



General view of the Acropolis from the southeast. Photo G. Paganis, January 2008

- M. Ioannidou, 2007-2008, progress of the Acropolis Anastelosis Works
M. Ioannidou, Conservation and Restoration of the Acropolis Monuments: interventions planned for the period 2009-2013
V. Eleutheriou, V. Manidakis, A. Vrouva, Restoration of the west side of the Parthenon. General programming of the work and proposals for intervention
D. Mavromati, The use of orthophotography in the geometric documentation of the Parthenon
E. Sioumpara, Inventorying the Scattered Members of the Acropolis
D.N. Englezos, D. Moullou, Preservation of the Circuit Wall of the Acropolis: past and future
F. Mallouchou-Tufano, News from the Acropolis
F. Mallouchou-Tufano, Honouring the marble technicians of the Acropolis: the Gold Cross of the Order of the Phoinix to Nikos Skaris

Anastelosis on the Acropolis continued at undiminished pace during the second half of 2007 and the first half of the present year. The works, as is well known, are carried out by the Acropolis Restoration Service (YSMA) itself, a special Service of the Ministry of Culture, with the academic supervision of the Committee for the Conservation of the Acropolis Monuments (ESMA); funding is pro-

vided by the 3rd Community Support Framework.

In brief, the following works were carried out on the monuments of the Acropolis Rock during the past year:

In the **Parthenon**, structural restoration of the dismantled members of the north colonnade

was continued. During the second half of 2007 the eight columns were reset in place and work began on resetting the entablature, at the level of the architrave, under the supervision of the architect-archaeologist Lena Lambrinou, responsible for the relevant study and the civil engineer Antigoni Vrouva. Work on the west end of the north colonnade was also initiated with the dismantling of the metopes.

Specifically, from June 2007 to June 2008, the structural restoration of 34 members (two column capitals, four architrave blocks, five filling blocks, ten frieze blocks, seven cornice blocks) was completed, and 24 members were reset on the monument (six drums of the 4th column, four column capitals and fourteen architrave blocks).

Six metopes, three filling blocks and one triglyph were dismantled from the west end of the north side. Their structural restoration was begun, and work proceeds on copying the metopes to replace the originals on the monument.

The Directorate of Topography, Photogrammetry and Land Register of the Ministry of Culture made a photogrammetric survey of the entablature of the west end of the north colonnade and the west façade of the Parthenon. The orthophotomosaics were pro-

cessed by the rural and surveying engineer Dionysia Mavromati.

Studies for structural restoration of the entablature of the west end of the north colonnade were completed by the architect Rozalia Christodouloupoulou and the civil engineer Antigoni Vrouva, and for the entablature of the Parthenon west façade by the architects Vassiliki Eleutheriou and Vasso Manidaki and the civil engineer Antigoni Vrouva. Both studies have been approved by the ESMA, and approval of the second study is awaited from the Central Archaeological Council of the Ministry of Culture. Work on the Parthenon continues under the direction of the architect Nikos Toganidis.

In the **Propylaia**, from July 2007 to date, work on restoring the monument has continued in accordance with the approved study of Tasos Tanoulas and Maria Ioannidou. Specifically, work continued on restoring the ceilings of the west hall and this has been completed with the resetting of restored architectural members of the superstructure, i.e. the beams, the inter-beam blocks and the coffered ceiling blocks. With the recent removal of the workstands from the areas of intervention, the coffered ceiling of the west hall is now visible to visitors approaching along the central passageway. Work continued also on restoring the members of the entablature and pediment of the east portico, specifically the blocks of the cornice, the tympanon, the raking cornice and the sima. Restoration of the east portico has reached the level of the frieze and the overlying members are expected to have been set in place by the end of 2008.

In addition, in March 2008, conservation was carried out on the reinforced concrete floor of the Propylaia Pinakothek, introduced in the stabilizing intervention of Anastasios Orlanos and Eustathios Stikas in 1955. The work comprised surface water-proofing of the slab, repairs to parts of the bearing elements and testing of the strength and homogeneity of the concrete.

In April, 2008, work started on the infrastructure of the Justinian cistern of the Propylaia, and it is continuing at present. This involves the replacement of the wooden floor and suitable reforming of the space, so that it can serve as a storeroom for the ceiling coffers that will not be used in the recent intervention. For interventions planned for the future, in

July 2008 the architect K. Karanasos submitted to ESMA the study for restoring the south wall of the Propylaia. On approval by the Committee, the study has been submitted to the Central Archaeological Council, where it is expected to be discussed at the next meeting. Works in the Propylaia continue to be under the direction of the architect Tasos Tanoulas.

In the **temple of Athena Nike**, 13 restored architectural blocks from course II (from the top) of the cella wall were reset, and fourteen blocks of the epikranitis with their joining elements. Resetting of the restored blocks of the architrave was begun, as also the column bases. Work continues on the structural restoration of the members of the overlying layers (ceiling coffers, inter-beams, horizontal cornice blocks)



The north colonnade of the Parthenon, in course of restoration, from the NW. Photo A. Kafourou, June 2008



Dismantling a metope from the western end of the Parthenon north colonnade. Photo A. Kafourou, May 2007



The north colonnade of the Parthenon, in course of restoration, from the east. Photo L. Lambrinou, July 2008



Replacing an architrave block on the Parthenon north colonnade. Photo L. Lambrinou, July 2008



The restored ceiling of the west hall of the central building of the Propylaia. Photo K. Karanasos, July 2008



View from the south of the restored ceiling of the west hall of the Propylaia central building, with the marble technicians responsible for the intervention. Photo T. Tanoulas, June 2008

as well as on the piers of the monument. Restoration of members of the columns has also been completed, and casts have been made of the figures of the original frieze for replacing them on the monument in artificial stone. Likewise completed is the study by the architects Kostas Mamalougas and Demosthenes Giraud for the arrangement and setting of the column capitals. Work on the temple of Athena Nike continues under the direction of the civil engineer Dionysia Michalopoulou.

Carried out during this same period were also

the continuous works of **surface conservation** on all the monuments, headed by the chemical engineer Evi Papakonstantinou-Zioti, the **inventorying of scattered ancient members** on the Acropolis rock, under the direction, since 2008, of Elizabet Sioumpara, the **digitisation and digital management of documentation** of the works of anastelosis and surface restoration of all the monuments by the Documentation Office, headed by the archaeologist Fani Mallouchou-Tufano, the **conducting of the educational programmes** by the YSMA Office of Education and Information, directed by the architect-archaeologist Cornelia Hatzi-

aslani, the **production of copies** in artificial stone of the architectural sculpture removed from the monuments, by the Cast Laboratory. **Electro-mechanical support of the works** continues to be headed by the mechanical and electrical engineer Spyros Oikonomopoulos, and the Accounting and Secretarial Offices of the YSMA are headed by Panayiotis Katsimichas and Hara Papanikolaou respectively.

The commencement during this past year of systematic attention to an additional monument of the rock, the Acropolis **Circuit Wall**, is considered to be of special importance.

In order to explore and document its state of preservation, a series of works were initiated (including: photogrammetric survey of the Wall and of the Acropolis hill in elevation and in plan, a three-dimensional scan of the Wall and hill, the development of Geographical Information Systems and data base for the Wall) that will form the basis for further research and studies.

The civil engineer Dimitris Englezos is in charge of the work of restoration of the Acropolis Circuit Wall. Responsible for archaeological documentation of the work is the archaeologist Dorina Moullou, for photogrammetric applications, the rural and surveying engineer Dionysia Mavromati. Funding for the above works is provided by the European Operational Programme, «Information Society»



Structural restoration of the piers and columns of the temple of Athena Nike. Photo E. Lembidaki, June 2008



The temple of Athena Nike, in course of restoration, from the E. Photo E. Lembidaki, June 2008

Maria Ioannidou
Civil Engineer
Director of the YSMA

The great restoration programme of the Acropolis, initiated by the Acropolis Restoration Service (YSMA) in 2000, with the scholarly supervision of the Committee for Conservation of the Acropolis Monuments (ESMA), is expected to be completed in 2008.

The YSMA, a special Service of the Ministry of Culture created by Presidential Decree 97 of 1999, undertook at that time, with funding from the 3rd Community Framework, to develop and carry out restoration interventions on the Acropolis monuments. Full use was made by the YSMA both of the Com-

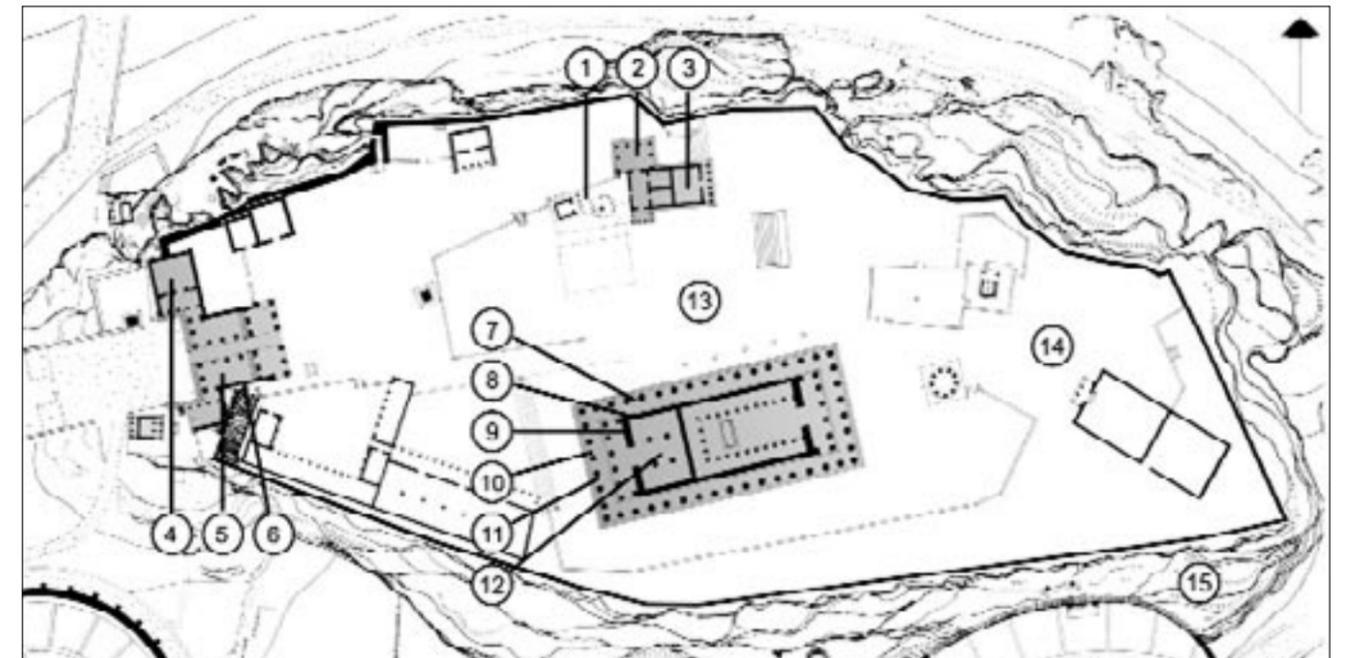
proach, including consultations with both local and international specialists and the continuous development of contemporary technical knowledge, together with a highly specialised personnel, are all practices established by the ESMA and they assure the high quality of work characteristic of these interventions.

With the completion of the programmes inaugurated in 2000, a creative period in the restoration of the Acropolis will come to an end, while another will begin. Programmed for the coming years are interventions, the basic purpose of which is to continue the ar-

of future programmes has been made on the basis of priorities, determined mainly by the structural problems of the monuments, in connection with already existing studies for intervention, both approved and pending. A basic criterion for determining future interventions was the possibility of making use of infrastructure and actions that had been installed and carried out in previous years with Community funding.

Planned in this framework for the period 2009-2013 are the following:

1. Extension of interventions in areas of the monuments restored by N. Balanos that show



1. Restoration of the Pandroseion, 2. Sheltering of the Erechtheion north porch, 3. Filling in of the interior of the Erechtheion, 4. Restoration of the Propylaea north lateral wing, 5. Restoration of the Propylaea south lateral wing, 6. Partial anastelosis of the south wall of the west hall of the Propylaea central building, 7. Final cutting of the column flutes in the fillings of new marble of the restored columns of the Parthenon north side, 8. Anastelosis of the lateral walls of the Parthenon cella, 9. Restoration of the west wall of the Parthenon cella, 10. Restoration of the Parthenon west façade, 11. Surface conservation of the Parthenon west façade, 12. Re-organization of the Parthenon work site, 13. Final display of the surface of the Acropolis plateau, 14. Conservation of poros architectural members, 15. Preservation of the Circuit Wall of the Acropolis

munity Funding and of the possibilities offered by its own establishment through Presidential Decree, to give the Acropolis works an impressive development, the greatest since the foundation of the Greek State. This development was possible because of the multifaceted scholarly knowledge and experience that had been gained by the ESMA during previous years in the course of the Acropolis works. The methodology of preparing and performing the works with systematic preliminary study, with an interdisciplinary ap-

proach, demanding from the scholarly point of view, necessary from the standpoint of scholarship and technically complicated, of protecting, stabilising and conserving some of the most important monuments of the ancient world, and arranging their display. These are interventions that we believe will assure the continued existence of the Acropolis monuments, while contributing to their comprehension and their impact on future generations ultimately as common property of World Cultural Heritage. The choice

of structural problems and, with this, removal of the sculptural decoration that is still *in situ*, in order to preserve it from continuing damage.

2. Research on the present condition and studies of both restored and undisturbed areas of the monuments with serious structural problems, in order to make their condition clear and to enter them in future intervention programmes.

3. Studies and supplementary interventions, making it possible to restore areas of the mon-

uments, not only to increase their static efficiency but also to make them more easily understood by the general public. In any case, the artistic values of the monuments must be evident and their architectural form and function must be comprehensible.

4. Problems of surface conservation of the monuments that arise during the course of the work must be confronted with systematic conservation and with the application of the laser method for cleaning.

5. Documentation and protection of the architectural members scattered on the rock, while at the same time distinguishing and displaying the historical topography of the Acropolis.

6. Research on the static efficiency of the Circuit Wall and seismic behaviour of the Acropolis Rock by means of the latest contemporary methods, and by interventions of rescue character where necessary.



The north porch of the Erechtheion from the NW. Photo F. Mallouchou-Tufano, July 2008



The interior of the Erechtheion from the east. Photo E. Petropoulou, November 2006

7. Programming of activities that will further the promotion and display of the large-scale restoration work being carried out on the Acropolis monuments.

Analytically, the following is programmed for each monument:

Restoration work on the **Erechtheion** by the ESMA was completed in 1987. The following is planned for the coming years:

1. *Sheltering of the north porch:* it is planned to shelter the north porch in order to protect it from the corrosive effect of rain-water. The relevant study, which calls for a light shelter of wood and titanium, has been carried out by the YSMA architect V. Manidaki and it has been approved by the ESMA.

2. *Filling in of the interior of the Erechtheion* to the level of the floor of the christian

basilica in order to protect its vulnerable foundations.

3. *Restoration of part of the Pandroseion:* the study has been made by the architect V. Manidaki and it has been approved by the ESMA.

In the **Parthenon**, on completion of the intervention on the north side of the monument, the following is programmed:

1. *Intervention on the west façade of the monument:* the state of preservation of this side of the monument, in both the restored parts and the parts that have never been restored, is especially critical. The general preliminary study of Korres and Bouras of 1983 included replacement of the rusted metal joining elements in areas of the west façade that had been restored in the past and interventions to

reintegrate into this section fragments identified as ancient. The recent study by the YSMA architects V. Eleutheriou and V. Manidaki, which has been approved by the ESMA, calls for dismantling of the two previously restored corners of the west façade, structural restoration of the members and their resetting on the monument, removal of the metopes from the two corners and their replacement with copies in cast artificial stone. Infrastructure for plotting the entablature of the west façade comprised photogrammetric survey and the formation of an orthophotomosaic by the YSMA rural and surveying engineer, D. Mavromati. This was carried out in collaboration with the Directorate of Topography, Photogrammetry and Land Register of the Ministry of Culture. The study is to be submitted directly to the Central Archaeological Council of the Ministry of Culture (KAS) for approval.

2. Programmed for the restored *north colonnade* is the final cutting of the column flutes in the restored fillings of new marble and the application of an artificial patina.

3. *Intervention on the west wall:* the work comprises chiefly the dismantling of the lintel of the west doorway, restored earlier using reinforced concrete, the replacement of this with new marble and the partial dismantling of the upper section of the west wall. The study for this intervention, made by Professor M. Korres, has been approved by the Central Archaeological Council and the definitive study is being carried out by the architect L. Lambrinou.

4. *Restoration of the side walls of the cella:* at present, the relevant structural study is under way, and the Central Archeological Council has already approved a study for the restoration of the orthostates and the three directly overlying courses of the north wall.

In order to perform the above interventions, the Potain crane installed at the north side of the Parthenon will have to be dismantled, moved and re-assembled at the west side on a base of reinforced concrete prepared beforehand.

In the **Propylaea**, when restoration of the ceilings of the central building of the monument has been completed, the following is programmed:

1. *Broad reconstruction of the wall blocks in the superstructure of the south wall of the*



The west side of the Parthenon. Photo F. Mallouchou-Tufano, February 2006

west hall: the intervention includes restoration of the blocks in place and the identified blocks of the superstructure of the south wall of the central building of the Propylaea. The study, carried out by the architect K. Karanasos, has been approved by the ESMA and submitted for approval to the KAS.

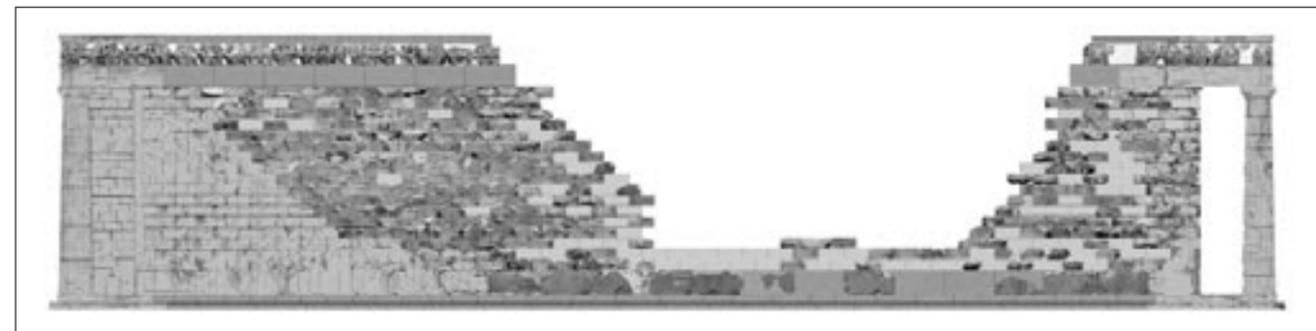
2. *Intervention in the north wing of the Propylaea:* the study by T. Tanoulas and M. Ioannidou has already been made, specifying the

following works: removal of the cement floor and its replacement with a metal flooring or conservation of the existing cement floor and filling in of the basement space, dismantling-conservation of the uppermost level of Frankish mediaeval additions and first underlying course. A crane will have to be installed within the north wing to perform the work.

3. *Description, drawing, identification, mending of members of the south wing:* this in-



The west wall of the Parthenon from the east. Visible is the concrete ceiling of the west door from the Balanos intervention. Photo S. Mavrommatis, 1986



Proposal for the restoration of the south cella wall of the Parthenon. Photographic reconstruction by C. Paraschi and S. Mavrommatis, 2002

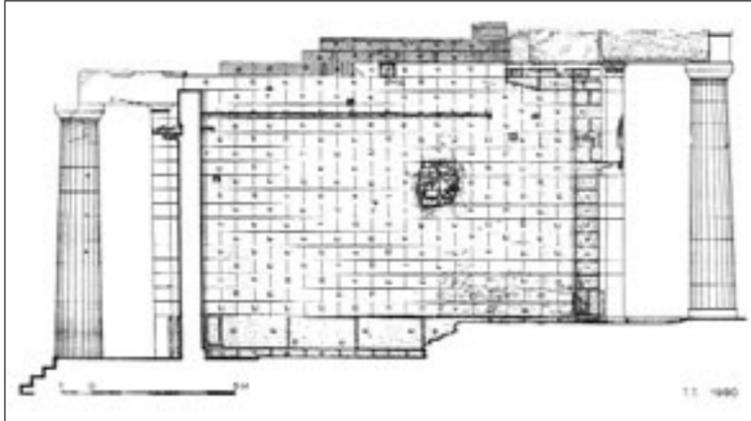
cludes collecting identified ancient material, its documentation and the joining of fragments that belong together, for use in the future restoration of members to the monument. Both study and joining are in process by personnel of the YSMA.

In the **temple of Athena Nike** when its restoration has been completed, the plan is to remove the work-site equipment now in place, to conserve *in situ* the old slab of reinforced concrete south and east of the temple and, on the basis of a special study to be carried out, examined and approved, to work on the problem of rain-water that stagnates on the Nike Pyrgos.

Programmed for the **Circuit Wall of the Acropolis** are documentation and supporting studies (geotechnical-geological study, laboratory research on the building material of the Wall). The purpose of these studies is to make a definitive study for intervention that will comprise geostatic monitoring of the Wall, study of the filling material, the waterproofing material and the material of the final surfacing, and study of the drainage. Proposals will be made for restoration of the Wall. Planned in addition for the period 2007-2013, is the application of a pilot programme for resolving the structural damage in the SE part of the Wall. Stabilisation of the SE corner of the Wall will serve as a pilot programme for the main work to follow, i.e. the stabilisation of the entire monument. The definitive programme depends on the preserved state of the Wall, which will be evident on completion of the monitoring, documentation and studies now in progress.

Surface restoration of the monuments will

continue to be carried out on the areas of the monuments undergoing anastelosis and also on other areas, where structural intervention is not being carried out but where surface damage is evident and needs attention. Included under this heading are architectural members of the north side and both architec-



The programmed restoration of south wall of the west hall of the Propylaea central building. Study by K. Karanasos, original drawing by T. Tanoulas



The north wing of the Propylaea from the south. Photo F. Mallouchou-Tufano, February 2007

tural and sculptural members of the west side of the Parthenon. Also planned is the systematic cleaning of the surfaces of the monuments with the laser method. The crumbling of the poros foundations of the monuments is a problem that will have to be confronted in the future.

The **Project of the Scattered Members** for

the period 2009-2013 comprises completion of the inventory, photographic and graphic documentation and classification of all the poros architectural stones, so that they can be stored and preserved in a closed area. It is likewise planned to record, classify and arrange the two stone piles, totalling 3000 members, that resulted from clearing the foundations of the House of the Arrephoroi.

Programmed in addition to the interventions on the monuments for the period 2007-2013, are activities that –as required by the principle of publication in Article 16 of the Charter of Venice– will contribute to advancing and diffusing scholarly knowledge, provide information for the international community of scholars, and will publicize and project the work being carried out on the Acropolis. The purpose is likewise to familiarise the citizens with subjects associated with the protection of cultural heritage.

Programmed in this framework are the following:

- *Organisation, in 2009, of the 6th International Meeting for the Restoration of the Acropolis Monuments*, at which the completed interventions and the studies for future works will be presented. Symposia and one-day conferences will likewise be organised in Greece and abroad for the scholarly and general public.
- *Scholarly results of the completed works and publication of relevant volumes*: Erechtheion, opisthonaos and north side of the Parthenon, Propylaea, temple of Athena Nike, the backfilling of the Arrephorion.
- *Series of publications for the general public and the scholarly community*: the YSMA Newsletter, an informative booklet about the

Acropolis Works to be distributed to visitors to the Acropolis, a special volume on the Acropolis Works reporting recent research with scholarly and technical information.

- *Organisation of exhibitions in Greece and abroad*.
- The production of movies showing the completed interventions on the monuments by means of conventional and three-dimensional drawings.
- *Creation of a cultural complex* in a new building where exhibitions, lectures and various other activities of cultural interest can be held for the public. (A proposal to this effect



General view of the Acropolis from the NW. Visible is the Circuit Wall, to be restored in future. Photo F. Mallouchou-Tufano, May 2008

has been made to the Ministry of Culture). In addition, the same building could house the valuable but perishable ESMA archive, which has a desperate storage problem.

- *Restoration of the ESMA-YSMA building* at Polygnotou 10 street, which has serious problems – repair of the upstairs offices of the building.

The main characteristics of the work of the YSMA today, which have assured successful execution of the programmes of 2000-2008 and in a sense insure successful accomplishment of the works proposed for the period 2007-2013 are:

- The securing of the *greatest possible schol-*

arly knowledge and experience in both programming and execution of the works, through collaboration of the specialist scholars of the ESMA with the specialised scholarly personnel of the works and the consistent and continuous connection of the works with ongoing research.

- The *creation*, in the framework of the works, of a *staff that is highly specialised* in the objective of anastelosis of classical monuments and the development of special skills and technical knowledge for accelerating completion of the work.

Acropolis at the same accelerated speed as during recent years, without sacrificing any of the internationally-recognised quality obtained to now.

- Retention of the present conditions of the works, that is, assurance of continued employment of the staff, specialists in the anastelosis of ancient monuments, replacement of those who retire or leave, and the legal regulation of additional qualifications of the personnel.
 - Assurance of regular funding of the works on a continuous basis.
- It is eminently clear that the entire program-

- *Successful and full use of Community Funding*, because of the advantageous and increased powers provided by the YSMA statute.

All the works described above are included in the general proposal that has been submitted to the Ministry of Culture for discussion, together with their financial estimate, and the Government has undertaken to provide funding for the Acropolis Works for the coming period.

The general budget for the proposed works has been estimated on the basis of the following presuppositions:

- Continuation of the interventions on the

ming of the works still to be carried out on the Acropolis is incorporated in the existing process of works executed by the Ministry of Culture, with independent supervision, by the specialised and experienced scholarly and technical staff of the YSMA, under the interdisciplinary supervision of the ESMA. This is the only process permissible for interventions on monuments of universal importance, unique quality and especial sensitivity, as are those of the Athenian Acropolis.

Restoration of the west side of the Parthenon

General programming of the work and proposals for intervention

The west side of the Parthenon is indeed the best preserved, in that it did not suffer the serious damage or collapse inflicted on the other sides of the monument. As a result, it has not undergone restoration, with the accompanying mis-settings of ancient architectural members evident, for example, in the north side. Yet, during the long history of the building it suffered significant damage, such as cracks in the marble and opening of joints with measurable changes in the original

geometry of the monument. Restoration of marble fragments and their joining elements was undertaken for the first time during stabilisation projects at the end of the 19th century.

The Balanos interventions

In the first period of anastelosis of the Parthenon under the supervision of N. Balanos, interventions in the opisthonaos were followed by efforts to stabilize the west side.

The works, carried out from 1900 to 1902, included dismantling of blocks, limited fillings of new marble and many joins – strengthened with iron joining elements (clamps and dowels). Dismantled also were the blocks at the two corners of the pediment, the central orthostate of the tympanon, the exterior block of the central part of the architrave and the two metopes above this. Characteristic is the way in which four fragmentary column capitals were filled in with new marble. The fillings were wedged into the ancient pieces, the broken surfaces of which were trimmed accordingly. Balanos cannot, indeed, be called frugal in his use of new metal joining elements. More than 100 exterior joining elements have been counted, and it is certain that more of these clamps and dowels were placed in surfaces, not now visible, of stones that were dismantled.

At the end of the decade of 1940, works of stabilisation were carried out under the supervision of A. Orlandos. At that time fragments of the south central orthostate of the tympanon and the pedimental cornice of the south angle of the pediment were incorporated in the monument. In 1977, the remaining pedimental sculptural group of Kekrops in the north angle and of Kallirrhoe in the south were replaced by copies.

State of preservation – pathology

In 2007, in the framework of general programming of the Parthenon interventions, examination of the state of preservation of the west side of the monument was begun. In order to approach the west side, yet avoid the unaesthetic use of scaffolding, it was decided to rent a self-lifting platform, which was installed in May, 2007. The superstructure of the west side held surprises in store, as inspection revealed the degree to which the surfaces and most of the external metal joining elements had suffered corrosion.

Examination of the entire entablature is impressive in showing a notable gradation in the preservation of the ancient surfaces. In especially bad condition are the surfaces of the central area, which appears to have suffered more during the ancient fire. The cutting off of projecting parts of the figures of the metopes is overwhelming and has caused acceleration in the erosion of the surfaces. Un-

like the corresponding architectural members of the central area, at the two angles all the characteristic architectural details of the members can be discerned, such as the *astragal* crowning the top of the triglyphs and metopes, the *guttae* on the mutules of the cornice blocks and in some cases the painted decoration such as the maeanders at the base of the cornice. Even so, it is the areas of the two corners that have the most acute structural problems. Discernible are breaks in the architrave blocks, shifts and projections of architectural members, open joints and unfinished beddings.

As might be expected, of great importance for evaluating the structural damage of the west side is the condition of the architrave blocks and the columns beneath them. A typical form of failure in the architrave blocks is their breakage especially around the clamps and dowels. More serious problems are seen in the exterior blocks of the two corners, where there are breaks that run right through the block, the penetration being due to the architrave blocks of the long sides (exterior blocks of the 1st, from north, and the 7th architrave blocks), which converge on these positions. After the earthquakes of 1981 and 1999, a crack of 1 cm appeared in the exterior block of the south architrave, at the SW corner. These breaks are consistent with the general picture of deformation in the entire colonnade, which indicates that the corners have shifted outwards.

As for the columns, the problems lie mainly in the notable lack of mass evident in a number of column drums, and in cracks that penetrate the drums. The capitals have suffered damage of various sorts from the overlying blocks. Breaks in the mass of their especially fine marble, caused by the ancient dowels of the architrave blocks, are observable in all the column capitals.

The addition of exterior iron joining elements by Balanos, along the full length of the entablature and the pediment, have caused extensive cracking and breakage, as has been noted frequently in the earlier interventions on the Acropolis monuments.

Deformations

So that the proposals for the rescue interven-

tions needed would be coordinated with a more general review of the problems, it was considered necessary to correlate the structural damage, found chiefly in the sections restored by N. Balanos, with the general deformations shown by the monument in that particular area.

As has been observed in earlier studies, the courses of the entablature have suffered significant horizontal displacement in an east-west direction, with characteristic outward shifting of the corners, forming a concave curve in plan. This deformation has been verified with new measurements made at the level of the architrave and the horizontal cornice blocks (a deflection in the nature of 7 cm and 12 cm respectively) was measured and it is analogous with the deformation verified in the opisthonaos.

Horizontal shifting of the blocks in a north-south direction is shown by the opening of the thrust joints, evident for the most part in the architrave and the cornice. The total shift along the length of the façade is calculated at some 6 cm.

Aim of the restoration

Repair of earlier damage, including damage

brought about as a result of the preceding intervention, is dictated in accordance with the established methodology followed in the Acropolis works. Notes on the problems and general proposals for confronting them had been proposed as early as 1983 by Professor M. Korres.

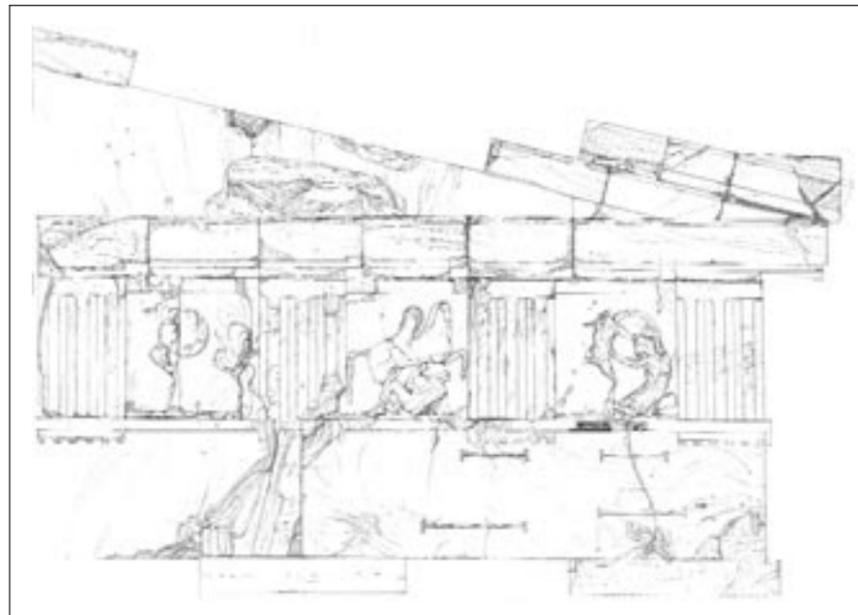
The purpose is not to repair all the damage, since this would entail interventions on a grand scale, thus reducing the authenticity of the monument. The conception of the monument as «ruins», moreover, has been accepted as a value that is expressed in the principle tendency to retain the present appearance of the monument. The goal is thus to preserve the building with the least possible intervention, such as restoration of broken members and their joining elements, especially the restoration of the basic members of the load system, the architrave and the column capitals. Likewise, the repairs should respond to pathological developments expected in the future, rather than serving only a momentary image and structural strengthening.

The areas to be dismantled in the west side

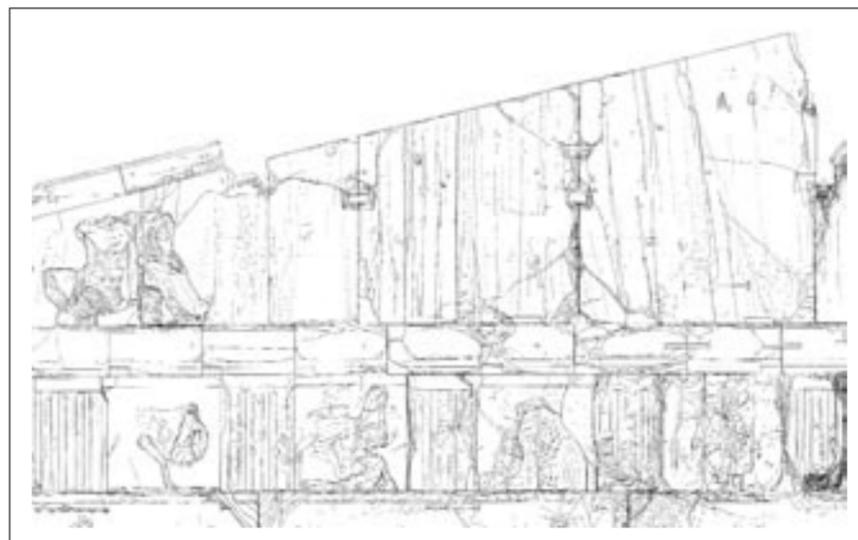
Restoration of broken architectural members is technically feasible with partial dismantling of the blocks of the west side. The extent of the area to be dismantled, which should be as small as possible, depends on many parameters, such as:

- the seriousness of the structural problems
- economy in the extent of blocks to be dismantled (since most of these areas have been undisturbed since antiquity).
- the advantage to be gained in stability (improvement of response to structural and stress loads) and in extending preservation of the monument into the future.
- time in which the work can be completed and the monument made accessible to the public.

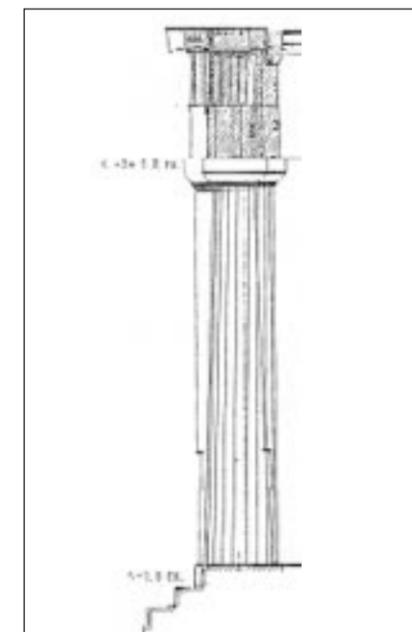
Dismantling will be limited and will stay within the boundaries of Balanos' interventions for the restoration of the exterior plinth of the central architrave block and the tympanon of the pediment. There is therefore no problem about the extent of the area of



The Parthenon SW corner showing fractures of the architrave blocks and openings in joints of the end cornice blocks. Study-drawing by V. Manidaki, 2008



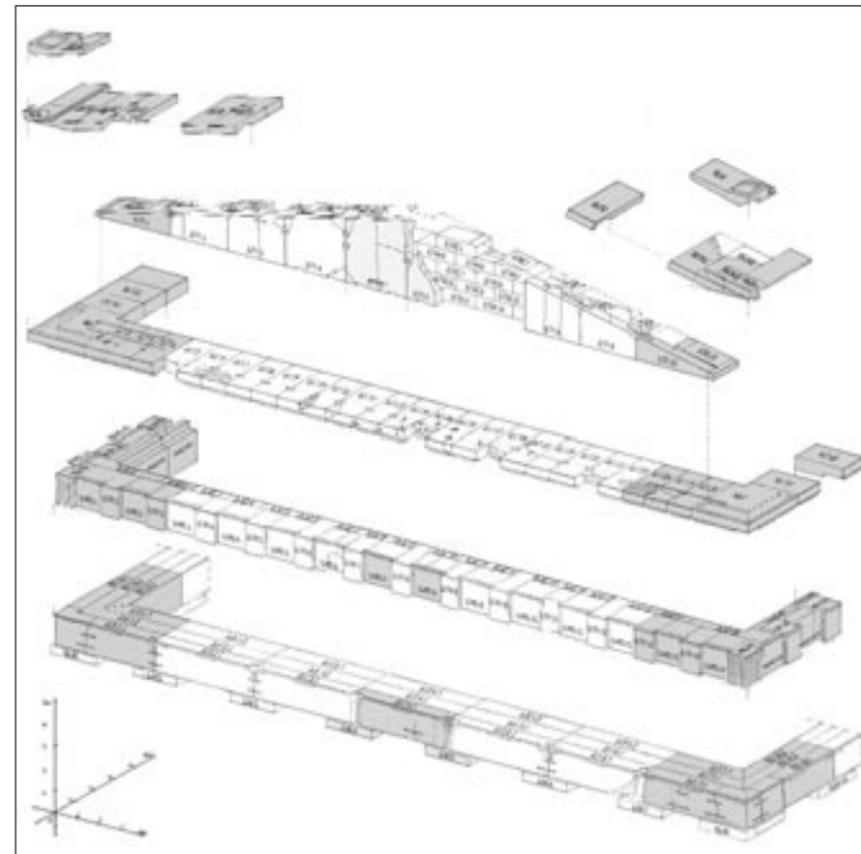
The tympanon orthostates of the central area of the Parthenon west pediment showing breaks at the joining elements, ancient and recent. Study-drawing by V. Eleftheriou, 2008



Deviation of the Parthenon NW corner towards the west. Study-drawing by V. Eleftheriou, V. Manidaki, A. Vrouva, 2008

intervention. It is otherwise with the extent of the area of intervention on the two corners, as here there is a theoretical question concerning the type and quality of restoration. Determining factors in the extent of the area to be dismantled are the cracked and shifted architrave blocks of the two corners.

Considering together the advantages and the limitations imposed by the building form of



The areas of the programmed intervention on the Parthenon west side showing the blocks to be dismantled. Study-drawing V. Eleftheriou, V. Manidaki, A. Vrouva, 2008

the monument, the Study proposes that the entablature of the two corners, SW and NW, be dismantled down to and including the architrave blocks.

Any further dismantling of the entablature, of whatever sort, is ruled out. The structure of the building itself and the principle of economy of intervention place limits on the dismantling of architectural members beyond the point where there is no justification for any improvement to their structural condition. The pedimental orthostates

and the backing wall, all undisturbed in their positions from antiquity, except for the central orthostate, place a serious limit on any intervention in the central area and, in fact, orient us toward making repairs *in situ*.

The sub-programmes of the interventions

It is proposed to divide all the works into the following 8 sub-programmes:

NW corner (1st), SW corner (2nd), central architrave (3rd), central orthostates of the tympanon (4th), backing wall of the tympanon (5th), the columns (6th), replacement of exterior joining elements and mending of fragments in danger of breaking off (7th), crown-blocks and ceiling blocks of the west colonnade (8th).

The programmes for work on the two corners of the monument together with the replacement of the exterior joining elements are of immediate priority. The other five pro-

grammes are to be carried out in the succeeding phase, after analytical studies are made.

Restoration of the corners of the monument

The intervention includes all the architrave blocks of the corners together with their overlying members. The total number of members to be dismantled from the NW corner is 42, from the SW corner 37. This intervention has many advantages because, apart from the restoration of the broken architrave blocks, it allows other important improvements to be made to the structural condition of the corners, such as:

1. Resetting of the architrave blocks in their original position in relation to the adjoining architrave blocks and considerable reduction of the marked deformation of the façade. It is feasible to close the joints of the corners that have opened and to correct by some 50% the horizontal deformation of the entablature.

2. Improvement of the stability of the corner columns, since relieving them of their load allows them to be returned to their original state of equilibrium, improving the resting surfaces of the drums between each other.

3. Enabling a fragment of the NW corner column capital to be correctly joined; its resetting had been made difficult by the existing change in the inclination of the corresponding column.

4. Improvement of the bedding of the architrave blocks and overlying members, thus decreasing the opening of the horizontal joints, such as, for example, the opening between the triglyphs and architrave blocks visible at present.

5. Replacement of the particularly damaging dowels of the architrave blocks that have penetrated the column capitals.

The dismantling proposed, moreover, permits the corner metopes of the monument to be transported to the museum and replaced on the monument by casts, a choice in keeping with the principles followed for the sculptured architectural members in restoring the Acropolis monuments. The specific 6 metopes (4 metopes from the west side, the westernmost on the north and the western-

most on the south side) are among the best preserved metopes of the entire Doric frieze. It should be noted that when the proposed work is finished, the result will be that copies (at the corners) and authentic metopes will be beside each other on the same façade.

Addition of new marble to the west pediment

As in the past (Study by M. Korres in 1983),



Illustrations of the Parthenon west side by W. Gell in 1801 (left) and S. Fauvel in 1790 (right)

It is proposed to set two new raking cornice blocks on the north wing of the tympanon and two underlying blocks of the backing wall, which are necessary for their support. The raking cornices and all the orthostates of the tympanon were preserved *in situ* to the end of the 18th century and are illustrated in drawings of the period (for example, in Fauvel's watercolour of 1790). The addition of the above new members will greatly improve



Restoration proposal for the Parthenon west side. Electroning editing of a S. Mavrommatis' photo by V. Manidaki, 2008

it is considered worthwhile to restore the central orthostate of the south side to its original dimensions by filling in with new marble the two identified fragments (the first fragment, which was set in place in the Orlandos anastelosis, and the second, which was identified by M. Korres). Restoration of the 7th orthostate, the only one of the entire series that is not preserved, will complete the intervention on the tympanon of the pediment. This will be done for both aesthetic and structural reasons.

the morphological continuity of the pediment by restoring the characteristic ridge-line of the monument.

It is proposed, in addition, to fill in the frontal sections of the four broken horizontal cornice blocks, in order to improve the ability of the entablature to protect itself from rain. At present, because of these voids the underlying construction is more exposed to erosion. The restoration of the continuity of the horizontal cornice, together with filling in of gaps and hollows here and there, allows

the rain to run off as it should and contributes to the protection of the underlying metopes.

The position of the crane for the intervention on the west side

Examining the ergonomics (in order to provide the best possible service for all the works being programmed for the west side), and to have the least possible disturbance from the aesthetic standpoint, the installation of the Potain crane of the Parthenon work site at the west side is planned. Its rails will be laid parallel to the west side, with a small extension to the south, so that when it is in rest position its boom can be folded parallel to the south side of the Parthenon. In this position the crane will be less annoying to visitors to the Acropolis. Moreover, this arrangement is more efficient ergonomically as well as providing direct connection with the area of the work-site bridgecrane.

The Study for the proposed interventions on the corners of the west side of the Parthenon has been discussed in the ESMA and will be submitted directly to the Central Archaeological Council of the Ministry of Culture for approval. With approval of the necessary funding, the work is expected to begin, when the restoration of the north colonnade is completed during the coming year.

Vassiliki Eleftheriou, Vasso Manidaki
Architects
Antigone Vrouva
Civil Engineer

Parthenon West Side Restoration
Programme

The first step in restoring a monument is its precise geometric documentation. Photogrammetry is the technology for obtaining reliable information about physical objects and the environment, through a process of recording-measuring and interpreting photographic images. It is one of the quickest topographical methods of geometric documentation, and it was in use very early for recording monuments, historical buildings and



Meteorological balloon for lifting the photogrammetric camera

complexes. Yet, while it achieves the prerequisite and particularly the unique precision desired for the entire subject, use of the final photogrammetric-topographical base was not always «sufficient» for the ultimate customers (architects and archaeologists). This is primar-

ily because the topographer is as a rule not fully prepared for a specialised archaeological and architectural recording/drawing. The result is that the final product appears to the eye of the specialist as «cold» and misunderstandings and ambiguities are often evident in the rendering of forms and characteristics of the subject.

In recent years the use of digital techniques in photogrammetry has provided the possibility of producing illustrative materials, orthophotomosaics and 3D models with texture, which form today the usual photogrammetric hand-outs.

The reason that orthophotomosaics constitute today the most widespread basis for architectural-archaeological recordings is fairly clear: they combine geometric graphic accuracy with the optical-quality information of the photograph. Thus, the final specialised interpretation and drawing of the particular characteristics of the subject is done by the ultimate receiver, the architect and the archaeologist. Indeed, the production of orthophotographs for purposes of archaeological documentation, in addition to the large scale of the final product, presents significant features that come primarily from the form and complexity of shape of the subject, its position (where it is, for example, difficulty of access) and, usually, from the extremely low budgeting for studies of this sort.

All the above has led to the conception and use of a versatile and simple means of taking

photographs (i.e. platforms), which must be of low cost, little weight, easy to transport, suitable for both vertical and horizontal image acquisitions, and designed for both distance and close-up photographic shots.

A solution to the problem of hoisting photographic equipment, employed by the Directorate of Topography, Photogrammetry and Land Register of the Hellenic Ministry of Culture, is a small meteorological balloon.

The use, however, of such an unstable platform, even though it is in communication with the computer, does not allow full control over photographic shots, and results in an irregular geometry of the strips of the blocks of the images. The images, therefore, frequently come out in varying scales, with significant rotations and sometimes with a coverage different from that originally planned. Moreover, a platform of this sort cannot be used for heavy equipment, but only for light, non metric, cameras of small or medium format. Precise modelling of the surface of the subject is likewise a determining factor both for geometric precision and for the optical quality of the final orthophotography. This modelling is done with the breaklines and spot heights.

Inaccurate recording or topical mistakes in recording the surface result both in geometric errors and in deformations.

The most usual problems in the collection of the digital surface model of most of the an-

cient monuments, characterised by abrupt changes in relief, are the modelling of surfaces that are parallel to the direction of projection and full control over stereoscopic models for determining the areas that «should» be projected.

To date, the following applications of the method of orthophotography have been carried out for the geometric documentation of the Parthenon.

Plan view of the west part of the entablature of the north colonnade of the Parthenon

This study included the production of the orthophotomosaic of the plan view of the west section of the entablature of the north colonnade of the Parthenon.

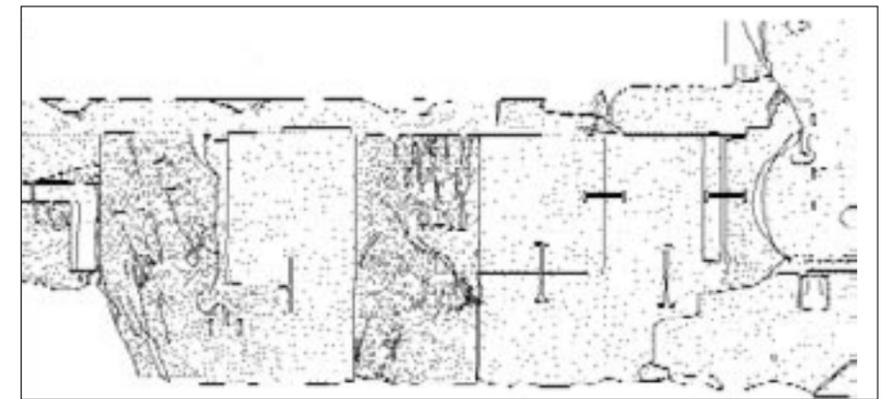
The photographs were taken from a distance of 5m with an analogue camera of medium format (60mm x 45mm) with a 45mm wide-angle lens, by S. Yesaphidis and A. Santrouzanos (Directorate of Topography, Photogrammetry and Land Register of the Ministry of Culture). A total of 20 images were used with overlapping that surpassed 75%.

A total of 150 ground control points were measured by E. Portelanou, A. Kambiyaki, P. Petropoulos and V. Kyriakopoulos (Directorate of Topography, Photogrammetry and Land Register of the Ministry of Culture) and the photo-triangulation of 20 images was accomplished with a Route Means Square (RMS) error of 3.5mm in the ground control points. The scale of the final orthophotomosaic was 1:10.

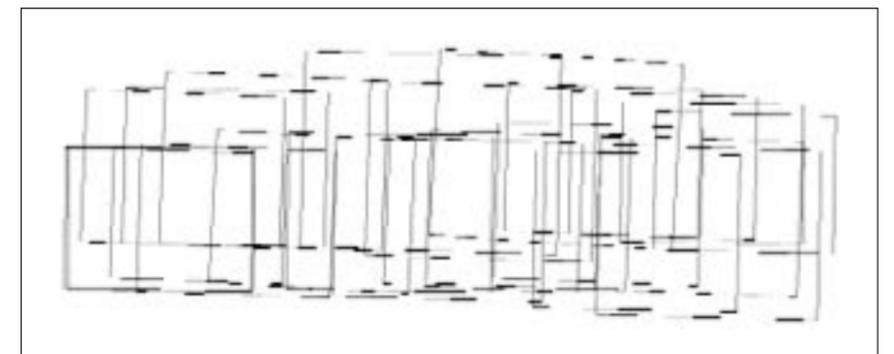
Elevation of the entablature of the north side of the Parthenon

This study included making the orthophotomosaic of the elevation of the entablature of the north side of the Parthenon.

The photographs were taken from a distance of 10 m with an analogue camera of medium format (60mm x 45mm) with a 45mm wide-angle lens by S. Yesaphidis and A. Santrouzanos (Directorate of Topography, Photogrammetry and Land Register of the Ministry of Culture). Eight images with an overlapping over 60% were used.



Digital surface model: part of the plan of the west part of the Parthenon north colonnade entablature. D. Mavromati, 2008



Footprints of the images of the plan of the west part of the Parthenon north colonnade entablature. D. Mavromati, 2008



Original photographs of the plan of the west part of the Parthenon north colonnade entablature. S. Yesaphidis -A. Santrouzanos, 2008



Original photographs of the elevation of the entablature of the Parthenon north colonnade. S. Yesaphidis-A. Santrouzanos, 2008

A total of 130 ground control points were measured by E. Portelanou, K. Galazoulas and V. Kyriakopoulos (Directorate of Topography, Photogrammetry and Land Register of the Ministry of Culture) and the photo-triangulation of the images was accomplished with a RMS error of 6mm in the ground control points. The scale of the final orthophotomosaic was 1:20.

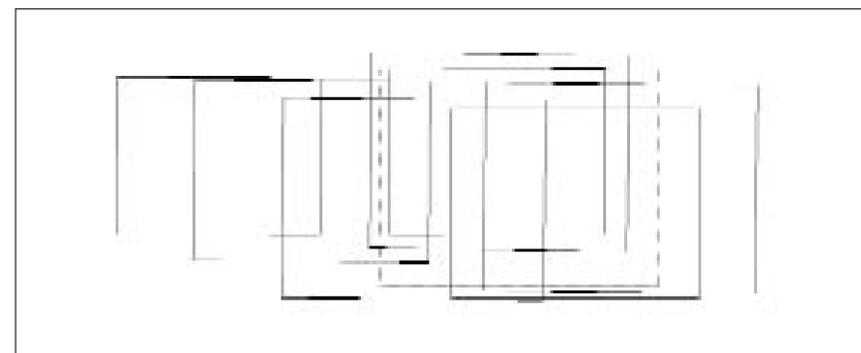
Elevation of the entablature and the pediment of the west side of the Parthenon

Included in this study was the production of an orthophotomosaic of the elevation of the entablature and the pediment of the west side of the Parthenon.

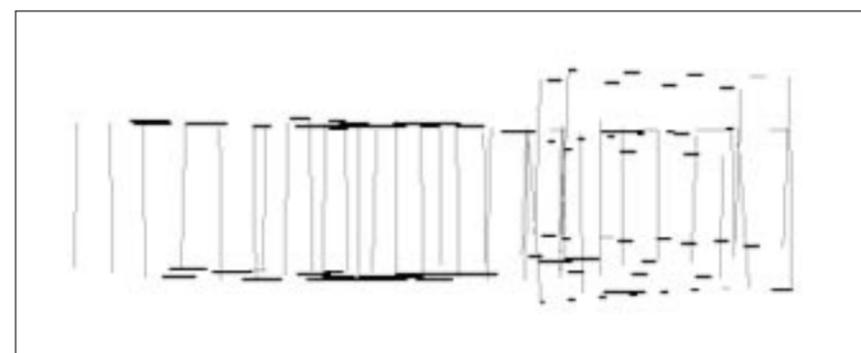
The photographs were taken from a distance of 10m with an analogue camera of medium format (60mm x 45mm) with a 45mm wide-angle lens by S. Yesaphidis and A. Santrouzanos (Directorate of Topography, Photogrammetry and Land Register of the Ministry of



The westernmost metope of the Parthenon north side. Detail of the orthophotomosaic of the elevation of the west part of the entablature. D. Mavromati, 2008



Footprints of the images of the elevation of the entablature of the Parthenon north colonnade. D. Mavromati, 2008



Footprints of the images of the elevation of the entablature and the pediment of the Parthenon west side. D. Mavromati, 2008

Culture). A total of 23 images were used with overlapping more than 75%.

A total of 184 ground control points were measured by E. Portelanou, A. Kambouraki, E. Tsakou, Ch. Vasilopoulou and V. Kyriakopoulos (Directorate of Topography, Photogrammetry and Land Register of the Ministry of Culture) and the photo-triangulation of 23 images was accomplished with a RMS error of 5.5mm at the ground control points.

Conclusions

The successful combination of various contemporary recording technologies, accomplished in a short time without undue cost, produces the desired result that underlies the intervention studies.

Interdisciplinary collaboration is a prerequisite, so that the final product is trustworthy for all the researchers—of various specialties—who are involved with restoration of the monuments. Indeed, in every case the requirements of the ultimate recipients must be considered a priori.

Given these prerequisites, the use of new technology is suitable for recording the mon-

uments at large scale and the results of the recordings can be utilised in accordance with the requirements of every researcher.

Dionysia Mavromati
Rural and Surveying Engineer, NTUA

In charge of the Topographical and Photogrammetric Projects of the Acropolis



Original photograph of the elevation of the entablature and the pediment of the Parthenon west side. S. Yesaphidis-A. Santrouzanos, 2008



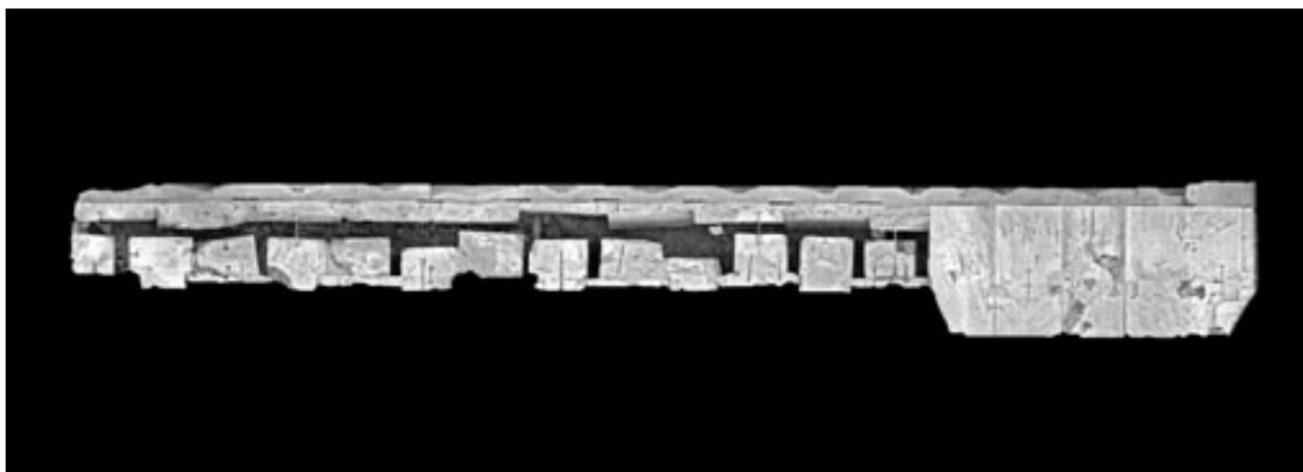
Detail of the orthophotomosaic of the elevation of the entablature and the pediment of the Parthenon west side. D. Mavromati, 2008



Final orthophotomosaic of the elevation of the west part of the entablature of the Parthenon north colonnade. D. Mavromati, 2008



Final orthophotomosaic of the elevation of the entablature and the pediment of the Parthenon west side. D. Mavromati, 2008



Final orthophotomosaic of the plan of the west part of the entablature of the Parthenon north colonnade. D. Mavromati, 2008

The purpose of inventorying the Scattered Members of the Acropolis has for the past 31 years been to make use of and to display all the remains, mainly architectural, from all historical periods of the Acropolis, that are no longer in their original position but lie as isolated blocks or fragments, separated from their original context and mixed with others as *disiecta membra*, all over the Acropolis rock.

Because of its great variety and diversity, this numerically vast amount of material can demonstrate in a unique way the history, the multiform building and, in a more general way, the cultural activity on the Acropolis rock throughout the ages. To an extent it can demonstrate the same for the city of Athens too, since part of the material came not from the Acropolis but from the lower city itself, transported either as building material for the construction of mediaeval and Ottoman buildings on the Rock, or when Kyriakos Pittakis, after 1833, in the first, rudimentary Archaeological Service, arranged for the unidentified antiquities, plentiful in Athens, to be collected and brought up to the Rock, in order to save them from likely destruction or theft. From the members of the archaic buildings of the Acropolis to the re-used blocks in the mediaeval additions and alterations of the Propylaia and the characteristic crowns of the grave *stelai* of the Ottoman cemetery, originally on the Acropolis west slope, more than 2,400 years passed without a break and the more than 20,000 scattered members unwind in extraordinary fashion the thread of history of this holy place and to an extent of the areas surrounding it.

The imperative need for documentation, arrangement and display of this material was recognised immediately with the establishment of the Committee for Conservation of the Acropolis Monuments (ESMA) in 1975. When the anastelosis works on the Acropolis monuments began, in 1977, the Committee launched systematic research and utilisation of the scattered material, forming a separate group to work exclusively on this specific programme. From 2000 on, the Work on the Scattered Members has been included among the programmes of the Acropolis Restoration Service (YSMA), being funded by the 3rd Community Support Framework.

Work on the Scattered Members is carried out by an architect or archaeologist at the head of a small team of specialised technicians. From 1977 to 1994, the scholars responsible for the work were, consecutively, the architects Tasos Tanoulas, Demosthenes Giraud and Theodore Tsitroulis, the archaeologist Konstantinos Kissas and, from 2008, the undersigned.

The purpose of the work on the Scattered Architectural Members of the Acropolis is first of all to inventory and catalogue, to doc-

ument photographically and graphically, and to classify and arrange all the scattered material found at present on the Rock. The material comprises for the most part architectural members, preserved complete or fragmentarily, but also all kinds of archaeological stone remains, such as inscribed stones, fragments of sculpture or relief, dedicatory bases, marble vases, little altars, tables of offering, perirhanteria, sarcophagi, etc.

A primary aim of the work on the Scattered Members is to identify and ascribe fragments



Stone pile of scattered members north of the Old Acropolis Museum prior to their recording. Photo T. Tanoulas, 1980



Scattered members of a stone pile preliminarily classified on wooden stands. Photo Th. Karabelas, 1997

of architectural members to monuments of the Acropolis and its environs, and to connect them, by mending them with known members of the various monuments, so that this material can be utilised in the anastelosis being carried out on and around the Sacred Rock. The same principle holds also for the other categories of ancient works of art, such as the attribution of fragments to sculpture that is already known. The final goal of the work is to arrange the scattered members, and to make use of them in the display of the archaeological site of the Acropolis.

Scientific research and publication of the material or part of it is by definition an inseparable obligation in the work on the Scattered Members. The amount of material is, indubitably, vast and systematic study and comparison of the scattered members probably will make it necessary to remove them from the Rock; much of it is indeed not connected with the classical phase shown in the archaeological site of the Acropolis today. Their removal will surely contribute to the better display of the monuments and to the final arrangement of the archaeological site on completion of the works of anastelosis.

The method employed in research on the scattered material is briefly the following: collection of the material or dismantling the stone piles, transportation of the fragments to wooden stands and preliminary classification, numbering, description, photographic and graphic documentation of the worked fragments. Members without specific form are collected in separate stone piles.

Attribution, in close collaboration with the engineers responsible for the worksites of the monuments, and handing over of the architectural members to the anastelosis works.

After being inventoried, the fragments of sculpture, of inscriptions, of numerous chosen architectural members and all the archaic marble architectural members are handed over to the 1st Ephorate of Prehistoric and Classical Antiquities, where possibilities of joining them with already known and/or published works are explored. Following this, the members are grouped and relocated in stone piles according to type (for example, Doric, Ionic, Corinthian column capitals, column bases, perirrhanteria, sarcophagi, etc).



Transporting a scattered Ionic capital on the Acropolis. Photo Th. Karabelas, 1997

The remaining members are collected in newly formed stone piles. Finally, the inventory notebooks, photographic and graphic records are given to the YSMA Documentation Office, where the conventional archive entries are completed. The conventional archive of the Scattered Members is now being digitised in the framework of the digital management of the documentation of the YSMA interventions by the Documentation Office.

Completed from 1977 to date are the inventories, description, photographic and, for selected members, graphic documentation of over 20,000 worked pieces, preserved as fragments, and complete members, which

had lain scattered around the monuments of the Acropolis in 25 large stone piles created already by the end of the 19th century, at various places on the Rock. More than 10,000 amorphous pieces have likewise been recorded and separated from the rest of the material.

The arduous task of recognising and attributing the scattered stones to known monuments and works of art, in short «identifying» all those stones, takes an endless amount of time in trial attempts at filling in many «puzzle-mosaics» in connection with the already existing knowledge of the monuments and works. All together these efforts are rewarded not only by the number and variety of the joins but chiefly by the increase in knowledge about the monuments and the works of art through these new identifications and joins. Indicative of the identifications and attributions of some of the Scattered Members to architectural monuments, we may note, to date, the attribution of over 700 stone pieces to the Parthenon, 265 to the Propylaea, 106 to the Erechtheion, 91 to the Pre-Parthenon, 30 to the temple known as the «Hekatompedon»,

500 to the «Archaïos Neos», 64 to the Stoa of Eumenes, 7 to the stoas of the Asklepieion and 3 to the Odeion of Herodes Atticus. A great number of these have been joined along breaks and they fill in architectural members that have been used in the anastelosis of the above monuments. We may note also that new fragments have been joined to unique bases of archaic acroteria preserved on the Acropolis as well as to the corner sima block with the ram's head from the *Archaïos Neos* of Athena.

The scholarly research conducted in the framework of the programme of the scattered architectural members of the Acropolis, beginning with the earliest, includes among

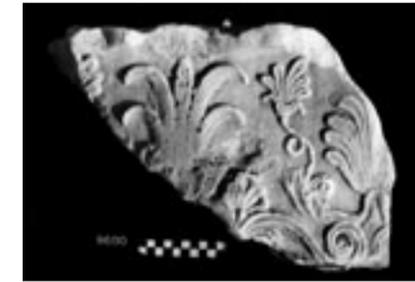
others the study of Konstantinos Kissas on the archaic architecture of the Acropolis, the study of Byzantine members and sculptures by Demosthenes Giraud and the study of Gothic poros architectural members from the Frankish mediaeval buildings on the Acropolis by Tasos Tanoulas.

As examples of joined sculptural pieces, we may note the finding and joining of a fragment from the back of the horse of the Persian Rider (Acropolis Museum Inv. No. 606), thus restoring the length of the horse's back, the joining, by Alexander Mantis, of a fragment from the Scattered Members with the late archaic relief of the gigantomachy (Acrop. Mus. Inv. No. 120) showing the goddess Athena reaching out her hand to seize the giant by his helmet, the joining of a fragment to the relief-decorated base of the Pyrrhic dancers in the Acropolis Museum (Inv. No. 1338) and the joining of many fragments to dedicatory bases or to the dedications themselves, thus making them comprehensible.

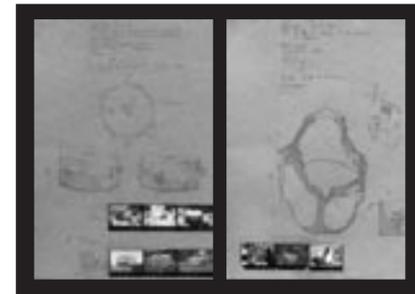
Included in the work of the Scattered Members of the Acropolis was also the inventory and cataloguing of ancient stones from the buildings of the Old National Printing Press and the Arsakeion (first girls' school in Greece). These stones had been built into the walls of these buildings after 1835, when some of the scattered members had been sold as building material and used for constructing public buildings, mainly in the lower city of Athens. Found built into the walls of the Printing Press as re-used building material were 128 fragments, which were removed and brought to the Acropolis where they were recorded. The importance of this operation is evident in the attribution of 27 of these pieces to the Parthenon. In the Arsakeion, where removal of plaster from the exterior walls exposed the extensive use of ancient material from the Acropolis monuments, 482 blocks were photographed to scale, after visible surfaces and their perimeter joints were carefully cleaned.

It is expected that the inventory, cataloguing and arrangement of the most important poros architectural members on the Acropolis rock will be finished by the end of 2008. This material, comprising over 1000 fragments of architectural members, comes, for

the most part, from the archaic buildings of the Acropolis. Part of the material, indeed the best preserved, is exhibited in the Acropolis Museum; this includes the pedimental sculpture of the archaic buildings. Other



Photographic record of a scattered member: fragment of the crown of a small altar (Inv. No 9600). Photo Th. Karabelas, 1997



Graphic and photographic recording of a half-finished drum from the Pre-Parthenon (Inv. No 342) and of a fragment of a throne (Inv. No 336). T. Tanoulas, 1978



Photographic record of a scattered member: roman crown block with Lesbian and Ionic mouldings (Inv. No 1067). Photo D. Giraud, 1980

pieces are kept in the museum storerooms. These poros pieces, together with those still remaining on the rock, offer incontestable evidence of the intensive building activity of archaic times in the most important sacred place of Athens. Such remains of lost build-

ings, even the foundations of which did not survive the complete reorganisation of the Acropolis Rock in classical years (with the single exception of the foundations of the «Archaïos Neos» of Athena) are sufficient, with their four pedimental groups, to place the archaic Athenian Acropolis among the foremost of the archaic sanctuaries of Greece. After the first publication of this material, indeed exemplary for its time, by Theodor Wiegand with the collaboration of Wilhelm Dörpfeld in 1904, the poros material, collected into piles chiefly south and west of the Acropolis Museum, was never perused systematically, but disturbed only on occasion. The present programme of the Scattered Members is intended to catalogue fully, document photographically and graphically, classify and arrange all those stones. The fragility of the material of the poros architectural members makes it urgent indeed to complete the work and to arrange them ultimately in a covered space.

When the programme for the Scattered Poros Architectural Members has been completed, it is planned to inventory, catalogue, classify and arrange two large stone piles made up of some 3000 members, which were found in the excavation carried out during the backfilling of the foundations of the House of the Arrephoroi. The excavation, conducted in 2006 by the Acropolis Ephorate, in which the staff of the Scattered Members participated, brought to light, among other things, new fragments of the Parthenon frieze.

Elisavet Sioumpara
Archaeologist, Ph.D.

I

*In charge of the Programme
of Inventorying the Scattered Members
of the Acropolis*

The Acropolis Circuit Wall is the only monument on the Acropolis that has not yet been studied sufficiently. Over the past 25 years, problems of deformation and severe weathering of the surface have been noted many times at various areas. Yet, systematic observation and monitoring of its structural efficiency has begun only relatively recently, in 2006. This is understandable given the draining of personnel and the YSMA funds by the anastelosis work on the other monuments because of their urgent need of restoration. Another reason lies in the special difficulties presented by intervention on a monument the size and extent of the Circuit Wall, as well as the difficulties of access in order to document and study it.

The state of preservation of the Wall today

The appearance of the monument today is



Elevation of part of the north Circuit Wall with visible signs of damage. Photo D. Englezos, 2007

due to the effect of time, to human intervention, to the physico-chemical environment and to permanent or transient loading of the monument in the course of its life. As a result of the above factors, the monument shows in places a series of typical problems of a structural nature, which compose its «pathology».

Generally speaking, the structural problems can be divided into two basic categories: a) those of a geometrical nature, which are connected with change in the form of the structure, without failure of the structural members, such as displacement, inclinations relat-

ing to the vertical axis, barreling, etc and b) those of a mechanical nature, connected with strains and failures of the structural members without change to the form, such as cracks, breaks, detachments of stones, weathering, etc.

The above structural problems have created areas of weakness locally, and, to begin with, they raise concern as to the capability of the structure to respond satisfactorily to increased transient loading (such as hydrostatic pressures from heavy rainfall, earthquake, etc.).

The basic conclusion is that an overall and rational plan of action is needed so as to undertake extensive intervention for preserving the monument.

Earlier studies and works (1975-2006)

A rational plan for overall intervention for

protection of the monument clearly must utilise the scientific information gained in the framework of earlier work. In fact, from 1975 to 2005, a number of works and studies were carried out that directly or indirectly may prove to be of use in forming proposals for interventions on the monument. It is worth noting that these studies and works were not necessarily drawn up with protection of the Wall as criterion; they thus refer to the Acropolis monuments in general or they are partial. They are the following:

1. The «Geological-Geotechnical study of

the Athenian Acropolis» was carried out in 1976 by the Institute for Geological and Metallurgical Research (IGME). The study needs to be brought up to date with recent information – at least for areas where stabilization of the Wall is needed, but also for the underlying foundation of bedrock.

2. Studies and works of stabilization of various areas of the rocky slopes, carried out by the Committee for Conservation of the Acropolis Monuments from 1976 to 1993 under the supervision of the civil engineer D. Monokrousos. It should be noted that there are unstable areas that have not been studied and supplementary studies are therefore needed to monitor and stabilise them.

3. Photogrammetric recording of the south Wall at a scale of 1:50 (2002-2004) by an outside collaborator under the supervision of the YSMA (supervision of V. Manidaki). A rectified photomosaic was made with the planar rectification method.

4. A Geophysical Study for determining sections of the Wall (2005-2006) by an outside collaborator (Aristotle University of Thessalonike – Technological and Research Foundation of Crete) under the supervision of the YSMA (V. Manidaki). Surface investigation of underground layers was carried out using the method of vertical and horizontal tomography.

5. Crack gauges (2004) were set by the YSMA itself (supervision of V. Manidaki). The purpose of the monitoring was to bridge and measure the behaviour of the existing cracks. A total of 18 crack gauges were set and 12 series of measurements were made using the suspended working platform or by means of photography by a special team of climbers.

6. Setting of an INVAR extensionmeter (2005) by the YSMA (supervision: V. Manidaki). The purpose is to monitor chance shifting in the middle of the south Wall.

Current studies and works (2006-2008)

1. Study and work on backfilling the Arrheporion (2006, supervision: D. Englezos). The purpose of the relevant studies, architectural and geotechnical (by: V. Manidaki, D.

Englezos, respectively), was to document and to backfill the foundations of the monument for protective reasons, and to reduce thrust on the north Wall. The work has been finished and the effectiveness of the intervention is being monitored systematically by means of sensors.

2. Creation of a unified system of coordinates for the Acropolis hill and monuments and its entry into the National Coordinate System (supervision: D. Mavromati - D. Moulou). The work is being carried out by an outside collaborator and will be completed in 2008.

3. Study for photogrammetric recording of the Wall and Acropolis hill in elevation and plan (supervision: D. Mavromati - D. Moulou). The purpose of the study, which has been entrusted to an outside collaborator, is to produce true orthophotomosaics as photo texture background, at scales of 1:50 for the elevations of the Wall, 1:25 for areas of the Wall that are of particular archaeological interest and 1:100 for the plan view of the hill. These orthophotomosaics will be used in compiling the documentation and consolidation studies of the Wall. The study will be completed in 2008.

4. Three-dimensional (3D) scanning of the Wall and hill (supervision: D. Mavromati - D. Moulou). The purpose of the work, being performed by an outside collaborator, is to create a 3D model of the Wall and Acropolis hill, to be used as a basis for further studies. The work will be finished in 2008.

5. Development of Geographical Information Systems (G.I.S.) and data base for the Wall (supervision: D. Mavromati - D. Moulou). The purpose of the work is to enter all existing information about the Wall into a data base and to make thematic maps for their fuller use. The logistics are expected to be ready in 2008. There will be, no doubt, continuous updating of information for the data base during the course of the works on the monument.

6. Clearing and weeding of the rocky slopes of the Acropolis hill and the Circuit Wall, by an outside collaborator (Dec. 2007-Jan. 2008, supervision: D. Englezos). The pur-

pose was to protect the Wall and the rocky slopes from the destructive action of plant roots and to reveal possible unstable areas of the Wall that had been hidden by plants. Such systematic clearing is scheduled on a pe-



Characteristic erosion in part of the south Circuit Wall of the Acropolis. Photo D. Englezos, 2008



Deviation from the vertical axis in part of the north Circuit Wall of the Acropolis. Photo D. Englezos, 2008

riodic basis until the damaging plant system has been obliterated.

7. Structural restoration, in collaboration with an outside collaborator (supervision of the work: D. Englezos), of a number of stone blocks from the crest of the south Wall in the area of the temple of Athena Nike, that had lost their cohesion because of washing and dissolution of their binding mortar. The intervention, which included the removal of unstable stone blocks, the cleaning of their joints, their resetting and stabilising with ce-

ment mortar and titanium bars (10mm), is considered to have been successful.

8. Measurements at geodetic points on the Wall, using highly accurate topographical instruments. The purpose of the measurements is to monitor movements in characteristic areas of the south and east Wall. The setting of the points was done by the YSMA, and monitoring is being carried out by an outside collaborator (supervision: V. Manidaki) using a total station of 0,5 sec. speed.

9. Setting of optical fibers sensors. The purpose of the work is to determine the strains and displacements of the Wall with high accuracy. In this way areas that may have a dense concentration of displacements can be located, so as to determine where the interventions should be made and to acquire im-

portant information about the type of mechanical loading. The installation of the sensors was carried out by an outside collaborator under the supervision of the Service (D. Englezos). The sensors (of displacement and temperature) were placed in suitable arrays on the south, east and north Wall.

10. An accelerograph was installed at the top of the Acropolis hill by the Geodynamics Institute of the National Observatory of Athens (supervision of the work: D. Englezos). A network of accelerographs is at present being in-

stalled in the backfill, at other points on the surface where limestone emerges, on the schist bedrock and at suitable locations in the Parthenon. The purpose of developing this network is to record seismic events and the response of the hill and the monuments on it. The seismic motion of the rock during the earthquake of Andravida (8/6/2008, 15:25') has already been recorded, with the greatest acceleration at 6 mg. It is worth noting that this is the first recording of a seismic event on the Sacred Rock.

Programming of future interventions

In the framework of a critical review of the studies and works that have been carried out to date, their partial character and lack of an overall conception for organising the restoration and protection of the monument must be noted, – without in any way overlooking the contribution made by each separate project in the acquisition of information. It should be noted that the Acropolis Circuit Wall, because of the great number of factors involved in an overall approach and analysis

(such as the size of the Wall, the difficulty of access for direct observation, the variety in its building techniques and materials, the diversity of geological and geotechnical conditions that have affected it, etc.), from the standpoint of confrontation, presents a complex technical and scholarly problem. There is urgent need, therefore, for an overall plan of management of the Wall, on the basis of interdisciplinary collaboration, so that the required actions will be rationally performed. In particular, while the work is basically in the domain of the civil engineer, it must be supported systematically in every circumstance by various fields of knowledge (for example: Archaeology, Architecture, Technical Geology, Topography, Seismology, Mechanics, Conservation) in the framework of a broad interdisciplinary collaboration.

The studies and the works that come from the cooperative efforts of the above specialists should proceed in the following stages:

1. Archaeological documentation and description of the monument, particularly those parts that are hidden by artificial backfill, for the discovery of which excavation is needed. The excavations should be combined with other works, such as a) geometric documentation using both modern and traditional methods of recording so that the drawings required for supporting studies and consolidation studies can be produced to scale, b) site investigation of prevailing geotechnical conditions, c) suitable instrumental monitoring, d) application of temporary or permanent measures of consolidation, e) conservation. The above should be carried out on the basis of a plan that is applicable to each area to be examined.

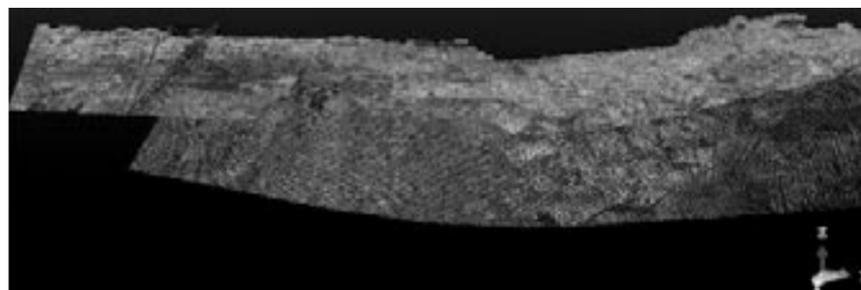
2. Studies: the studies for restoration of the monument comprise both supporting and consolidation studies. The supporting studies include successively: up-dating the existing geological study of the hill in the areas of programmed intervention, the systematic geotechnical evaluation of the conditions in the area of the work, research on the natural and mechanical features of the building material of the structure with suitable *in situ* and laboratory testing, study of the drainage of the surface of the hill, study for instrumental monitoring of the monument and the evaluation of data from the proper sensor systems.

The consolidation studies include analyses of the current state of preservation to determine the existing safety factor from load acting on the monument either permanently or sporadically; the choice of suitable methods and computational tools for analysis and comparison with the results of the monitoring for rational calibration of the calculation parameters and of the nature of the mechanical loading. This is followed by the studies for consolidating the areas that need it, and for the time schedule required.

given to outside collaborators), the technical means and personnel required, the precise budget for the work, the time schedule, the systematic documentation of the works, their quality control, instrumental monitoring during the execution of the work, the final record and the instructions for conservation of the works accomplished.

4. Monitoring. The instrumental monitoring of crucial parameters of interest to engineers offers important information at every stage of

rotations, the stresses and the temperature. Monitoring insures first of all the timely diagnosis of possible disturbing phenomena related to the stability of the monument and therefore suggests a correct intervention. Moreover, the interrelation of information from the monitoring process with the information from the computational tools and the various analyses yields a scholarly correct simulation of the problem, so that the best measures from the standpoint of security and cost can be undertaken. With the completion of



Point cloud from laser scanning of an area of the north Circuit Wall of the Acropolis. Photo of 2008



Weeding on the north slope of the Acropolis. Photo of 2008



Structural restoration of a small part of the south Circuit Wall. Photo D. Englezos, 2008



Placement of optical sensors in an area of the inner face of the north Circuit Wall showing considerable deformation. Photo D. Englezos, 2008

3. Interventions. They are basically the performance of the consolidation studies. The file of the work includes the relevant studies, description of the technical standards, the contract requirements (in cases where the work is

the preservation work on the monument (documentation, studies, interventions). In brief, we may note that from the standpoint of an engineer the crucial points to monitor are the shifts, the deformations, the

the interventions, the monument must be monitored on a continuous basis, in order to verify their efficiency.

5. Conservation. This includes interventions on a small scale on structural elements of the Wall during the course of structural restoration and after this work is finished, as part of a general programme of systematic conservation.

Execution of the above described studies and works must be escalated in sections, because of the extent of the monument to be restored. In any case, for the full implementation of all the activity planned the time needed will be at least ten years, assuming the continuous and unobstructed funding of the work.

Dimitrios N. Englezos
Civil Engineer Ph.D., NTUA
Dorina Moullou
Archaeologist

*Programme for the Preservation
of the Circuit Wall of the Acropolis*

Educational activities

In 2007, the YSMA Department of Education and Information carried out an educational programme at the Centre for Acropolis Studies on the theme «Let's Go to the Acropolis», for 1810 pupils from 60 schools. For yet another year, collaboration with the Greek Parliament continued, with 400 pupils from outlying Gymnasia in the Dodekanese making a visit to the Acropolis. To all the



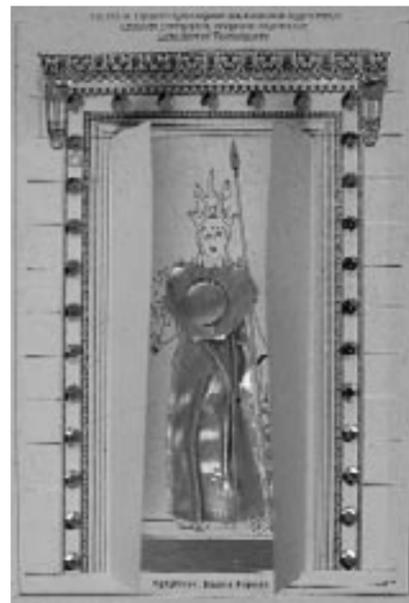
Educative programme on the sculptural architectural decoration of the Parthenon. New Acropolis Museum, February 2008

gymnasia that participated in the programme of the Parliament, a file was presented containing educational material for their library. On the occasion of inaugurating the ground floor of the New Acropolis Museum, educational programmes were held on the Acropolis Sanctuary, the ancient temples, the Parthenon frieze and the Gods of Mt. Olympus. Two hundred fifty pupils from Primary Schools and Gymnasia attended.

In addition, it is estimated that 13,139 pupils from 242 schools worked with the Department's Museum Kits during 2007. Museum kits went out on loan directly from the Department and were used by 9945 pupils in 160 schools in Attica, Phokis, Trikala, Tripoli, Chalkis, Volos, Messene, Serres, Kos and Pyrgos. Another 3194 pupils from 82 schools borrowed and used the museum kits from institutions, mainly in the provinces,

with which the Department has collaborated systematically during recent years (Ephorates of Antiquities, Museums with Educational programmes, Schools participating in the programme of School Books, where there are copies of the museum kits).

Also during this past year, 400 museum kits were distributed on the subject of the «Twelve Gods of Mt. Olympus» (this is the most recent museum kit, brought out in 2007



and funded by the «Stavros Niarchos» Foundation) to institutions in Greece (329 museum kits), in America and in many countries of Europe (71 museum kits).

Seminars were held in 2007 by the Head of the Department and the staff, Cornelia Hatziaslani, architect-archaeologist and Eirene Kaïmara and Asemina Leonti, archaeologists. These were attended by 830 educators and pupils. In November 2007, they participated in a One-day Conference for educators of the University of Thessaly on the theme of «Educational Material for Museums: Designing, Use, Utilisation».

Events abroad related to the Acropolis Works

During the past year the Acropolis restoration works were presented in various countries abroad, beginning with *Australia*, where, in October 2007, the YSMA organised events on the subject of the Acropolis in collaboration with the Organisation for the Construction of the New Acropolis Museum (OANMA) and the Departments of Modern Greek Studies and Architecture of the University of Sydney; participating also was the Association of Hellenism Overseas of Australia and the Far East. The events included the presence in the Nicholson Museum at Sydney, until December 2007, of a photographic exhibition of the Acropolis Restoration Works and the New Museum. It included also lectures about the Acropolis Works on the 24th of October at the University of Sydney, by the YSMA director, Maria Ioannidou, and by Nikos Toganidis, the architect in charge of the Parthenon restoration. A public discussion was held on the 28th of October, entitled «Who Owns the Cultural Heritage?» with the subject of management and the retention of monuments of cultural heritage in their own land. The national holiday of the 28th of October, celebrated with special brilliance by the Greeks Overseas, was dedicated, as «Family Day», to informing families and school children about the Acropolis and in general about the importance of museums and the management of cultural heritage.

On March 13th, 2008, the Minister of Culture, Mr. Michalis Liapis, opened the photographic exhibition of the Acropolis Restoration Works by the YSMA photographer Sokrates Mavrommatis, at the Pergamon Mu-

seum in *Berlin*, in the framework of events held to present the New Acropolis Museum, organised in collaboration with the Foundation for Hellenic Culture. The exhibition lasted to the end of May and will be shown also in other cities of German speaking Europe.

A series of events related to the Acropolis Restoration were held by the YSMA also in *Beijing*, as part of the Olympic year of Greece in China. On the 8th of May 2008, the well-known photographic exhibition of the Acropolis Restoration Works was inaugurated at the Greek House in Beijing enriched with two additional units, one an introduction to the history, the diachronical events and earlier restorations of the monuments on the Rock, and another unit on the subject of the Parthenon Frieze. The exhibition continued until the end of June. During this time, visitors had the opportunity to see the films produced by YSMA, «The Works on the Athenian Acropolis: the People and the Monuments», «Conservation and Cleaning of the Parthenon West Frieze» (both directed by S. Mavrommatis), «The Erechtheion and Time» (directed by A. Drakopoulou), «The Sacred Rock» (directed by M. Parachi), «The Saving of the Acropolis» (directed by K. Vretakos), «Parthenon: the Restoration of the East Side» (directed by D. Vernikos), which were shown continuously. The designing of the exhibition was by Pavlos Psaltis and Platon Konstantopoulos, and the accompanying catalogue (in English and in Chinese) was by Maria Ioannidou and Dorina Moullou.

Likewise on the 8th and 9th of May, a scholarly Two-day Conference on the Athenian Acropolis and the Forbidden City Restoration Projects was held by the YSMA in collaboration with Tsinghua University. The Conference was held in the Palace Museum of the Forbidden City and at Tsinghua University. Chinese specialists presented the works of conservation and restoration being carried out in the Forbidden City. For the Greek side, the Acropolis Works were presented by Maria Ioannidou (The Acropolis restoration project), Fani Mallouchou-Tufano (Principles of the Acropolis restoration project), Nikos Toganidis (Parthenon restoration project), Tasos Tanoulas (Propylaea restoration project), Dionysia Michalopoulou (The Athena Nike restoration project), Evi Papakonstantinou-Zioti (Acropolis Mon-

uments: surface conservation and research), Dimitris Englezos - Dorina Moullou (Acropolis Circuit Wall: documentation and research), Yiannis Alexopoulos (Documentation data base of the Acropolis restoration project), Spyros Oikonomopoulos (Engineering technology of the Acropolis restoration project), Cornelia Hatziaslani (Acropolis restoration and education). The Conference, which was attended with great interest

by a large audience, mainly students, ended with a general discussion in which, Maria Ioannidou, Tasos Tanoulas and Evi Papakonstantinou-Zioti took part for the Greek contingent. Publication of the Proceedings of the Conference is planned.

The Symposium of the CIPA and the Acropolis

The YSMA was well represented in the 21st



The photographic exhibition of the Acropolis restoration works in the Nicholson Museum in Sydney. October-December, 2007



Lecture on the Acropolis restoration in the University of Sydney on October 24, 2007



Photographic exhibition of the Acropolis restoration works in the Hellenic House in Beijing, May-June 2008

International Symposium of the International Committee for Architectural Photogrammetry (CIPA), held 1-7 October 2007 at the Zappeion in Athens, on the theme of «AntiCIPAting the Future of the Cultural Past». Professor Manolis Korres, member of the ESMA, spoke in the opening session on the subject of «Historical monuments: research and preservation». An entire session was devoted to the Acropolis works, with talks by M. Ioannidou on «Principles and methodol-

ogy of intervention for structural restoration of the Acropolis monuments», Nikos Toganidis and Tasos Tanoulas on the «Parthenon restoration project» and «The Restoration of the superstructure of the Propylaea central building», respectively, Evi Papakonstantinou-Ziotti on «The surface conservation project of the Acropolis monuments: studies and interventions». In sessions on corresponding topics, Dorina Moullou and Dionysia Mavromati spoke on «Topographical and

photogrammetrical survey of the Athenian Acropolis» and Fani Mallouchou-Tufano and Yiannis Alexopoulos gave talks on the «Digital management of the documentation of the Acropolis restoration».

Among the accompanying posters of the Symposium, those about the Acropolis anastelosis were of particular interest (in fact, Pavlos Psaltis set up a small exhibition in the Zappeion). The orthophotograph of the entablature of the west end of the north colonnade of the Parthenon by the rural and surveying engineer, Dionysia Mavromati, was indeed impressive.

The same exhibition was presented at the New Acropolis Museum on the occasion of the International Congress for the «Return of Cultural Properties to the Countries of their Origin», organized by the Hellenic Ministry of Culture and the Unesco, in March 17th-18th.

Lectures

As in previous years, last year too the academic staff of the YSMA gave lectures and reports in Greece and abroad on general or specific topics about the Acropolis Restoration Works.

Fani Mallouchou-Tufano gave a lecture about the anastelosis of the Acropolis in June 2007 at the Architectural School of the Rome University III.



Poster of the Acropolis restoration exhibition in Beijing. Design: P. Psaltis, Pl. Konstantopoulos



M. Ioannidou guiding the President of the Hellenic Republic K. Papoulias and the Minister of Culture M. Liapis in the exhibition on the Acropolis restoration in the New Acropolis Museum, March 17th, 2008

At an One-day Conference held in November 2007 at the Archaeological Museum of Thessalonike, the YSMA conservators Anastasia Panou and Yasemi Frantzi presented, respectively, the cleaning of the Parthenon west frieze and the surface conservation of the Acropolis monuments.

At a Symposium at the National Technical University of Athens in December 2007, the Head of the YSMA Conservation Department, Evi Papakonstantinou-Ziotti, spoke

about Theodore Skoulikidis and his contribution to the conservation of the Acropolis monuments.

Awards

In the framework of festivities celebrating the 170 years of the National Technical University of Athens and the 90 years of the School of Chemical Engineering, on Tuesday May 20, 2008, the Chemical Engineer Evi Papakonstantinou-Ziotti, Head of the

YSMA Department of Surface Conservation of the Monuments, was awarded an Honorary Diploma by the Dean of the National Technical University Professor K. Moutzouris, on the proposal of the School. This was followed by an address given by the recipient of the award entitled «Surface conservation of the Acropolis monuments: research and intervention».

In this same framework, the «Theodore Skoulikidis» Hall was inaugurated at the School of Chemical Engineering on May 19, 2007, as a dedication to the memory of the founding member of the ESMA and brilliant teacher of the Technical University.

On May 26, 2007, the distinguished marble technician, Nikos Skaris, foreman marble technician of the Erechtheion restoration work (1979-1987), was honoured by the President of the Hellenic Republic, Karolos Papoulias, with the Gold Cross of the Order of the Phoinix.

Fani Mallouchou-Tufano
Archaeologist, Ph.D.

Head of the YSMA Documentation Office



Scholarly Meeting on the restoration of the Acropolis and of the Forbidden City in the University of Tsinghua, Beijing, May 8th-9th, 2008



Poster of the Acropolis restoration exhibition in Beijing. Design: P. Psaltis, Pl. Konstantopoulos



Photographic posters on the Acropolis restoration works in Zappeion during the CIPA International Meeting, Athens, October, 1st-7th, 2007

Honouring the marble technicians of the Acropolis The Gold Cross of the Order of the Phoinix to Nikos Skaris

On May 26, 2008 at the Presidential Residence the President of the Hellenic Republic, Karolos Papoulias, decorated the Acropolis marble technician, Nikolaos Skaris, son of Evangelos Skaris, with the Gold Cross of the Order of the Phoinix. Nikolaos Skaris was head of the team of marble technicians of the Erechtheion restoration (1979-1987).

As written by the architect in charge of the restoration of the Erechtheion, Alekos Papanikolaou, in the partly finished text he left on the subject of the work, *the marble technicians were the stylobates of the work, since it was through their devotion to the work and their professional skill that the entire enterprise was successfully completed. The span of their ages covered three generations. The first generation included technicians with proven experience in the large anastelosis programmes carried out in Greece in the decades 1950-1970. They are distinguished for their professional application, for the careful and thoughtful way in which they carried out the work and for their ethos. It is to this generation that Nikos Skaris, distinguished in his work, belongs.*

Alekos continues: *Nikos Skaris was the foreman of the crew of the Erechtheion restoration work and he was the teacher of us all. He is characterised by his high ethical standards, his kindness and civility, his humility and by his unique professional qualifications, equal to those of the ancient technicians.*

Nikos Skaris was born in 1923 at Pyrgos in Tenos. At the age of ten he began to be instructed and to work in the art of marble-cutting, first in the marble work-shop of Dionysios Pissas, then with his uncle, the marble-cutter Tzortzis Skaris. Later he joined

the marble work-shops of the brothers Maravelia and the brothers Skaris (that marble workshop was the great school of all the marble technicians of the Archaeological Service), and after that he worked alone, in his own marble work-shop. His works are many and they encompass ancient, Byzantine and more recent monuments (marble decorations and church iconostases, such as that at Ayios

buildings (such as that of the Chamber of Commerce in Piraeus or the Archaeological Society in Athens) He has vast experience in working on ancient monuments, for he has taken part in nearly all the most important post-war anastelosis interventions: restoring the marble cavea of the Odeion of Herodes Atticus, restoration of the SW wing of the Propylaia, restoration of the temple of Aphaia, restoration of the Epidaurus theatre, restoration of the temple of Poseidon at Sounion, restoration of the Parthenon in the middle 1950's. He returned to the Acropolis in 1979, where he worked as head of the restoration work of the Erechtheion until his retirement in 1987.

After his retirement, in 1989, Nikos Skaris worked with Professor Charalambos Bouras, President of the ESMA, on creating a little Sculpture Museum in the restored refectory of the monastery of Hosios Loukas. The work called for the joining, filling and restoring of a small number of middle Byzantine sculptures, all of which was carried out by Nikos Skaris with the quality of work and rapidity for which he is known.

The honour given to Nikos Skaris by the President of the Hellenic Republic reflects on all the marble technicians of the restoration works of the Acropolis monuments. They are continuing his work with mastery and ethos.

Fani Mallouchou-Tufano



The President of the Hellenic Republic, K. Papoulias, awarding N. Skaris. Athens, May 26, 2008



Nikos Skaris and his wife Marika in the Presidential Residence. Athens, May 26, 2008

Dioysios in Zakynthos, the monastery of Hosios Meletios, the church of the Soter Lykodemos, the church of Ayios Demetrios of Thessalonike, the church of Ayios Andreas in Patras) and also the creation of columns, antae and wall capitals for modern



1

1. Nikos and Markos Skaris with Giorgos Sinanis (from right) in 1979, filling the orthostates of the podium of the Erechtheion south porch with new marble

2. Nikos Skaris in 1982, during the restoration of the part of the Erechtheion north wall above the north entrance

3. Marking an architrave of the Erechtheion south porch for inserting titanium rods for the structural restoration of the block, in 1979



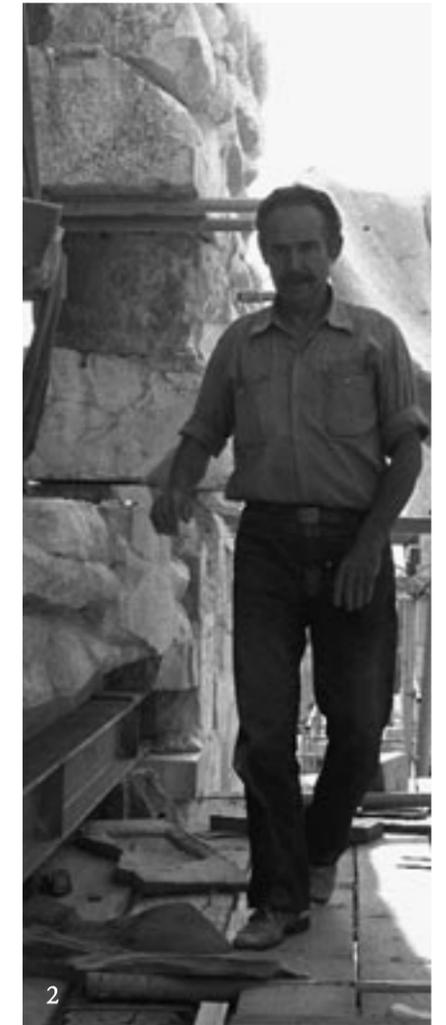
3

4. Nikos Skaris and Stelios Kafouros in 1982, filling an orthostate block of the Erechtheion south wall with new marble

5. Carving the moulding of the new marble fillings of the crown of the podium in the Erechtheion south porch, in 1980



4



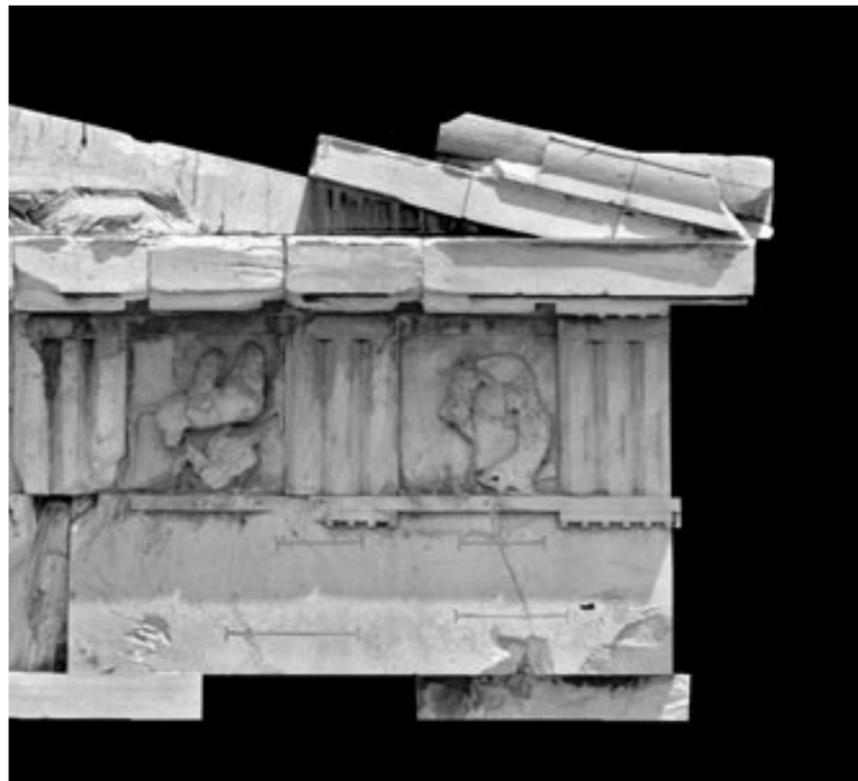
2



5



Orthophotomosaic of the northeast corner of the Parthenon west side. D. Mavromati, 2008



Orthophotomosaic of the southeast corner of the Parthenon west side. D. Mavromati, 2008

News Letter of The Acropolis Restoration Service of the Hellenic Ministry of Culture

Editor:
Professor Emeritus Ch. Bouras

Editing and Production:
F. Mallouchou-Tufano, Ph.D.

Layout:
O. Simeoforidou

Photographic Supervision:
S. Mavrommatis

English Translation:
M. Caskey, Ph.D.

The restoration and conservation works of the Acropolis Monuments as well as the present issue are jointly financed by the European Union.

Community Support Framework
2000-2006
Operational Programme "CULTURE"
Community Contribution: 75%
National Contribution: 25%

Managing Authority for Operational
Programme "CULTURE"



The Acropolis Restoration Service
10, Polygnotou Street
GR-10 555 Athens
Tel/Fax: (30) 210-32-43-427/ 32-51-620
e-mail: protocol@ysma.culture.gr

©YSMA, 2008