ΣΥΝΕΔΡΙΑ - CONFERENCES

EXTRAORDINARY MACHINES AND STRUCTURES IN ANTIQUITY

An International Symposium

With deep sorrow, the Organizers announce the untimely death of Professor Andrew D. Dimarogonas, an eminent figure in Science, Engineering, Philosophy and Politics, a world known specialist in Ancient Greek Technology and a cornerstone of the organization of the present Symposium.

Co-Chairmen: +Professor A. D. Dimarogonas, US, Professor S. A. Paipetis, Professor Th. Tassios, GR

ORGANIZING COMMITTEES

Local Organizing Committee:

- 1. Prof. S. A. Paipetis, Univ. of Patras, GR
- 2. Prof. E. E. Gdoutos, Univ. of Thrace, GR
- 3. Dr D. Polyzos, Univ. of Patras, Assoc. Prof., GR
- 4. Dr V. Kostopoulos, Assoc. Prof., Univ. of Patras, GR
- 5. Dr A. Carabelas, Univ. of Patras, GR
- 6. Dr Th. Chondros, Univ. of Patras, GR

International Scientific Committee:

- 1. Dr (Mrs) X. Arapogianni, GR
- 2. Prof. M. Ceccarelli, I
- 3. +Prof. A. D. Dimarogonas, US
- 4. Prof. E. Filemon, HUN
- 5. Prof. G. S. Holister, UK
- 6. Prof. T. Koetsier, NL
- 7. Prof. S. A. Paipetis, GR
- 8. Prof. Julian Popescu, RO
- 9. Prof. Th. Tassios, GR

Symposium Secretariat:

Mrs Ang. Bossini (for Greek participants) Mrs Eleni Tsotra (for foreign participants)

All correspondence etc. should be addressed to:

Professor S. A. Paipetis, Department of Mechanical Engineering and Aeronautics, University of Patras, 260 01 Patras, Greece, tel. (+3061) 992172 & 997233, Fax +3061-992644, e-mail: paipetis@mech.upatras.gr

Symposium site at the Internet

It is recommended that participants visit our site regularly for possible announcements:

http://www.mech.upatras.gr/~emsa/

Symposium emblem: The helmet of Miltiades, general-in-chief of the Athenians at the battle of Marathon (Persian Wars, 480 BC), Olympia Museum.

Presentations

Presentation time will be 30 min. (45 min. for invited speakers) including discussion. Slide and transparency as well as computer projection equipment will be available.

Registration fees

For those who have not paid their registration fees yet there is still time to transfer the respective amount directly to Alpha Credit Bank, 2 New National Road Branch, Patras, Greece, A/C no 014 534 00 231 000 1050, or pay upon registration at the Symposium. The registration fees, are now as follows:

- * Participants...... 200 EUROs
- * Students...... 50 EUROs
- * Accompanying persons 50 EUROs

Fees cover the Symposium folder with all relevant material, the opening reception, the Symposium dinner and transportation from and to the hotels downtown for those not staying at the International Olympic Academy (approx. 3 km away from the town of Olympia).

The Symposium venue

Ancient Olympia lies 20 km east of Pyrgos, the capital of Eleia, in a valley between the wooded Mount Cronion, the Alfios River and its tributary Cladeos. It is the place where the Olympic Games originated in 776 BC to honor Zeus 'Father of gods and humans'. It is also the place where the idea of the common cultural heritage among the Hellenic City States was further enhanced. During the Games, the Olympic Truce was in force, and all hostilities were suspended.

These panhellenic contests were held every four years, attracting athletes from all City States of Hellas. The *kotinos*, the victor's prize, was only a wreath made of a wild olive tree branch. The City States, whose athletes won at the Olympic games, used to tear down part of the city walls, implying that, with such brave men, defence walls were unnecessary. The Olympic Games came to an end in 393 AD by a prohibitive edict of the Byzantine Emperor Theodossios I. Fifteen centuries later, in 1896, they were revived in the place where were they were born, in Greece, by the French historian and educator Pierre de Coubertin.

The International Olympic Academy, the Symposium venue, was founded to protect and expand the heritage of the Olympic Idea and to develop the Olympic Movement. It is an educational institution, aiming at the training people devoted to the principles and ideals of Olympism, who will then disseminate these in their respective countries as ambassadors. It is also encouraging dialogue for the promotion of international friendship, understanding and cooperation in accordance to the ideals and principles laid down by the Ancient Greeks.

Weather

The weather in mid August is rather hot in Greece. The temperature during the day may rise up to over 30°C (86°F), but it may be cool and humid at night, especially in this area, and a light jacket or sweater may be necessary.

Travel to Olympia

Olympia is accessible either from Athens, if traveling by air, or from Patras, if traveling by boat and/or car.

- a. Travel through Patras: Olympia lies 115 km south west of Patras, the capital of Achaia in north western Peloponnese, which is directly accessible by car ferry from Italy on a daily basis, e.g. from Brindisi and Bari (travel time approx. 12 hours) or from Ancona (travel time less than 24 hours by superfast ferries). The Patras coach terminal lies in the harbour area, and there are regular connections to Pyrgos and Olympia.
- b. Travel through Athens (by air): From the Athens airport many airline or public transport buses to downtown Athens are available, as well as to the main Coach Terminal, connected to Olympia and all major cities by regular departures.

Accommodation

Hotels of all classes are available at reasonable prices in the town of Ancient Olympia. Participants will be notified of the 2001 prices in time. For any queries one may address to our local travel agent: Charisma Travel, 27065 Ancient Olympia, Greece, tel: +30-624-22 811, fax: +30-624-22 812.

A number of rooms at the International Olympic Academy are available at very reasonable prices, although without all of the comforts of a proper hotel. Those interested must address to the Symposium Organizers immediately.

Social Programme

The Social Programme will include an Opening Reception, the Symposium Dinner and a guided tour in the archaeological site and the Museums. A ladies programme will be announced at the Symposium, including daily trips to historical places in the area.

PARALLEL EXHIBITION

OF THE MARITIME TRADITION MUSEUM (Piraeus)

In the very same lecture theater of the Symposium, important items from the Museum collection, related to the historical connection between Greece and the sea from antiquity till present, title "Sea & Art", will be exhibited, The collection includes maritime art, cartography, engravings, ship models and plans, scientific and navigational instruments, time-keeping and astronomy, byzantine maritime art, traditional art, sea warfare items etc.

IMPORTANT! CATERING FACILITIES

There is a restaurant in the International Olympic Academy, but no other restaurant close by. Those who wish to have lunch there, must book from the day before. This is a very strict rule of the house.

PRESENTATIONS PLAN

A total of 35 papers have been accepted for presentation in three classes, namely machines, structures and papers of general interest, according to the following presentation plan:

MONDAY 20 AUGUST 2001

17.30-20.00 Registration at the hotels 20.30 Welcome reception

TUESDAY 21 AUGUST 2001

08.00-09.00 Registration at the Symposium Site

09.00-10.30 OPENING SESSION
Chairman: Professor S. A. Paipetis

- 09.00 Opening remarks and welcome (Prof. S.A. Paipetis and distinguished visitors)
- 09.15 OPENING ADDRESS: Discovering the Past; Inventing the Future, Professor G. S. Holister, former Director General of UNESCO)
- 09.45 A tribute to the memory of Professor A. D. Dimarogonas, Co-Chairman of the Symposium (Professor S. A. Paipetis).
- 10.00 + DIMAROGONAS A.D.: Machines in Homer (commu-nicated by Professor S. A. Paipetis)
- 10. 30 COFFEE BREAK

10.45-13.00 SESSION IA – MACHINES

Chairmen: Professor G. S. Holister, Dr Th. Chondros

- 11.00 KOETSIER, TEUN, Archimedes and the Invention of the Screw-Pump (key-note lecture)
- 11.45 CHONDROS, TH. G. AND +DIMAROGONAS A.D., "Deus ex Machina".
- 12.15 TSOSKOUNOGLU-MISOPOLINOU A., How Penelope Was Weaving: Presentation of the Controversial Points on the Construction of the Wrap-Weighted Loom.
- 12.45 NIKOLANTONAKIS, C., Ptolemy's Astrolabe: An Example of Astronomical Measurements from the Ancient Greek Tradition.
- 13.15 LUNCH BREAK

14.30-17.30 SESSION IB – MACHINES

Chairmen: Profs. V. Kostopoulos and D. A. Zacharopoulos

- 14.30 PARHARIDES, S., IOANNOU, C., VALLIANOS, CH., Ancient High Technology at the Time of Heron of Alexandria and its Consequent Decline and Simplification: An Example Drawn From the Twin Screw Press.
- 15.00 REFRESHMENTS

- 15.30 D. RAPTI, D.A ZACHAROPOULOS, GDOUTOS E.E., MANTZOROS N.: Mechanical Study of a Hoisting Machine in Ancient Greece
- 16.00 KATSAROS, THOMAS, Kerotakis: Pigment Production With the Use of an Unknown Alchemical Apparatus.
- 17.00 TSITOMENEAS S., CARABELAS A., KYRAGGELOS P.: Optical and Thermal Properties of Caustic Mirrors.
- 18.00 GUIDED TOUR OF OLYMPIA MUSEUM (Mrs. X. Arapogianni, Director, Olympia Museum)

WEDNESDAY 22 AUGUST 2001

08.30-11.15 SESSION IC-MACHINES

Chairmen: Mr M. T. Wright, Prof. S. A. Paipetis

- 08.30 MICHAEL T. WRIGHT, Towards a new reconstruction of the Antikythera Mechanism: some external features.
- 09.15 RORRES, CHRIS, HARRIS, HARRY G., The Construction and Operation of Archimedes' Iron Hand.

09.45-10.15 COFFEE BREAK

- 10.15 PAIPETIS, S.A., KOSTOPOULOS, V.: Defensive Weapons in Homer: Part A, The Shield of Achilles.
- 10.45 PAIPETIS, S.A., KOSTOPOULOS, V.: Defensive Weapons in Homer: Part B, The Shield of Ajax.

11.45-17.30 SESSION IIA - STRUCTURES

Chairmen: Professor Mario Marchetti, Professor D. D. Beskos

- 11.45 BESKOS, DIMITRIS D. Static and Dynamic Analysis of Arta Bridge by Finite Elements.
- 12.15 CANAVAS, COSTAS, Axumite Megaliths in the Late Antiquity. 13.15-14.15 LUNCH BREAK
- 14.15 PAIPETIS, S.A., POLYZOS, D., AGNANTIARIS, J. P., SELLOUNTOS E. J., Acoustical Behaviour of the Chamber of Dead in the Necromanteion of Acheron River.
- 14.45 MARCHETTI, MARIO, "Via Flaminia: an admirable work full of modern tips"
- 15.15-15.30 REFRESHMENTS
- 15.30 KAM, WALTHER, Treasury of Atreus: The Construction of the Façade
- 16.00 CIGOLA, MICHELA, Egyptian Obelisks in Rome.
- 16.30 CHIAVONI, EMMANUELA, The Temples of the Tivoli Acropolis.
- 17.00 PALYVOU, C., TASSIOS, Th. P., STOURNARAS, K., GERALIS, K., Adobe structures at Mecyneae.
- 18.00-19.00 GUIDED TOUR OF THE ARCHAEOLOGICAL SITE, Presentation of the Hydraulic system (Mrs X. Arapogianni, Director, Olympia Museum)
- 21.00 SYMPOSIUM DINNER (OLYMPION ASTY HOTEL)

THURSDAY 23 AUGUST 2001

08.30-10.30 SESSION IIB - STRUCTURES
Chairman: Prof. S.Papamarinopoulos

- 08.30 SOL, HUGO, CUYPERS, HEIDI: Applied Science in Ancient Egypt: Stability of Stepped and Flat Spans in Chambers and Corridors in Structures of the 4th Dynasty.
- 09.00 VANBEVEREN, DANY & SOL, HUGO, Stellar Symbolism in Structures in Ancient Egypt
- 10.00 MARCOYANNIS, G., TH. GILMER, CH. ROUKIS, Thera: The Minoan & Cycladic Ship
- 10.30 BELLES CH., Shipbuilding in the Aegean Region During the Byzantine Era (From the 10TH Century onwards)
- 11.00 COFFEE BREAK

11.00–14.00 SESSION III – GENERAL APPROACHES

Chairman: Prof. Th.P. Tassios

- 11.00 TASSIOS TH. P. Counter-Fertilization of Science and Technology in Ancient Greece.
- 11.45 PAPAMARINOPOULOS, STAVROS, Is Platonic Atlantis Troy?
- 12.15 LIRINTZIS, IOANNIS, On the Mystery of two Hellenic Pyramidals.
- 12.45 LUNCH BREAK
- 13.00 MELAS MANOLIS, Knowledge as Power: Function and Meaning of Grand Artefacts in Antiquity.
- 13.00 ORFANOUDAKIS, NIKOS, The Bellows go to War.
- 14.00 PAPATHEODOROU, GEORGE, A Marine Geophysical Survey for the Detection of Ancient Rocks and Man-Made Structures in the Coastal Zone of Alexandria-Egypt.

14.30-16.00 FINAL SESSION - Discussion and conclusions

1st LRCW CONFERENCE

--FIRST CIRCULAR—

This is the first announcement of the '1st International Conference on Late Roman Coarse Wares, Cooking Wares and Amphorae in the Mediterranean: Archaeology and Archaeometry (Barcelona, 14-16 March 2002)'. Conference subjects will be archaeological and archaeometric studies on Coarse Wares, Cooking Wares and Amphorae from the Vth century AD to the end of the Antiquity in the Mediterranean Basin. Invited papers will be given by M.G. Fulford, P. Reynolds, M. Bonifay (to be confirmed), R. Tomber (to be confirmed), D.F. Williams, S. Ramallo Asensio and S. Sanotoro & G. Montana.

The web pages of this Conference are already available at the following URL:

{HYPERLINK"http://www.ub.es/prehist/noticies.htm"} http://www.ub.es/prehist/noticies.htm

The deadline for submission of abstracts is 15th October 2001.

For more information contact:

Equip de Recerca Arqueomètrica de la Universitat de Barcelona (ERAUB) Dept. de Prehistòria, Història Antiga i Arqueologia Universitat de Barcelona C/ de Baldiri i Reixac, s/n 08028 Barcelona (Catalonia, Spain) Telf. 34-93 440 92 00 ext. 3192 Fax: 34-93 449 85 10 eraub@trivium.gh.ub.es



New directions in archaeological science

Please submit your abstract by May 31st

as an email attachments to

Dr Rob Shiel R.S.Shiel@newcastle.ac.uk

Information on the abstract format, along with a sample abstract can be downloaded <u>here</u>



Basic guidelines for DIY preparation of artwork for A1 and A0 colour poster presentation



Basic guidelines for DIY preparation of artwork for a powerpoint presentation

IMPORTANT NOTICE

Only manuscripts brought to the meeting will be considered for publication in the Journal of Archaeological Sciences.

For further conference details please contact Matthew Collins, FFEGI, Drummond Building, University of Newcastle upon Tyne, NE1 7RU

m.collins@ncl.ac.uk

A member of the <u>Ancient</u> <u>Biomolecules group</u>

Archaeological Science 2001 29th August - 1st September 2001 University of Newcastle upon Tyne, UK.

At the turn of a new millennium archaeological science appears to be distancing itself from other aspects of archaeology, as ever more powerful analytical tools are brought to bear on archaeological questions. The increasing trend towards more powerful scientific methods on the one hand and 'pure' archaeology on the other is also reflected in the tensions between funding bodies and the creation of new funding streams within both areas. This conference seeks both to review the advances in archaeological science and try to place them more firmly within the developments in theoretical and field archaeology.

The meeting is divided into five major themes, each of which will consider the contributions and detractions of archaeological science. Proceedings of the sessions will be published in *Journal of Archaeological Science* and speakers who wish to contribute to the publication are asked to bring manuscripts to the meeting.

Conference Details:

Conference Programme and Posters Registration Form

To download the registration form to your PC click on the .pdf logo. You will need Adobe Acrobat Reader to read these files. If you do not have this plug-in on your PC, download it from the <u>Adobe</u> website.

Major Sessions

Food and Nutrition Mike Richards (Bradford)

Chronology Mike Baillie (Queens, Belfast)

The life cycle of the artefact **Mike Tite** (Oxford)

Prospection and Geoarchaeology Martin Bell (Reading)

New Directions in Archaeological Science **Martin Jones (Cambridge)**

Funding of Archaeological Science Speakers from the key funding bodies

Closing Address: Archaeological Science: a perspective on theory **Mike Shanks** (**Stanford**)

Timetable

31 May	Abstract Deadline			
30th June	Programme posted on Web			
31 July	Registration deadline			
29 August - 1 September	Meeting			

General information for delegates:

DIRECTIONS FOR ArchSci01 BY ROAD, RAIL AND AIR

Hall of residence: http://www.ncl.ac.uk/conferences/castle.html

Location: http://www.ncl.ac.uk/about/visiting/location.html

Details of Northumbria and Newcastle:

http://www.northumbria-tourist-board.org.uk/home_v4.htm

http://lorien.ncl.ac.uk/ming/Dept/Ncl/Ncl.htm

Other related conferences:

Degradation of Collagen Based Materials Registration Form

Details of forthcoming related meetings

Archaeological Science 2001

29th August- 1st September 2001

University of Newcastle upon Tyne, UK.



New directions in archaeological science

Posters

Preliminary Programme

Wednesday 29th August

Registration 12:00 - 15:00

Funding Archaeological Sciences in the new Millennium

Chair: Lord Redesdale, Secretary of the Parliamentary All Party

Archaeological Group

3:00 - 3:20 Leverhulme Trust: Barry Supple

3:20 - 3:40 Wellcome Trust: Gavin Malloch

3:40 - 4:00 NERC: Mark Pollard

4:00 - 4:20 EU: David Miles

Coffee Break

4:40 - 5:10 AHRB: Michael Jubb

5:10 - 5:40:English Heritage: Mike Corefield

5:40 - 6:00: COST Action G8: A. Adriaens

6:00 - 7:30 Reception

Evening Meal 7:30

Bar open until 23:00

Thursday 30th August

Breakfast 7:00 - 8:30 Castle Leazes Halls of Residence

The life cycle of the artefact - Mike Tite (Oxford)

9:00 - 9:30 KEYNOTE Life cycle overview: Tite

9:30 - 9:50 Getting Back to Nature? The Rare Earth Elements in Inorganic Materials: Stern & Pollard

9:50 - 10:10 Geochemical characterisation by ICP-MS and INAA of steatite from the two extremities of Europe: Shetland and Crete: Jones et al.

10:10 - 10:30 Gold traces to trace gold: Guerra et al

Coffee Break

11:00 - 11:20 Archaeometric investigation of Neolithic earthenware surfaces from Billown, Isle of Man: Andrews

11:20 - 11:40 Pots from Mars and Metals from Nowhere: the analysis of contrasting material biographies in the Early Bronze Age Aegean: Day & Doonan

11:40 - 12:00 Microanalytical characterization of Ancient Syrian Bronze artefacts originating from Tell Beydar: De Ryck et al.

12:00 - 12:20 Opaque biographies and belief in the afterlife: glass production, exchange and consumption in analytical perspective: Jackson & Day

Lunch - Castle Leazes Halls of Residence

New Directions in Archaeological Science - Martin Jones (Cambridge)

2:00 - 2:30 KEYNOTE Biomolecular archaeology: from the New World to the Old: Jones

2:30 - 2:50 Using DNA from animal bones to study the peopling of the New World: Cooper & Barnes

2:50 - 3:10 Origins of pre-Columbian maize: Brown

3:10 - 3:30 DNA analysis of bones from Mycenae: Brown

Coffee Break

4:00 - 4:20 Ancient DNA and the illusion of interdisciplinarity; a case study: Levine & Forster

4:20 - 4:40 Temporal tuberculosis patterning using mycolic acids; the case for St. Augustine the Less, Bristol: Gernaey et al.

4:40 - 5:00 Anglo-Saxon and Norse residential mobility from combined radiogenic and light stable isotope analysis: Budd et al.

5:00 - 5:20 Phytolith Hydration and Plant-Water Physiology as a Mean for Understanding Ancient Irrigation: Madella et al.

7.30 Conference Dinner

Mandarin Restaurant, Chinatown, 14 Stowell St, Newcastle

Friday 31st August

Breakfast 7:00 8:30 Castle Leazes Halls of Residence

Food and nutrition - Mike Richards (Bradford)

9:00 - 9:30 KEYNOTE Food and Nutrition: Heron & Richards

9:30 - 9:50 Zooarchaeology: food and beyond: Albarella & Dobney

9:50 - 10:10 Seasonality and Overexploitation of the Oyster, (Ostrea edulis L.) Milner

10:10 - 10:30 An integrated approach to the study of prehistoric animal resource management: notes from a small isle: Craig et al.

Coffee Break

11:00 - 11:20 Stable Isotope Analysis and Hunter-Gatherer Diets in Patagonia: Tykot et al.

11:20 - 11:40 Understanding complexity in the Neolithic of the Near East: A stable isotope approach to the reconstruction of ancient diet at Çatalhöyük: Pearson et al.

11:40 - 12:00 Tracing the routing and synthesis of amino acids using gas chromatography-combustion-isotope ratio mass spectrometry as applied to palaeodietary reconstruction: Howland et al.

12:00 - 12:20 Stable isotopes from bone and tooth collagen reveal dietary patterns and the age of weaning at the Medieval village site of Wharram Percy: Fuller et al.

Lunch - Castle Leazes Halls of Residence

2:00 - 2:30 The Earliest Evidence for Dairying in Prehistory: Copley et al.

2:30 - 2:50 *Sus Scrofa* Bone Mineral Density Values And Utility Indices: the need for species specific studies: Pugsley

Geoarchaeology et al. - Martin Bell (Reading)

2:50 - 3:10 KEYNOTE Martin Bell

3:10 - 3:30

Coffee Break

4:00 - 4:20 Geoarchaeology of Late Quaternary floodplain development and human settlement in the Upper Tisza valley, northeast Hungary: Passmore et al.

4:20 - 4:40 Chemical signatures of ancient and modern Maya activities: The story within their floors. Terry et al.

4:40 - 5:00 Experimental Bog Body Taphonomy Peacock et al.

5:00 - 5:20 DNA diagenesis in the skeleton: Evison

Poster Teasers 5:20 - 6:00

Each poster presentee will be given one visual (slide/OHP) and two sentences in which to advertise the contents of their poster

Evening Meal - Castle Leazes Halls of Residence

Poster Session - Castle Leazes Halls of Residence

Bar open until 23:00

Saturday 1st September

Breakfast 7:00 - 8:30 Castle Leazes Halls of Residence

Chronology - Mike Baillie (Queens, Belfast)

9:00 - 9:30 KEYNOTE Chronology: what's the problem? Baillie

9:30 - 9:50 The potential significance of dietary offsets for the interpretation of radiocarbon dates: an archaeologically significant example from medieval Norwich: Bayliss et al.

9:50 - 10:10 Compound Specific Radiocarbon Dating of Fatty Acids in Archaeological Pottery: Berstan et al.

10:10 - 10:30 New advances in amino acid geochronology: Collins et al.

Coffee Break

11:00 - 11:20 Collagen preservation and amino acid racemization in cave bear teeth dentine: Torres et al.

11:20 - 11:40 Inaccurately precise?: An exploration of accuracy and precision for Useries dating of bone: Pike

11:40 - 12:00 Extending the scope of British Dendrochronology: Imported and Local Conifers: Crone

12:00 - 12:30 OSL: Sanderson

Archaeological Science - a perspective on theory Mike Shanks (Stanford)

Lunch - Castle Leazes Halls of Residence

Conference venue

Archaeological Sciences 01 will be held at the Castle Leazes Hall of Residence. The Hall is located about 20 minutes walk from the centre of town. All meals and lectures/posters will be held at this venue, with the exception of the Conference meal, to be held at the Mandarin Restaurant, Chinatown, 14 Stowell St, Newcastle.

Accommodation

Accommodation in single rooms at the hall is recommended (shared bathroom), at a cost of £23 per night including breakfast. Double rooms and en-suite are available on request.

18th INTERNATIONAL RADIOCARBON CONFERENCE

The 18th International Radiocarbon Conference will be held 1-5 September 2003 in Wellington, New Zealand.

The conference web page is located at: http://www.14Conference2003.co.nz Pages currently posted include contact details for the organizing committee and information and photos of Te Papa, the conference venue. Conference timetable, information about submitting abstracts, and descriptions of the social program will be posted later this year. In 2002, abstract submission, registration and accommodation booking will be available though the web site as well as by mail.

For now, the local organizing committee invites you to submit ideas for workshops, sessions, and program suggestions.

FIRST ANNOUNCEMENT OF THE 18th INTERNATIONAL RADIOCARBON CONFERENCE

The conference is hosted by the Rafter Radiocarbon Laboratory of the Institute of Geological and Nuclear Sciences, and will be held in the Museum of New Zealand, Te Papa Tongarewa. Te Papa is on the shore of Wellington Harbour, within walking distance of down-town Wellington, and in the heart of the city's restaurant and accommodation area.

This is the first time that that the conference has been held in the southern hemisphere since 1971, so it is an ideal opportunity for everyone to come down south and check the north-south offset for themselves.

The conference programme and structure will follow the patterns established by previous conferences, and will provide the opportunity to present current research and the newest developments in all areas involving ¹⁴C. In line with the sub-title of the journal Radiocarbon, presentations need not be confined to ¹⁴C, and interesting papers concerning other cosmogenic isotopes will be welcome.

We also welcome suggestions for special sessions and discussion topics, contact 14Conf-info@gns.cri.nz

INTERNATIONAL CONFERENCE

Archaeometallurgy in Europe

Milan, 24-26 September 2003





in cooperation with



Fondazione Museo Nazionale della Scienza e della Tecnologia Leonardo da Vinci

SCOPE OF THE CONFERENCE

The conference aims at gathering and sharing information on the history of all aspects of iron and copper metallurgy in European countries. The two main topics will give rise to two sessions that will cover a wide range of aspects concerning European archaeometallurgical items dating back from the origins to the first half of the XVIII Century. The conference intends to promote an active dialogue among researchers involved with archaeometallurgy, by creating an opportunity to discuss about new areas of research such as the interaction between the study of ancient metallurgical process, conservation science and application of modern metallurgical experimental methods and techniques to investigate, to identify and to date ancient artefacts.

CONFERENCE TOPICS

- Mines
- Ancient ores and refractories
- Foundry
- Forging, joining and metal finishing
- History of metallurgy
- Production and and products
- Archaeometry
- Archaeomaterials and conservation science

CONFERENCE VENUE

The conference will be held in Milano, at the Museo Nazionale della Scienza e della Tecnologia Leonardo da Vinci

CALL FOR PAPERS

Prospective authors wishing to present papers are invited to submit paper title and an abstract of about 400 words (in English) to the Conference Secretariat. The abstract should provide sufficient information for a fair assessment.

Three ways of reply are possible:

- to fill in the coupon printed on the circulars and return it to the Conference Secretariat
- to fill in the <u>form on the conference web site</u> www.fast.mi.it/aim/archaeo.htm
- to send the requested information by e-mail to aim@fast.mi.it

DEADLINES

- Titles and abstracts
 16 December, 2002
- Notification of acceptance
 31 March, 2003
- Final manuscripts 30 May, 2003

LANGUAGE

English will be the conference language.

CONFERENCE CHAIRMAN

W. Nicodemi - President of AIM

ORGANISING COMMITTEE

E. Angelini - Politecnico di Torino

P. Bufalini - AIM

- S. Casana Fondazione Museo Nazionale della Scienza e della Tecnologia Leonardo da Vinci
- M. Cavallini Università di Roma "La Sapienza"
- G.L. Garagnani Università di Ferrara
- D. Lini Fondazione Museo Nazionale della Scienza e della

Tecnologia Leonardo da Vinci

- C. Mapelli Politecnico di Milano
- R. Montanari Università di Roma "Tor Vergata"
- A. Pedrotti Università di Trento
- S. Sutera Fondazione Museo Nazionale della Scienza e della

Tecnologia Leonardo da Vinci

SCIENTIFIC COMMITTEE

Two international Scientific Committees respectively for the Iron and the Copper area are being appointed.

COOPERATING ORGANISATIONS

Comité pour la Sidérurgie Ancienne

CNR - Progetto Finalizzato Beni Culturali

The Materials Science-based Archaeology Group of the University of Oxford



Organising Secretariat:

Associazione Italiana di Metallurgia

20121 MILANO - Piazzale R. Morandi, 2 - ITAL \overline{Y} Tel. +39 02 76021132 - Fax +39 02 76020551

INTERNATIONAL CONFERENCE EGYPT AND CYPRUS IN ANTIQUITY

CALL FOR PAPERS

On the occasion of the 25th anniversary of its foundation, the Cyprus American Archaeological Research Institute (CAARI), together with the Archaeological Research Unit (ARU) of the Department of History and Archaeology of the University of Cyprus, are organising an international conference, to be held in Nicosia from Thursday 3 April to Sunday 6 April 2003 inclusive, on EGYPT AND CYPRUS IN ANTIQUITY

Many new discoveries and findings have been made in both Egypt and Cyprus since the principal works on this theme were published. It is timely to bring the results of recent fieldwork and research together in a forum where their bearing on the process of historical reconstruction canbe expertly and collectively evaluated. The conference will cover the period from the 3rd millennium BC to the 6th century AD, and will comprise three large chronological areas: A: from the Chalcolithic to the Late Bronze Age; B: from c. the 11th to the end of the 4th century BC; and C: The Ptolemaic and Late Roman periods. The languages of the conference will be English, French and Greek. Participants, other than keynote speakers, will be allowed 25 minutes each for their delivery.

Those who are interested in attending and giving a paper should send an abstract of c. 500 words by post, fax or (preferably) e-mail to the Secretariat of the conference by 31 December 2001. In order to preserve a balance between the periods covered, the organisers reserve the right not to accept proposed titles, or to suggest alternative ones of their own. Speakers will be responsible for making and paying for their own travel to Cyprus. There will be no registration fee and the conference will be open to the public.

On behalf of the Scientific Committee:

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6TH INTERNATIONAL CONFERENCE OF ANCIENT DNA AND ASSOCIATED BIO-MOLECULES

Jerusalem, July 21st to 25th, 2002.

As well as papers on ancient DNA there will be a session on associated ancient biomolecules, as well as a full session on forensics (the practical aspect of aDNA). Jerusalem and Israel stand at the heart of some of the most exciting archaeological finds relating to the rise of civilization. The Dead Sea Scrolls and Qumran, Massada, and the Carmel Caves will be central features of the visit. The conference will consist of keynote lectures, presented papers, posters, round-tables, and hands-on workshops. Major concerns will be plant and animal domestication, ancient pathogens -especially tuberculosis and influenza, forensic sciences, ancient bio-molecules other than DNA, and cutting-edge technologies.

Jerusalem will be the central focus, but field trips will be planned to important archaeological excavations and museums.

At the moment a mailing of posters and pre-registration forms is prepared and expressions of interest etc would be welcomed.

All announcements after the first mailing will be made by e.mail, including. preregistration, and abstract submission.

Contact person: Mark Spigelman dna6@md.huji.ac.il

METRON: MEASURING THE AEGEAN BRONZE AGE 18-21 April 2002 Yale University

Preliminary draft of program (as of 3 June 2001)

Thursday morning, 18 April (British Art Center Lecture Hall)

Welcome and opening remarks, D. Gutas, K. Foster, R. Laffineur

A. Measuring the Aegean Landscape

- 1. V. Gaffney, session chair, position paper
- 2. D. Pullen, Site size, territory, and hierarchy: measuring levels of integration and social change in Neolithic and Bronze Age Aegean societies.
- 3. R. Rothaus, E. Reinhardt, T. Tartaron, A geoarchaeological approach for detecting prehistoric Aegean harbors.
- 4. A. Dakouri-Hild and A. Sarris, The digital Thebes project: heritage management and archaeological research in Boeotian Thebes using GIS.
- 5. A. Bevan, Exploring Kythera: island dynamics and GIS.
- 6. J. Conolly, Quantitative analysis of Aegean survey data: a case study from Kythera.
- 7. S. Soetens, A. Sarris, J. Driessen, S. Topouzi, GIS variations on a Cretan theme: peak sanctuaries.

Thursday afternoon, 18 April (British Art Center Lecture Hall)

B. Materials Characterization

- 1. T. Tartaron, session chair, position paper
- 2. P. Getz-Gentle and N. Herz, Sourcing the marble of Early Cycladic Objects.
- 3. T. Carter, Re-problematizing the analysis of obsidian in the Aegean and surrounding worlds.
- 4. N. Gale, Lead isotope and other isotopic provenance research in the Aegean.

- 5. C. Gillis and R. Clayton, Provenancing tin with the use of tin isotopes.
- 6. S. Van Lokeren, Metallurgical technologies and production organization on LBA Kythera.
- 7. S. Ferrence, K. Melesanaki, P. Betancourt, D. Anglos, Adaptation of laser-induced breakdown spectroscopy for the analysis of archaeological artifacts.
- 8. P. Betancourt, Interpreting ceramic petrography: a new model for pottery distribution in the Early Minoan period.
- 9. E. Kiriatzi, Sherds, fabrics and clay sources: reconstructing the ceramic landscapes of prehistoric Kythera.
- 10. V. Kilikoglou, E. Kiriatzi, A. Philippa-Touchais, G. Touchais, I. Whitbread, Pottery production and supply at MH Aspis, Argos: the evidence of chemical and petrographic analyses.

Thursday evening, 18 April (Graduate Club)

J. Muhly, keynote address

Friday morning, 19 April (British Art Center Lecture Hall)

C. Artifact-based Studies

- C. Sease, session chair
- 1. E. Hendrix, Some methods for revealing paint on Early Cycladic figures.
- 2. W. Müller, Minoan works of art, seen with penetrating eyes: X-ray testing of gold, pottery, faience.
- 3. E. Shank, The MuSIS 2007 system and its application to Aegean Bronze Age wall painting.
- 4. A. Brysbaert, Rotating angles in measuring the Aegean Bronze Age: the technology of Bronze Age painted plaster from the Aegean and east Mediterranean.
- 5. M. Shaw, Grids and other drafting devices used in Minoan and Egyptian wall painting.

D. Experimental Archaeology and Replication Projects

- 1. E. Barber, position paper
- 2. E. Andersson and M-L. Nosch, With a little help from my friends: investigating Mycenaean textiles with the help from Scandinavian experimental archaeology.

Friday afternoon, 19 April

bus excursion to Mystic village: 19th century whaling seaport, aquarium; perhaps also Ballard lab; focus on technological matters, replication issues, marine environments.

Saturday morning, 20 April (Luce Hall)

E. Environmental and Biological Analyses

- 1. S. Fox, session chair, position paper
- 2. D. Reese, Recent work on Early Bronze Age faunas in the Aegean.
- 3. A. Sarpaki, Measuring complexity through the study of archaeobotany in the Aegean Bronze Age.
- 4. R. Arnott and E. Stuckey, Finding the hydra: the search for malaria in the prehistoric Aegean.
- 5. S. Triantaphyllou, A bioarchaeological approach to Bronze Age cemetery populations from western and central Greek Macedonia.
- 6. K. Brown, C. Flaherty, J. Prag, T. Brown, Families, faces, and ancient DNA at Mycenae.
- 7. M. Serpico, Quantifying the trade in natural products between Egypt and the eastern Mediterranean during the Late Bronze Age.

Saturday afternoon, 20 April (Luce Hall)

F. Architectural and Constructional Studies

- J. Crowley, session chair
- 1. D. Preziosi, What does a module mean?
- 2. C. Palyvou, Creto-Mycenaean architecture: from conception to execution (geometrical forms and measuring techniques).
- 3. J. Shaw, Relative proportions as a key to Minoan planning.
- 4. D. Romano, Minoan surveyors and town planning at Gournia.
- 5. J. Wright, Evidence for metrical practice in the palace of Nestor.
- 6. L. Hitchcock, Documentation of pre-classical ashlar masonry in the east Mediterranean.

- 7. M. Nelson, Leveling ashlar walls.
- 8. A. Tzigounaki, D. Roubien, M. Ricciardi, Architectural and reconstruction study of the protopalatial settlement of Apodhoulou, Crete.

Saturday early evening, 20 April (Beinecke Rare Book and Manuscript Library) reception for exhibition Mapping the Mediterranean (also displayed in Sterling Library)

Saturday evening, 20 April (Battell Chapel) musical performance: Dimitrios Vassilakis, Daedalus Project – Labyrinth

Sunday morning, 21 April (Luce Hall)

R. Laffineur, session chair

G. Weights and Measures

- 1. A. Michailidou, Balances and weights: material and cognitive equipment in Bronze Age societies in the Aegean and the Near East.
- 2. M. Alberti, Weighing and dieing between east and west: weighing materials from funerary contexts in the Late Bronze Age Aegean.
- 3. V. Aravantinos, A new series of Mycenaean weights from Thebes.
- 4. K. Petruso, Quantal analysis of balance weights from Mycenae and Athens.

H. Statistical Analyses of Ceramics

- 1. A. Van de Moortel, Statistical analyses of conical cups: changes in the organization of pottery production in central Crete, >from MM IIB through LM IB.
- 2. M. Andreadaki-Vlasaki, Measuring the Khanalevri material.
- 3. M. Nikolaidou, From metron to context in Neolithic/EBA Mandalon, Northwest Greece: the example of ceramics.
- 4. S. Andreou, S. Dimitriadis, V. Klikoglou, E. Kiriatzi, K. Kotsakis, A. Tsokalidou, Patterns of demand and supply of Mycenaean and Protogeometric style pottery in LBA Macedonia, with special reference to Thessaloniki Toumba.

Sunday afternoon, 21 April (Luce Hall)

K. Foster, session chair

- I. Measuring and Linear A
- 1. D. Nakassis and K. Pluta, Identifying Linear A words using statistical analysis.
- 2. M. Perna, Ideograms of vases and fractions in Linear A script.

J. METRON and Beyond

- 1. K. Kopaka and G. Nikolakakis, Measuring measure in the Aegean? Human toil and soil as seen from an ethnoarchaeological perspective.
- 2. J. Cherry, Measurement, simplification and the state in the prehistoric Aegean.

K. Measuring From New Perspectives

- 1. G. Bass, A submersible for early wreck surveys.
- 2. T. Cunningham, Applications of aerial kite photography for survey and excavation.
- 3. J.-N. Anslijn and R. Laffineur, Laser plotting and 3D reconstruction of Aegean archaeological remains.
- M. Wiener, plenary address, Scientific dating methods and Aegean Bronze Age chronology
- P. Rehak and J. Younger, chairs, concluding panel

Poster and demonstration sessions (concurrently, Sat morning, afternoon, Sun morning, Luce Hall)

- 1. J. Younger, Calculating vessel volumes.
- 2. C. D'Annibale, Replicating Bronze Age obsidian blade manufacture: towards an assessment of the scale of production during the Minoan period.
- 3. P. Jablonka, TroiaVR: a virtual reality model of Troy and the Troad.
- 4. W. Müller, Precision measurements of Minoan and Mycenaean gold rings with ultrasound.
- 5. J. Crowley, Iconaegean: classification and database for Aegean glyptic.
- 6. P. Belli, On tholoi measurements.
- 7. G. Walberg and J. Hancock, Digital Midea: an interactive computer model of a Mycenaean citadel.

- 8. E. Barber and A. Lillethun, The reconstruction of Aegean cloth and clothing.
- 9. K. Foster, Theran pumice from Egyptian tombs?
- 10. M. de Vries, Measuring figures of the Spedos variety.
- 11. W. Kamm, The Nippur measuring rod and its reference to the linear measure used during the Aegean Bronze Age.
- 12. R. Laffineur et al., Laser and computer technology applied to automatic profile drawing of sherds and pots.
- 13. I. Tzachili, Counting sherds at the peak sanctuary of Vrysinas.
- 14. G. Bianco, A Neopalatial module of measurement in Building T at Kommos.

For more information, contact the conference organizers: Karen FOSTER: Karen.Foster@yale.edu

Robert LAFFINEUR: R.Laffineur@ulg.ac.be

EARLY MATERIALS' FORUM

1-2 November 2001

First Call for Papers and Posters

Mezz 1, Graduate School, Richmond Building, University of Bradford

The meeting is free for all interested parties!

Please send provisional titles and abstracts for papers and posters to the email address below.

Papers should be 20 minutes in length plus 5 minutes for Q&A.

Powerpoint facilities, OHP and slide projectors available.

EMF Objectives

The Early Materials' Forum (EMF) is an *informal* meeting of people with an interest in the analytical study of archaeological and historical materials. At these meetings current work, results, and ideas are presented for discussion. The meetings promote dialogue between researchers in different institutions and between researchers working on diverse topics and materials.

The topics discussed cover a wide range of materials, including glass, ceramics, metals, resins, textiles, stone and pigments. Talks typically outline the archaeological and historical context of the artefacts discussed, the analytical techniques employed, the results obtained, and the interpretation of the results placing their importance within a wider archaeological framework.

Proposed Sessions

- ·Recovery and sampling of early materials
- ·Analytical studies of early materials
- ·Conservation and curation of early materials

Further Information

Refreshments will be provided during breaks. There will be a wine reception on Thursday evening and lunch will be provided on Friday. Food is also available inexpensively from various curry-houses around Campus.

Accommodation information on request. For students, halls of residence / free floor space will be available.

Computing facilities will be available for participants to access email.

EMF websites: www.ucl.ac.uk/emf/ and www.brad.ac.uk/acad/archsci/

For further information and to receive future emails, whether you intend to present or just attend, please email Lyn Wilson: l.wilson2@bradford.ac.uk.

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Fax: +44 (0)1274 235190

Email: L.Wilson2@Bradford.ac.uk

FULBRIGHT RESEARCH AND LECTURING AWARDS FOR 2002-2003

Conduct research, lecture or carry out a combination of lecturing/research activities. Applications welcome from scholars or professionals in all areas of archaeology and anthropology, particularly those with strong interest in Cyprus, Greece, F.Y. R. of Macedonia and Turkey. Applicants may apply for a specific position requested by the host country or develop their own proposals.

All applicants must have U.S. citizenship. Deadline for applications is August 1, 2001. For more information, contact Jennifer Skulte-Ouaiss, Program Officer, Council for International Exchange of Scholars (CIES) at (202) 686-6246 or jskulte@cies.iie.org. For more information on the Fulbright Scholar Program, go to www.cies.org.

ELECTRONIC PRESENTATION OF THE GREEK PREHISTORY

The electronic presentation of the Greek Prehistory completed last year in greek language as part of the big project "Hellenic History" of the Foundation of the Hellenic World, Athens is now available in english as well!

It includes the following web sites:

The Stone Age: http://www.fhw.gr/chronos/01/en/start.html

The Bronze Age: http://www.fhw.gr/chronos/02/en.html

Minoan Crete:

http://www.fhw.gr/chronos/02/crete/en/index.html

The Bronze Age on the Greek Mainland:

http://www.fhw.gr/chronos/02/mainland/en/index.html

The Bronze Age on the Aegean Islands:

http://www.fhw.gr/chronos/02/islands/en/index.html The electronic presentation of the Greek Prehistory completed last year in greek language as part of the big project "Hellenic History" of the Foundation of the Hellenic World, Athens is now available in English as well!

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The Bronze Age on the Aegean Islands:

http://www.fhw.gr/chronos/02/islands/en/index.html

THE MATERIALS RESEARCH SOCIETY (MRS) BULLETIN

SPECIAL 40% DISCOUNT OFF THE JANUARY 2001 ISSUE OF MRS BULLETIN-

Theme Topic: Preserving Art through the Ages

Now Available for Only \$12 (instead of regular \$20 single-issue rate)

The Materials Research Society (MRS) announces a special discount offer on the January 2001 issue of MRS Bulletin. Featuring an exclusive compilation of overview articles on ³Preserving Art through the Ages,² the issue focuses on how the life of materials used for artistic and cultural expression is understood and prolonged through modern materials analysis. Guest Editor for the issue, Pamela B. Vandiver, is senior research scientist in ceramics at the Smithsonian Center for Materials Research and Education in Suitland, Maryland.

Articles include:

- * Materials Science Research for the Conservation of Sculpture and Monuments
- * Investigations of Astrolabe Metallurgy Using Synchrotron Radiation
- * Technical Studies and Replication of Guan Ware, an Ancient Chinese Ceramic

For an introduction and full table of contents for the issue, visit http://www.mrs.org/publications/bulletin/2001/jan/

MRS Bulletin is FREE to current MRS members, both in print format and online. For non-members, the 2001 subscription rate is \$170 in the United States and \$225 elsewhere.

For the most up-to-date information on the Materials Research Society, visit the Web site http://www.mrs.org

Επιστημονικό έργο Εκδοτικός άθλος 3.327 σελίδων για την ιστορία της Κρήτης

Ένας εκδοτικός άθλος, το μεγαλύτερο έργο που έχει κυκλοφορήσει μέχρι σήμερα για την ιστορία της Κρήτης, παρουσιάστηκε χθες στο Ιστορικό Μουσείο Κρήτης. Πρόκειται για τα «Πεπραγμένα του Η' Διεθνούς Κρητολογικού Συνεδρίου» που εκδόθηκαν από την εταιρεία Κρητικών Ιστορικών Μελετών σε επτά τόμους, τριών χιλιάδων τριακοσίων είκοσι επτά (3.327) σελίδων.

Είναι το εκτενέστερο και πολυανθρωπότερο συλλογικό επιστημονικό έργο, για την κρητική αρχαιολογία, ιστορία, φιλοσοφία και εθνογραφία. Τα 222 άρθρα των Πεπραγμένων έχουν την αφετηρία τους στις ανακοινώσεις που παρουσιάσθηκαν στο πλαίσιο των εργασιών του Συνεδρίου που οργάνωσε η ΕΚΙΜ τον Σεπτέμβριο του 1996 στο Ηράκλειο. Στην επεξεργασμένη και ενημερωμένη μορφή με την οποία εκδίδονται σήμερα, συνιστούν ένα μοναδικό πολυπρισματικό πανόραμα της έρευνας των ιστορικών επιστημών για την Κρήτη και έναν αναπόδραστο πυρήνα γνώσης και αναφοράς για κάθε μελλοντική επιστημονική προσπάθεια. Το έργο αποτελείται από τρία μέρη:

- * Το τρίτομο πρώτο μέρος της Προϊστορικής και Αρχαίας Ελληνικής Περιόδου με 25 επιστημονικά άρθρα.
- * Το δίτομο δεύτερο μέρος, της Βυζαντινής και Μεταβυζαντινής Περιόδου, με 56 άρθρα, και
- * Το επίσης δίτομο τρίτο μέρος, της Νεώτερης Περιόδου, με 41 άρθρα. Για το αποτέλεσμα απαιτήθηκε μεγάλος και πολυετής εκδοτικός μόχθος. Η έκδοση κατέστη δυνατή χάρις στη χρηματοδότηση του Περιφερειακού Επιχειρηματικού Προγράμματος (ΠΕΠ) Κρήτης.

TA NEA, 29-06-2001, Σελ.: P03, Κωδικός άρθρου: A17076P032

GEOARCHEOLOGY RESEARCH ASSOCIATES (GRA) SEEK FOR MA TO PHD LEVEL CANDIDATES

Geoarcheology Research Associates (GRA), a company focused on geoarcheological research, has recently been contracted to undertake a comprehensive investigation of a deeply stratified archeological site on the Ohio River.

Cultural deposits extend in excess of 3 meters and feature occupations ranging from the Early Archaic through Woodland and historic periods. The contract calls for the development of a comprehensive stratigraphy to guide archeological excavation and to model environmental reconstructions and site formation histories.

We are currently considering MA to PhD level candidates who have field experience in alluvial settings. The project begins in mid-July and will continue well into 2002. The successful candidate will be part of a geoarcheological team that has been selected to undertake the geoarcheology component of the project. Separate teams of archeologists will be excavating various culturally sensitive portions of the landform. Excavation strategies will be guided, in large measure, by the interpretations and sequences developed by the geoarcheological team.

If you are interested please contact me by email and I will provide you with further details.

Joseph Schuldenrein
President Geoarcheology Research Associates
5912 Spencer Ave.
Riverdale, N.Y. 10471
718-601-3861 (Office)
718-601-3864 (FAX)
917-602-8940 (Cell)
geoarch@aol.com (email)

http://members.tripod.com/geoarch/index.html

ΠΕΡΙΦΕΡΕΙΑΚΟ ΕΠΙΧΕΙΡΗΣΙΑΚΟ ΠΡΟΓΡΑΜΜΑ ΑΤΤΙΚΗΣ (ΠΕΠ)

Plirofories gia to Perifereiako Epixeirisiako Programma Attikis (PEP) yparxoun stin istoselida:

http://www.pep-attikis.org/

Analutika perilamvanontai kai se ekdosi tou Grafeiou Diamesolavisis pou vrisketai stis Grammateies ton Institouton.

Ta Metra 1.2 kai 1.4 exoun san telikous dikaiouxous Ereunitika Kentra. Ta Texnika Deltia ton Metron einai prosvasima apo to Grafeio Diamesolavisis.

Πληροφορίες για το Περιφερειακό Επιχειρησιακό Πρόγραμμα Αττικής (ΠΕΠ) υπάρχουν στην ιστοσελίδα: http://www.pep-attikis.org/

Αναλυτικά περιλαμβάνονται και σε έκδοση του Γραφείου Διαμεσολάβησης που βρίσκεται στις Γραμματείες των Ινστιτούτων.

Τα Μέτρα 1.2 και 1.4 έχουν σαν τελικούς δικαιούχους Ερευνητικά Κέντρα. Τα Τεχνικά Δελτία των Μέτρων υπάρχουν στο Γραφείο Διαμεσολάβησης