



Detail from the cleaning of block W.III of the Parthenon west frieze. Photo S. Mavrommatis, 2004

Ch. Bouras, The work of ESMA in 2003

M. Ioannidou, Works completed on the Acropolis, Spring 2004

R. Christodouloupoulou, The restoration of the opisthonaos of the Parthenon

T. Tanoulas, The central passageway of the Propylaea

D. Michalopoulou, Technical issues and constructions in the restoration of the temple of Athena Nike

C. Hadziaslani, I. Kaïmara, A. Leonti, The Parthenon Frieze and the Festival of the Panathenaia

F. Mallouchou-Tufano, News from the Acropolis

E. Touloupa, Memories of the works on the east façade of the Parthenon

The work of the Acropolis Restoration Service (YSMA) in 2003 is characterised by great acceleration and increased productivity. This is the result of many factors, the most significant of which is the administrative reorganisation and the continuous availability of funds during the past four years. Likewise important is the enthusiasm of the personnel, who continuously and increasingly see their efforts realised and feel satisfaction in the steady expansion of their experience and technical knowledge.

Concern about the constraints of time available and the surprises, which the dismantling process always holds in the course of restoration, predominated on the Acropolis during the past year. The concern was a result both of pressure from the Ministry to keep to the time-schedule and of outside factors that imposed their reconsideration. The desire of the Ministry for the monuments of the Acropolis to present a respectable appearance during the Olympic Games is plausible indeed, as is the desire of all of us to complete the programmes.

The outside factors that delay the works are the unexpected need for structural restoration that becomes evident with the moving of architectural members, the unavoidable bureaucratic delays both in procurement and in entrusting of the work to external associates, possible strikes on the part of the personnel and bad weather conditions which make it impossible to work out-of-doors.

The tremendous acceleration of the works has in no way lessened the quality of the work being done. All is being carried out according to the demanding specifications established long ago. The gathering of statistical facts permitted the reorganisation of the time schedule with great accuracy as far as the time needed for the restoration of every single member.

The twelve-member multidisciplinary Committee for Conservation of the Acropolis Monuments (ESMA) remained unchanged in 2003. Its two-year term was renewed at the beginning of July. During the year twenty-three meetings were held, at six of which the General Secretary of the Ministry of Culture, Lina Mendoni, presided. As usual, fully detailed minutes were taken and decisions were made concerning all the administrative, scholarly and economic subjects. The participation in the Committee of the Direc-

tor of the Acropolis Ephorate, Mrs. Alkesti Choremi, facilitated collaboration with the Acropolis Restoration Service (YSMA), the special service of the Ministry charged with carrying out the work, and the reciprocal assistance for practically all matters.

In 2003, the Director of the YSMA, Mrs. Maria Ioannidou, did not simply fulfill the duties of her position, but with great effort far exceeded them. In addition to presenting



The pronaos of the Parthenon from NE. Photo A. Papanandropoulos, 2003

nearly all the subjects to the Committee, in collaboration with the supervisors she coordinated the partial works, she managed the very complicated economic matters related to the funding from the 3rd Community Support Framework and from National funding, she reorganised the time schedule and resolved a host of problems arising in the daily course of a large technical enterprise, the largest that has ever been carried out in the sphere of the Archaeological Service.

A few changes were made in the academic staff during the past year. The sudden death of the civil engineer Vasileios Paschalidis, a man of much promise, threw into mourning all his colleagues and friends on the Acropolis. The archaeologist Evi Petropoulou was in charge of the Secretariat of the Committee for almost the entire year with the general secretarial support of Hara Papanikolaou.

Thanks to the efforts of the entire staff the Accounting Office and Management of the Service ran efficiently. A small team under the mechanical engineer, Spyros Oikonomopoulos, is part of the general support of the works. We are obliged to him for the solving of countless technical problems.

The works on the Parthenon are directed by the experienced architect Nikos Toganidis. His colleagues include four architects (Lena Lambrinou, Rozalia Christodouloupoulou, Katerina Paraschi and Angelos Papanandropoulos) and three civil engineers (Marilena Mentzini, Eleni Toubakari and Chrysa Kypra-rissi). The archaeologist Elena Karakitsou is responsible for keeping the daybooks and entering the documentation into the Data Base. Three programmes, as we know, are now in process: in the pronaos, the opisthonaos and the north colonnade. The surface conservation of the Parthenon is the responsibility of the conservator Anastasia Panou.

The pronaos programme is expected to be finished in May, 2004 and it is indeed in the final stages of completion. In carrying out the study of Manolis Korres, the additions to the columns had already been completed as early as 2002 and last September the restoration of the architrave blocks, which, however, cannot yet be set in place since the crane is being used in the opisthonaos programme. In October began the dismantling of the southeast anta, which had been restored by Balanos. Here too, unfortunately, there were problems with cement plaster in the area of the orthostate and a number of members had to be filled in. It should be noted that the appearance of the filled-in columns, which seems strange to us today, will be altered after the final fluting. This will be done after the present programme has been brought to completion\*\*.

Petros Kouphopoulos, Assistant Professor at the University of Patras, is working as technical advisor in the restoration of the Parthenon opisthonaos. He has made the study for this work. In 2003 great progress was made and the programme is in the stage of completion.

The most serious and demanding of all the Parthenon programmes is that of the north colonnade, which is expected to be finished by the end of 2006. Eight columns, from the 4th through the 11th counting from the east, restored together with their enablature

by Balanos, had to be cleared of rusted iron and cement. The eight columns were dismantled in 2003. Of the 88 drums only 14 had remained unmoved and of the 88, a total of 77 were dismantled. Their condition after the intervention of Balanos has been discussed last year and the year before. In any case, 2003 was taken up with the restoration of the 29 drums, which together with the 9 restored in 2002 and the 77 that were in good condition increased the number of drums ready to be reset to 45.

But the reduction of material and the possibility of taking extremely precise measurements, cast doubt on quite a few points in the original study of Kostas Zampas. These are differences, to be sure, of only a millimetre in a metre or fractions of a millimetre. In the case of the Parthenon, however, they cannot be overlooked. Some of them are the result of the abrasion of resting surfaces, made by the Balanos team. Others are minute differences in the depth of the flutes or in the surface erosion of the marble. We hope that the attempt to coordinate all the measurements, undertaken by Mr. Toganidis and Mrs. Lambrinou will lead to results acceptable to the Committee so that the columns can be reerected this year.

The restoration of the cracked architrave blocks of the entablature has likewise begun and three are ready. Documentation with precise measurements of the overlying architectural members of the Doric frieze and the cornice continued. The work of restoring the column drums went ahead at a great pace thanks to a specially designed machine by the mechanical engineer, Spyros Oikonomopoulos, based on an idea of Nikos Toganidis, which cuts directly the flutes in the fillings of new marble. The final cutting, to be sure, will be done by hand after the resetting of the column drums. It should be noted finally that in one case the lower drum, preserved in situ, was moved purely for reasons of research.

For the Propylaea, director of the work is the exceedingly experienced architect Tasos Tanoulas. His colleagues in this are Konstantinos Karanasos, architect, and Vasilis Papavasileiou, civil engineer. The daybook and the entering of documentation in the Data Base are being done by Evi Petropoulou. Responsible for surface conservation is Kaiti Banika.

In 2003 work was carried out also on the north wall of the central building of the Propylaea and on its six-column east porch. The original study, based on "correcting" the restoration of Balanos, presupposed the dismantling of 98 architectural members. During the course of the work, however, it was discovered that Balanos had moved and joined with iron 91 more members. This, as can be understood, upset the original time

schedule for the past year, with the dismantling of all the members. In the Propylaea, fortunately, the condition of the architectural members is much better than that of the Parthenon, even though here too there were distressing surprises. Balanos had used iron beams and an ample amount of reinforced concrete for joining the middle architrave of the east façade with its opposing piece. The entire work was delayed by the task of sepa-



The north colonnade of the Parthenon from NE. Photo L. Lambrinou, 2003



Drums of the Parthenon north colonnade restored with new marble. Photo L. Lambrinou, 2004

rating the two members, removing the rusted beams and the reinforced concrete and taking them down to the work-site. Superhuman efforts were required on the part of the personnel and, especially, our colleague, Vasilis Paschalidis, prematurely lost.

In any case, by the end of 2003, 27 blocks of the north wall had been restored and 8 column drums and 41 other architectural members had been prepared for resetting. At the same time, extensive work had been done on the infrastructure, marble supplies and the preparation of many other members with fillings and joins, the goal being to keep to the new time schedule according to which the Propylaea was to be ready by June 2004. Likewise in 2003, Tasos Tanoulas produced a study for the renewal of the visitors' pathway in the Propylaea.

The temple of Athena Nike, although the smallest classical monument of the Acropolis,

was to prove the greatest problem of the Acropolis Restoration Service (YSMA) during the past years. This is so for many reasons: a) the ancient architectural members have been badly handled in the two previous restorations, b) in the last anastelosis before the war much cement had been used for strengthening the walls, which had bonded with the ancient members, c) the little temple

to take place in Athens. Thus, the pressure exerted by the Ministry to complete the restoration of the monument as quickly as possible was entirely justified, as also the tremendous efforts of the Committee and the Service in response. Yet matters themselves imposed a slower rhythm.

Responsibility for the new restoration of the temple of Athena Nike is in the hands of the

and Georgios Antoniou, and a draftsman, Themis Moutopoulos, were added to the force for drawn documentation of the architectural members. Technicians were moved from the team recording scattered members and from the group making casts to the Nike temple. Many of the marble technicians are working overtime. The making of marble fillings was entrusted to external collaborators as was the study for a special metal grate that is to some extent to support the temple.

In 2003 the drawing of 315 architectural members was completed and Mr. Mamaloungas successfully studied the rearrangement of the blocks that had previously been misplaced. Many fillings were made, and 18% of them were joined to the original members. According to the revised time schedule, in addition to the krepis, the orthostate blocks, three courses of cella wall-blocks will be in place by this summer, while two more courses of the cella walls will be temporarily placed, without clamps. Following the same time schedule, the anastelosis of the temple will have been completed in April 2006.

In connection with the restoration of the Circuit Wall of the Acropolis, in 2003 documentation was initiated with a survey of the south Wall. Using new methods and modern technology the topographical engineer Manolis Kapokakis completed the work entrusted to him. Prior to this, by provision of the Service, the wall was cleared of flora as a gift from Mr. Tsakiridis. In this same framework, the architect Vaso Manidaki made a systematic study of the problem of protecting the foundations of the Arrephorion, which, despite their great archaeological and historical importance, have been damaged by dampness, ice and wind.

Surface conservation of the marble by the team under the direction of the chemical engineer Evi Papakonstantinou and supervision of the ESMA member, Professor Emeritus Theodore Skoulikidis, was carried out on the architectural members before resetting them on all monuments. Original research on erosion of the marble from natural causes was undertaken in cooperation with the University of Athens.

The marble conservation team's most important work during the past year, however, was carried out on the West Frieze of the

Parthenon. After extensive research and collaboration with the Research and Technology Foundation of Crete, a specific formula of lazer rays was determined and suitable machinery. The result has been judged completely satisfactory, since the effects of pollution are removed without harming either the calcined surfaces or the ancient coloured patina of the marble. A committee of archaeologists, with Mrs. Choremi as president, supervises the work and is responsible for the final aesthetic result. Direct supervision of the work is the responsibility of the archaeologist C. Vlassopoulou with the cooperation of Paraskevi Pouli and Theodora Ditsa on behalf of the Research and Technology Foundation. Mrs. Panou is the conservator representing the YSMA. It is hoped that the West Frieze, 20 metres long, will be ready for exhibit in July 2004. It should be noted also that during the past year surface conservation of the Erechtheion was continued, under the direction of Georgia Phrantzi. The team documenting the architectural members scattered on the Acropolis, led by the archaeologist Konstantinos Kissas, completed the work that had been scheduled for the past year with the dismantling of one more stone-pile and the documentation of 1055 fragments, in accordance with specifications revised anew two years ago by the ESMA. The fragments were then put in order, placing them in new stone-piles with others of the same type, and the documentation was entered in the Archive. As I mentioned above, no progress was made in 2003 on the urgent matter of protecting the Acropolis inscriptions that are still outside. The ESMA Archives, the Documentation Office and Data Base of the YSMA for documenting the works of anastelosis on the Acropolis make use of entirely modern technology and work according to the specifications of their own canon. The head of the Office is the archaeologist Fani Mallouchou-Tufano. As noted, in every work-site of the Acropolis there is now an archaeologist in charge of directly informing the Archive of all activities and all modifications to the monuments. The programme was presented on the Japanese television.

Unfortunately our obligation to give a scholarly rendition of the programmes that have been completed, was not accomplished in any form during 2003. The additions and

preparation for publication of the restitution of the Erechtheion, which with his untimely death Alekos Papanikolaou had left half finished, has been undertaken recently by Fani Mallouchou-Tufano.

The Office of Information and Education, directed by the architect-archaeologist Cornelia Hatziaslani, was especially active in 2003. Educational programmes were car-

ried out for some 7000 students (in part in cooperation with the Greek Parliament) and around 200 Museum kits were given or lent for presentation to over 23,000 other students. The seminars and the giving of educational material to teachers and professors, both Greek and foreign, proved to be particularly effective, as did a special conference of educators that took place in July. The museum kits and educational material were presented in exhibitions at Thessalonike, Delphi, Boston and Rome. In collaboration with the National Documentation Centre and the Acropolis Ephorate, a CD-ROM on the Parthenon frieze was published in two languages and sent to a great many schools, university and public libraries throughout Greece and abroad. The same CD-ROM has become available to the public with its

installation on the web. Yet another information pamphlet was published in December on the timely subject of the Games in the ancient Panathenaia. Photographic documentation of all the works continued in the photographic laboratory, directed by Socrates Mavrommatis. Likewise under his direction, special scenes in the course of the works are documented cine-



The cutting machine used for fluting the new marble fillings of the column drums in the Parthenon work-site. Photo S. Oikonomopoulos, 2003

is the only monument which was wholly dismantled, a fact that raised special problems in connection with the level and cutting of the krepis, d) the excavation below the euthynteria of the monument led Balanos to new arrangements for the foundations with a plentiful use of reinforced concrete, which had to be replaced and e) the surface of the monument is much damaged.

None of this, unfortunately, had been dealt with in the study made at the beginning of the 1990s by Demosthenes Giraud, now Director of Anastelosis in the Ministry, and, yet more important, the original time schedule was not calculated to take this into account. The result is a serious error in programming by the Committee, an error that was magnified by the fact that the temple of Nike dominates the entrance to the Rock and because the Olympic Games are about

civil engineer Dionysia Michalopoulou, who is collaborating with the architect Kostas Mamaloungas and the archaeologist Evi Lebidaki, whose main task is keeping the day-books. The conservator, Anthi Tsimereki, is responsible for the conservation team of the temple of Nike. In order to accelerate the work, the ESMA placed at the disposal of the team working on the temple all technical means as well as a large personnel. Two bridge cranes have been allotted for moving and for work on the marble, two pantographs have been installed in special temporary buildings below the Acropolis. On the Rock a marble cutter has been installed in a special workroom. In order to install the bridge crane, an entire support system was constructed outside the Nike Bastion and a special pathway was organised for visitors. Two more architects, Vaso Manidaki

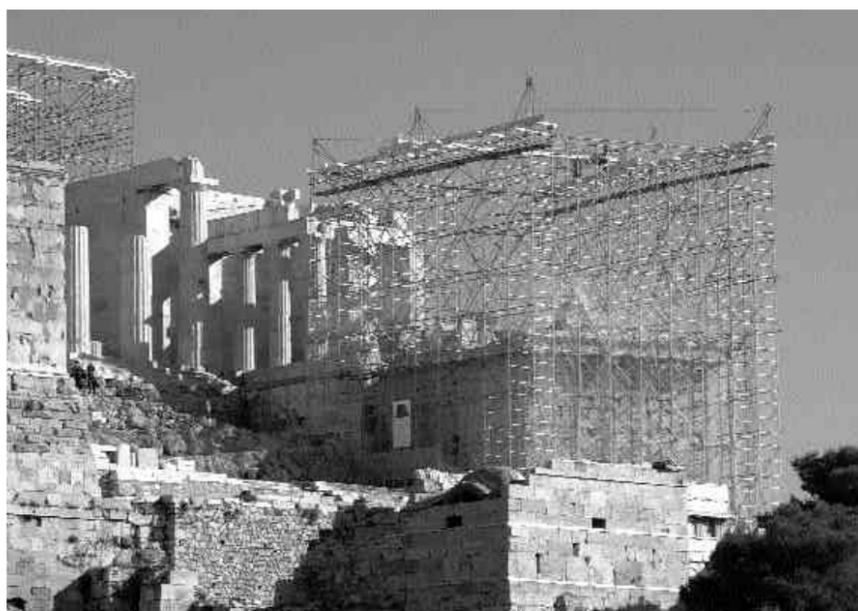


The central architrave of the east portico of the Propylaia during its dismantling. On the left the civil engineer in charge of the work V. Paschalidis, prematurely lost. Photo T. Tanoulas, 2003

ried out for some 7000 students (in part in cooperation with the Greek Parliament) and around 200 Museum kits were given or lent for presentation to over 23,000 other students. The seminars and the giving of educational material to teachers and professors, both Greek and foreign, proved to be particularly effective, as did a special conference of educators that took place in July. The museum kits and educational material were presented in exhibitions at Thessalonike, Delphi, Boston and Rome. In collaboration with the National Documentation Centre and the Acropolis Ephorate, a CD-ROM on the Parthenon frieze was published in two languages and sent to a great many schools, university and public libraries throughout Greece and abroad. The same CD-ROM has become available to the public with its

matographically. The photographic exhibition that made its first appearance in the Benaki Museum during the International Meeting of 2002 was shown last year in Thessalonike (Photographic Museum), in London (University College), in the framework of "Greece in Britain", and in Rome (in the exhibition hall of the Forum of Trajan).

There were other noteworthy activities during 2003 in the realm of information. Myrto Paraschi wrote the script and directed the film "The Sacred Rock", the first showing of which is expected soon. The work of the YSMA was presented at the International Congress of Classical Archaeology in Boston by Mrs. Papakonstantinou, Mrs. Vlassopoulou, and Mrs. Hatziaslani. The 3rd volume of the "Acropolis Restoration News" has been published by Mrs. Mallou-



The bastion of Athena Nike from NW. Photo S. Mavromattis, 2004



Reconstruction drawing of the temple of Athena Nike from NW after its restoration. Perspective drawing by K. Mamaloungas, photorealistic representation by P. Konstantopoulos, 2003

chou-Tufano as editor/producer. Lectures on the works were given by Mrs. Mallouchou-Tufano in Berne, Florence and Sassari in Sardinia. A Day-long meeting held in Rome and devoted to the subject of classical

anastelosis was addressed by Professors Korres and Pantermalis, Mrs. Touloupa and Mrs Mallouchou-Tufano. In addition to the Acropolis Restoration News and the pamphlets published by Mrs. Hatziaslani, we

should note also the publication of the full Proceedings of the Fifth International Meeting for the Restoration of the Acropolis Monuments, of 2002 (edited by Mrs Mallouchou-Tufano) and the Italian journal *Quaderni dell' ARCo*, with an excellent critical article on the restoration of the Acropolis and of monuments in Italy.

To end the report, thanks are due to the member-colleagues of the Committee for Conservation of the Acropolis Monuments and all our colleagues, who have already been mentioned, especially to the Director of the YSMA, Mrs. Ioannidou, the staff of the Acropolis Ephorate and the Director Mrs. Choremi. Great praise and thanks are due to the marble technicians and the assistant technical personnel who made superhuman efforts to accelerate the works during 2003 with impressive results. Finally, I express the appreciation of all the ESMA to our colleague Lina Mendoni, General Secretary of the Ministry of Culture in 2003, for her enthusiastic encouragement and continuous assistance in the administrative and economic matters of the works of the Acropolis.

Professor Emeritus Charalambos Bouras  
President of the ESMA

\* From a talk given at the Centre for the Acropolis Studies, 28 April, 2004.

\*\* For the work on the opisthonaos, see below, special article.

Approximately four years after its creation and three and one half years after two of its largest restoration programmes had been approved (the others had been approved a few months earlier) by the Central Archaeological Council, the Acropolis Restoration Service (YSMA) presents four completed sectional works on the Acropolis: the restoration of the opisthonaos and the pronaos of the Parthenon, the conservation and cleaning of the Parthenon west frieze in the laboratories of the Acropolis Museum and the restoration of the north wall and east portico of the Propylaea.

The administrative reorganisation that accompanied the founding of the YSMA made it possible to accelerate the Acropolis works. This allowed an increase in scholarly and technical personnel and direct control of the available funds by the Service. At the same time, inclusion of the Acropolis works in the 3rd Community Support Framework assured continuous funding. These adjustments provided the dynamics that led the Acropolis works to an impressive stage of development, the greatest they had ever had from their beginning in 1975 and even from the establishment of the Greek state. The country's largest programme of restoration today, from 2000 to 2004, comprised the restoration of three monuments. Three sectional programmes were carried out in the Parthenon (on the pronaos, the opisthonaos and the north side), one in the Propylaea and one in the temple of Athena Nike, with a total of 1000 architectural members being structurally restored. The progress of the works was accompanied by an impressive improvement of work-site equipment, with new mechanical arrangements for accelerating the work, designed and constructed by the Service. This all led to an acceleration never before achieved in the works and indeed quite apparent to anyone ascending the Acropolis. The specialised academic and technical personnel of 240 permanent and temporary employees work with enthusiasm, in the knowledge that they are taking part in the most important work of restoration in the country. We may note that the accelerated rhythm of the works has in no way decreased their internationally recognised quality. Quite otherwise. Numbered among the positive results must be the development of

the special technical knowledge needed for accelerating the work and also the specialisation of personnel in the restoration of classical monuments.

All interventions on the monuments are carried out after systematic studies that have been approved by the ESMA and by the Central Archaeological Council. Frequently in the course of the work, however, it becomes necessary to extend the work to parts of the monuments that were not included in the original programme. Some parts were found to have been damaged in the earlier interventions, but because there was so little documentation this was unknown. There were also areas of the monuments that had not been disturbed but had structural problems, which became evident when overlying



The east portico of the Propylaea from E. Photo K. Karanasos, July 2004

parts were removed. Likewise in the course of the works, programmed or not, new problems arose, theoretical, scientific and technical, that required immediate solutions. The result was that the engineers responsible had to compile a mass of supplementary or amended studies for the interventions. Among the problems confronted was the change in orientation of members being restored (for example the column capitals of the east portico of the Propylaea), reexamination of the resetting already approved for the dismantled members on the basis of new information acquired in the mean-

time (in the case of architrave blocks, frieze and crown blocks of the opisthonaos, column drums in the north side of the Parthenon and blocks of the cella of the temple of Athena Nike), the replacement of broken pieces of architectural members with new marble (for example the Parthenon opisthonaos architrave blocks), the structural calculations for the joining clamps of the members (on all the monuments), the new method for calculating bending members (its application to the architrave of the north side of the Parthenon and to the beams of the Propylaea ceilings), the investigation of materials (artificial stone for the copies of the Parthenon frieze, examination of the mechanical properties of marble).

The four programmes of anastelosis that

were completed in the spring of 2004 are the following:

Restoration of the opisthonaos of the Parthenon

The restoration of the opisthonaos of the Parthenon began in April 2001. The initial study was for the dismantling of the twenty-one architrave blocks of the opisthonaos, their structural restoration on the ground, and the resetting of all the blocks of the entablature that had been removed as well as the cast copies of the west frieze. While car-

rying out the work, it was found necessary to dismantle also the capital of the northwest anta and the capitals of columns 5 and 6 (from the north), so that these members could be restored and filled in with new marble on the ground. While dismantling the 5th column capital, an ancient empolion with its centring pin, in excellent condition, was discovered and taken in to the Acropolis Museum for conservation and protection. This was a particularly moving experience. Structural restoration was carried out not only on the dismantled members, but on quite a few of the underlying members as well (ar-



Cast copies of the west frieze in place on the Parthenon. Photo R. Christodouloupoulou, 2004

chitrave of the north wall, etc.). The upper drums of all the columns received grout injections. The architect, R. Christodouloupoulou, in addition to general supervision of the work, made a series of emended studies for the restoration based on the new information that was gradually emerging during the works (restoration of the interior architrave blocks of columns 4 and 5 and the courses of the frieze, study of the original arrangement of the crown blocks (thranoi) at the NW corner of the opisthonaos porch). Trial loads were tested under the supervision of the civil engineer E. Toubakari so as to estimate the condition of the columns in the opisthonaos. In addition to the calculations

for the titanium rods used for joining fragmentary members, Mrs. Toubakari carried out a study and tests that resulted in an improved mixture for the artificial stone used for the copies of the west frieze. In addition to general supervision, the technical advisor for the work, P. Kouphopoulos, made proposals for the solution of arising problems and drew up a proposal for the restoration of the mediaeval spiral stairway that includes a window providing a view of the capital of the SW anta of the Parthenon cella. By decision of the ESMA, the copies of the frieze were made with a sculptured face of artificial

stone 10 cm thick. The back (as a sort of frieze-backer) was made of marble taken from the frieze-backers that had been made for the intervention of 1898-1900. These had not been used in the present restoration since a new study showed the different measurements of these members in their original arrangement. It was decided to complete the work after the Olympic Games, with the resetting of the beams and interbeams of the ceiling of the west wing, in order to restore the inner crown blocks of the entablature of the west façade, which are preserved in very bad condition. All the mending, filling in and construction of members from new marble was carried out by the personnel of

the work. Outside workshops were entrusted with making a number of new members of the frieze course and the changing of stones of the frieze course belonging to the Balanos intervention on back blocks of the copies of the sculptured frieze.

The timely and successful completion of the programme of restoration of the opisthonaos is to a great extent due to group effort and enthusiasm with which all the team of marble technicians involved carried out the work.

#### Restoration of the pronaos of the Parthenon

The restoration of the Parthenon pronaos includes the anastelosis of its columns with extensive fillings in new marble, the dismantling of the SE (6th) column (restored earlier), the removal of its rusted clamps, their replacement with titanium and the resetting of the column drums in accordance with the study by M. Korres. Included in the works carried out are the filling in of the fourth and fifth drum of the 6th column with new marble in order to increase its stability, the resetting of the capitals of the 4th and 5th columns after being filled in with new marble and the structural restoration and resetting of four architrave blocks of the entablature. While the area of the SE anta of the cella side wall was being dismantled, it was found that the stones had been badly broken. This necessitated making eleven fillings of new marble in order to restore the total stability of the area. According to the approved study, the fillings of new marble in the column drums were to remain unfluted. In the course of the work, however, in order to improve the aesthetic result, forty-eight flutes were cut in the fillings of ancient fragmentary drums in cases where the fluting was preserved. Likewise for aesthetic reasons, an artificial patina was added to the fillings of new marble. General responsibility for the works of the pronaos restoration programme was in the hands of N. Toganidis, architect and head of the Parthenon Restoration Project. Structural restoration of the members was carried out under the direction of the civil engineer, M. Mentzini, (and for part of the time in collaboration with the civil engineer Ch. Kyparissi).

The members of the Parthenon work-site staff are the following:

Marble technicians: Ioannis Arbiliias (foreman of the team until 1998), Stelios Kaphourou (foreman of the team from 1998 on), Georgios Angelopoulos (group head), Franzesos Alexopoulos (group head, foreman of the opisthonaos restoration project), Iosif Armaos (group head), Georgios Voudouris (group head), Evangelos Karagiorgis (group head), Spyridon Kardamis (group head), Tzortzis Papparidis (group head), Demetrios Foskolos (group head), Spyridon Angelopoulos, Vasiliki Valsamou, Panayiotis Vamvakas, Vasilis Velonas, Demetrios Gavalas, Michalis Gasparis, Theodoros Grekas, Euphrosini Theou, Panayiotis Kalogeropoulos, Ilias Constantinopoulos, Eleni Mazaraki, Demetrios Mastoropoulos, Karolos Megoulas, Theocharis Dayakas, Konstantinos Xipolitidis, Giorgos Papamakris, Demetrios Papparidis, Iakovas Perakis, Tzortzis Skalkotas, Georgios Skalkotas, Ioannis Spyrou, Michail Tzanoulinos, Andreas Tzortzinakis, Giannis Fakazis, Georgios Philippousis, Lefteris Philippousis, Ignatios Chiou, Chrysostomos Chondroianis, Alexandros Chousakos, Athanasios Psiolopoulos.

Technicians: Gregoris Androutopoulos, Ioannis Vassalos, Nikolaos Voulgarakis, Evripidis Goussis, Ioannis Daphoulis, Chritos Demou, Vayios Kandakos, Georgios Samaras, Nikolaos Tsoupros.

Mould and cast technicians: Marta Adamopoulou, Sophia Gavriilidou, Michail Tzioumas, Demetrios Fanakidis.

Draftswoman: Andromache Kaphourou.

Crane operators: Georgios Gaitis, Athanasios Koloniaris, Georgios Koloniaris, Konstantinos Rachoutis.

Pantograph operator: Christos Bazakos.

Work-site administrator: Georgios Angelopoulos.

Conservators: Anastasia Panou (head), Demetrios Damianos, Christos Laskaridis, Georgios Marakis, Melina Naka.

Marble technicians-conservators: Elisavet Tzoumouli, Iakovos Kladios (group head), Konstantinos Demopoulos, Andreas Lyritis, Kostas Melas.

Technician-conservator: Evangelos Tzebelikos.

Conservation and cleaning of the west frieze of the Parthenon

Conservation and cleaning of the west frieze of the Parthenon, which was removed in

1993 and stored in the Acropolis Museum, began after exhaustive examination and tests that had one purpose only: to be certain we had an entirely safe method of protecting these masterpieces of classical sculpture. In 2000, conservation and consolidation of the

surface cracks with injections of lime and cement, stabilising disintegrating surfaces by spraying with a solution of lime hydroxide reinforced with calcium carbonate, joining small fragments and the removal of bronze nails and earlier plaster.



Details from the cleaning of blocks W.VIII (above) and W.VI (below) of the Parthenon west frieze. Photo S. Mavrommatis, 2004

frieze blocks was started. This work included joining the large fragments with white cement and titanium rods, filling in the cracks with hydraulic grout, fixing areas that had

The next stage in the programme, which included cleaning the frieze of soot deposits and black crust, involved research that was programmed by the YSMA with the schol-

arly supervision of the ESMA member, Professor Emeritus T. Skoulikidis. The goal of the research was to find the right method for retaining the historical layers of the surface with an excellent aesthetic result. After much research and testing in collaboration with the Technological and Research Foundation of Crete (FORTH-IESL), the method of cleaning found to be the most suitable was the Laser method, using two wave lengths, together with other methods, where deemed necessary, that have been tried and approved as entirely safe (microblasting method, the application of absorbive poultices, inversion of gypsum into calcite). After approval in April 2002 by the Central Archaeological Council of the relevant study, that was carried out by Evi Papakonstantinou, chemical engineer, and Katerina Frantzikinaki, conservator, the FORTH-IESL undertook to develop an original system that worked on two wave lengths (ultra-red and ultraviolet) that could be used individually or simultaneously on different levels of power. This is the system that was used by the YSMA conservators in collaboration with the FORTH-IESL physicists Drs. P. Pouli and T. Ditsa, for cleaning the west frieze.



The SW block of the Parthenon west frieze before (above) and after (below) cleaning. Photo S. Mavrommatis, 2002



Restoration of the north wall of the central building and east portico of the Propylaea. The programme of restoration of the north wall and the east portico of the central building of the Propylaea formed an extra intervention that had to be inserted into the approved general programme for the re-

storations of the ceilings of the monument. It was decided to carry out this work when, while dismantling the overlying members, it was discovered that the intervention of 1909-1917 had gone on to include a large part of the north wall of the central building of the monument, probably to correct the deformation resulting from the great 17th century explosion. This discovery, as well as the obviously bad condition of the iron clamps and dowels of the earlier intervention with resulting cracks in the members, made it necessary gradually to expand the dismantling to include a large part of the north wall.

A similar problem emerged with the dismantling of the column drums in the east portico, where the evidence at hand had indicated an earlier intervention only on the column capitals and eight drums of columns 4 and 5 from the north. In the end, the dismantling of members in the east portico was expanded beyond the six capitals and eight drums of the above columns, to include twenty-one additional drums (two from the 1st, six from the 3rd, two from the 4th, one from the 5th and five from the 6th). Between the eighth and the ninth drum of the 1st column, which had to be dismantled because of its exceedingly fragile condition, an ancient empolion in excellent condition was found. This was sent in to the Acropolis Museum for conservation and care. Painted in milto on the upper surfaces of the drums were ancient building inscriptions. Pittakis' saw, much loved by the public, was removed from the join between the fifth and sixth drum of the 6th column from the north where, as became evident, Balanos had preserved it in a suitable cutting.

The iron clamps and dowels from the previous intervention were removed from the drums and the fragments were joined with titanium rods. Fifty-five architectural members in all were dismantled from the north wall, among them the three architrave blocks above the wall, the corner triglyph, the metope and a block of the doorway wall. The dismantling was done using specially made lifting-tongs because frequently the blocks followed the same order as in the original arrangement, so that the dowels in the hidden surfaces were concealed. The dismantled blocks were structurally restored on

the ground and fragments were joined with titanium rods. Fillings of new marble were made only where necessary to restore the bedding surface of drums and blocks. Structural restoration followed conservation of the bedding surfaces and vertical surfaces that would be invisible after resetting. Resetting of the blocks was accompanied by replacing the iron clamps and dowels with others of titanium that were placed either in existing ancient sockets or in sockets made in the course of the previous intervention. In setting the wall blocks an effort was made to offset, as much as possible, the geometrical deformations of the parts of the monument that had not been dismantled. Resetting of the columns was completed with the repositioning of the column capitals. The column capitals, which had been turned 90° or 180° degrees in Balanos' intervention, so as to have the full surface visible from the east, were now reset precisely in their original position.

The architect T. Tanoulas is head of the entire Propylaea project, in direct collaboration with the architect K. Karanasos. Structural restoration of the members and general structural work was in the hands of the civil engineers V. Paschalidis (+2003) and V. Papavasileiou under the supervision of the undersigned. The staff of the Propylaea Project are the following:

Marble Technicians: Panagiotis Adamopoulos (foreman), Georgios Rigos (group head), Georgios Vidos (group head), Ioannis Vidalis (group head), Georgios Desypris (group head), Modestos Bon (group head), Aristeidis Kladios (group head), Nikos Papadopoulos, Michalis Maravelias, Georgios Alexandridis, Nikos Alertas, Ioannis Apergis, Georgios Vasdekis, Rovertos Vidalis, Petros Georgopoulos, Georgios Kagiorgis, Iakovos Kladios, Daniel Kosma, Nikos Kritikos, Maria Mouzoura, Iosif Palamaris, Nikos Piperis, Athanasios Sismanis, Evangelos Skaris, Markos Toufeklis, Christina Christopoulou, Matthieu François.

Technicians: Christodoulos Amorgianos, Vasilis Anagnostou, Charalambos Damigos, Christos Barbas, Ioannis Moraitis, Panagiotis Toufeklis, Georgios Chaldaios, Konstantinos Chrysaphoudis.



The block W.VII of the Parthenon west frieze after its cleaning. Photo S. Mavrommatis, 2004

Mould and Cast Technicians: Paraskevi Vlachouli

Conservators: Kaiti Babanika (head), Eleni Georgiou, Fotis Katevas, Sofia Papida, Eirini Frangiadaki.

Marble technicians-conservators: Leonidas Michalacos, Elias Doulias

Technicians-conservators: Niovi Georgiou, Elisavet Drakopoulou, Fotini Anna Karageorgi, Georgios Kyrkos

Successful and timely completion of the YSMA's first programmes of restoration are due, in large measure, to the group spirit and collaborative focus that developed in all the work-sites. The first programmes to be

completed have raised the self-confidence of the personnel of the works, who can now see the fruition of their efforts. Their enthusiasm for the effort necessary to complete the remaining works has increased.

Maria Ioannidou  
Civil Engineer  
Director of the YSMA

Three whole years have passed since the start of the second period of restoration of the Parthenon opisthonaos and today we are in a position to hand over the completed work. The purpose of the programme was to restore both structure and surface of all the members of the porch, either dismantled or in situ, and to reset them on the monument where they would be joined by means of new titanium dowels and clamps.

Dismantled during the first period of work (September 1990-July 1993), were the architectural members of ceiling of the west wing, of the crown and frieze together with the interior frieze courses (diazomata). This was followed by a period of slow but steady work on the structural restoration of the members of the dismantled courses (1993-1996). At the same time research and preparation was under way with mechanical equipment for grouting the columns of the porch, following the decision to consolidate them in situ. This was applied during 1997-1998 to all the drums of the four northernmost columns, except for the uppermost.

The second period of work started at the beginning of 2001 with the dismantling of the north frieze courses and filling stones that had remained on the monument. The intervention was expanded to include the northernmost blocks of the west wall where it meets the north side of the porch.

### Dismantling of the architrave blocks

Dismantling of the architrave courses was launched in April 2001, beginning with the exterior member of the south side of the porch and continuing with the easternmost of the north side. The interior architrave blocks of the SW corner came out broken into many pieces. This was due to the rusting and subsequent expansion of the metal clamps and dowels; also to the damage of the marble mass of the architrave blocks in the ancient fire, the fragments of which were held together by cement plaster and dowels, resting on the walls of the mediaeval stairway. By the end of the year the dismantling process had reached the NW corner and the three northernmost architrave blocks of the west side, made by Balanos. The dismantling of the entire architrave had been completed by January 2002 with the removal of the three northernmost. Dismantling of each triad of architrave blocks began with the east-

ernmost member, which was moved toward the interior of the porch with lifting-tongs so that lifting straps could be placed around them for lowering by means of the crane. Whatever architrave blocks had been broken into smaller fragments were first protected with metal beams and straps so that they would not come while suspended.

### Structural restoration of the architrave blocks

While the dismantling was in process, the members that had been lowered to the ground were structurally restored and filled in with new marble. Restoration of the members began with the NW corner, which was the first to be reset on the monument. The members that have been taken down and especially the architrave blocks are divided into



Resetting an architrave block in the opisthonaos of the Parthenon. Photo S. Mavrommatis, 2003

four categories according to the kind of wear they show and the type of structural restoration needed:

- Those broken into two or three large pieces that have been joined with lengthwise reinforcements.
- Those broken into many smaller fragments which were joined with bolts to make larger pieces.
- Members with breaks at the edge of the main mass, which were mended with bolts.
- Members with blind breaks into which interior reinforcements have been introduced. The upper part of the face of all the west ar-

chitrave blocks, wherever there were gaps from breakage or fillings from earlier interventions was filled in with new marble. Taenia, regulae and guttae have been sculptured with this new marble.

### Restoration of the columns

After the dismantling of all the architrave blocks and the discovery that the two middle columns were badly damaged, it was decided to make load tests in order to find out the structural strength of the columns. Tests were run in 2002 on the four northernmost columns. Initiated this same year was the restoration of the upper parts of these same columns with grouting injections in the upper drums and the restoration of their capitals.

In cases where the relation between the members and the underlying drums had not

been disturbed, great care was taken to intervene as little as possible. The surface reinforcements of the Balanos intervention on all capitals were replaced with new ones of titanium, set on the interior of the members and thus invisible. Other elements of the earlier intervention, such as stretchers or the metal beam of the 3rd column, that successfully withstood the structural problems of the area, were simply replaced by exact copies in titanium. Similarly, the new marble inserted during the Balanos intervention was used again and joined with a titanium rod to the ancient member.

In the course of taking down the capitals of the 5th and 6th columns and the upper drum of the 5th, which was in need of extensive restoration, the ancient wooden empolia together with their pins still in them were found preserved in excellent condition. Even the dust from the wedging of the wooden elements was preserved, with the marks and traces of turning.

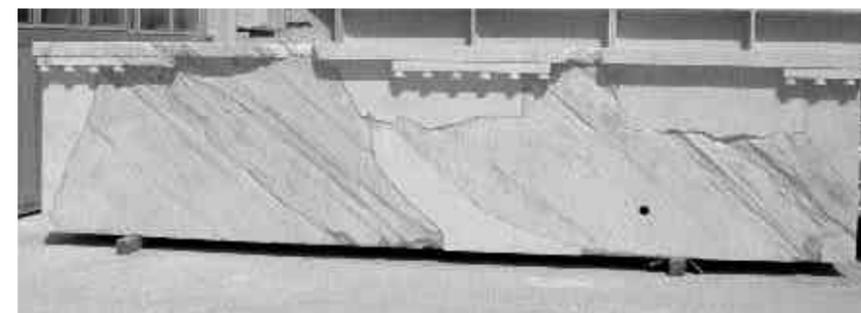
### Resetting of the architrave blocks

At the end of 2002 it became possible to continue resetting of the architrave blocks, which had started with the north side of the porch. In order to reset the blocks of the north architrave it proved necessary to restore the crown capital of the north anta of the west wall. This meant the removal, cleaning and joining of a large part of it, as well as

the removal of the northernmost architrave block, the north corner of which was in a bad state of fragmentation.

In repositioning the architrave course in 2003, the problem arose as to whether or not to use preserved ancient material in two of the architrave blocks built by Balanos. It was decided finally not to incorporate the ancient marble for reasons of construction and because the ancient material would not have been visible even if incorporated. As for the other four architrave blocks of the earlier intervention that were on the monument, these were replaced by the corresponding ancient blocks that derived from joining identified fragments.

Although the procedure of resetting the architrave blocks was safer and faster than the



Architrave block of the Parthenon opisthonaos restored. Photo R. Christodouloupoulou, 2003



Resetting the marble filling of the Balanos restoration on the capital of the first (from N) column of the Parthenon opisthonaos. Photo R. Christodouloupoulou, 2003

process of dismantling them, decisions were needed concerning the new geometry of the entablature that emerged, given the existing deformation of the columns and the curve that they should have followed. Emphasis was then placed on the ancient construction marks on the upper surface of the column capitals and on the exact correspondence of the anathyrosis bands on the lower part of the inner surfaces of the members, so that from below the joins between the members in each intercolumniation would be as little visible as possible.

The architrave blocks of the inner corners, for example those of the SW corner, proved to be crucial for the position of the rest, which had to share without divergence in their vertical join, yet accord with the existing deformation. The epistyle blocks took their final position after many trial settings.

### Resetting of the column capitals

During the present year the two southernmost column capitals were reset. In addition to the joining of the ancient fragments of these capitals, new marble was used to replace the additions of Balanos and their scorched inner corner, in order to restore the autonomous bedding of the overlying architrave blocks. Among the additions in new marble was an abacus and simplified echinos, without annulets.

### Joining of members

For joining the architrave blocks and all the other members as well, wherever the ancient sockets were preserved in good condition, they were used for the insertion of dowels and clamps, made in the same form as the ancient ones, but on the basis of new calculations. In other cases, sockets that had been made near them by Balanos (as with the crown blocks) were used or ancient sockets in which the usual clamps were strengthened at the head by bolts. In exceptional cases, such as the joining of the outer SW architrave blocks, a special type of clamp was designed and made.

### Resetting of the sculptured frieze and inner frieze blocks (diazomata)

By April 2002 resetting of the frieze courses and backers was already under way, first at the join with the west wall and then on the north side and NW interior corner.

After a new study it emerged that the inner frieze (diazoma) of the west end numbered four fewer blocks than had been placed earlier by Balanos and that it was greater in length, the two central members equalling the length of the architrave blocks. The construction of these members was entrusted to an outside workshop (VENUS Company). The question of the form of the copies of the members of the west frieze was also re-examined and a bipartite construction was decided upon. Behind the cast members of the sculptured frieze it was decided to place the six blocks of the inner frieze (diazoma) from the Balanos intervention, reworked, and in addition another nine of new marble, likewise given to the above-mentioned outside workshop because of the pressure of time. Additional frieze backers of new marble were set at the NW corner and in the middle of the west end.

#### Resetting of the crown blocks (thranoi)

The crown blocks too were reset in a similar way. These had been given additional surface conservation and they were filled where necessary with new marble especially in places broken around the dowels. Crucial for placing the members proved to be the positioning of the corner members, which was settled after a whole series of trials. In addition, all the joints between the members, horizontal and vertical, were sealed with elastic sheet and plaster, to protect them from rain water. The new marble in all courses was given a patina.

The wall beam was placed on the north crown blocks, after repeated trial settings. The corresponding beam at the south, following an existing crack, was split into two parts, which were then joined with lengthwise rods on the interior.

#### Mediaeval spiral staircase

Restoration of the superstructure of the mediaeval staircase was a separate task but it had to be done before the interior SW architrave blocks could be set. Likewise a prerequisite was the construction of a reinforced concrete beam between the spiral stairway and the south inner architrave.

To conclude this brief presentation of the restoration works of the opisthonaos carried out during the past three years, we add some

quantitative information about this second phase of the works:

- 36 members were taken down: 2 complete column capitals, two fragments of column capitals, 1 drum, 22 architrave blocks, 3 inner frieze [diazoma] blocks, 5 backers and 1 crown block.

- 40 members were structurally restored (6 column capitals, 2 anta capitals, 2 drums, 21 architrave blocks, 5 inner frieze [diazoma] blocks, 1 backer, 2 crown blocks [thranoi] and 1 wall beam).

- 105 members received surface conservation or grout injections (all the above-mentioned members plus 7 drums, 1 architrave block, 6



General view of the cast copies of the west frieze after being set in place on the Parthenon. Photo R. Christodouloupoulou, 2004

inner frieze [diazoma] blocks, 9 backers, 35 crown blocks, 1 wall beam and 6 ceiling blocks).

- 40 new members were made - apart from 3 wall blocks of the staircase (4 inner frieze blocks [diazomata], 2 backers, 15 back parts for the sculptured frieze, 19 cast copies of the sculptured frieze).

- 133 members were reset (2 complete column capitals, 2 fragments of column capitals, 1 drum, 21 architrave blocks, 15 inner frieze [diazoma] blocks, 12 backers, 15 back parts for the sculptured frieze, 19 cast members of the sculptured frieze, 38 crown blocks, 2 wall beams and 6 ceiling blocks).

A good many of the members were taken down broken into fragments, such as the south interior architrave, which comprised 30 large pieces and just as many small fragments.

The variety of questions encountered, simple or composite, usual or emerging for the first time, technical or theoretical, that had to be resolved by the scholarly and technical staff, endowed the staff members with expertise. They would be able successfully to carry out a similar sort of work in the future. The most significant gain is undoubtedly the achievement of a specific goal through the shaping

of many different views, personalities and abilities and the awareness, by the technicians of today, of the full knowledge and matchless quality of work of their ancient colleagues, whom they always consider as ancestors.

Rosalia Christodouloupoulou  
Architect of the Parthenon  
Restoration Project

In charge of the Opisthonaos Programme

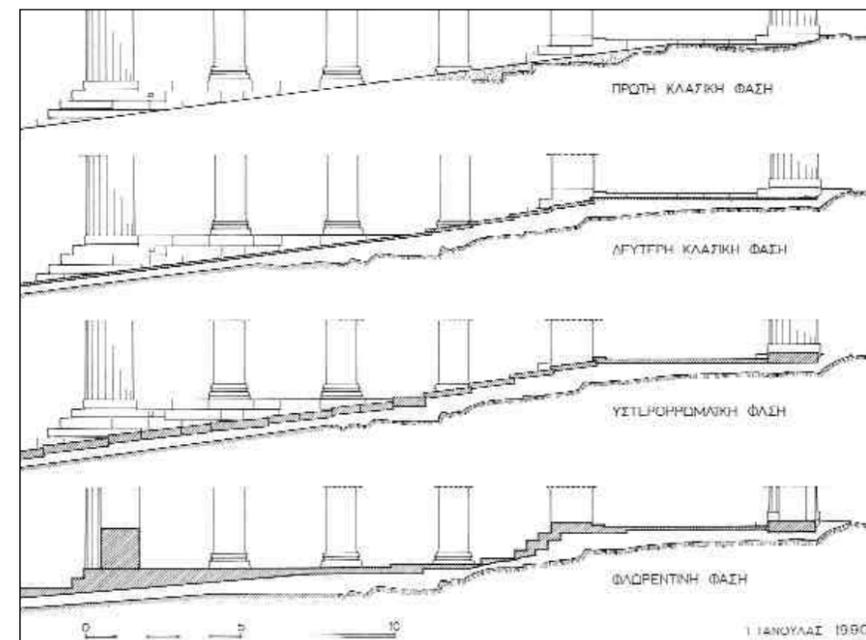
The central building of the Propylaea is rectangular in plan, with two similar hexastyle Doric pedimental façades at the east and west. A cross wall divides it into two spaces: the east portico and the west hall. The middle intercolumniation of each façade is wider than the others in order to allow for the passage of ramp for the ascent of animals in the Panathenaic procession. The way runs through the central building of the Propylaea, along the axis passing through the great central portal of the cross-wall. This wall has four other doorways as well, arranged symmetrically on each side of the central one, with a gradual reduction of width toward the sides. For this reason the cross-wall is known as the doorway-wall. The doorway-wall thus divides the central building of the Propylaea into two areas: to the east is the east portico, to the west the spacious west hall. To support the marble coffered ceiling of the west hall, interior supports were needed, which took the form of six Ionic columns arranged symmetrically in pairs on the two sides of the central ramp. The part of the ramp that passes through the Propylaea and the area defined by the surmounting and adjacent building elements—stylobate, columns, superstructure—are known conventionally as the central passageway of the Propylaea.

The west end of the central passageway was revealed for the first time in 1805, when the stones of the mediaeval terrace in front of the central building were removed in order to use them as building material for a bastion south of the Beulé Gate. In the second decade of the 19th century, Cockerel began to remove the mediaeval floor of the central passageway, a work that was finished after the Greek state was freed and the Acropolis given over to archaeological research.

In 1849 Pittakis built a stairway that led from the base of the Athena Nike bastion to the south end of the west façade of the Propylaea, with the result that the entrance to the Acropolis was not exclusively through the central passageway. Even so, from the time of their discovery, the remains of floors and drains in the central passageway were exposed to the ravages of weather and activities of man, so that they suffered significant damage. In 1956/7, Stikas replaced Pittakis' stairway with today's zig-zag ramp, which still leads to the west section of the central passage of the Propylaea, bringing again the

main stream of visitors to that entrance route. Subsequently a wooden floor was constructed that covered practically all of the length of the passageway, except for the part that is west of the westernmost pair of Ionic columns. In 1978 this wooden floor was removed and replaced by a new one that covered also the western end, following the study made by Travlos and under my supervision. In 1988 the entire wooden construction was replaced by a new one, which was the same on the outside but supported by an improved wooden infrastructure, following the study of Ioannidou.

Full photographic and graphic documenta-



The central passageway of the Propylaea. Reconstruction drawing in section showing the four phases of the flooring and the drain. Studied and drawn by T. Tanoulas, 1990

tion was made during this intervention. A full description and commentary on the facts that emerged are given in my book *The Propylaea of the Athenian Acropolis from A.D. 267 to 1458* (in Greek), published in 1977 in Athens. Study of the evidence showed that there were four building phases in the central passage.

a. First classical phase: the new evidence verified the reconstruction of the first classical phase proposed by Stevens in 1942. Stevens discerned two phases: in the first, the floor was the rock itself, evened by cutting and with its natural hollows filled in; in this phase a drain through the Propylaea to carry off

rainwater was thought to be unnecessary because the pre-Mnesikleian drain cut into the rock was considered sufficient for that purpose.

b. Second classical phase: construction of a drain along the length of the central passage. The drain was cut in the east portico, for almost its entire length, entirely in the natural rock and it was covered with slabs that rested in cuttings in the rim of the drain. This means that, at least in that place, there was no slab paving on the adjacent rock surface and that the rock either side of the drain remained as it had been during the previous phase. In its continuation westward, the bot-

tom of the drain cut into the natural rock is preserved as far as the eastern pair of Ionic columns. In its continuation westward, however, the drain was evidently entirely built because the slope of the rock increases suddenly. It is clear that the drain was covered by slabs for its full course. It is uncertain, however, whether the floor on each side was slab-paved.

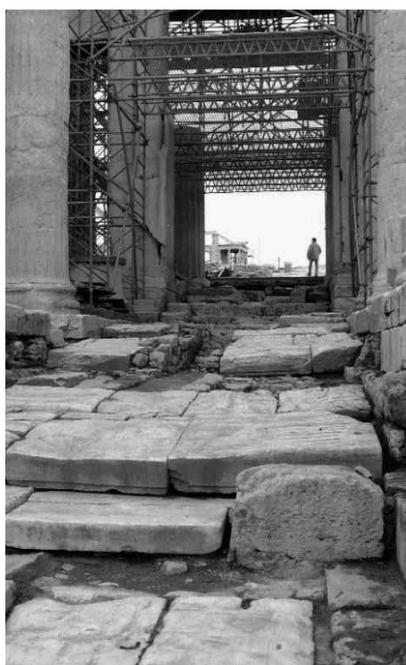
c. Roman phase: the floor of the passage in the east portico was paved with marble slabs set in plaster. As seen in the drawings of Bohn, along the length of the east side of the central portal a low step was made, similar to the step made in classical times that runs

along the east side of the doorway wall, on both sides of the sections. The entire west section of the floor was paved with big slabs forming large inclined steps. This arrangement should be contemporary with the Roman marble stairway built probably in the 1st century A.C.

The Roman floor of the passageway must have been repaired during the Post-Herulian period, after A.D. 267. This is evident from the fact that the floor slabs preserved are of second use and all come from the crepis of a buildings of classical times. This practice suggests the Post-Herulian period rather than the 1st century A.C.

d. The entrance to the Acropolis was by way of the central passageway of the Propylaia down to the beginning of the 15th century. The duke of Athens, Antonio I Acciaiuoli, however, used the west hall of the central building of the Propylaia as a reception hall. This meant that the passage through the Propylaia was given up. The central passage was filled up in the interest of making a horizontal floor paved with marble slabs. This pavement was destroyed, as noted above, by Cockerel.

The implementation of the Study for the Restoration of the Superstructure of the Propylaia required extension of the work over the entire width of the building and, of course, in the area of the central passageway.



The central passageway of the Propylaia from the W. Visible in the lower part is the Post-Herulian marble pavement with the drain in the centre. Above, the grating for the protection of visitors. Photo T. Souvlakis, February 2004

A necessary precondition for beginning the work was, of course, the safety of the visitors during the course of the work. It was decided to prepare a study for a structure that could

hold building material or objects that might fall from the area of the building's superstructure, while carrying out the work, causing an accident to visitors who might be walking along the central passageway. It was determined that from the aesthetic standpoint this construction must be as discrete in form as possible so as not to attract the attention of visitors. It also had to allow the visitors, in so far as possible, a clear view of both the monument and the works being carried out.

Finally a ceiling was constructed comprising an inflexible wire grating of galvanised iron. The grating was supported in a network of galvanised horizontal bars, which rested in turn on the scaffolding of the bridge cranes. The width of the framework of the grating is adjustable so that each time the entire space between the towers of the scaffolding is covered, thus assuring greater protection. A fine meshed wire net was spread over the grating so as to be able to catch any small pieces of building material. The total construction is inflexible enough to be able to work not only as a ceiling over the passage but also as a floor for personnel working at that height.

Today, the central passageway of the Propylaia is the most frequented part of the entire Acropolis. Indeed, anyone wishing to enter the Acropolis, either for work or as simple visitor, must pass through here. Moreover, through this central passageway go objects or material that do not need to be moved by the lifting crane that is at the southeast corner of the Acropolis.

Thus, it is quite natural that the wooden floor covering the ground of the central passage is so much used that the material is worn and both floor and substructure are deformed. These problems were faced ad hoc, by replacing floor boards and substructure. Despite that, the floor always has some unforeseen anomalies so that those using it may trip or even fall.

There are, however, other problems connected with the properties of wood: much vibration and loud noise, insecure fixing of the posts holding the ropes for separating the monument and work-site from visitors, damage to adjacent and underlying ancient members from rubbing by parts of the flexible wooden construction.

For these reasons I proposed some years ago that the wooden flooring be replaced by a new one to be supported on an inflexible substructure, with a pavement of ready-made reinforced cement slabs. With such a construction all the problems presented by the wooden floor would be avoided. It would provide a stable, inflexible surface of reinforced cement of a consistency and colour to blend with the monument, the natural rock of the Acropolis and the form of the pathways laid in 1978 under the direction of Travlos and with my supervision.

Time ran out for putting in a stable construction in the central passageway in 2004, for the increased problems of the wooden floor and the expectation of an increase in the number of visitors during the Olympic Games in August, made it necessary to improve the flooring of the central passageway. While all agreed on the necessity for a stable substructure, the prevailing opinion was that the flooring itself should be of wood. In the solution that was finally applied, I tried to accommodate things so as to lessen as far as possible the dangers stemming from the physical properties of wood.

Removal of the old wooden substructure began on the 6th of February and took two days. This was followed by cleaning underlying antiquities for new systematic photography, which was carried out on the 16th of February by the YSMA photographer Telemachos Souvlakis. The old evidence of 1978 was also examined.

The extraordinarily bad weather that followed delayed completion of the work, which was finally open for use on the 25th of March. The substructure that was made is rigid and in the future, if deemed necessary, it can serve as the foundation for another type of floor. It consists of three galvanised steel beams H-sectioned, HEB 100, that run the length of the central passageway. These beams are supported by low posts of reinforced concrete. Between the concrete and the underlying antiquities is a strong plastic sheet that assures the avoidance of adherence and makes it easy to remove the posts if ever needed. A frame of galvanised steel grating has been bolted to the beams and on this the wooden floor boards are laid and fastened with screws.

The grating was set in order to make certain that the construction was inflexible and so



The central passageway of the Propylaia from the W with the wooden floor and the stainless steel railings in place. Photo T. Tanoulas, March 2004

that the planks are drained and ventilated from all sides. Furthermore, bolts were used as a rule for joining. This makes it easy to disassemble the parts of the floor and its substructure and to remove it wherever needed. Finally, three parallel railings of stainless steel tubing were set in place so that the two cur-

rents of visitors that meet in the Propylaia, those coming and those going, do not get mixed up with each other.

Tasos Tanoulas  
Architect Ph.D.

In charge of the Propylaia restoration project



The central passageway of the Propylaia from the W. Visible is the rigid substructure of the new wooden floor, consisting of low posts of reinforced concrete supporting galvanised steel beams. Photo T. Tanoulas, March 2004



The central passageway of the Propylaia on March 25, 2004. Photo K. Mamaloungas

The temple of Athena Nike, designed by the architect Kallikrates, was built between 427 and 424 B.C. It is Ionic, tetrastyle, amphiprostyle, with unique peculiarities of design. It replaced an earlier poros shrine, dedicated to the same divinity, which was discovered in 1936 beneath the classical temple, on a bastion of the Mycenaean fortification of the Acropolis. In their present form, both classical temple and the bastion on which it is founded comprise the result of a series of restorations that began in 1835 and were completed in 1935-1940 by N. Balanos, followed by A. Orlandos.

The damage and structural problems of the monument, in both foundation and superstructure, even after the last anastelosis, demanded a new restoration, which was started in 2000 on the basis of a study by the architect Demosthenes Giraud.

The architectural members of the temple were dismantled down to and including the stones of the second step of the krepis on the south side, by means of the bridge crane that had been installed in the temple in 1997 for dismantling the members of the frieze, cornice and sima. Subsequently, in the course of the intervention it became apparent that the bridge crane would have to be replaced by a new hoisting system; this because it was necessary to dismantle the entire krepis of the temple, on which the bridge crane had been set, and to remove the underlying rusted constructions of the Balanos intervention (corroded metal in the slab of reinforced concrete beneath the cella of the temple, the support system at its NE corner with an equally corroded pair of I-section steel beams and the steel column beneath the north anta). Moreover, in addition to the above, the existing overhead bridge crane could not be used to reposition the western columns of the temple, because of its limited travel course to the west end along the East-West axis.

The goal was to interfere with the aesthetic appearance of the site as little as possible. Solutions were therefore sought for new hoisting systems for dismantling and resetting the architectural members and for the construction of the necessary flooring on the west side of the temple for the safe access of both the staff of the work-site and the visitors themselves. Among the solutions considered was also the possibility of installing a construc-

tion crane at the base of the north side of the Athena Nike bastion. This plan was ruled out because there is no access near enough for a telescopic road crane, necessary for transporting and installing the parts of the construction crane to be assembled. The installation of a new bridge overhead crane on scaffolding was therefore chosen as the most suitable solution. The beams bearing the crane

rails are supported on a metal framework that surrounds the monument. Its north and south columns are based on blocks of reinforced concrete at the north and west base of the Nike bastion. The other columns of the south and east sides are supported on a flooring of reinforced concrete that extends south and east of the temple.

In the course of the works involved in re-

constructing the monument, the slab of reinforced concrete from the Balanos restoration beneath the cella was removed using the CRASHER-non-disturbing method. The solid metal column in the basement of the temple that supported the north anta of the temple was also removed. The non-reinforced concrete in contact with the entire length and height of the north wall of the earlier poros temple in the basement was demolished, since it was the source of salts that infiltrated and damaged the poros. After all the above were removed, the programme for restoring the monument continued with the redesigning of the support structure for the temple.

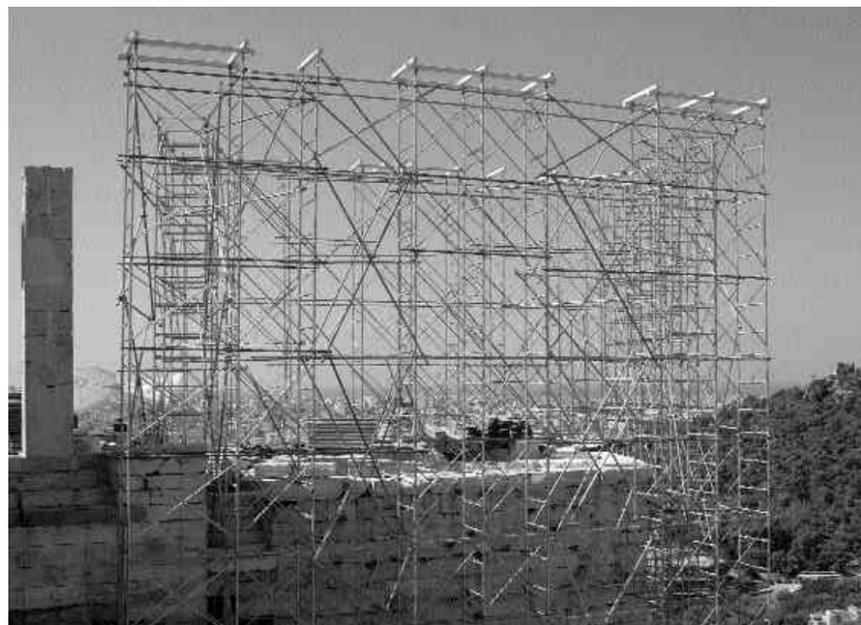
The surface that had to be covered by the new support structure was an irregular polygon in shape with an area of some 15 sq. m. A repeat of Balanos' solution, namely a slab of reinforced concrete with metal supports along the east and north sides of the temple, was ruled out because of the difficulties involved in making reinforced concrete on the site. A special problem was the mixing of the concrete, because it was not feasible to bring a cement mixer into the area; moreover the necessary wooden form for the slab would inevitably leave concrete residue on the adjacent marble architectural members of the temple. After this, in consultation with the ESMA member in charge, Professor K. Syrmakezis, it was decided that a steel structure was the best possible solution.

The solution chosen was to make a metal grid of stainless steel grade 316 L, extending along the two axes (N-S and E-W) with massive H-section beams of 20 cm and 35 cm height. The actual distance between consecutive beams of the grid was designed so that the joints of the overlying slabs of the temple floor, as also the axial load of its north pillar, would coincide with the axis of the upper flange of the beams. The longitudinal beams, on the north-south axis, cover an opening 1.64 m wide in the west section and an opening 3.15 m wide in the east. The cross beams, on the east-west axis, are joined by stainless steel bolts to the lengthwise beams. It is planned to cover the grid openings by stainless steel sheets, that will be welded to the upper flange of the beams, so that the welding seams will be invisible to the visitor to the basement space of the temple. This solution also shields the underlying

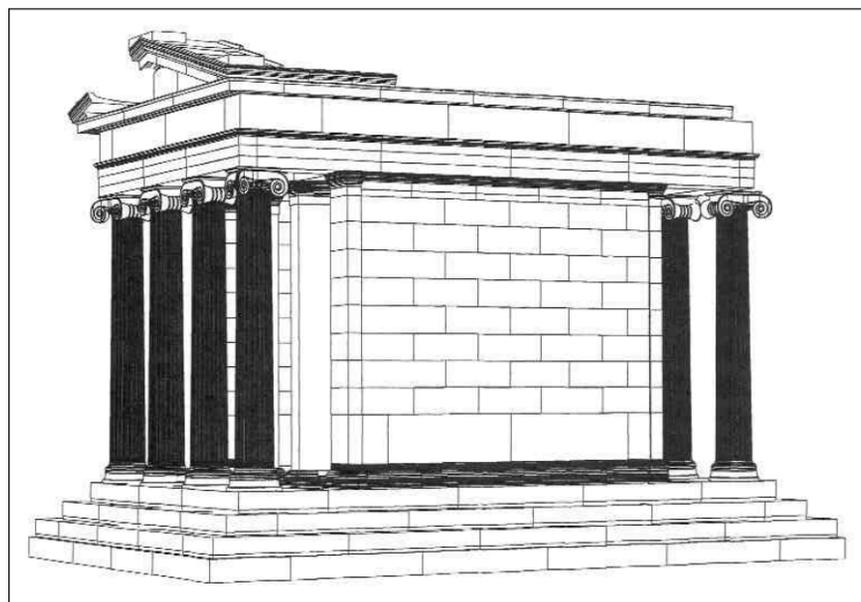
poros shrine from rainwater that might seep through the joints of the floor slabs of the temple.

The metal grid is a construction made especially for the anastelosis of the temple of Athena Nike. The material comes from Germany in the form of sheets. These are cut and welded together to form the sections. The grid is made by a workshop specialising

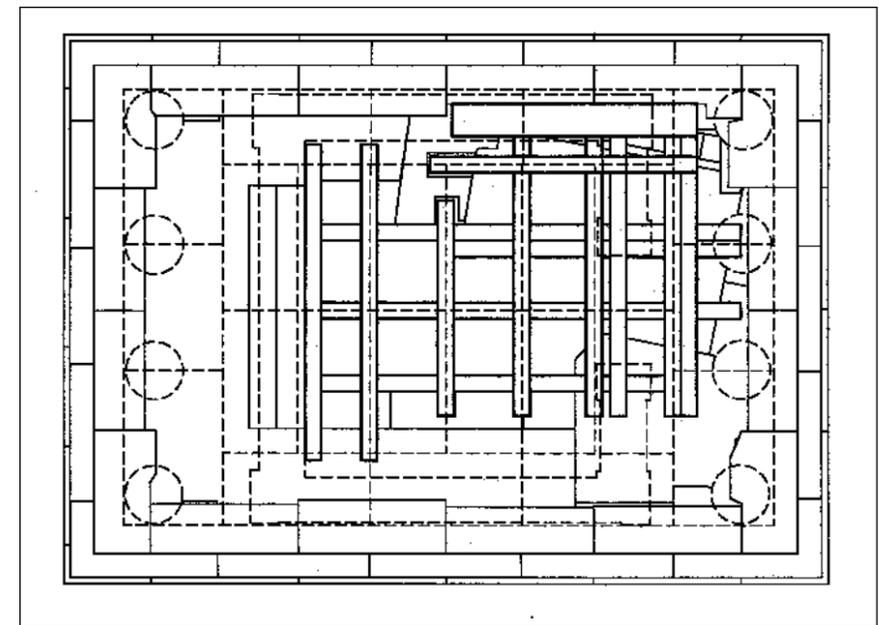
in stainless steel construction. The beams are supported both by the non-reinforced concrete that had been used in the Balanos restoration as a filling material between the layers of the krepis and euthynteria, the outer line of which is preserved with the ancient stones, and on a new wall construction of reinforced concrete that was built in the north-west corner of the basement space. In the



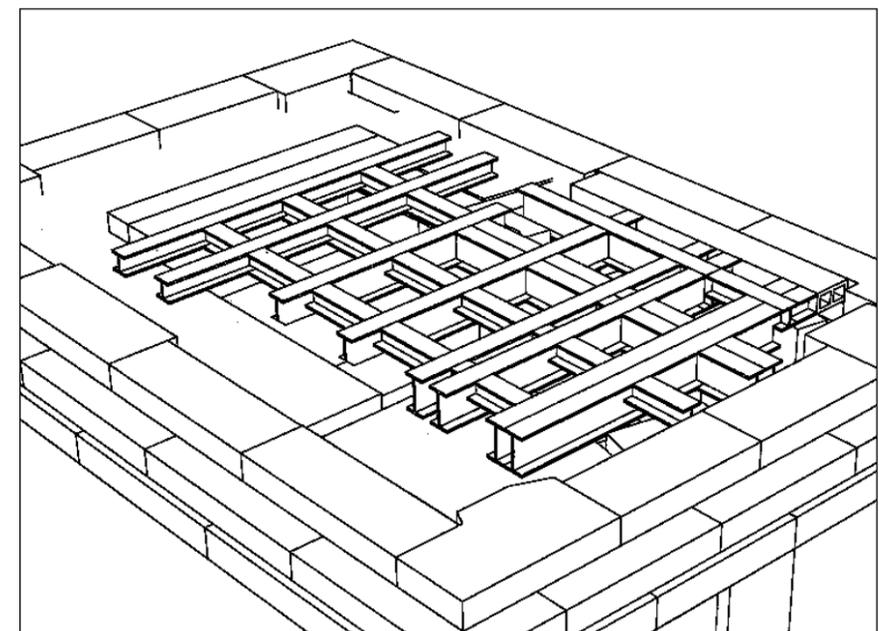
The bastion of Athena Nike from the N during the installation of the new hoisting system. Photo S. Mavrommatis, 2003



Reconstruction drawing of the temple of Athena Nike from NE after its restoration. Perspective drawing by K. Mamaloungas, 2003



The stainless steel grid beneath the temple of Athena Nike viewed from above. Drawn by K. Mamaloungas, 2003



Perspective drawing of the stainless steel grid beneath the temple of Athena Nike. K. Mamaloungas, 2003



Preparation for placing the stainless steel grid in the bastion of Athena Nike. Inside the bastion are visible the relics of the classical poros naiskos. Photo K. Maloungas, 2004

available space between the north and north-east parts of the poros shrine and the corresponding sides of Balanos' basement constructions, two vertical columns of stainless steel (grade 316 L) were set as supports, one for the northeast corner of the temple, the other for the northeastern column of the temple and the northeastern block of the euthyteria.

Other special problems arose in the course of the structural restoration of the temple. Of significant importance was the degree of damage to the architectural members of the monument, the full extent of which could not be recognised as long as they were in place. Another problem was finding the marble fragments of the krepis that had been incorporated by Balanos in the non-reinforced concrete used to fill in the first and second steps of the krepis and the step of the euthyteria. Removal of these fragments was particularly difficult and time consuming. In the process of dismantling 319 architectural members of the temple it became evident that all the architectural members had

suffered heavy damage except for the columns. The damage resulted from the rusting of the clamps and dowels placed during the Balanos restoration, not only between members, but also to join fragments of the same stone. Likewise damaging was the extensive use of cement plaster. Because of the extent of damage to the ancient material, it became evident during the restoration of the architectural members that a great number of fragments that belonged together had to be joined and many new marble fillings had to be made for missing ancient fragments (a greater number than foreseen). To cope with these problems and to accelerate the work, the work-site was reinforced with an increase in personnel while two mechanical copying machines (pantographs) and a marble cutting machine were installed in special workshops in the area of the lifting crane below the SE corner of the Acropolis and on the rock E of the stoa of the Sanctuary of Artemis Brauronia respectively.

The temple of Athena Nike is the smallest monument of the Acropolis being restored,

simultaneously with the Parthenon and the Propylaia. The problems of the temple, both known and unforeseen, that arose during the process of dismantling, showed that the architectural members, small by comparison with the other monuments on the rock, require an equal amount of time for repair, structural restoration and conservation. Furthermore, the unique position of the temple yielded many surprises in planning the infrastructure for carrying out its restoration. While we tried not to burden the site with the size, shape and position of our constructions, most of the time the monument itself was the guide to the solutions chosen.

Dionyssia Michalopoulou  
Civil Engineer

In charge of the restoration of the temple of Athena Nike

Educational programmes of the YSMA in the framework of the Olympic Games

The Department of Information and Education of the Acropolis Restoration Service (YSMA) in collaboration with the 1st Ephorate of Prehistoric and Classical Antiquities, is participating in the parallel events in celebration of the Olympic Games in Athens. Its interest has been focussed on the Parthenon Frieze and the Festival of the Panathenaia.

Thus, during the school year of 2003-2004, our Service:

1. Issued the CD-ROM entitled "The Parthenon Frieze", in collaboration with the National Documentation Centre (EKT) of the National Research Foundation, in both Greek and English. In order to make the Frieze accessible to the general public, in June 2003 the CD-ROM about the Frieze was entered the Internet at the address [www.ekt.gr.parthenonfrieze](http://www.ekt.gr.parthenonfrieze).

2. As a necessary supplement to the CD-ROM, an educational game of assembling the Parthenon Frieze was produced. It consists of a photographic representation of the four sides of the Frieze at a scale of 1: 60. With the help of the game the student arranges the Panathenaic procession and tries to imagine it on the temple.

3. The book, "ΤΩΝ ΑΘΗΝΗΘΕΝ ΑΘΛΩΝ" (Prizes from Athens. The Panathenaic Games) was published in Greek and in English. The Panathenaic festival, the athletic and artistic contests and the great procession to the Acropolis are described through ancient vases and sculpture. The book is accompanied by a card game of making a Panathenaic amphora and a poster with a full-size amphora.

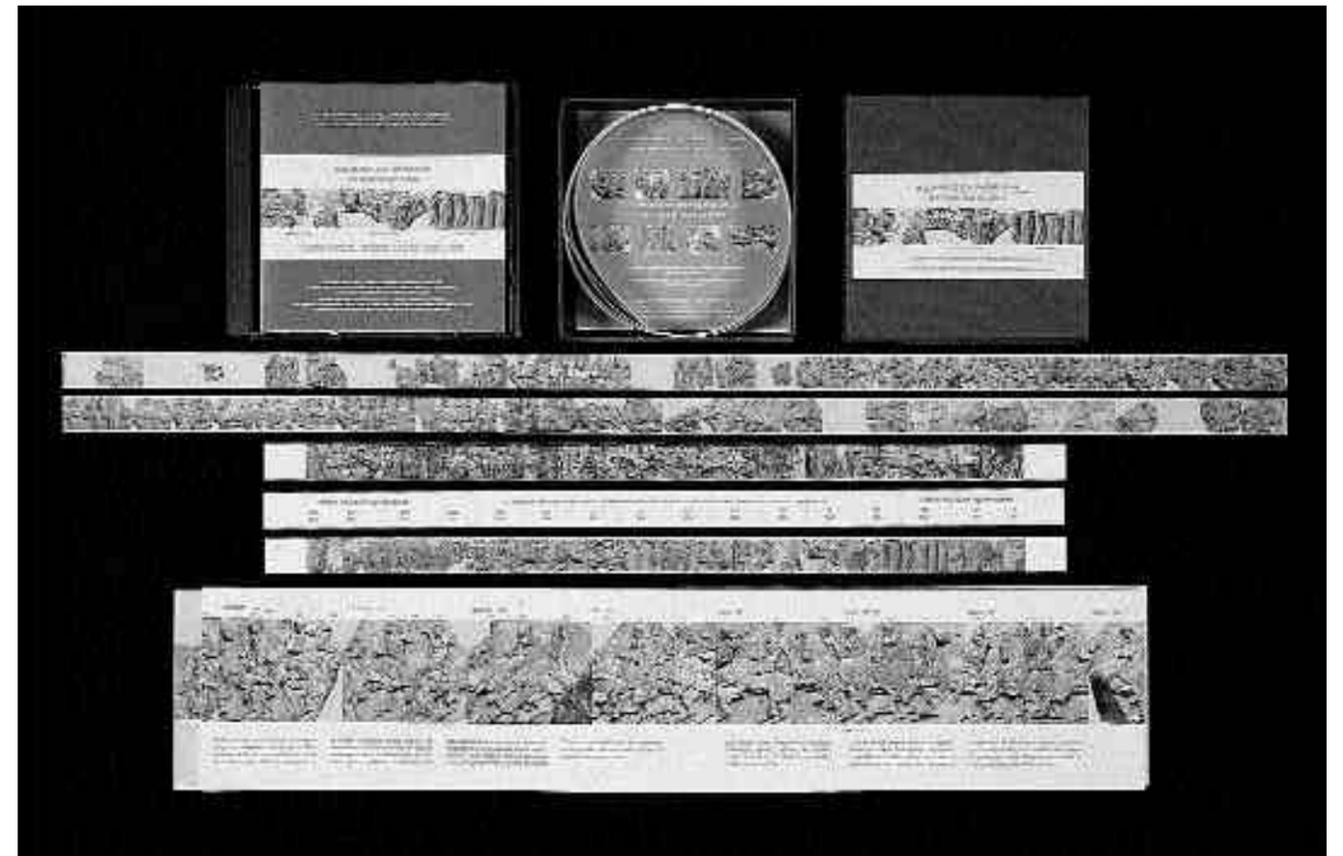
4. In collaboration with the EKT, the CD-ROM "The Parthenon Frieze" with the corresponding game of assembling it and the book "ΤΩΝ ΑΘΗΝΗΘΕΝ ΑΘΛΩΝ" were donated to 500 School Libraries, 150

Municipal Libraries and 92 Public Libraries throughout Greece.

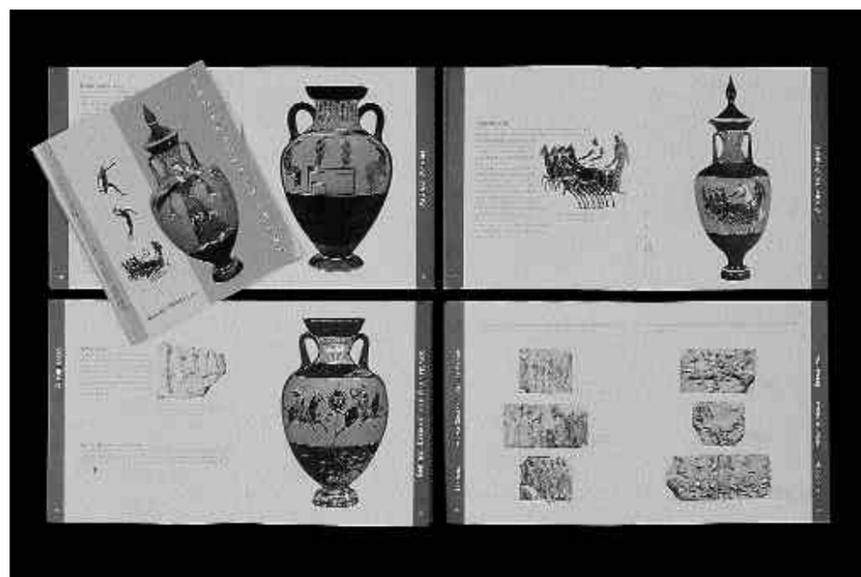
5. The educational museum kit, "The Parthenon Frieze" was given to 95 schools and libraries in Greece and to 50 institutions abroad, to large Museums and to Universities from America to Japan.

6. Given the opportunity of the Olympic Games, a special programme was organised on the subject "The Panathenaia seen through the Parthenon Frieze" It is based on the museum kit "The Parthenon Frieze" accompanied by the CD-ROM and the new booklets. The museum kit and the CD-ROM have been described in The Acropolis Restoration News, Issue 3, July 2003.

The programme was launched with a seminar held on Saturday, 1 November, 2003, at the Centre for the Acropolis Studies. Taking part were 152 educators from 93 institutions from 18 provinces of Greece. The seminar was in the form of an extensive educational



Educational game, photographic reconstruction and the CD-ROM "The Parthenon Frieze"



Educational book "Τὸν Ἀοηνηθὲν Ἀθλοῶν" (Prizes from Athens. The Panathenaic Games)

programme, through which the educators took part with their imagination in the festival of the ancient Panathenaia, in the artistic and athletic contests and in the great procession to the Acropolis.

First the educators were informed generally about the programme. Then they were divided into groups that took part in turn in eight workshops, using the museum kits of the Department. The educators had the opportunity to have a lesson in topography through the museum kit "Let's Go to the Acropolis", to understand the architecture of the temples using the museum kit "An Ancient Temple", to work with marble using the museum kit "The Art of Stone Sculpture", to observe the Parthenon Frieze, to study its composition on a model of the temple, to get information from the CD-ROM through the museum kit "The Parthenon Frieze", to observe the various types of ancient dress illustrated in the Panathenaic procession aided by the museum kit "Ancient Greek Dress", to recognise the musical instruments carried by the participants in the procession with the help of the museum kit "Ancient Greek Musical Instruments", to observe the divinities on the East Frieze aided by the museum kit "The Twelve Olympian Gods", to learn about the contests that took place in the Panathenaia through the book "Τὸν Ἀοηνηθὲν Ἀθλοῶν" and through literature, mythology and modern works of art. The purpose of the work-

shops was for all who participated to understand how, with specially designed educational material for alternative teaching, such as the museum kits, that schools can borrow, they can approach in a more interesting and original way subjects related to the monuments, especially the Acropolis and in particular the Parthenon Frieze.

All the schools that participated in the seminar received as a gift for their library the museum kit "The Parthenon Frieze". During the school year our Service worked continuously on this project, through the network of the schools, providing assistance and further educational material at all stages of the programme. Special emphasis was placed on the big programme of the YSMA for the West Frieze: its dismantling, conservation and cleaning and at the same time the preparation of the copies that have already replaced the originals on the monument.

The programme was brought to completion on May 15, 2004, with the 8th Symposium "Educators and Programmes on the Acropolis" (the previous symposiums ones were held in 1991, 1993, 1994, 1996, 1998, 2001, 2003). The special theme this year was "The Panathenaia through the Parthenon Frieze" at which the work of the schools and libraries that had participated in the programme was presented.

Eighteen presentations were made by 22

speakers, representing 15 Schools, the Educational District of the Evros in Northern Greece, the Tellogleion Museum of Thessalonike and the Ministry of Culture and Education of Cyprus. All the schools were State schools. Nine presentations were made by provincial schools, from Gastouni, Evros, Thessalonike, Karpenisi, Lamia, Larisa, Nafpaktos, Pyrgos and Chios. Five schools were primary schools and eleven were upper schools (gymnasium/lykeion).

The programme of presentations began with the work of the 5th Gymnasium of Palaio Phaleron where the students travelled to Italy, gave a theatrical presentation and also held an exhibition of painting and collage, many of which had been worked on the programme Photoshop. At the Peiramatikion Gymnasium of the Ionideion School, the students began with puzzle games and studied cult activities, seeking modern Greek parallels in today's festivals and the panegyria. Educational activities concerned with cultural heritage and the Museums, are well served by the programme "Versatile Zone" of the Hellenic Ministry of Education. The next presentation was by the School Councillor of Primary Education of the Province of Evros. She explained analytically how they had used the museum kit "The Parthenon Frieze" in in-school Training for the "Versatile Zone". Following this were reports from three schools that had used it in the specific programme. Two are Primary schools, the 29th Primary School of Athens and the First Primary School of Karpenisi. Here the students worked on the Panathenaia and wrote their own stories and poems. The students of the 5th Gymnasium of Lamia made their own CD-ROM with Panathenaic amphorae and a book about the Acropolis and its monuments. The valuable experience of the Tellogleion Foundation for the Arts where the exhibition "The New Acropolis Museum" was held, was the subject of the next presentation. Some 4,000 students of all ages from 70 schools of the Province of Thessalonike learned about the Parthenon and its sculpture by using the museum kit. From Thessalonike the museum kit travelled to Cyprus. Eight museum kits on the Frieze were donated to the Cypriote Ministry of Education and Culture. The use of the museum kit and its application in Cyprus with its festivals of Aphrodite was presented by the

Department of Museum Instruction in Primary Education of the Ministry. The next report was by the 2nd Lykeion of Nafpaktos. Three schools collaborated in presenting M. Korres' exhibition, "From Mt. Pentelicon to the Parthenon" and they organised a big symposium on the sculpture of the Parthenon. The next reports showed how the Frieze was approached by a full-day school, the 145th Primary School of Athens, with students from all the classes collaborating in a musical event in honour of Pallas Athena, how the Gymnasium of Acharnon, an intercultural school, used a questionnaire about the Frieze to involve the citizens of the area, how the Gymnasium-Lykeion of Volissos, in the island of Chios, in their mathematics lesson applied the Pythagorean theorem to the Frieze and made a table-game, how the students of the 2nd Primary School of Acharnai in their English class posed and translated the sort of questions that a foreigner might ask about the Acropolis. Since the museum kits are really

another form of a book, they belong in a library. Thus, the kits were donated to institutions with libraries, as well as to library networks. Five papers presented the excellent use of the kits in school libraries: in the 6th Lykeion of Aigaleo the students produced a little athletic newspaper of classical times; in the 3rd Lykeion of Pyrgos in the lesson of local history the Parthenon Frieze was compared with the Frieze of the Temple of Apollo Epikoureios; in the 1st Gymnasium of Laurion, the emphasis was on a large exhibition with 25 posters in which the students presented the Panathenaic Festival and contemporary athletic games through 150 digital photographs; in the 7th Lykeion of Larisa, the museum kit travelled to 9 schools of the province and the students used it with emphasis on narration and description and, finally, in the Lykeion of Gastouni in Elis, where myth and the art of modelling in clay were emphasised. The students collaborated in a modern torch race, the goal being the ar-

rival of the Olympian flame. The above eighteen presentations give a representative example of the various works done by the students in the framework of the programme. In June, all the schools that participated in the programme handed in to our office full reports of their work.

Through the above activities we estimate that this year more than 15,000 students worked with the museum kit and over 30,000 students with the CD-ROM of the Parthenon Frieze.

Cornelia Hadziaslani  
Architect-Archaeologist, Head  
Irinī Kaīmara, Assimina Leonti  
Archaeologists  
Information and Education Office  
of the YSMA



The Parthenon frieze as seen by a student of the 5th Gymnasium, Palaio Phaleron, Athens

New publications on the Acropolis restoration

The Proceedings of the 5th International Meeting on the Acropolis

The Proceedings of the 5th International Meeting for the Restoration of the Acropolis Monuments, held in Athens, October 2002, were published at the beginning of 2004. The volume has 638 pages, with 294 photographs. It presents the 39 reports given at the conference (in the form of articles, with illustrations and bibliography), the debates that took place in the course of the conference and an appendix giving the views of many of the participants, particularly foreigners, about the Acropolis works. The volume was edited by Fani Mallouchou-Tufano.

Quaderni dell' ARCo 2003

The yearly journal of the Associazione per il Restauro del Costruito (ARCo) (Society for Building Restoration) was published in 2003 and was dedicated entirely to the works of restoration on the Acropolis. This was a successful Greek-Italian collaboration resulting in the publication of a elegant, bilingual –Italian and English– volume of 247 pages with 224 photographs and plans. It greatly contributes to the information, internationally, of archaeologists, engineers, conservators and others who may be interested. The following contributed to the Quaderni dell' ARCo, 2003 with articles on the works in general and on the various sectional works: Ch. Bouras, M. Ioannidou, E. Papakonstantinou, C. Vlassopoulou, C. Hatziaslani, F. Mallouchou-Tufano, S. Oikonomopoulos and Y. Alexopoulos. The interventions on the four great monuments of the rock, the Erechtheion, Parthenon, Propylaea and temple of Athena Nike, were discussed in detail by M.C. Barone, M. G. Filetici, E. Pallotino, F. Giovanetti and S. Gizzi with corresponding comments by F. Mallouchou-Tufano, M. Korres, T. Tanoulas and D. Giraud. The volume also contains opinions and comments on various parts of the works by M. L. Conforto, S. D'Agostino, J. Jokilehto, E. La Rocca and H. Schmidt and independent views on a variety of restoration topics by C. d'Amato, S. Gizzi, M. L. Conforto, M. G. Filetici and C. Baggio. Editors of the volume for the Italian side were M. G. Filetici, F. Giovanetti and E.

Pallotino; for the Greek side F. Mallouchou-Tufano.

The photographs of the Acropolis restoration works travel ...

The photographic exhibition of Socrates Mavrommatis on the restoration of the Acropolis Monuments continued to be shown with great success in 2003-2004. The exhibition was presented in London at the North Cloisters of University College of London, from October 15 to December 12, 2003.



The Proceedings of the 5th International Meeting for the Restoration of the Acropolis Monuments



The volume of Quaderni dell' ARCo, 2003

Presentation of the exhibition was organized by the YSMA in collaboration with the Ministry of Culture, Directorate of Museums and Exhibitions, and was among the events of "Greece in Britain" of the Greek Embassy in London.

From November 14, 2003 to March 6, 2004, the exhibition was presented in Rome, in the splendid galleries of the so-called Agora of Trajan (Mercati Traianei), which since 2000 has been restored and is used for tem-

porary exhibitions. The ultimate goal is still to make it into the Museum of the adjacent Fori Imperiali. The photographic exhibition of the works of the Acropolis, organized by the YSMA in collaboration with the Ephorate of Cultural Resources of the Municipality of Rome, coincided with the proposals announced precisely for the organization of the above museum.

It is planned to show Mr. Mavrommatis' exhibition during the summer of 2004 in the Cultural Centre of Kyme in Euboia, and in the autumn of 2004 the exhibition will begin a tour in universities of the United States.

Symposium on the restoration of ancient monuments in Rome

In the framework of the above exhibition, the Ephorate of Cultural Resources of the Municipality of Rome organized a One-day Symposium on December 4, 2003, in the Capitoline Museums, on the subject of "Comparison of methodology for resetting and reconstructing architectural parts of ancient buildings" (Ricomposizione e ricostruzione dei partiti architettonici degli edifici antichi: metodologie a confronto). The symposium was opened with an address by the Ephor of Cultural Resources of the Municipality of Rome, Professor E. La Rocca. It was followed by Dr. F. Mallouchou-Tufano with a talk on the similarities and differences between the interventions on ancient monuments in Athens and in Rome, the President of the Organisation for the Building of the New Acropolis Museum, Professor D. Pandermalis, on the way in which the architectural sculpture of the Parthenon is to be exhibited in the New Acropolis Museum and Professor M. Korres on the methods and principles of restoring building parts of marble. Taking part in the symposium also was Dr. M. Maischberger with a talk on the history and new perspectives of the architectural reconstitution of the Pergamon Museum of Berlin, 70 years after its creation. The archaeologist in charge of the Mercati Traianei, L. Ungaro, presented the programme for the Museum of the Fori Imperiali, the architect P. Martellotti spoke on museographical architectural reconstructions in connection with traditional techniques and modern technology. Presentation of the Quaderni dell' ARCo, 2003 and extensive discussion followed the talks.



The photographic exhibition of the Acropolis restoration works by S. Mavrommatis at UCL, London



The photographic exhibition of the Acropolis restoration works by S. Mavrommatis at the Mercati Traianei, Rome



The “Sacred Rock”: a new cinema film about the Acropolis  
On 2 May 2004, a new film on the Acropolis was shown at the “Attikon” movie theatre. The title is “The Sacred Rock” and it

was produced by the YSMA and Myrto Paraschi. In the course of an hour, the film shows in lively fashion through the eyes, inquiries and everyday activity of a young man, the Acropolis monuments, their his-

torical vicissitudes, their restoration, their special relation to contemporary Greece. Iokasti Zourari and Jo Papanikolaou have parts in the film. The script writer and director of the film is M. Paraschi, photography by V. Kapsouros, scholarly editing by F. Mallouchou-Tufano.

Fani Mallouchou-Tufano  
Archaeologist Ph.D.  
Head of the Documentation Office  
of the YSMA



On 23 March, 2004, the new political leadership of the Ministry of Culture, the Deputy Minister Mr. Petros Tatoulis and the General Secretary Mr. Christos Zachopoulos, visited the Acropolis. Messrs. Tatoulis and Zachopoulos inspected the restoration works on the Acropolis and were informed by the President of the ESMA Prof. Emeritus Ch. Bouras, the Director of the YSMA Mrs. M. Ioannidou and the Ephor of the Acropolis Mrs. A. Choremi

Two events (or memories) have bound me to the east façade of the Parthenon. The first has to do with surface conservation. Until the late 80's, there had been no intervention on the surface of the monuments. Our chemists, under the guidance of Professor Theodore Skoulikidis were devoting themselves to relevant research at the National Technical University of Athens. No one in the Directorate of Conservation of the Ministry of Culture had worked on the conservation of stone. There was not a single lesson on this subject in the Technical Schools.

The spring of 1986, as Head of the Acropolis Ephorate, I took the initiative of asking Yianna Dogani, at that time working on the conservation of pottery in the archaeological storeroom of the Roman Agora and who, I knew, could use the English bibliography, to record the damage to the surface of the east façade of the Parthenon. Despite some objections by members of the ESMA, Yianna climbed up the scaffolding and recorded her observations on paper. Later, in collaboration with the chemical engineer, Nikos Beloyannis, she took samples of the polychrome layers from different places of the



The inscription ΧΣΑΝΘ on a backer of the east pediment of the Parthenon. Photo S. Mavromatis, 1989

entablature for analysis. These were, I believe, the first steps taken in the actual conservation of the surface of the Acropolis monuments that has now become one of the most important sections of the YSMA, under the leadership of the chemical engineer Evi Papakonstantinou.

My second experience was more personal. After the metopes were removed from the monument, I was obliged to go up myself

for research in situ on the entablature. Beneath two architrave blocks, inscriptions had already been discovered: capital letters painted in red miltos, which had greatly surprised us. One read ΧΣΑΝΘ, the other ΘΠΑΚΣ(?) ... The names of artisans? ...

In the space between the metopes and their backers research was needed that resembled an excavation because there was so much undisturbed earth that had collected there. A number of pottery sherds were found there and many little bird bones, verified for us by a specialised ornithologist. Were the birds trapped there or did they make it their refuge when they realized the end was near? Or had the men who built the Parthenon left there the remains of their snack? Be that as it may, they cannot have been left by the inhabitants of the houses during the Turkish domination, because the roofs of those houses stood only as high as the 8th column drum, as is clear from traces on the patina of the marble.

Evi Touloupa  
Ephor Emerita of the Acropolis  
Member of the ESMA



The Parthenon from the NE. Visible on the columns are traces left by the roofs of adjacent medieval houses. Photo P. Sébah, 1872-1875, ESMA Archives



Details of the cleaning of blocks W.III (above left), W. IX (above right) and W.X (below) of the Parthenon west frieze. Photo S. Mavrommatis, 2004



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 Acropolis Restoration Project and this publication are co-funded by the European Union



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, 2004