Sea. As in Saba, the building was constructed from limestone. In Ethiopia, however, it had to be transported from the quarry over a distance of more than 150 kilometres.

Stonemasons from Saba worked on the ash-lars extremely accurately and adorned the interior sides with valuable alabaster plates, which were actually transported from the homeland to the African continent.

As the temple was used as a church in later times it has not fallen victim to stone robbery so far. The interior architecture, however, was completely removed in the course of the 20th century so that only the exterior walls which were badly damaged in a devastating fire remain today. The foremost tasks of the restoration project are to mend the destruction and to secure the stability of the walls with supports.

The “Great Temple of Yeha” is regarded as the national monument of Ethiopia and belongs to the most important tourist attractions in one of the world’s poorest countries.

Financing requirement: 450,000 €
Baalbek – Making the History of the City Come Alive

The largest remaining sanctuary of the Roman world is found in Lebanon in the modern town of Baalbek. A world heritage site since 1984, it is regarded as the cultural highlight of the country and is visited by approximately 500,000 tourists a year.

It was laid open from 1900 to 1904 by German archaeologists who conducted the excavations on behalf of Emperor Wilhelm II. In co-operation with the Lebanese department of antiquities, the DAI established a museum on the site in 1998 which gained nationwide recognition. Since then, archaeological fieldwork has been taken up again as a joint German-Lebanese venture. As recent research has impressively shown, Baalbek played an important international role long before and after the Roman period. The Roman sanctuary was in fact built over a settlement which goes back to the 8th millennium BC. The Roman cults were replaced by Christianity in the 5th and 6th centuries AD; the city was richly refurbished at that time and oriented towards a single basilica. In the Middle Ages at the time of the Crusades, the sanctuary and the basilica served the sultans of Damascus as a luxuriously furnished stronghold against the crusaders. Several residential areas and municipal buildings from that time, situated at the main entrance to the fortress, have been excavated in the meantime. The aim is to compile a complete documentation of these excavations areas and to make them accessible to further research and to tourism by means of a round tour.

In association with a World Bank financed project of the Lebanese department of antiquities, the DAI will take part in the professional conservation of two medieval public baths (hammams) and a number of houses on the tourist tour which are worth saving as archaeological ruins. The works will be carried out locally and comprise the consolidation of walls, plaster work and the posting of information on the quarter.

Financing requirement: 75,000 €

1 View to the south over the hot bathing area of the medieval baths
2 View over the medieval baths, columns of the Roman baths in the background
3 The well preserved toilets of the medieval baths
The late antique pilgrimage town of Resafa, situated in the north Syrian desert steppe at a some 25 kilometres from the Euphrates, belongs to the most impressive ruin sites of the Middle East. Originating from a Roman fort on the limes, the site of the martyrdom of Saint Sergius developed into an important pilgrim centre during the 5th and 6th centuries AD with large churches, supply facilities and a city wall still standing high to this day. Saint Sergius was venerated by Christians and Muslims alike. Byzantine emperors and Umayyad caliphs, Christian Arab tribes and European crusader gave rich presents to his churches and provided for the upkeep of the city. Resafa was constructed on difficult building ground and lies in an earthquake zone but the city and the complex surrounding the great pilgrim church (Basilica A), built in the 5th century AD, were nevertheless repaired again and again with a great deal of effort against all odds. The town was largely spared from the Mongol invasion in the mid-13th century AD but was abandoned shortly afterwards due to the collapse of trade and left exposed to wind and weather.

Resafa has been the subject of systematic archaeological research since the 1950s. In the last few years, special emphasis was placed on the planning and execution of consolidation and restoration measures for the still impressive ruins, also in view of increasing tourist numbers and resurging pilgrim tours. Preliminary studies on the existing building stock and the cause of damage were the indispensable foundation for all such measures. Conservation measures on Basilica A were begun anew in 2006. A study on its stability was carried out in 2007; the findings showed that the building was still in motion and in acute danger of collapsing. Temporary supports were therefore erected as an emergency measure in three especially endangered areas in 2008. Permanent protective measures were developed at the same time and will now be implemented step by step depending on available means.

Securing Basilica A is not only of great importance for the preservation of a cultural monument of exceptional architectural value, but also presents a highly symbolic contribution to the peaceful co-existence between Christians and Muslims that is already amply attested in the history of Resafa.

Financing requirement: 50,000–75,000 € annually
Since 2004, a joint German and Saudi project team has been excavating public and residential buildings, dating from the early 2nd millennium BC to the Islamic period, in the northwest Arabian oasis of Tayma, a centre in the trade network of the Arabian peninsula. The local arid environmental conditions present special challenges to the conservation and restoration of the extensive building remains in the oasis. Fluctuations of temperature and humidity as well as sunlight and wind erosion put an extreme strain on the architectural remains. The walls are made of irregular dry stone bedded in loam mortar. The stones derive mainly from various types of sandstone showing different damage symptoms. This affects the stability of the walls, sections of which are in acute danger of collapsing. The repair of wall joints and additions to missing parts in the historical building stock will now also contribute to the long-term preservation of the ruins. The missing parts of the joints are filled with a specially manufactured and modified loam mortar which is made exclusively of locally available materials. Loose stone and wall copings are secured and provided with a drainage system to protect them from erosion and heavy rainfall. The best results were obtained through the addition of screened sand, lime hydrate and plant fibres as well as specialised methods of workmanship. During the implementation of the restoration programme, local specialists are being trained with the aim to enable them to conduct a sustainable site management and the touristic development of the site by their own authority. An important part of the excavations consists in the skilled recovery, transportation and re-setting of heavy stone objects. As the necessary hoisting technology is lacking so far, it is intended to employ a gantry crane which has been specially equipped for the conditions on the excavation site.
Italy: pp. 6–7: DAI Rome in cooperation with Studio Hinz und Franz, Munich. pp. 10–11 all figs.: D. Mertens.
pp. 12–13 fig. 1: D. Mertens, fig. 2: F. Beuthan, fig. 3: S. Fleig after K. Mathieu. All other figs.: DAI.
Tunisia: pp. 14–15 all figs.: DAI.
Greece: pp. 16–23 all figs.: DAI.
Egypt: pp. 24–31 all figs.: DAI.
Turkey: pp. 32–33 figs. 1, 2: Schmidt, fig. 3: graphic G. Knoll.
pp. 46–47 figs. 1–4: I. Wagner.
Ethiopia: pp. 48–49 all figs.: DAI.
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