

# ACROPOLIS RESTORATION

THE CCAM INTERVENTIONS



EDITED BY RICHARD ECONOMAKIS

ACADEMY EDITIONS • LONDON

# EDUCATIONAL PROGRAMMES ON THE ATHENIAN ACROPOLIS

*Cornelia Hadziaslani*

**O**n September 26th 1987, exactly three hundred years after the destruction of the Parthenon by troops under the command of the Venetian general Morosini, the Acropolis Ephorate inaugurated a new museum, the Centre for the Acropolis Studies. It was housed in the old building in the Makriyiannis lot (adjacent to Makriyiannis Street on the south slope of the Acropolis), which was constructed in 1836 by Bavarian army engineer W Weiler to serve as a military hospital. The building is one of the oldest and most important examples of Neoclassicism in Greece. In 1930 the Athenian police were stationed here; when an adequate site was being sought in 1975 for the new Acropolis Museum, Prime Minister Constantine Karamanlis arranged for the removal of the civil force. In 1985 the building started being repaired in order to shelter copies of the Parthenon sculptures (known as the 'Elgin Marbles'). Two years later, under the former Director of the Acropolis Ephorate Dr Evi Touloupa (who was responsible for investing the Centre with its present character and functions), the building was officially opened by the Minister of Culture Melina Mercouri. Under the present Director Dr P Calligas the Centre is the seat of an expanding archaeological Ephorate bustling with activities that centre on archaeological and architectural studies.

In 1989 the international competition for the new Acropolis Museum was held at the centre. Some 438 entries were submitted to an international jury. In 1990, the prizewinning study confirmed the Makriyiannis lot as the eventual building site and the Centre for the Acropolis Studies was officially incorporated as part of the complex.

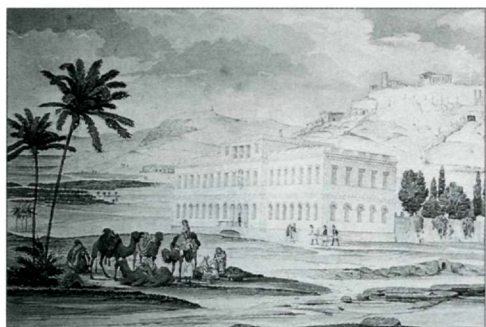
The Centre acts as the Educational Centre of the First Ephorate of Prehistoric and Classical Antiquities in Greece and is used as a preparative stepping stone for visitors of all ages to the Acropolis. It thus represents an area of communication with the wider public interested in archaeological, historical, architectural and artistic subjects related to the Acropolis. Furthermore, the Centre caters to the promotion of studies focusing on the Acropolis and its monuments.

The building consists of three floors and a basement, each of which is being used for specific functions and displays. I will briefly describe the exhibition areas. The ground floor is dedicated to the Parthenon sculptures; casts of the metopes, the frieze and the pediments, all of which were carefully studied and arranged by the archaeologist A Mantis, give the visitor a rare, comprehensive view of the sculptures that includes all those which are presently housed in museums around the world.

The two celebrated pedimental compositions of the Parthenon, each of which is twenty-five metres long and 3.2 metres tall and illustrate, respectively, the birth of Athena (east front) and the competition between Athena and Poseidon for the patronage of Athens (west front), are exhibited in the two main exhibition halls flanking the entrance, together with the fifteen surviving metopes from the south elevation of the temple. Reconstructions of other metopes are currently being prepared for exhibition. Copies of the surviving 110 metres (out of an original total of 160) of the Parthenon Frieze illustrating the Panathenaic Procession are affixed to

*OPPOSITE, FROM ABOVE L TO R: Demonstration of ancient marble cutting techniques; touring the site; measuring a mutule with architect Tasos Tanoulas; learning to cut and finish a marble block; modelling demonstration by Greek sculptor Stelios Triantis at the Centre for the Acropolis Studies; learning how to cast in plaster*





*FROM ABOVE: The old Makriyiannis building, now the centre for the Acropolis Studies, seen from the south; watercolour of the building just after its construction*

the walls of the entrance and the two adjacent corridors.

These casts have their own history. In 1846 the British government donated a series of copies of the famed 'Elgin Marbles' to the newly independent Greek state. Since the fifties the cast collection has continued to be enriched with new matrices and casts, most of which are now on display. These acquisitions are hugely important because they provide possibilities of comparative and highly detailed research. The matrices are especially valuable as they bear details that the originals may have lost today. The Centre also functions as a school for students of casting and conservation techniques. The Casts and Matrices Archive is housed in the basement to facilitate work.

The second floor of the Centre is taken up mostly by the exhibition 'Acropolis: Conservation, Restoration and Research'. Its purpose is to make known to the general public the work accomplished by the Committee for the Conservation of the Acropolis Monuments (CCAM) since 1975, which comprises both the preliminary studies for restoring the monuments and carrying out the programme and the application of new techniques and methods. Included in the exhibited material are numerous old photographs showing some of the works executed in the nineteenth and early twentieth century which gave the Acropolis its present form, now familiar to millions of people around the world.

A special presentation on the same floor focuses on the project for the consolidation of the Acropolis rock slopes; works in progress on the main ancient temples, that is the Erechtheion (which was the first restoration project to be completed by the Committee), the Parthenon, the Propylaea, and the temple of Athena Nike; ways and means of documenting both the studies and progress of operations, presented through a series of drawings and models; the project to document the architectural members scattered around the Acropolis, showing how they are inventoried, classified and reassigned to buildings; and finally the related physiochemical and static problems, which are the main causes of deterioration in the buildings. The ultimate aim of the exhibit is to project a comprehensive view of the recent research carried out on the archaeology, architecture, and history of the buildings, research that has yielded a veritable harvest of new data and enormously enriched our knowledge of these unique structures. The exhibition currently on show is already the third in a continuing series, as every two to three years it is updated with the latest material arising from the progress of the ongoing restoration works.

The Centre also houses a collection of superb models and drawings that were put together mostly by the architect Manolis Korres in order to better inform the visitor on the historical evolution of the Acropolis and the construction of ancient Greek temples. Five models representing the state of the Acropolis rock during successive historical periods (Neolithic, Archaic, Classical, and Medieval), a model of the city of Athens during the third century AD, models of the Erechtheion, the temple of Athena Nike and the theatre of Dionysos during the classical period, all constitute a very important part of the exhibition, as do several drawings of the Parthenon as a church, a mosque, and during and after the great explosion of 1687. The special exhibition 'From Pentelikon to the Parthenon' illustrates, through reconstruction drawings and models, the phases a piece of marble underwent from the moment it was chosen at the quarry to the moment of its final finishing on the surface of the temple itself. Models of ancient building devices and samples of tools and their distinctive traces, the various fastenings that were used, etc, complete this exhibit.

The exhibition 'Terracotta Tiles from the Athenian Acropolis', studied and put together by the archaeologist C Vlassopoulou, provides the visitor with general information on the construction of ancient roofs, both terracotta and marble, and a



complete analysis of ancient terracotta tiles focusing on their composition and decoration, and the uses of polychromy in antiquity.

On this same floor there is an auditorium (seating 250 people), in which all the education services are initiated. Students are taken regularly to the Acropolis itself, but the Centre is always considered as the first step before any visit to the archaeological site. The philosophy of the Education Department and the programmes that have been developed are laid out below.

The Education Department of the Acropolis Ephorate was created in 1987 (the year of the inauguration of the Centre for the Acropolis Studies) by the First Ephorate of Prehistoric and Classical Antiquities (the Acropolis Ephorate) in collaboration with the Committee for the Conservation of the Acropolis Monuments, and is based on the belief that:

1 An intimate knowledge of the art and history of the Acropolis monuments and a familiarity with the essence of Classical architecture should be the prerogative of all people today and not that of a select circle of experts.

2 An understanding and appreciation of the Athenian Acropolis is part of the curriculum in the majority of schools worldwide and forms, of course, a substantial part of the history taught in schools throughout Greece; virtually every Greek school sends its students on a visit to the Acropolis. In fact, one to two thousand pupils visit the Acropolis every day in autumn and spring. The Ephorate is dedicated to the continual improvement of conditions for visiting groups of students.

3 The first step towards ensuring the respect and continuing conservation of a monument is through education; related curricula should begin at an even earlier age than what is currently required in schools.

These principles constitute the framework within which the Education Department is seeking to effect positive changes in educational practices today. The aim is to provide people of different ages and different levels of education with the opportunity to enhance their understanding of Classical civilisation. Lectures, film projections, and guided tours by Acropolis personnel are organised on a monthly basis. Two 'Acropolis Laboratories' are presented every year: events are coordinated so as to interest all groups, be they scholars, adult education seminar participants, or school students. The active support of the 'Friends of the Acropolis' is a valuable contribution.

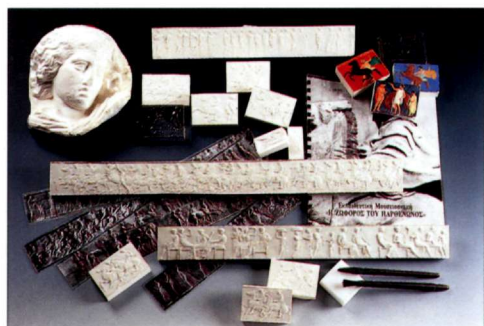
Due to the large number of people interested in the Acropolis, priority is given to school pupils and teachers, whatever their field. Education services are currently offered through special seminars for teachers and their pupils, 'open days' organised on the Acropolis (drawing around eight hundred pupils per day) or at the Centre (where one to five hundred pupils participate daily, depending on the subject), school visits (between thirty and forty pupils normally attending, ie around one class per visit), and the loan of pedagogic material. All these services, it should be mentioned, are provided free of charge.

I will briefly expand on each of the services provided by the Education Department, giving particular emphasis on the use of the Acropolis and the Centre for the initiation of the non-specialists (especially school pupils and their teachers) in Classical architecture and current attitudes towards restoration. The first task that the Ephorate set itself was to study how the area of the Acropolis could best be utilised so that the pupils' visit could be of the utmost benefit to them. The result was the programme 'A Day at the Acropolis'. The emphasis of this programme is on the architectural and archaeological analysis of the ancient buildings, construction methods, the analysis of the damage caused to the monuments over the two-and-a-half thousand years of their life, as well as today's conservation and restoration methodologies.



*Casts and moulds at the Centre for the Acropolis Studies*





FROM ABOVE: Didactic model of the artificial terraces on the Acropolis with removable buildings; samples of casts and moulds from the special educational kits provided by the Centre for the Acropolis Studies; the special kits that were prepared for visiting teachers and pupils

The archaeological site is organised so as to present visitors with a full perspective of the above subjects through visual, hearing, and touching experiences. Fifty trained volunteer university students are stationed around the site, each presenting a different part of the work. The presentations are coordinated to provide a full description of the temples and the ongoing or completed restoration works. Attending school pupils can thus learn about things not ordinarily covered in the available text books, guide books, and leaflets: about the ancient building accounts, the development of the construction of an ancient building, the cost of materials, and the transportation and labour that was involved in the erection of each edifice. Using replicas of the ancient tools they can work directly on marble and learn to distinguish the different tool traces on contemporary and ancient blocks. Often they are even encouraged to sculpturally reproduce architectural members in soap.

The construction of a wall by placing and joining the stones without the use of mortar is explained in detail and duplicated physically. The original connectors, clamps and rectangular dowels are shown and matched against their original cuttings by the pupils. The staff demonstrates the ancient procedure of pouring molten lead around the connectors to complete the bond, to absorb earthquake vibrations, and to preclude the possibility of rust arising from the metal components. They also illustrate the use of the *polos* (a wooden cylinder) and *empolion* (a truncated pyramid of wood) to align column drums vertically.

Ancient methods of transporting and hoisting marble blocks are reproduced by the technical staff with the help of sketches and models. Today's most common methods are also displayed as a means of comparison (the comparative juxtaposition of a model of a fifth-century BC crane against the modern crane designed specially for the Parthenon restoration tends to excite particular interest). The pupil has the opportunity to watch and in some cases to participate in moving marble blocks horizontally and vertically by hand or with the help of tools and machinery. Pupils are taught to distinguish traces of paint on the monuments and are shown coloured reconstructions; they are encouraged to colour a line drawing of a painted coffered ceiling panel or of cymatia with reference to the originals and to the polychromatic palette. They are also offered the opportunity to learn about ancient tiles, both of marble and clay, and are even encouraged to make their own.

The other major focus of this programme is a detailed analysis of the stages of the scholarly research, conservation and restoration work currently in motion. The estimated number of stone building fragments on the Acropolis is between fifty to seventy thousand; the principles, as well as the difficulties, of their classification in categories are carefully illustrated alongside samples from the archive index of the scattered architectural members. Pupils are taught to distinguish the Doric, Ionic and Corinthian orders in the thousands of fragments on the site, aided by a diagram and the staff.

The methods of photographic documentation of antiquities are illustrated in a special display at the Centre, as is documentation by scale drawing. Pupils can assist the architects, watch how detailed measurements are made, how they are translated into a sketch and finally into a scale architectural drawing. Precision instruments are made available for close scrutiny by the new initiates.

The major causes and types of stone decay are presented and discussed at length. Marble fragments selected to illustrate each type of damage are placed side by side and pupils have the opportunity to examine for themselves the wear on the stone surfaces. The types of deterioration normally displayed are those resulting from atmospheric pollution and acid rain, oxidation and expansion of iron clamps from older interventions, biodeterioration, fire, plant roots, bird droppings, wartime shelling and bombardment, vandalism, and from combinations of the above.



Special research studies aimed at counteracting these sorts of damages are meticulously illustrated: for example, diagrams showing the corrosion of the metopes, antiseismic studies, etc. Staff demonstrates cleaning and maintenance procedures, the equipment, and the chemicals involved. Attending pupils can gaze through a stereoscopic microscope and even work on specially chosen fragments.

The principles for the restoration of the Acropolis monuments are analysed with reference to the Charter of Venice and the principle of 'reversibility' first stipulated by the Committee for the Conservation of the Acropolis Monuments. The decision of the Committee to restore to their original positions the various fragments that were scattered around the site or incorrectly positioned in previous interventions (including architectural members now housed in museums around the world), is discussed *in situ*. Furthermore, staff explain why elements that are intended to replace lost parts of the monuments should be both distinguishable from the authentic parts in order to prevent false impressions and not too different in form or colour so as not to disturb the harmony of the monuments. The replacement of a ruinous block by an accurate copy in marble is enacted: first a mould is produced, which is subsequently copied in marble with the help of a pointing instrument or (automatically) by means of a pantograph. The joining of old and new pieces through reinforcements made of titanium is examined next.

'A Day at the Acropolis' takes place for three consecutive days every spring: some eight hundred to one thousand pupils participate in each of the open days, representing a total of eighty different schools (primary and secondary) from around Greece every year. The accompanying teachers that are selected are different every year, the programme being part of an expanding national curriculum. Fifty students from the Faculties of Archaeology and Architecture of the University of Athens present a total of twenty-five workshops. The students are trained by the Acropolis staff (who presented the first 'Day at the Acropolis' programme in 1986) during the course of five intensive four-hour seminars. All of the 'open day' programmes that are presented by students are organised on a voluntary basis, the students being specially appointed after a request made to their professors. Through their participation they acquire a more extensive knowledge of the Acropolis and inside experience on educational programmes and proceedings, all very valuable exposure for them as in the future many might staff the Archaeological Service and schools throughout the country.

The twenty-five workshops form the basis of most of the Centre's programmes. The majority of these have by now taken their final form as a Teacher's Pack or a Museum Kit, and can be loaned to teachers. Several guided trails on the history, architecture, sculpture and restoration of the monuments are also active. The goal is to train the teachers and to encourage them to bring their pupils to the Acropolis on their own, to prepare the young scholars in their charge and to enable them to run workshops with the help of the loan material without the presence of trained staff.

The programme 'A Day at the Centre for the Acropolis Studies' was instituted for the first time in 1989. All the exhibits at the Centre are used, and the full range of workshops is made available. Many well known Greek artists present these workshops, helping in their way to bridge the historical gap between ancient and contemporary culture. The Parthenon sculptures are analysed in detail, pediments are recreated by means of holography, and their composition represented through role-play. Needless to say, mythological storytelling crops up everywhere. The South Metopes of the Parthenon, illustrating the battle between Centaurs and Lapiths, are presented and acted out by the pupils. With the help of computers and image-processing through computer graphics, the pupils have the opportunity to put together fragments



FROM ABOVE: Educational material intended for instruction in the three Greek architecture orders; chiselling equipment available to students learning marble cutting techniques; didactic reconstruction of ancient Greek musical instruments that appear on the Parthenon frieze





*Identifying themes in miniature casts of the Parthenon frieze*

of broken metopes, to colour architectural members, and make a synthesis of architectural elements. The Parthenon Frieze is studied and put together by analysing and recreating its subject matter, namely the Panathenaic Procession.

Mythology and everyday life in Classical Athens are jointly discussed through the Frieze's exquisite relief figures. Cult statues and votive offerings are used to analyse, explain and recreate worship and customs, materials and techniques. A description of the 'Athena Parthenos', the colossal gold and ivory statue by Phidias, provides the opportunity to discuss the use of matrices and procedures. The process of creating a marble sculpture, the production of clay works of art, the transfer in plaster and transcription on marble, all takes place in front of the pediments during the special programmes. Pupils are welcome to ask for details, to participate and even to carve directly in stone. The process of producing a bronze sculpture with the lost wax method is presented with reference to the huge 'Athena Promachos' statue by Phidias which guarded the Acropolis. The 'Diipetes Xoanon', which was the Archaic wooden statue in the Erechtheion, is the hint to discuss and work with wood. Likewise, a terracotta acroterion which forms part of the Tiles Exhibition, is the hint to discuss and work in clay. As ancient Greek sculptures were normally painted, techniques and painting possibilities are made available to pupils.

The Centre for the Acropolis Studies is a cast museum, and on each day of the programme the laboratories and the Cast Archive are open to the public. Visitors are free to observe the stages of construction of the different types of moulds and casts, every guest being entitled to witness and take part in the pouring of an individual cast.

Additionally, the second floor houses a presentation of the system of modules, styles, forms, and decorative themes from ancient Greek architecture, the sensitive combinations of which produced the perfect classical aesthetic achievements which have so indelibly marked the development of western culture.

The open yard facing the Centre is being excavated to allow the future construction of the new Acropolis Museum. The archaeologists in charge routinely explain the different stages followed in an excavation in order to make a piece of earth and its contents contribute fully to the knowledge of our past.

In January 1991 the Minister of Culture accepted the Committee's proposal and decided to proceed with the most important intervention on the Parthenon, namely the removal of the Parthenon Frieze for its protection. Subsequently the Centre produced the programme entitled 'A Day with the Parthenon Frieze'. This programme is based on a new concept and inaugurated a new series of flexible programmes. It is addressed to around one hundred pupils per day who participate after a slide presentation in eight workshops which are divided into groups of pupils who are led around the museum every fifteen minutes. They first sculpt in marble and get a taste of the difficulties of this craft. Then they make a scaled cast of a Parthenon Frieze block, paint it, and locate it in the exhibition, thus piecing together the various thematic groups in the Panathenaic Procession. Subsequently the pupils are encouraged to make an archaeological and stylistic analysis of one frieze block. They search for different kinds of garments worn by the ancient participants, try to find and identify ancient musical instruments, and look for the different animals (horses, cattle and rams). Finally they are encouraged to identify the Gods of Olympus and act out their characters. This particular programme lasts three hours and requires the assistance of around ten university students. Depending on the availability of the students it can be easily repeated, as well as enlarged or reduced thematically. The success and flexibility of this programme resulted in the next ones:

'A Day with the History of the Acropolis' focuses on the collection of models and drawings at the Centre. The subjects are the Neolithic, Archaic, Classical and



Medieval periods; the 1687 explosion; the stripping of the Parthenon sculptures by Lord Elgin; the Balanos restorations; and the Committee for the Conservation of the Acropolis Monuments restoration works.

‘A Day with the Acropolis Monuments’: like the previous programme, it is also focused on the models in the Centre’s collection. The subjects are the Acropolis Rock and the complex of temples (the Parthenon, Erechtheion, Propylaea and temple of Athena Nike), the Brauroneion sanctuary, the Chalkotheke and the Arrephorion, the votive offerings, and finally the ancient processions and sacrifices that took place around the various altars on the Acropolis.

‘A Day Building the Acropolis’: this programme centres on the collection of models and drawings in the special exhibition ‘From Pentelikon to the Parthenon’. The subjects are: building inscriptions, the orders of Classical Hellenic architecture, columns and capitals, floors and walls, putting blocks together and fastening them, roofs, ceilings, tiles, sculpture, ornament and applied colours, techniques of stone carving, and, finally, sculpting in soap.

‘A Day Building Your Own Temple’: integrated with the above programme, the project encourages pupils to articulate the necessary phases that they would have to go through if they were to construct their own temple; they decide which deity the building shall be dedicated to, where the temple shall be built (the location in relation to the altar and the site orientation), which quarry is closest, what method of transportation shall be used for the heavy blocks (mules or ships, depending on the kind of stone that shall be utilised), the type of temple (amphiprostyle, peripteral, etc), the size of the building, and the order to be used. According to the availability of funds and craftsmen (who can be invited from another ancient city of the pupil’s choice), the amount and type of materials to be used in the sculptural decoration will be decided and investigated (cult statues, pediments, Doric or Ionic frieze, acroteria, subject matter; cymatia, roofs, the number of doors and openings and their locations), colours and bronze fittings explored; finally the pupils are urged to calculate how much money and time their project will require.

‘A Day Restoring the Acropolis’: this programme is the most sophisticated and is addressed to older pupils. Through it they are initiated into the restoration philosophy and problematics that the Centre feels should inform the thoughts of every educated and responsible citizen and taxpayer who lives alongside the ancient monuments and cares about his heritage. The pupils are further initiated in the construction of the Classical monuments, their later history, the damages they have suffered, and the history of the restorations, whether older or ongoing. They are then invited to take part in and present their opinions on the given subjects with the help of the original records and studies. The goal of this programme is to encourage criticism through well studied arguments, the educational programme representing only a first stage in the initiation of the pupil.

As the Acropolis is an integral part of Greek school curricula, the interest in participating in these programmes far exceeds the potential of the Education Department. Thus the orientation of the Department was very early turned towards the training of teachers of every specialisation.

As the greatest achievement of the Classical world, the Athenian Acropolis represents an architectural, artistic, and cultural prototype for Western civilisation. The Centre for the Acropolis Studies feels that it is necessary to find ways to activate what is surely a huge educational potential. Our goal is to make the Centre render the maximum in educational proceedings and programmes that can have a general application the methods of learning about humanity through the brilliant spectrum of the Classical world.



*Pupils' model illustrating the process of transporting building blocks to the Acropolis in Classical times*