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(Ένωση Ελλήνων Χημικών)

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# Πληροφοριακό Δελτίο της Ελληνικής Αρχαιομετρικής Εταιρείας

**- Ιούνιος 2012 -**

**Give me a lever long enough and a fulcrum on which to  
place it, and I shall move the world.**

*(Archimedes)*

## Newsletter of the Hellenic Society of Archaeometry

**- June 2012 -**

**Nr. 135**

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## ΣΥΝΕΔΡΙΑ - CONFERENCES/WORKSHOPS

### POCA 2012

The Institute of Classical Archaeology of the **Friedrich-Alexander-University Erlangen- Nuremberg** in collaboration with the **Interdisciplinary Centre "Ancient World"**, the **German Archaeological Institute/Athens Department** and the Institute of Archaeological Science of the **Ruhr University Bochum** (Jun.-Prof. Bärbel Morstadt) are proud to announce the 12th edition of the Postgraduate Cypriot Archaeology (POCA). This meeting will be held **from November 23-25, 2012** in Hörsaal (lecture hall) C, Philosophisches Seminargebäude/University of Erlangen, Kochstraße 4, D - 91054 Erlangen.

The POCA symposium offers an excellent opportunity to postgraduate students and young scholars, from various backgrounds and disciplines, who are currently carrying out research on Cypriote culture, to present their work, exchange ideas and meet people who carry out research in the same field. We welcome all papers regarding **archaeological, historical, anthropological topics**, or rather **material culture and art history**. There is no chronological limit.

There is no registration fee. The admission to the symposium is open to everybody, and we invite all interested people to attend the communications.

Please send your paper proposal with title, an abstract of no more than 300 words and the name and address of the author (or authors), to Prof. Dr. Hartmut Matthäus, [hartmut.matthaeus@arch.phil.uni-erlangen.de](mailto:hartmut.matthaeus@arch.phil.uni-erlangen.de), and Dr. Christian Vonhoff, [vonhoff@athen.dainst.org](mailto:vonhoff@athen.dainst.org), **no later than Juli 31st, 2012**. The papers can be presented in English or in German. Speakers presenting their paper in German are asked to join an abstract in English and to give their powerpoint presentations either in English, or with bilingual slides. Communications should be 20-25 minutes long, as they will be followed by discussion.

In order to respect the deadline and guarantee a quick publication, we inform the participants that all the manuscripts should be sent to [hartmut.matthaeus@arch.phil.uni-erlangen.de](mailto:hartmut.matthaeus@arch.phil.uni-erlangen.de) and [vonhoff@athen.dainst.org](mailto:vonhoff@athen.dainst.org) **at the latest on January 31st, 2013**. All submissions will be subject to peer-review, and therefore acceptance for presentation does not automatically guarantee inclusion in the final publication.

For further informations :

[http://www.klassischearchaeologie.phil.uni-erlangen.de/projekte/poca2012\\_poca.html](http://www.klassischearchaeologie.phil.uni-erlangen.de/projekte/poca2012_poca.html)

Looking forward to seeing you all in Erlangen!

\*\*\*\*\*

Petra Gehr  
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**CONFERENCE ON THE BIOARCHAEOLOGY**  
**OF ANCIENT EGYPT, 31 JANUARY - 2**  
**FEBRUARY 2013, AMERICAN UNIVERSITY**  
**IN CAIRO, CALL FOR PAPERS**

Our understanding of ancient Egypt has long been rooted in the more obvious manifestations of its material culture in the form of monumental architecture and a vast variety of artefacts. Increasingly, however, attention is given to the less spectacular, but equally, if not more informative bioarchaeological remains that answer questions on health and nutritional status of ancient populations, animal husbandry, diet, agricultural practices, the economy and the natural environment. This conference, the Bioarchaeology of Ancient Egypt, will provide a venue for scholars from the different disciplines of Egyptology, archaeozoology, physical anthropology, and archaeobotany to meet, present and discuss their research in the hopes of future integrated collaboration.

Please send paper title, abstract, and your affiliation to: [bioarchaeology@aucegypt.edu](mailto:bioarchaeology@aucegypt.edu)

The first day of the conference will be devoted to papers relating to Human Remains. The second day will be divided evenly between papers on Zooarchaeology and Archaeobotany.

Topics can include anything related to the Bioarchaeology of Ancient Egypt (particularly drawing from the fields Archaeozoology, Archaeobotany, Physicalanthropology, etc.).

Posters will also be accepted.

Deadline for abstracts: October 1, 2012.

Conference Venue:

Oriental Hall - Tahrir Campus - American University in Cairo

Conference language: English

The plans for publishing the papers will be sent out in subsequent announcements.

A limited number of travel stipends are available for speakers otherwise unable to attend. For those who are interested in this, please write a short paragraph to explain the need for such a stipend and send it to: [bioarchaeology@aucegypt.edu](mailto:bioarchaeology@aucegypt.edu).

Conference Fees for attendees (includes information packet and welcome reception):

Students	\$ 10
Egyptian Students	EGP. 20
Non Students	\$ 20
Egyptian Professionals	EGP. 50

Payment in Cairo, various currencies accepted

Bioarchaeology of Ancient Egypt is made possible through a generous grant from:

The Wenner-Gren Foundation

And also sponsored by:

The American University in Cairo (AUC), The Institute for Bioarchaeology (IB), & The American Research Center in Egypt (ARCE)

**Please visit the site: <http://conf.aucegypt.edu/BAE2013>**

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**SPYRIDON MARINATOS 1901-1974, TWO-  
DAY SYMPOSIUM, NATIONAL AND  
KAPODISTRIAN UNIVERSITY OF ATHENS,  
DEPARTMENT OF ARCHAEOLOGY AND  
HISTORY OF ART, 'IOANNIS  
DRAKOPOULOS' AMPHITHEATRE,  
CENTRAL UNIVERSITY BUILDING, 30  
PANEPISTIMIΟΥ STR., ATHENS, 22ND-23TH  
JUNE 2012**

Dear all,

The updated programme and abstracts for the forthcoming symposium in memory of Spyridon Marinatos, organised by the University of Athens, have been posted at:

<http://www.arch.uoa.gr/anakoinoseis-drasthriothtes-kai-prokhry3eis/drasthriothtes/proboli-drasthriothtas-tmimatos/diimero-symposio-amfi8eatro-iwannoy-drakopoyloy-22-23-6-2012.html>

The posts are found in the Greek section of the University website only, but if you click on the relevant links (Πρόγραμμα and Περιλήψεις) you may download the pdfs, which are both in Greek and in English.

\*\*\*\*\*

Γιώργος Βαβουρανάκης  
Λέκτορας "Προϊστορικού Αιγαίου: Θεωρητικής Αρχαιολογίας"  
Εθνικό & Καποδιστριακό Πανεπιστήμιο Αθηνών

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Giorgos Vavouranakis  
Lecturer in "Prehistoric Aegean: Theoretical Archaeology"  
National & Kapodistrian University of Athens

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# **12TH INTERNATIONAL PALEOLIMNOLOGY SYMPOSIUM TO BE HELD IN GLASGOW, SCOTLAND FROM AUGUST 21ST – 24TH 2012, FINAL CIRCULAR**

On behalf of all UK palaeolimnologists, welcome to the 12th International Paleolimnology Symposium to be held in Glasgow, Scotland from August 21st – 24th 2012.

We are looking forward to a stimulating scientific meeting embracing every aspect of palaeolimnology involving scientists, young and old, from every corner of the world, and we are planning a social programme to suit all tastes.

The meeting will take place in the Scottish Exhibition and Conference Centre (SECC) in the centre of Glasgow where there are first-rate facilities for both oral and poster sessions.

Glasgow itself is one of the UK's most cultured and lively cities. It is located on the famous River Clyde with Loch Lomond giving access to the stunning Scottish Highlands only a short distance away to the north.

The Local Organising Committee (from University College London and the University of Newcastle) together with colleagues throughout the UK are working hard to ensure the symposium will be successful and memorable and we will do all in our power to take care of your needs.

## **Timetable**

1st August 2011 First circular & website launch  
1st November 2011 Second circular & further details  
6th April 2012 Final circular and registration open  
15th May 2012 Deadline for early bird registration  
1st July 2012 Final deadline for abstract submission  
21st August 2012 Conference starts!

<http://paleolim.org/ips2012>

<https://www.facebook.com/IPS12>

<https://twitter.com/#!/paleolim2012>

## **Programme**

The science programme will centre on 16 specially convened sessions. These will consist of 2 parallel streams over 4 days for both oral and poster presentations, each with a keynote speaker.

<http://paleolim.org/ips2012/index.php/programme/>

There will be 16 special sessions each with a keynote and associated oral and poster presentations.

**Session 1: Isotopes and biogenic silica: understanding lake sediment archives**

**Session 2: Applied palaeolimnology**

Session 3: Lurking beneath the surface: decadal to millennial scale records of environmental pollution

Session 4: Environmental change in the high latitudes

Session 5: Advances in development of lake chronologies

Session 6: Regional integration of recent lake sediments for management of landscapes, ecosystems and ecosystem services (PAGES Focus 4)

Session 7: Tibetan Plateau: disentangling the Asian monsoon system

Session 8: Environmental records of climate change and human impacts in mountain regions

Session 9: Thirty years of quantitative palaeoenvironmental reconstructions: lessons from the past and future challenges

Session 10: Understanding low-latitude climate change: recent developments from palaeolimnology

Session 11: Recent biomarker advances and applications in paleolimnology

Session 12: Land, sea and society: palaeoenvironmental perspectives on coastal, brackish and saline systems

Session 13: Past climates of the Southern Hemisphere

Session 14: Palaeoecological reflections of biodiversity: challenges and new advances

Session 15: Holocene lake sediment records of changing terrestrial matter cycles and their impact on lake productivity and functioning

Session 16: What have we learned from drilling large lakes?

### **Plenary Speakers**

We are delighted to have confirmation of the following plenary speakers:

- Professor Tom Johnson, Large Lakes Observatory, University of Minnesota, Duluth, USA
- Professor John Anderson, Department of Geography, Loughborough University, UK
- Dr Marie Elodie Perga, Alpine Centre for Research on Lake Ecosystems and Food Webs, National Institute for Agronomical Research (INRA), France

### **Registration**

Registration will be open for IPS2012 on 30th March 2012. During registration you will be able to register an accompanying person for the symposium events (£30) and dinner & ceilidh (£60).

### **Information for participants**

#### **Venue**

We are proud to be holding IPS2012 at Scotland's premier venue – the Scottish Exhibition and Conference Centre (SECC) in Glasgow.

The symposium will take place between the 21st and 24th of August 2012, with an ice-breaker on the evening of the 20th.

**How to get here** (info on SECC website)

#### **Fees**

Registration fees include mandatory IPA Membership Fee of £25\*. Reduced rates for 'early bird' registration up until 15th May 2012. To qualify for 'early bird' rate you must register AND pay by May 15th. Fees cover registration and mid-symposium excursion, tea and coffee, ice breaker event and a civic reception at Glasgow City Chambers.

Lunch is NOT included but there will be facilities available for people to buy lunch.

until 15th May 2012 after 15th May 2012

Student £270 + £25 = **£295** £348 + £25 = **£373**

Full £378 + £25 = **£403** £450 + £25 = **£475**

To register you will need to visit the **Delegate Area** to create a username and login to register, pay and submit an abstract.

\* This is a subscription fee to the International Paleolimnology Association (IPA) valid for the next three years. The principal for charging such a fee in this way was agreed at the last symposium in Guadalajara.

Without such a fee the IPA has no source of income to cover the essential costs of running itself. At the moment these costs include maintaining the website, striking Lifetime Achievement Medals and paying the expenses of LIFERS to attend the symposium.

### **Symposium Dinner**

The symposium dinner will be held in Bute Hall on Thursday 23rd August and will be a three course dinner followed by a ceilidh. A ceilidh (pronounced “kay-lee”) is a traditional

Gaelic dance with a small band and someone to show you the steps. The dinner and ceilidh will cost £60. This can be booked when registration opens in February 2012.

### **Excursions**

There will be a mid-conference excursion which is included in the conference fee.

Delegates can choose between:

- Loch Lomond boat trip
- distillery tour
- Glasgow city tour

There is an additional post-symposium excursion available catering for a maximum of 20 participants. A provisional itinerary can be found on this page:

- SW Scotland & Northern Ireland (25-30th Aug) - £1224 per person

Travel will be by mini-coach and accommodation provided on a dinner, bed and breakfast, single occupancy basis in mid-range local hotels.

A 50% deposit of £612 will be required by May 31st 2012 to secure a booking. The remaining 50% payment of £612 will be required by July 9th 2012.

### **Maps**

Glasgow is in Scotland and is served by several major airports, motorways and rail links. The venue is situated on the north bank of the river Clyde close to the city centre, a short walk from the main stations and university campuses.

### **Accommodation**

We have negotiated discounted rates at several hotels, covering a range of budgets – use the link below:

<https://www.conferencebookings.co.uk/delegate/GMBIPA2012>

You can also book accommodation at University of Glasgow halls of residence. Cairncross

House offers cheap accommodation in university residence close to the venue for around £21 per person per night.

<http://www.gla.ac.uk/services/cvso/accommodation/universityofglasgowresidences/cairncrosshouse/>

Please note that accommodation booking and payment cannot be taken by IPS2012 organisers.

### **Transport**

The following links may be useful:

- **Strathclyde Partnership for Transport**
- **BAA Glasgow Airport**
- **Glasgow Prestwick Airport**
- **BBC Glasgow Traffic News**

### **Contact**

To contact the local organising committee please email Andrew Henderson

([andy@paleolim.org](mailto:andy@paleolim.org))

For inquiries about payments please email Dr Simon Patrick ([simon@paleolim.org](mailto:simon@paleolim.org))

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**THATCAMP FOR COMPUTATIONAL  
ARCHAEOLOGY, FRIDAY, AUGUST 10, 2012,  
HARRISON-SMALL SPECIAL COLLECTIONS  
LIBRARY OF U.VA., CHARLOTTESVILLE,  
VIRGINIA**

[The Computer Applications and Quantitative Methods in Archaeology \(CAA\) North American chapter](#) is pleased to announce [THATCamp for computational archaeology](#), co-sponsored by the University of Virginia Library. It will be held Friday, August 10, 2012 in the Harrison-Small Special Collections Library of U.Va., Charlottesville, Virginia. The registration period for the event is now open and closes May 31. Applicants will be notified of their acceptance by June 8.

THATCamp (The Humanities and Technology Camp) CAA-NA is an "unconference" with the mission of facilitating communication and collaboration between students, scholars, professionals, and other interested individuals within archaeology and related disciplines. General themes (borrowed from CAA 2012, held in Southampton, UK) are as follows:

- Simulating the Past
- Spatial Analysis
- Data Modelling & Sharing
- Data Analysis, Management, Integration & Visualisation
- Geospatial Technologies
- Field & Lab Recording
- Theoretical Approaches & Context of Archaeological Computing
- Human Computer Interaction, Multimedia, Museums

Please visit <http://caana2012.thatcamp.org/> for more information. Inquiries can be made to [thatcampcaana@gmail.com](mailto:thatcampcaana@gmail.com).

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**COLLOQUE INTERNATIONAL ON: “UN  
MILLÉNAIRE D’HISTOIRE ET  
D’ARCHÉOLOGIE CHYPRIOTES (1600-600  
AV. J.-C.)”, MILAN, IULM UNIVERSITY, 18-19  
OCTOBER 2012**

Dear Colleagues,

IULM University of Milan and Sapienza University of Rome are pleased to announce the Colloque International on: “Un millénaire d’histoire et d’archéologie chypriotes (1600-600 av. J.-C.)”. The Colloque International will be held in Milan, at IULM University, on 18 and 19 October 2012.

For further information:

<http://www.iulm.it> > News/eventi > Colloque International

<http://www.iulm.it/wps/wcm/connect/iulmit/iulm-it/News-e-eventi/Colloque-international>

<http://www.iulm.it/wps/wcm/connect/iulmit/iulm-it/News-e-eventi/Colloque-international/Participants-au-Colloque>

Kind regards,

Mario Negri

\*\*\*\*\*

**Mario Negri**

Pro-Rettore Vicario

Direttore dell'Istituto di Scienze dell'Uomo, del linguaggio e dell'ambiente

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**HISTORICAL METALLURGY SOCIETY**  
**ANNUAL CONFERENCE - NOT SO MUCH**  
**GOLD, SILVER, BRONZE - MORE COPPER,**  
**ZINC AND BRASS, SS GREAT BRITAIN,**  
**BRISTOL, ENGLAND, 6TH -7TH OCTOBER**  
**2012**

The Historical Metallurgy Society is celebrating its 50th anniversary this year with a series of conferences. In this Olympic year the Historical Metallurgy Society would like to invite you to join us for a one day conference on the real stories behind non-ferrous metals - not just gold, silver, and bronze, but copper, zinc, brass and others.

This conference offers an opportunity to explore themes relating to the history and archaeology of all non-ferrous metals. With the SS Great Britain as a backdrop there will be a focus on the broad theme of communication; communication of ideas, metals as communication tools and the role of non-ferrous metallurgy in the slave trade.

The conference on the 6th of October will be hosted in the stunning Victorian surrounds of the SS Great Britain, the world's first great ocean liner. Registration for the conference will include access to the ship, refreshments, a light lunch and afternoon tea. The Bristol area is rich with non-ferrous archaeological sites, and on Sunday 7th October there will be an opportunity to explore Roman lead workings and post-medieval copper works with expert guides.

Offers of papers are welcome on any of these themes. Please send your abstract to [wave@mattnic.co.uk](mailto:wave@mattnic.co.uk) by the 31st of May.

HMS members £45

Non-members £55

Student HMS members £35

The booking form is available on the Historical Metallurgy website <http://hist-met.org/conf2012.html> . For more information or contact Eleanor Blakelock at [eleanor.blakelock@ironsmelting.net](mailto:eleanor.blakelock@ironsmelting.net)

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**THIRD BALKAN SYMPOSIUM ON**  
**ARCHAEOLOGY, *THE UNKNOWN FACE OF***  
**THE ARTWORK, 29-30TH OCTOBER 2012,**  
**BUCHAREST, ROMANIA**

The Organizing Committee is pleased to invite you to participate in the “*3rd Balkan Symposium on Archaeology - The Unknown Face of the Artwork*”, which will be held in Bucharest – Romania, 29-30 October 2012.

The Symposium continues the tradition of previous Balkan Network of Archaeology scientific meetings, the first being held in Ohrid - Republic of Macedonia in 2008 and the second in Istanbul – Turkey in 2010.

The biennial event will gather scientists, conservators, restorers, architects, companies, decision-makers, professors and students involved in projects on all aspects of archaeology, the application of modern experimental methods and techniques used in investigation, identification and dating of ancient artifacts, as well as related fields of archaeology and art history.

Please visit the site: <http://certo.inoe.ro/balk/>

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**EUROMED2012 - INTERNATIONAL**  
**CONFERENCE DEDICATED TO CULTURAL**  
**HERITAGE AND DIGITAL LIBRARIES**  
**UNDER THE PATRONAGE OF UNESCO, IN**  
**COOPERATION WITH THE EUROPEAN**  
**COMMISSION AND UNDER THE AUSPICES**  
**OF THE 2012 CYPRUS PRESIDENCY OF THE**  
**COUNCIL OF THE EU**

**[EuroMed2012 Opening Ceremony with the EU Commissioner for Education and Culture Mrs Androulla Vassiliou and CY Minister of Education and Culture](#)**

**[The event of the European Union on Cultural Heritage](#)**  
**CALL FOR PAPERS – EXTENDED DEADLINE**

\*\*\* **Oct. 29th - Nov. 3rd, 2012**

\*\*\* Limassol, Cyprus

\*\*\* <http://www.euromed2012.eu>

\*\*\* **Extended Paper submission deadline: JUNE 15th**

Dear colleagues,

The 4th EUROMED conference brings together researchers, policy makers, professionals, fellows and practitioners to explore some of the more pressing issues concerning Cultural Heritage today. In particular, the main goal of the conference is to focus on interdisciplinary and multi-disciplinary research on tangible and intangible Cultural Heritage, using cutting edge technologies for the protection, restoration, preservation, massive digitalization, documentation and presentation of the Cultural Heritage contents. At the same time, the event is intended to cover topics of research ready for exploitation, demonstrating the acceptability of new sustainable approaches and new technologies by the user community, owners, managers and conservators of our cultural patrimony.

**Keynote Speakers:**

- Dr. KISHORE RAO, Director of UNESCO's World Heritage Center
- Dr MICHAEL T. JONES, Google's Chief Technology Advocate, former Chief Technologist of Google Maps/Google Earth and CTO of Keyhole Corporation
- Dr. THOMAS R. KLINE, Lawyers for Cultural Heritage Looting and Preservation
- Prof. NADIA MAGNENAT-THALMANN, Director of MIRALab at the University of Geneva (Switzerland) and Director of the Institute for Media Innovation (IMI) at Nanyang Technological University in Singapore
- Prof. DANIEL THALMANN, founder of VRlab at EPFL (Switzerland) and professor at the Institute for Media Innovation (IMI) at Nanyang Technological University in

Singapore

- Dr LIVIO DE LUCA, director of MAP laboratory at CNRS Marseille (France)
- Dr ELEANOR E. FINK, international art and technology consultant the Institute of Information Science, University of Southern California, the World Bank, and International Finance Corporation
- Dr JOHN GREAVES, the pioneer of the RF ID technology
- Prof. STEFAN GRADMANN, professor of knowledge management and semantic knowledge architectures at the School of Library and Information Science of Humboldt-University in Berlin (Germany)

**Topics and themes:**

Researchers and practitioners willing to participate to the EUROMED 2012 conference are invited to submit papers on original works addressing the following subjects and research themes:

- i) PROTECTION, RESTORATION AND PRESERVATION OF TANGIBLE AND INTANGIBLE CULTURAL HERITAGE
- ii) DIGITAL HERITAGE DOCUMENTATION AND PRESENTATION

More detail information regarding the themes can be found at:

<http://www.euromed2012.eu/index.php/call-for-participation/>

**Submission of Papers:**

Submissions for the event are completely electronic through the on-line submission website available at <http://www.euromed2012.eu/index.php/paper-submission/>

The conference accepts only original, unpublished work written in English which will be blind-reviewed and published on SPRINGER LNCS.

We are soliciting three types of contributions:

1. **Full research papers:** they present new innovative research developments and results. They will feature a full-length oral presentation and will be published in a high-quality proceedings volume. Each submitted paper must not exceed 10 pages in total.
2. **Project papers:** they focus on the description of project organization, use of technology and lessons learned. They will feature a short oral presentation and will be published in a high-quality proceedings volume. Each submitted paper must not exceed 10 pages in total.
3. **Short papers:** they present preliminary ideas and works-in-progress. These papers will have a short oral presentation and will be also available also as posters during the whole period of the conference. Each short paper must not exceed 6 pages in total.

**The 15 best submitted papers will be published on a special issue of the International Journal Heritage in the Digital Era (<http://www.multi-science.co.uk/ijhde.htm>)**

**Important Date:**

**Extended paper submission: 15<sup>th</sup> of JUNE 2012**

Best Regards,

Marinos Ioannides

Cultural Heritage Conference:

[www.euromed2012.eu](http://www.euromed2012.eu)

Journal on Digital Heritage:

[www.multi-science.co.uk/ijhde.htm](http://www.multi-science.co.uk/ijhde.htm)

Digitizing the Past: THE ASINOU UNESCO WHL Monument

<http://www.youtube.com/watch?v=a8LVyI9x1kU&feature>

<http://blog.europeana.eu/category/european-ministers/>

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**INTERNATIONAL NUCLEAR PHYSICS**  
**CONFERENCE (INPC2013), FIRENZE 2-7**  
**JUNE**

Dear Colleagues,

please find in the following web address the first circular of the International Nuclear Physics Conference (INPC2013): <http://www.inpc2013.it>.

On behalf of Organizing Committee we would be very happy to welcome you in Florence.

Sincerely yours.

C. Signorini, Chair

P.A. Mandò, Co-chair

**LSC2013 INTERNATIONAL CONFERENCE**  
**ON ADVANCES ON LIQUID SCINTILLATION**  
**SPECTROMETRY, UNIVERSITY OF**  
**BARCELONA, FACULTY OF CHEMISTRY,**  
**DEPT. ANALYTICAL CHEMISTRY,**  
**BARCELONA, SPAIN 18 – 22 MARCH 2013,**  
**FIRST ANNOUNCEMENT**

e-mail: LSC2013BCN@ub.edu

Website: [www.ub.edu/LSC2013BCN](http://www.ub.edu/LSC2013BCN)

**General Information**

Liquid Scintillation Counting (LSC) is a widely used technique for radionuclide determination in many different fields. The number of important studies developed throughout the world has yielded a significant increase in experience and the development of this technique. It is worth sharing this knowledge between the different researchers and specialists, and the International Advances in Liquid Scintillation Spectrometry Conferences is a traditional forum for this purpose.

LSC Conferences started in 1957 in Chicago (USA) organized by Northwestern University and it has continued more recently at Karlsruhe (Germany) 2001, Katowice (Poland) 2005, Davos (Switzerland) 2008 and Paris (France) 2010 with a total of 21 editions.

The conference LSC2013 in Barcelona continues this series and seeks to provide an appropriate forum for discussing the latest developments and applications.

Specialists and users of LSC are encouraged to attend and contribute with their experience. Young scientists are especially welcome.

**Main Topics**

Instrumentation, Methods and Scintillators

Radionuclide Metrology Using LSC

Calibration and Standardization

Data Evaluation and Spectrum Analysis

Applications Based on Alpha/Beta Spectrometry

Applications in Environmental Monitoring

Applications in Bioscience and Medicine

Applications in Geology and Geochronology

Natural Product Verification

LSC in Decommissioning and Nuclear Materials Studies

Quality Assurance

LSC in Neutron Detection

LSC in Drug Studies

**Conference language will be English**

**Important Dates and Deadlines!**

**May, 2012:** First announcement

**September, 2012:** Second announcement

**February, 2013:** Third announcement

**From September 10th, 2012 to January 31th, 2013:** Early Registration

(After this date registration fee will increase 50 €)

**October, 2012: Deadline abstract submission**

More information will follow on the LSC2013 website ([www.ub.edu/LSC2013BCN](http://www.ub.edu/LSC2013BCN))

### **Registration Fees**

The registration fee includes Special Events, daily lunch, Proceedings.

**Early registration:** Professionals 550 €

Students 390 € (without Proceedings)

**After January 30th, 2013:** Professionals 600 €

Students 440 € (without Proceedings)

**Accompanying person:** €90 (Special Events)

### **Contact**

José F. García, Alex Tarancón

Department of Analytical Chemistry, Faculty of Chemistry

University of Barcelona

C/ Diagonal 645

08028 Barcelona

Spain

Telephone +34 934021281

Fax. +34 934021233

Email: [LSC2013BCN@ub.edu](mailto:LSC2013BCN@ub.edu)

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**FIRST INTERNATIONAL SYMPOSIUM ON  
ANCIENT CULTURES IN SOUTHEAST  
EUROPE AND EASTERN MEDITERRANEAN  
ENTITLED "MEGALITHIC MONUMENTS  
AND CULT PRACTICES", OCTOBER 11-14,  
2012, SOUTH-WEST UNIVERSITY "NEOFIT  
RILSKY", BLAGOEVGRAD, BULGARIA**

TOPICS:

History of Culture. Ancient cultures  
Archaeology  
Ethnology  
Archaeoastronomy  
Geoarchaeology and Archaeomineralogy

Your participation in the Symposium will be our pleasure and honour.

Sincerely yours,

Vasil Markov

<http://satrae.swu.bg/?lang=en>

<http://www.swu.bg/?lang=en>

\*\*\*\*\*

Prof. Dr. Sc. Vassil Markov  
South-West University "Neofit Rilsky"  
Faculty of Arts  
Vice Dean  
Department of Culture  
Lecturer in Ancient Cultures  
Blagoevgrad 2700, Bulgaria

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**CALL FOR PAPERS: J.R.B. STEWART-AN  
ARCHAEOLOGICAL LEGACY, CYPRUS  
AMERICAN ARCHAEOLOGICAL RESEARCH  
INSTITUTE (CAARI), 1-3 MARCH 2013,  
CAARI, NICOSIA, CYPRUS**

A posthumous conference and Festschrift in honour of the 100th birthday of J.R. Stewart, organized by the Cyprus American Archaeological Research Institute (CAARI).

Date: 1-3 March 2013, to be held at CAARI in Nicosia, Cyprus

The aims of the conference are to honour the legacy of James Rivers Barrington Stewart, the Australian archaeologist best known for his pioneering work on the Early Cypriot Bronze Age. As an eminent prehistorian and excavator he established many of the typological and chronological markers that we still use today, especially in Cyprus. As a teacher and researcher, he built a strong foundation in Near Eastern archaeology at the University of Sydney and established important collections of Cypriot antiquities in university departments, galleries and museums in both Australia and New Zealand. Importantly, after his death in 1962 his estate was safeguarded by his wife Eve, and it was under her stewardship that CAARI in particular benefited from Stewart's legacy. Today CAARI retains a portion of their archives and the J.R. Stewart residence honors his name. CAARI continues to serve the needs of the international archaeological community and fosters links between the USA, Australia, Cyprus and many other countries in Europe, the Middle East and around the world. It is in this spirit that we invite speakers to submit papers on current research, re-investigated sites and biographical pieces that owe a particular debt to Stewart's archaeological legacy.

The specific themes of the conference will be developed on the basis of the papers that are accepted, but proposals that deal with the prehistoric and protohistoric periods of Cyprus and the Near East that captured J.R. Stewart's attention are intended to be the focus.

There will be an opening plenary presentation by Dr. Robert Merrillees on the first evening, followed by a reception and exhibition. The conference will take place over the weekend.

If you wish to submit a paper, please send a 200-word abstract to:  
[director@caari.org.cy](mailto:director@caari.org.cy)

before 31 October 2012 for consideration by the Steering Committee. Abstracts submitted after the deadline may be accepted or rejected at the discretion of the Committee.

Abstracts should include:

- 1) the name and full contact details and affiliation of the contributor
- 2) the title of the proposed paper
- 3) what the proposed paper intends to cover

4) an outline of the approach it will take.

Individual presentations are limited to 20 minutes with additional time for questions.

A publication of the proceedings is anticipated and participants will be asked to submit their papers by 31 August 2013.

Organizing Committee: Dr. Andrew McCarthy (CAARI Director); Prof. Emeritus A. Bernard Knapp (University of Glasgow); Dr. Jennifer Webb (La Trobe University)

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Cyprus American Archaeological Research Center (CAARI)

11 Andreas Dimitriou Street

1066 Nicosia, Cyprus

E-mail: [admin@caari.org.cy](mailto:admin@caari.org.cy)

Tel: +351 22456414

Web: [www.caari.org](http://www.caari.org)

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ΔΙΕΘΝΕΣ ΣΥΝΕΔΡΙΟ

## ΕΚΑΤΟ ΧΡΟΝΙΑ ΕΡΕΥΝΑΣ ΣΤΗΝ ΠΡΟΪΣΤΟΡΙΚΗ ΜΑΚΕΔΟΝΙΑ

επισκεφθείτε [http:// macedonia.prehistoric-conference.com](http://macedonia.prehistoric-conference.com)

ΑΡΧΑΙΟΛΟΓΙΚΟ ΜΟΥΣΕΙΟ ΘΕΣΣΑΛΟΝΙΚΗΣ | 22-24 ΝΟΕΜΒΡΙΟΥ 2012

### 1<sup>η</sup> Εγκύκλιος

Το 2012 αποτελεί μια επετειακή χρονιά για την πόλη της Θεσσαλονίκης και ευρύτερα για τη βόρεια Ελλάδα, καθώς συμπληρώνεται μία εκατονταετία από την ενσωμάτωσή της στο Ελληνικό Κράτος. Αυτά τα 100 χρόνια η αρχαιολογική έρευνα πέρασε από πολλά στάδια και κλήθηκε να προσαρμοσθεί στις μεταβαλλόμενες ιστορικές συνθήκες, να σταθεί κριτικά απέναντί τους ή να τις υπηρετήσει. Στα 100 χρόνια που πέρασαν έγιναν πολλά, μέσα από τη δράση εκατοντάδων Ελλήνων και ξένων αρχαιολόγων, της Αρχαιολογικής Υπηρεσίας, του Αριστοτέλειου Πανεπιστημίου Θεσσαλονίκης και των Ξένων Αρχαιολογικών Σχολών, αλλά υπάρχουν και πολλά που απομένουν να γίνουν και μπορούν να αποτελέσουν τους στόχους των επόμενων δεκαετιών. Δίνεται, έτσι, η αφορμή να γίνει ένας απολογισμός των όσων έχει επιτύχει η προϊστορική αρχαιολογική έρευνα μέχρι σήμερα, να γίνει μία κριτική προσέγγιση των θεωρητικών και μεθοδολογικών της προσανατολισμών και να αναδειχθούν οι προοπτικές για το μέλλον.

Το Αρχαιολογικό Μουσείο Θεσσαλονίκης κρίνοντας ως ιδιαίτερα σημαντική τη σφαιρική και ουσιαστική παρουσίαση των αποτελεσμάτων της έρευνας αλλά και την έναρξη ενός διαλόγου, που δεν αφορά μόνο τους επιστήμονες, αλλά το σύνολο της κοινωνίας και σχετίζεται με τις κοινωνικές συνδέσεις της αρχαιολογίας, διοργανώνει το Συνέδριο για τα Εκατό Χρόνια Έρευνας της Προϊστορικής Μακεδονίας σε συνεργασία με το Αριστοτέλειο Πανεπιστήμιο Θεσσαλονίκης.

Σας καλούμε να πλαισιώσετε αυτή την προσπάθεια και να συμμετέχετε στο Συνέδριο με ανακοινώσεις, οι οποίες θα είναι απαραίτητες συνθετικές και θα αποτελέσουν συμβολή στη γνώση μας για την Προϊστορική Μακεδονία. Το χρονολογικό πλαίσιο το οποίο θα καλυφθεί περιλαμβάνει όλες τις περιόδους από την Παλαιολιθική Εποχή μέχρι το τέλος της Ύστερης Εποχής του Χαλκού και τη μετάβαση στην Πρώιμη Εποχή του Σιδήρου. Οι κύκλοι γύρω από τις οποίους μπορούν να κινηθούν οι ανακοινώσεις είναι οι ακόλουθοι:

1. **Η ιστορία της προϊστορικής έρευνας στη Μακεδονία:** Ιστορικές και κριτικές προσεγγίσεις – Θεωρητικά και μεθοδολογικά ζητήματα – Οι ανασκαφές και τα πρόσωπα της έρευνας.
2. **Χρονολόγηση:** Στρωματογραφικές ακολουθίες – Ανασκαφικά σύνολα – Απόλυτη χρονολόγηση.
3. **Το περιβάλλον της Μακεδονίας και ο προϊστορικός άνθρωπος:** Παλαιοπεριβάλλον – Διατροφή – Ζωοαρχαιολογία – Αρχαιοβοτανική-Φυσική ανθρωπολογία-Αρχαιομετρία.
4. **Η δημιουργία του χώρου:** Αρχιτεκτονική – Οικισμοί και νεκροταφεία – Ο χώρος και οι νοσηματοδοτήσεις του.

5. **Από τα αντικείμενα στις ιδέες:** Τεχνολογίες και τεχνουργήματα – Ερμηνευτικές προσεγγίσεις – Η γνώση μας για τις προϊστορικές κοινωνίες της Μακεδονίας μέσα από τις μέχρι σήμερα έρευνες.

6. **Από την αρχαιολογική έρευνα στην κοινωνία :** Μουσειολογικά και μουσειοπαιδαγωγικά ζητήματα – Δημόσια αρχαιολογία – Προϊστορικές έρευνες και μεγάλα δημόσια έργα.

7. **Αρχαιολογία και κρίση: μετά τα εκατό χρόνια, τι;** Προβληματισμοί για το μέλλον και τις προοπτικές της προϊστορικής αρχαιολογικής έρευνας στο ρευστό και μεταβαλλόμενο περιβάλλον της εποχής μας.

- Το συνέδριο θα πραγματοποιηθεί στο Αρχαιολογικό Μουσείο Θεσσαλονίκης.
- Ως καταληκτική προθεσμία υποβολής αιτήσεων συμμετοχής ορίζεται η 31<sup>η</sup> Μαΐου 2012.
- Οι δηλώσεις συμμετοχής να συνοδεύονται από σύντομη περίληψη (όχι παραπάνω από 300 λέξεις).
- Η επιστημονική και οργανωτική επιτροπή διατηρεί το δικαίωμα να μη δεχθεί ανακοινώσεις που δεν εντάσσονται στη θεματολογία και τη φιλοσοφία του συνεδρίου.
- Θα υπάρχει η δυνατότητα συμμετοχής με ανακοίνωση προφορική ή αναρτημένη (poster).
- Δεν θα καλυφθούν έξοδα μετακίνησης και διαμονής.

#### **Συντονισμός διοργάνωσης**

Δρ. Πολυξένη Αδάμ-Βελένη, Διευθύντρια Αρχαιολογικού Μουσείου Θεσσαλονίκης

Δρ. Ευαγγελία Στεφανή, Αρχαιολόγος Αρχαιολογικού Μουσείου Θεσσαλονίκης

#### **Επιστημονική Επιτροπή**

Στέλιος Ανδρέου, Καθηγητής Προϊστορικής Αρχαιολογίας Α.Π.Θ.

Νίκος Ευστρατίου, Καθηγητής Προϊστορικής Αρχαιολογίας Α.Π.Θ.

Κώστας Κωτσάκης, Καθηγητής Προϊστορικής Αρχαιολογίας Α.Π.Θ.

Αικατερίνη Παπαευθυμίου-Παπανθίμου, Καθηγήτρια Προϊστορικής Αρχαιολογίας Α.Π.Θ.

**PLASTIC SCINTILLATION IN PRACTICE,**  
**INTERNATIONAL WORKSHOP,**  
**BARCELONA 15 – 16 MARCH 2013,**  
**UNIVERSITY OF BARCELONA, FACULTY OF**  
**CHEMISTRY, DEPT. ANALYTICAL**  
**CHEMISTRY, BARCELONA, SPAIN**

Website: [www.ub.edu/LSC2013BCN/PS](http://www.ub.edu/LSC2013BCN/PS)

**General information**

Plastic Scintillation (PS) has been known since the origin of the development of the Scintillation techniques in the 1960's. However, its application to routine activity determination of radionuclides since that time has been very limited.

The capability of PS microspheres (PSm) for this purpose has been evaluated during the last decade with satisfactory results.

The objective of this international workshop is to introduce the participants to the fundamentals but in particular to the practical aspects of the use of Plastic Scintillation microspheres for routine determinations.

**The course will include theoretical and practical sessions**

**Number of places: 10**

**Preliminary program topics**

Fundamentals of Plastic Scintillation

Sample preparation and measurement conditions using PSm.

Results treatment and discussion.

**The workshop language will be English**

**Dates**

From **March 15th**, 2013 to **March 16th**, 2013

The workshop will last 1.5 days, from Friday morning to Saturday noon.

**Important dates and deadlines**

**Second announcement** September 2012

**Registration:** September 10th to December 20th , 2012

More information will follow on the website [www.ub.edu/LSC2013BCN/PS](http://www.ub.edu/LSC2013BCN/PS)

**Registration Fees**

Registration fee: 290 € (including Material, Documentation, Coffee Breaks, Friday Lunch)

**Contact**

José F. García ([jfgarcia@ub.edu](mailto:jfgarcia@ub.edu)) and Alex Tarancón ([alex.tarancon@ub.edu](mailto:alex.tarancon@ub.edu))  
Department of Analytical Chemistry, Faculty of Chemistry  
University of Barcelona  
C/ Diagonal 645  
08028 Barcelona  
Spain  
Telephone +34 934021281  
Fax. +34 934021233

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## **ARCHAEOLOGY FIELDWORK IN CUEVA DEL ANGEL (LUCENA, CÓRDOBA, SPAIN), SUMMER 2012**

### **INFORMATION ABOUT THE ANGEL'S CAVE:**

Angel's Cave (Lucena - Córdoba) is a new Palaeolithic site at the south of the Iberian Peninsula. The sedimentary deposits were discovered in 1995. We have worked during four summers (1995, 1996, 2002 and 2003). Actually it shows a stratigraphy profile with five metres of potency. Actually we go on working fundamentally with the typology of the lithic industries, the fauna, the geology of the cave and the palinology. The fauna and the lithic industries that have been recuperated, like the made datations, permit us to show Angel's Cave like a site of the middle Pleistocene and the old upper Pleistocene, for that this cave is exceptional in the Iberian peninsula. The aim of the excavation of this campaign is to know if there is or not there is archaeological and paleontological record in two new areas: the so-called Covacha, and the Great Chasm anthropic stratigraphic character in both the little cave and inside the abyss. So this is a unique site not only in Spain but in Europe.

You can see [www.museodelucena.com](http://www.museodelucena.com)

**DURING:** The minimum stay is 1 month (July or August), but anyone interested may request two months.

**CITY:** Lucena (Córdoba).

**ORGANIZATING:** Museo Arqueológico y Etnológico de Lucena and Team Project of the Angel's Cave.

**MÁSTERS:** Consejería de Cultura de la Junta de Andalucía and Ayuntamiento de Lucena.

**TIPE OF SITE:** Palaeolithic (Acheulean).

**CIRCUIT OF THAT WICH:** International.

### **CONDITIONS OF PARTICIPATION:**

The selection of participants will be made by sending curriculum vitae to the following address: [museo@aytolucena.es](mailto:museo@aytolucena.es)

In the same should indicate personal data, recent photo, and studies and field experience, if it exists.

### **CONDITIONS OF STAY:**

The research project of the Cueva del Ángel bears the cost of accommodation, meals and travel from the residence to the site. The accommodation is held in a student residence, with spacious bedrooms, bunk beds and lockers, with a capacity between 4 and 6 people. Each bedroom has air conditioning. You do not need to provide sheets, blankets or sleeping bags, as each person will have, besides the bed and pillow sheets. It also has

showers, toilets and sinks in a ratio of one for every three workers. Also there is a cleaning service for common areas.

The dining room is integrated within the residential complex. Both the cleaning of dishes and the utensils used daily and dining areas and kitchen are the responsibility of workers, performing daily shifts for these purposes. Lunch will be served by a restaurant or by a professional chef on site.

It also offers dry cleaning service, but each worker has to bear this responsibility.

Certificate of attendance will be issued to the campaign valued in hours and days attended.

### **SCHEDULE:**

Monday to Friday from 8.00 to 14.00 pm and from 18.00 to 22.00 hours.

Saturdays from 8.00 to 14.00 hours.

From 16.00 to 17.30 is strictly forbidden to make noise, staff rest at nap (recommended).

Time for rest: Sunday.

### **THE WORK YOU MUST DO HERE IS DIFFERENT:**

- EXCAVATION IN THE CAVE
- WORK IN THE LABORATORY: Clearing bones and tools, abbreviation in initials, invento-catalogue, restauration, sifting of sediment, and administration.

### **COMMENDABLE:**

It's commendable come here with soft clothes of summer and personal bag for cleanliness.

### **WORK TO BE PERFORMED BY EXCAVATORS:**

The excavation of Cueva del Ángel is among the few archaeological sites that present a comprehensive treatment on excavation methodology. The work consists of three areas:

- Excavation itself.

-Screening of sediments.

- Materials Processing Laboratory.

The excavation methodology developed specifically Paleolithic, with learning exhumation of remains, surveying and in general all those activities that lead to a serious and rigorous.

The screen is divided into two activities. The first consists in obtaining seed coals and through flotation. The second sieving sediment from the excavation, with a closed water circuit. In the laboratory work will consist of cleaning, consolidation and marking of each piece individually appeared in excavation. The excavation does not subsidize travel trips may be granted nor is there any scholarship.

During the work will not be able to use cameras of photos, phones, tablets or another multimedia.

### **INSURANCE OF ACCIDENT:**

Attendees of the excavation shall be borne by statutory accident insurance, which amounts to 50 €, which should have been selected will be paid into bank account number is indicated by personal email with confirmation of attendance.



**TO ARRIVE TO LUCENA:**

If you come by flying, you can have your ticket of traveling from your origin country to the airport of Málaga, or Sevilla, or Madrid-Barajas. From these cities you have many bus form them to Córdoba or to Lucena in the bus station of Madrid, Sevilla or Málaga. By train you can also travel from Madrid to Córdoba or Puente Genil, a city sideways Lucena. When you arrived to Lucena, Puente Genil, Córdoba, or Málaga, if you have problems to localize with us you can phone to the next movil phone: 699-069042, ask for Daniel.

**Information and address for to send the Curriculum:**

Museo Arqueológico y Etnológico  
Ayuntamiento de Lucena  
Plaza Nueva, 1  
14.900 Lucena (Córdoba, España)  
Telf y Fax: 957-509783  
e-mail: [museo@aytolucena.es](mailto:museo@aytolucena.es)

Cecilio Barroso y Daniel Botella

Best regards

\*\*\*\*\*

José G. Solano  
Grupo de Trabajo [Estación Paleontológica Valle del Río Fardes](#)  
Museo Geominero  
[Instituto Geológico y Minero de España](#)  
C/ Ríos Rosas, 23  
28003 Madrid Spain  
Tlf.- + 34 913495930

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**ΘΕΣΕΙΣ ΕΡΓΑΣΙΑΣ/ΥΠΟΤΡΟΦΙΕΣ –**  
**JOB VACANCIES/FELLOWSHIPS**

**ΠΡΟΚΗΡΥΞΗ ΕΙΣΑΓΩΓΗΣ ΥΠΟΨΗΦΙΩΝ ΓΙΑ**  
**ΤΟ ΠΡΟΓΡΑΜΜΑ ΜΕΤΑΠΤΥΧΙΑΚΩΝ**  
**ΣΠΟΥΔΩΝ «ΜΟΥΣΕΙΑΚΕΣ ΣΠΟΥΔΕΣ» ΓΙΑ**  
**ΤΟ ΑΚΑΔΗΜΑΪΚΟ ΕΤΟΣ 2012-2013, ΕΘΝΙΚΟ**  
**ΚΑΙ ΚΑΠΟΔΙΣΤΡΙΑΚΟ ΠΑΝΕΠΙΣΤΗΜΙΟ**  
**ΑΘΗΝΩΝ**

Το Εθνικό και Καποδιστριακό Πανεπιστήμιο Αθηνών ανακοινώνει ότι δέχεται αιτήσεις υποψηφίων φοιτητών για το Πρόγραμμα Μεταπτυχιακών Σπουδών «Μουσειακές Σπουδές» (ΦΕΚ 823, τ. Β' /25-06-2003).

Δεκτοί στο Πρόγραμμα γίνονται οι πτυχιούχοι Ελληνικών Ιδρυμάτων της Τριτοβάθμιας Εκπαίδευσης, καθώς και Σχολών της αλλοδαπής, εφόσον προσκομίσουν ισοτιμία του τίτλου τους από το ΔΟΑΤΑΠ.

Οι ενδιαφερόμενοι υποψήφιοι μεταπτυχιακοί φοιτητές καλούνται να υποβάλουν τα παρακάτω δικαιολογητικά:

- ο [Έντυπη Αίτηση \(λαμβάνεται από την ιστοσελίδα του Προγράμματος: www.museum-studies.uoa.gr](http://www.museum-studies.uoa.gr) ή και από τη Γραμματεία του Μεταπτυχιακού Προγράμματος «Μουσειακές Σπουδές», 11.00 π.μ.-2.00 μ.μ.)
- ο 2 Φωτογραφίες (μεγέθους ταυτότητας)
- ο Φωτοτυπία 2 όψεων Αστυνομικής Ταυτότητας
- ο Αντίγραφο Πτυχίου (με βαθμό τουλάχιστον «Λίαν Καλώς») και Αναλυτική Βαθμολογία όλων των ετών, όπου θα φαίνεται ο Μέσος Όρος Βαθμολογίας (νομίμως επικυρωμένα)
- ο Για τους Πτυχιούχους της αλλοδαπής ισοτιμία καθώς και βαθμολογική αντιστοιχία του πτυχίου τους από το ΔΟΑΤΑΠ, που να έχει εκδοθεί έως την τελευταία ημέρα υποβολής των αιτήσεων (νομίμως επικυρωμένα)
- ο 2 Συστατικές Επιστολές (όχι παλαιότερες του 2012) σε σφραγισμένο και υπογεγραμμένο στο σημείο σφραγίσεως φάκελο, που θα συνοδεύουν την αίτηση ή θα αποστέλλονται ξεχωριστά από τους συνιστώντες. Οι συστατικές επιστολές θα πρέπει να είναι πρωτότυπες, να απευθύνονται στο συγκεκριμένο μεταπτυχιακό πρόγραμμα και να έχουν κατατεθεί έως την τελευταία ημέρα υποβολής αιτήσεων.
- ο Αποδεικτικό Αγγλικής Γλώσσας τουλάχιστον σε επίπεδο Lower (νομίμως επικυρωμένο)
- ο Επίσης κάθε άλλο στοιχείο - όπως διπλώματα ξένης γλώσσας, ανακοινώσεις, δημοσιεύσεις, αποδεικτικά επαγγελματικής εμπειρίας σε τομείς σχετικούς με «θέματα πολιτισμού», συμμετοχή σε ερευνητικά προγράμματα, άλλα πτυχία ή μεταπτυχιακοί τίτλοι - που κατά τη γνώμη των υποψηφίων συμβάλλουν στην πληρέστερη αξιολόγησή τους από την Επιτροπή. Τα παραπάνω δικαιολογητικά πρέπει να είναι πρωτότυπα ή επικυρωμένα αντίγραφα.

Δικαιολογητικά που δεν έχουν πιστοποιητικό γνησιότητας και δικαιολογητικά που κατατίθενται έπειτα από την τελευταία ημέρα υποβολής των αιτήσεων, δεν αξιολογούνται.

Ο αριθμός των εισακτέων στο Πρόγραμμα ορίζεται κατά ανώτατο όριο σε 15.

Οι υποψήφιοι, αφού υποβάλουν αίτηση και εφόσον η αίτησή τους θεωρηθεί πλήρης, θα αξιολογηθούν με βάση τα ακόλουθα κριτήρια:

1) Την επιτυχή γραπτή εξέταση σε 2 μαθήματα:

A) «Εισαγωγή στη Μουσειολογία»

B) Σε 1 από τους παρακάτω 6 κύκλους επιστημών. Ο υποψήφιος επιλέγει το μάθημα που θεωρεί πλησιέστερο στο βασικό του πτυχίο.

1. Ιστορία, Αρχαιολογία και Ιστορία της Τέχνης
2. Οικονομικές Επιστήμες
3. Φυσιογραφικές Επιστήμες, Επιστήμες Γης
4. Θέματα Συντήρησης, Πολιτιστικής και Φυσικής Κληρονομιάς
5. Παιδαγωγικά
6. Επιστήμες Υγείας

Προβιβάσιμος βαθμός θεωρείται το **πέντε (5)** σε καθένα από τα μαθήματα. Πληροφορίες για την [εξεταστέα ύλη](#) καθώς και για τον ακριβή χρόνο διεξαγωγής των εξετάσεων, λαμβάνονται από την ιστοσελίδα του Προγράμματος: [www.museum-studies.uoa.gr](http://www.museum-studies.uoa.gr) ή παρέχονται από τη Γραμματεία «Μουσειακών Σπουδών».

2) Εφόσον ο υποψήφιος περάσει επιτυχώς και τις γραπτές εξετάσεις, δηλαδή επιτύχει προβιβάσιμο βαθμό σε όλα τα μαθήματα που θα εξεταστεί, θα κληθεί στη Γ' και τελευταία φάση της αξιολόγησης που περιλαμβάνει τη διεξαγωγή προφορικής συνέντευξης σε ημερομηνία που θα ανακοινωθεί από τη Γραμματεία του ΠΜΣ.

3) Αξιολόγηση φακέλου υποψηφιότητας

Η εγγραφή στο Πρόγραμμα Μεταπτυχιακών Σπουδών συνεπάγεται συνεισφορά κάθε φοιτητή στα σχετικά λειτουργικά έξοδα, η οποία ανέρχεται για το Α', Β' και Γ' εξάμηνο στα 600 ευρώ ανά εξάμηνο και για το Δ' εξάμηνο στα 300 ευρώ.

Τα ονόματα των επιτυχόντων υποψηφίων σε κάθε φάση αξιολόγησης θα αναρτώνται στη Γραμματεία του Μεταπτυχιακού και [στην ιστοσελίδα του Προγράμματος: www.museum-studies.uoa.gr](#)

**Αιτήσεις γίνονται δεκτές από 01 Ιουνίου έως 29 Ιουνίου 2012**, Δευτέρα έως Παρασκευή και ώρες: 11.00π.μ.-2.00 μ.μ., στη Γραμματεία «Μουσειακών Σπουδών», Νέο Κτήριο Μαθηματικού (εξωτερική είσοδος), Πανεπιστημιούπολη Ζωγράφου, 157 84. Για περισσότερες πληροφορίες μπορείτε να επικοινωνήσετε στα τηλέφωνα: 2107276499, 2107276434, e-mail: [dstabol@admin.uoa.gr](mailto:dstabol@admin.uoa.gr) και μπορείτε να συμβουλευτείτε την ιστοσελίδα : [www.museum-studies.uoa.gr](http://www.museum-studies.uoa.gr)

Παρακαλούνται οι υποψήφιοι να καταθέτουν το φάκελό τους είτε ιδιοχείρως είτε με ταχυαποστολή-courier (όχι με συστημένη επιστολή).

**Οι εξετάσεις στα 2 μαθήματα θα διεξαχθούν την Τετάρτη 5 Σεπτεμβρίου 2012. Η προφορική συνέντευξη θα διεξαχθεί την Πέμπτη 20 Σεπτεμβρίου 2012.**

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## **3 YEAR PH.D. GRANT IN DENMARK:** **TEXTILE RESEARCH**

Dear colleagues,

Please find here information about a 3 year Ph.D. grant in Denmark/CTR on a topic related to textile research. You are most welcome to forward the call to any interested colleague.

<http://phd.hum.ku.dk/Blivph.d./stipendieopslag/>

Yours

\*\*\*\*\*

Marie-Louise B. Nosch, Ph.D., Research Professor,  
Director The Danish National Research Foundation's Centre for Textile Research (CTR)  
Saxo Institute, University of Copenhagen Njalsgade 76, DK-2300  
Copenhagen S, Denmark Phone + 45 35 32 9691  
Web: <http://ctr.hum.ku.dk/>

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## **SCHOLARSHIPS: FROM THE TURKISH GOVERNMENT**

Turkish Government Scholarships are available for foreign students who would like to study in Turkey.

For details, see: [www.trscholarships.org](http://www.trscholarships.org)

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Talip Küçükcan

<http://newsonturkey.blogspot.com/>

email: [talipkucukcan@gmail.com](mailto:talipkucukcan@gmail.com)

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## **[ZOOARCH] JOB ADVERT**

Dear All,

My apologies for cross-posting, but I would like to draw your attention to the following post advertised at UCLan.

<http://www.jobs.ac.uk/job/AEO105/lecturer-in-archaeology/>

Although the post does not stipulate any preference for 'bone' specialists per se, any one with osteological expertise (human or animal) will be in a good position as this is an area of expansion in the School. Furthermore, although by no means guaranteed, there is a chance that the post will be extended beyond the 6-months.

Despite the tight deadline, I would encourage anyone with Zooarchaeological expertise to apply.

My very best  
Krish

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Dr Krish Seetah  
Visiting Fellow  
McDonald Institute, Cambridge

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## **ΑΝΑΚΟΙΝΩΣΕΙΣ - ANNOUNCEMENTS**

### **DIGITAL CO-CURATION AND PUBLIC PARTICIPATION**

The *International Journal of Heritage in the Digital Era* is inviting papers for a special issue on the theme ‘Digital co-curation and public participation’ guest edited by Dr Kalliopi Fouseki of the Centre for Sustainable Heritage of University College London and Dr Kalliopi Vacharopoulou, Independent Researcher.

In the last decades, the development of technology has opened numerous possibilities in the curation of heritage objects including their recording, documentation and display with the aim not only to enhance research and conservation but also to broaden access and education.

At the same time, the increasing development of theories and practices of public engagement with museum collections have initiated discussions and debates that often challenge the nature and aims of museum institutions. To this end, digital technologies have contributed to the debates on the participatory role of museum and heritage institutions. Indeed, it is within this context that digital co-curation has recently emerged as a practice that fosters public participation and the sharing of knowledge and authority between curators, museum professionals and members of the general public – including visitors and non-visitors to museums. By the term digital co-curation we refer to curation of digitized collections in partnership with non-expert audiences. The social media play a significant role in this process. However, digital co-curation – as any form of co-curation – creates concerns among museum and heritage professionals with regard to the integrity of the collections.

The aims of this special issue of the *International Journal of Heritage in the Digital Era* are to investigate the issues that are being raised by digital curation and co-curation through the theoretically informed analysis of case-studies. Specifically, we are interested in the following themes/research questions:

- What are the benefits as well as the burdens that relate to digital curation? This should be exemplified through successful and least successful examples.
- What are the benefits and the challenges in digital co-curation? Similarly, successful and least successful examples should be used. How does digital co-curation function as complementary to curation of actual objects or digital curation? In other words, how does digital co-curation inform both curation and co-curation practices within the museum space?
- What is the experience of participants in the process of digital co-curation?
- What are the views of curators and other museum professionals who are involved in these processes?

#### Important deadlines

Papers will be submitted by 30 June 2012

Refereeing results will be notified by 30 July 2012

Camera ready FULL papers to printer by 31 August 2012

Papers submitted to Multi-Science by 10 September 2012

The weblink for the submission of the 4<sup>th</sup> issue papers is: <http://edition4.digital-heritage-journal.eu/openconf.php>

For queries about the content of this issue, please contact Dr Kalliopi Fouseki at [Kalliopi.fouseki@ucl.ac.uk](mailto:Kalliopi.fouseki@ucl.ac.uk) or Dr Kalliopi Vacharopoulou at [kalliopi.vacharopoulou@googlemail.com](mailto:kalliopi.vacharopoulou@googlemail.com)

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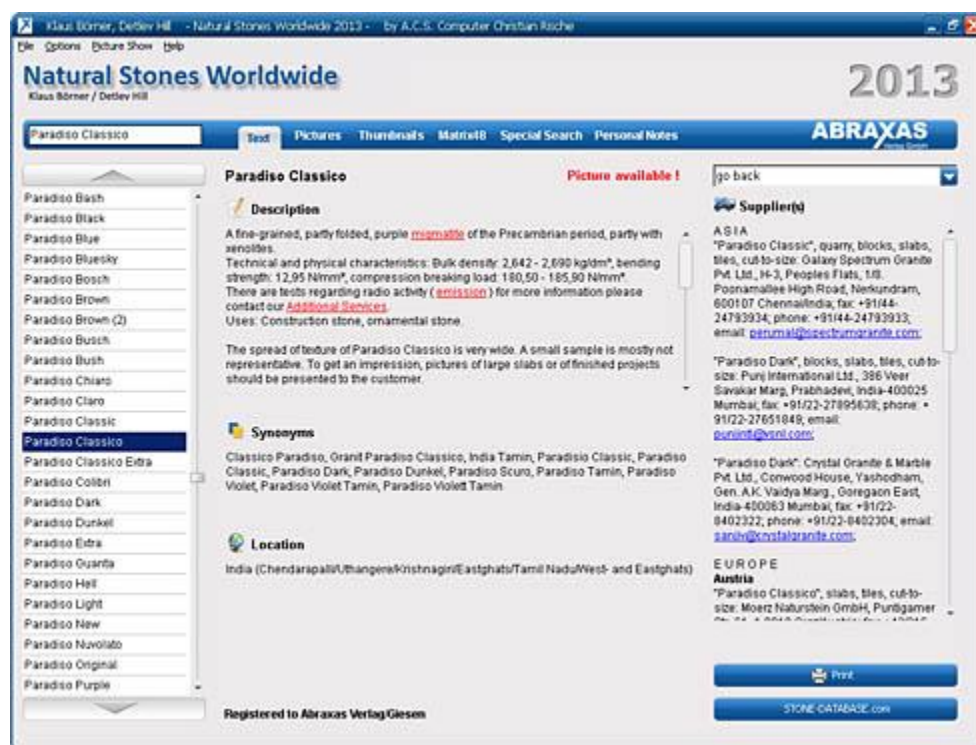
## DVD "NATURAL STONES WORLDWIDE"

The DVD "Natural Stones Worldwide" is the most comprehensive reference work on dimensional stone. The new edition will be released on May 8th, [see preview here](#).

Natural stone producers and processors, testing institutes and universities, architects and tilers have been our satisfied customers for more than a decade.

Whether you want to create a list of all the beige limestone from Portugal or looking for the blue stones from Brazil, whether you want to find stones similar to Nero Impala, or quarry owners or suppliers, manufacturers of fountain or spheres, or tips for cleaning and maintenance, within seconds you will get the desired results.

Searching for alternative to natural stones which are no longer available? - No problem with Matrix48, our unique search grid.



From the current edition of the DVD, you have access to the password-protected area of [STONE-DATABASE.com](#) (this database is updated weekly).

For more information about the contents of the DVD please visit the [Abraxas website](#).

The DVD will run on Windows 2000, XP, Vista + Windows 7

The price is € 245,00. If interested, please use this [online order form](#).

Best regards

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Benjamin Boerner, customer service

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## *INTERNET SITES*

### **CONSERVING BRONZE: THE LAMP WITH EROTES FROM VANI**

Please visit the site: <http://conservators.wordpress.com/2012/02/29/conserving-bronze-the-lamp-with-erotes-from-vani/>

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# **NEW ARCHAEOLOGICAL RESEARCH** **NETWORK FOR INTEGRATING** **APPROACHES TO ANCIENT** **MEDITERRANEAN STUDIES - NARNIA** **IDENTITY**

NARNIA is an interdisciplinary project, the main objective of which is to provide young researchers with the means to conduct research on ancient Eastern Mediterranean material culture and to develop their analytical skills through a series of research and training activities.

An awareness of the recent advances in technology and an understanding of the implications for theory and practice in the heritage environment have brought together a consortium of academic institutions and private companies in this collaborative project to support young researchers in their first steps into the competitive and complementary worlds of academia and private enterprise.

This well-structured research network aims to improve the career prospects of employment for young researchers, developing their lab-based skills in the study of ancient materials, while contributing to the history and archaeology of the Eastern Mediterranean basin, a region of great historical, cultural and geopolitical significance. In particular, through a comprehensive mobility scheme, young researchers will have the opportunity to continue their research careers at high profile universities and well-established private enterprises while working in research projects focused on the study of ancient material culture.

Sixteen Early Stage Researchers (equivalent to PhD candidates) and three Experienced Researchers will be trained to integrate theory and archaeological sciences for the study of different material categories, including ceramics, metals, glass and mosaics from primarily Cyprus, Greece and Jordan. The proposed program engages experienced academic and research staff, young entrepreneurs, and young researchers for a broad collaboration network, which will facilitate the exploration of analytical equipment and research data, while concurrently directing and promoting research activities in Eastern Mediterranean countries.

Here you can find details about the project coordinator and the whole management structure. You may also Contact the Coordinator and Project Manager.

Project Budget: 4,6 million euro. The funding is provided by the Marie Curie Initial Training Network programs which fall under the call FP7-PEOPLE-2010.

Main Project objectives

High-quality and multidisciplinary training of young researchers for skills and research development The interdisciplinary study of ancient materials contributing to historical and cultural knowledge of the Eastern Mediterranean region.

Application of techniques coming both from the “soft” and “hard” sciences and testing of their suitability and complementarity for the study of ancient materials.

The dissemination of research results and outreach actions Research and methodology outlines for future research and educational collaborative programs, taking into account the requirement of complementarity and interoperation between different European and regional institutions for the implementation of best practices.

Recommendations for future research collaboration and access to physical and virtual research infrastructures, particularly for users from the Eastern Mediterranean region, for the development of research in the region on holistic and multidisciplinary grounds.

Please visit the site: <http://narnia-itn.eu/>

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## **ARCHAEOLOGY EXPANDS BEYOND TRADITIONAL SCOPE INTO OTHER SCIENCES, POSTED BY TANNAMERICAS**

The popular perception of archaeology is a team of dusty individuals in wide-brimmed hats unearthing treasures from a pharaoh's tomb or an ancient collection of Native American artifacts.

Archaeology is that, but it is also a social science that utilizes information from other disciplines to inform and enhance archaeological data and to provide input to other sciences. Arizona State University Anthropology Professor Michael Smith explores the broadened scope of archaeology in the paper "Archaeology as a Social Science" published this week in Proceedings of the National Academy of Sciences. Gary M. Feinman of The Field Museum in Chicago, Robert D. Drennan of University of Pittsburgh, Timothy Earle of Northwestern University and Ian Morris of Stanford University are co-authors of the paper.

"A lot of people's perceptions are based on classical archaeology (such as the study of ancient Greece or Rome), or on the latest tomb discovered or the biggest palace," says Smith, of ASU's School of Human Evolution and Social Change. "Viewing archaeology as a social science advances how we interpret sites and how we do research."

Archaeology has greatly advanced during recent years. The discipline has expanded beyond anthropology, which studies the societies and cultures of the world, to include data and perspectives from other social sciences such as sociology.

"Looking at sociology and disciplines such as political science gives us more to draw from," Smith said.

And archaeologists are able to reach beyond the time of written records to provide data that can be utilized in other sciences. For example, data on patterns of inequality and social stratification among ancient peoples can be utilized by sociologists.

Archaeologists also offer evidence that at times contradicts commonly held views of societies, for example, that of political scientists who may believe that life is chaotic outside of a state system with rulers and laws. This belief doesn't hold up when one examines the lives of Native American societies such as the Hohokam that lived peacefully in tribal settlements, Smith says.

Excavation of a commoner's house at the Aztec city of Calixtlahuaca, Mexico [Credit: Michael Smith/ASU] Archaeology provides a full range of the human experience, including societies that are unlike any that exist in modern times. It provides records from all levels of society, including peasants and slaves, who often are left out of historical accounts, the archaeologists write in the paper.

Archaeological findings also provide a long-term perspective on change, documenting the origins of agriculture, the Urban Revolution, and other transformational social

changes. Indeed, archaeology is crucial to a renewed interest in what is now called "Deep History."

Practices that may be thought of as new phenomena may be traced through archaeological data. Urban farming is often thought of as an emerging trend in cities, but it was practiced by the ancient Mayan people 2,000 years ago.

"The whole notion of farming within cities is a pattern that has a lot of history," Smith says.

Likewise, urban neighborhoods can universally be traced back thousands of years, indicating that neighborhoods are crucial in the ways that cities work.

"We look at the past and see lessons for the future," he says.

This theme is the basis for a series of research projects within the School of Human Evolution and Social Change called "Late Lessons from Early History." Funded by the Intellectual Fusion Investment Fund at ASU, these projects are built around cutting-edge transdisciplinary research in anthropology. Smith is working on a project that is focused on urban neighborhoods in ancient and modern cities.

While items like broken pieces of pots and stone tools might not seem ideal for analyzing past social systems, economic processes or political dynamics, "analytical advances, including increasingly sophisticated applications of methods from chemistry and physics, now permit many past economic phenomena to be reconstructed with considerable detail," the social scientists write.

Among additional recent advances in the science are the ability to pinpoint the places of origin of many raw materials and objects, reconstructing ancient technology and manufacturing, and new computing power that allow archaeologists to find and compare patterns in small finds from sites, the social scientists write.

Archaeologists increasingly are utilizing techniques such as radiocarbon dating of charcoal and a variety of instrumental methods from physics, chemistry and biology to contribute to their studies.

Smith's archaeological studies in Central Mexico take into account obsidian, used to make tools, that occurs naturally in 20 places throughout the region. Each obsidian source contains different trace elements.

"We can trace exactly where the rocks came from," Smith said.

Archaeological data from many regions are now available, allowing comparative analyses of changes and social patterns. Furthermore, archaeology can contribute a new perspective because many of the societies they reconstruct are independent of the western cultural tradition that has been the focus of analysis by most of the social sciences.

Source: Arizona State University [April 30, 2012]

**Please visit the site:**

<http://archaeologynewsnetwork.blogspot.com/2012/05/archaeology-expands-beyond-traditional.html>

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## LAST STATUES OF ANTIQUITY

Here you will find a searchable database of the published evidence for statuary and inscribed statue bases set up after AD 284, that were new, newly dedicated, or newly re-worked.

To access the site, click on one of the buttons above: BROWSE, SIMPLE SEARCH, or ADVANCED SEARCH (or, if you need them, INSTRUCTIONS).

We do not have the funding to up-date this resource continuously, but would welcome hearing of additional material, or of substantive corrections, by your emailing <[LSA@classics.ox.ac.uk](mailto:LSA@classics.ox.ac.uk)>. This database is built on the published work of hundreds of scholars, whom we hope to have credited fully and correctly; if you are unhappy with our use of your material, do please contact us.

The database was constructed by a team working partly in Oxford and partly elsewhere. The person primarily responsible for each entry is named on each Discussion page, and we would be grateful if you would acknowledge their work when using their ideas. For details of the team see the team page. We suggest that in print you cite individual database entries in the following way:

<http://laststatues.classics.ox.ac.uk>, LSA-674, LSA-45, LSA-2013, etc.

(Please note that the LSA number allocated to each entry is arbitrary, and was determined only by the sequence of cataloguing.)

The LSA database was constructed as part of a major project funded by the Arts and Humanities Research Council of the United Kingdom.

Please visit the site: <http://ancientworldonline.blogspot.com/2012/05/last-statues-of-antiquity.html>

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## **CALCULATING DISTANCE AND TIME FOR TRAVEL IN THE ROMAN EMPIRE**

A splendid new tool with some implications for the Bronze Age, too:

<http://orbis.stanford.edu/>

All good wishes,

Judith

\*\*\*\*\*

Judith weingarten

email: [judith@judithweingarten.com](mailto:judith@judithweingarten.com)

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## **GREEK ARCHAEOLOGICAL MISSION IN MESOPOTAMIA ONLINE**

Information and publications from the Greek Archaeological Mission in Mesopotamia  
Online [http://ancientworldonline.blogspot.com/2012/05/greek-archaeological-mission-  
in.html](http://ancientworldonline.blogspot.com/2012/05/greek-archaeological-mission-in.html)

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***ΝΕΕΣ ΕΚΔΟΣΕΙΣ – NEW PUBLICATIONS***  
**GREEK CITY WALLS OF THE ARCHAIC  
PERIOD, 900-480 BC, RUNE FREDERIKSEN**

Bryn Mawr Classical Review 2012.05.08

Rune Frederiksen, *Greek City Walls of the Archaic Period, 900-480 BC*.  
Oxford monographs on classical archaeology. Oxford; New York:  
Oxford University Press, 2011. Pp. xxx, 238. ISBN 9780199578122.  
\$170.00.

Reviewed by John K. Papadopoulos, University of California, Los Angeles  
([JKP@humnet.ucla.edu](mailto:JKP@humnet.ucla.edu))

When first confronted with this book, my immediate reaction was: why has it taken so long for someone to write this book? This was a topic begging for synthesis, and for anyone interested in Greek fortifications, as well as the Early Iron Age and Archaic periods more generally, this is a “must-have” book, and for this reason we are grateful to Rune Frederiksen for taking on this challenging subject.

The book is based on Frederiksen’s 2003 doctoral dissertation at the University of Copenhagen entitled “Walled poleis of the Archaic period: architecture, distribution and significance of ancient Greek city walls”. Neither the title of the dissertation or that of the printed volume is totally accurate, as the study includes much that is pre-Archaic. In his study, Frederiksen musters together both the philological and archaeological evidence for settlement or town walls in the Greek world before ca. 480 BC (I do not think that we can speak of “cities” in this period). His basic argument is straightforward: that the widespread fortification of settlements in Greece did not begin in the Classical period, as is sometimes considered, but much earlier. More than this, Frederiksen argues that the development of monumental architecture in the form of fortification walls is every bit as important as the development of monumental early temples, and that the two go hand in hand. The volume is well illustrated with concise but clear plans of sites, as well as photographs and maps.

A short introduction (pp. 1-7) lays out the aims of the volume, the history of research on early fortifications, and a brief note on the organization of the book. Chapter 2 (pp. 8-19) deals with the types of fortification, beginning with those of the Early Iron Age—including “refuges,” such as Emporio on Chios, which consisted of 2.4 hectares of uninhabited space surrounded by a fortification wall—before dealing with Archaic fortifications. As a student of Mogens Herman Hansen, Frederiksen has to deal with the polis, and so fortification walls are contextualized within the framework of the polis. Frederiksen also looks at the evidence that exists for the fortification of harbors, as well as the scanty evidence for fortified villages, or what he refers to as “second-order settlements” (p. 11). Private estates or farms with towers are also discussed here, but are better dealt with together with “towers,” which appear slightly later in the chapter.

Another heading deals with the “Fortification of polis territory,” and it is here where forts and towers are discussed. Bona fide “forts” of the Archaic period are, as Frederiksen

says, “few and far between” and there is much more evidence for Classical forts than for the Archaic period. The examples that Frederiksen assembles of Archaic forts do not inspire confidence, and among the handful included is the site of Agathe, located in non-Greek territory more than 200 kilometers west of Massalia (mentioned by Strabo as an *epiteichisma* of Massalia). As for “towers,” the evidence of their existence in the pre-Classical period is, at best, paltry. First and foremost, few of these towers are clearly defensive;<sup>1</sup> secondly, as far as I know, not one can be clearly assigned to the Archaic period by means of straightforward archaeological evidence. The chapter ends with regional defenses, that is, fortifications beyond the polis, and a discussion of nucleated settlements as opposed to urban centers.

Chapter 3 (pp. 20-40) is entitled “City Walls in the Written Record and the Visual Arts.” Frederiksen begins with the meaning of the word “teichos,” as well as *teichos* as a settlement, and other terms implying fortifications. This is followed by attestations of actual fortified poleis in the extant literary record, as well as indirect attestations, and attestations of groups of walled poleis. The broader concept of *teichos* is also broached, including city walls in Homer and other Archaic poetry. As for fortification walls in the visual arts, Frederiksen’s brief overview adds little of any consequence to William Childs’ 1991 paper on the subject.<sup>2</sup> The only illustrated example is a detail of the celebrated François Vase, though Frederiksen here provides an interesting discussion of why Kleitias (the painter of the vase) depicted the walls of Troy in the manner in which he did. Frederiksen concludes, correctly I think, that Kleitias was probably inspired by Homer, and here we enter the realm of iconographical “reality” vs. “fantasy.”

“The preservation of city walls” is the title of Chapter 4 (pp. 41-49), in which Frederiksen reviews the evidence for the destruction of walls, including: destruction in modern times; destruction in antiquity and the middle ages; war-related destruction; destruction due to expansion or reconstruction; disrepair; and, finally, natural causes, not least erosion. Chapter 5 is entitled “The archaeology of city walls” (pp. 50-61). This short chapter reviews the types of fortifications; what constitutes a wall and its elements, like gates, towers, bastions, and so on. The various elements are all crucial for the identification of any wall as a fortification wall. The thorny issue of dating walls is tackled in Chapter 6 (pp. 62-69). Here dating by masonry style—as in polygonal or Lesbian—features prominently, and I remain highly skeptical of this as a failsafe avenue of dating any wall. I favor the motto on sundials in old English gardens: “it is later than you think.” But Frederiksen is careful to look for other means of dating walls, especially the evidence of walls in our literary sources, but this, too, is not infallible. Frederiksen concludes (p. 69) that “the last word on masonry style and building technique has not been said...”. This is true. But I would insist that the only failsafe method of dating any wall is by good old dirt archaeology.

Chapters 7 and 8 are, respectively, a synthesis of the data presented in the catalogue (Chapter 7: “Topographical and architectural analysis,” pp. 70-102), and an analysis and discussion of the occurrence and distribution of fortification walls in the Early Iron Age and the Archaic period (Chapter 8: “The prevalence of city walls in the Early Iron Age and Archaic Greece,” pp. 103-120). It may seem that these two chapters form the meat of the volume, but both are firmly based on the “Catalogue of city walls” (pp. 121-200), which, I would argue, is the section that warrants closest scrutiny.

The Catalogue of city walls forms the part of the volume that will be most read by archaeologists. Individual sites are presented alphabetically and each is followed by a designation: A, B, C.

Category A are those fortifications dated by archaeological evidence, mainly stratified material found in relation to a wall or to structures near it; B are walls dated by masonry style, or other less secure means; and C are pre-Classical fortifications mentioned in the literary testimonia. I will look closely only at those sites beginning with the letter A—such as Abai, Athens, and so on—as these can serve as a proxy for the entire catalogue. Sites in the B category include: Abai, Alope (east Lokris), Arisbe (Lesbos), Assos (Troad), and Atrax in Thessaly. Most of these are dated by masonry style. Whether or not they are Archaic, it is important that Frederiksen has included them, so scholars can make up their own mind and in the hope that future excavations might clinch the question of chronology.

The only sites fully in the C category are Andros (Palaiopolis) and Athens. The former is dated by the reference, in Herodotos 8.112.1, to an unsuccessful siege of the polis by Themistokles in 480 BC, so we are really at the cusp of the Classical period, and as far as I know, none of the standing fortification walls of Andros are pre-Classical. As for Athens, the literary sources are, at best, slippery. The passage in Thucydides 6.57.1, 3, placing the “Kerameikos” outside the walls, in connection with the murder of Hipparchos in 514 BC, refers to the area of the Classical Agora, which was the Archaic Kerameikos.<sup>3</sup> As for the Kylon affair of ca. 632 BC, the besieged walls referred to on the Acropolis are presumably those of the Mycenaean period, including the Pelargikon, and despite well over a century of excavations in and around Athens, there is absolutely no evidence for a fortification wall of the Archaic period other than the Mycenaean fortifications, until the construction of the Themistoklean wall.<sup>4</sup>

Of the A category, there is no shortage of problem sites. For example, it seems reasonably clear, on the evidence presented by the excavator, that the wall circuit at Agios Andreas on Siphnos is Mycenaean, though it is likely that the wall was reinforced—or just reused—in the Late Geometric period. Aigina is stated to be “likely 490-480,” but the argument is circumstantial, based as it is on the latest objects found in graves outside the wall. Moreover, Aigina, like Andros already discussed, only just falls into the Archaic period. Then there is Alalie on Corsica, and without belaboring the point, is there anything Greek about this site? For the Corinthian colony of Ambrakia, the early walls are only dated indirectly by dated structures of the late 6th and early 5th century BC oriented after the wall. For Antissa on Lesbos the date is based on a “possible association between the wall and a (not stratified) horizon of the 6th century (or earlier) bucchero fragments, documented in the area.” The 7th century date of the fortification of Illyrian Apollonia, stated by Neritan Ceka, is not based on archaeological evidence, and thus best belongs, at least for now, to Frederiksen’s Category C. As for Argos, the 6th century BC date often assumed is “based on an association between the wall and an Archaic votive deposit. The association is, however, not completely clear.”

Of the A category sites beginning with the letter A, there is reasonable archaeological evidence for a pre-Classical date at Abdera, Achilleion (Beşik-Yassitepe), Akragas, Amathous on Cyprus, and Asine. At some of these sites the evidence is more robust than at others. As for omissions, the only major site that I could not find in the catalogue was Lagomandra in Chalkidike, which has only been noted in brief preliminary reports, and

which is clearly Early Iron Age, perhaps Protogeometric rather than Geometric. And I would like to have read what Frederiksen had to say about the walls of Agios Georgios and the acropolis of Ismara at Maroneia in Thrace. Several other sites are not provided with adequate coverage: for example, anyone who has visited the recent excavations by Yaşar Ersoy at Klazomenai will be disappointed by Frederiksen's coverage of the site. The volume ends with the tables and maps (pp. 201-220), Addenda (pp. 221-222), and Indices of Ancient Writers (p. 223), Names and Places (pp. 224-229), and Subject Index (pp. 230-238).

My comments in the preceding paragraphs are not meant as criticism. Frederiksen has done a masterful job in assembling all this information in a single place, and for this the book is already seminal. Frederiksen's book is not the last word on Archaic fortification walls, but it does provide the starting point for all future research on the subject.

**Notes:**

1. See S.P. Morris and J.K. Papadopoulos, "Greek Towers and Slaves: An Archaeology of Exploitation," *American Journal of Archaeology* 109 (2005), 155-225.
2. W.A.P. Childs, "A New Representation of a City on an Attic Red-Figured Kylix," in *Greek Vases in the J. Paul Getty Museum vol. 5* (1991), 27-40.
3. J.K. Papadopoulos, *Ceramicus Redivivus: The Early Iron Age Potters' Field in the Area of the Classical Athenian Agora* (Hesperia Supplement 31), Princeton 2003.
4. Fully discussed in J.K. Papadopoulos, "The Archaic Walls of Athens: Reality or Myth?" *Opuscula* 1, 2008, pp. 31-46. The stretch of wall noted as Archaic in the Classical Agora in V. Capozzoli, "Le mura arcaiche di Atene. Un riesame della questione," *Siris* 5 (2004), 5-22, is clearly not a wall, as excavations in 2010 have shown.

Please visit the site: <http://bmcr.brynmawr.edu/2012/2012-05-08.html>

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## **COIN HOARDS, VOLUME X: GREEK HOARDS, OLIVER HOOVER, ANDREW MEADOWS, UTE WARTENBERG (ED.)**

Bryn Mawr Classical Review 2012.05.10

Oliver Hoover, Andrew Meadows, Ute Wartenberg (ed.), *Coin Hoards, Volume X: Greek Hoards*. New York: American Numismatic Society, 2010. Pp. viii, 281; 67 p. of plates. ISBN 9780897223157. \$80.00.

Reviewed by Lee L. Brice, Western Illinois University ([ll-brice@wiu.edu](mailto:ll-brice@wiu.edu))

It has been nearly a decade since the last volume of *Coin Hoards*. The tenth volume continues the mission of previous volumes in providing an inventory of new coin hoards and updates on previously published hoards, with references where available. The inventory alone would make this work valuable, but it is the accompanying articles that set this volume apart from the series. These ten discussions focus on new hoards of Seleucid coins or in one case an update on an older hoard.

The first seventy pages of the volume include the inventory of 471 hoards of Greek coins organized regionally into five groups: Balkans and Aegean, Asia Minor and Levant, the West, Egypt and Africa, and Spain. The inventory includes both new hoards and some previously catalogued hoards for which there is new literature or a new inventory or both. The inventories for previously known hoards all include their IGCH or CH number to facilitate research.<sup>1</sup> The references to new literature are clear and complete.

The rest of the volume is made up of ten articles focusing on Seleucid hoards. The editors note that the volume “can be seen, in part at least, as supplement to the recently published corpus of Seleucid coinage, *Seleucid Coins...*” (vii).<sup>2</sup> Each article includes a discussion of the hoard, a detailed catalogue of the contents, and high quality plates at the end of the volume. In most of the articles, authors speculate on the circumstances in which each hoard was deposited.

While such conclusions are intriguing, tied as they usually are to known political or military events, because most of these assemblages are hoards that appeared on the market with no fixed provenance, such conclusions must, in the words of the authors, remain tentative. The articles are clear and informative and could stand alone, but combined they provide a useful resource, not only to scholars of Seleucid numismatics but to anyone seeking more detailed information on Hellenistic coinage and hoards, as well as potential data for examining the economic history of the Hellenistic Eastern Mediterranean.

The first article, by B. R. Nelson, is an examination of the enormous (5000+) ‘Seleucus I’ hoard that appeared on the market in 2005. The author provides a catalogue and analysis of the hoard contents, focusing primarily on the various regional issues Macedon, Thessaly and Greece, Asia Minor, Cyprus and the Levant, and the East and Egypt (the Seleucid issues that make up the bulk of the hoard have already been published and discussed in *Seleucid Coins*). The most important contribution of the hoard is the amount



of information it adds to our knowledge of the royal coinages minted in the early third century. It is difficult to draw any conclusions about where the hoard was deposited, but the author dates it to c. 281.

Richard Miller tackles the 2002 East Arachosia hoard. This hoard was sold, and was recorded and published previously in *Seleucid Coins*. The short discussion in this chapter is intended to augment the previous publication. This hoard is important because it is the only Seleucid period hoard found in this area.

The 2002 Achaean hoard, dated to the late third or early second century BCE, is the topic of the third article by Andrew Meadows and Catharine Lorber. Like so many of the hoards discussed in this volume the 87 coins were recorded before being distributed for sale. The authors acknowledge that there is no way to be certain the entire hoard was recorded so any conclusions remain tentative. In addition to Seleucid coins, issues from Greece, Macedonia, NW Asia Minor and Pamphylia are present.

Oliver Hoover's discussion of the large "Pamphylia or Cilicia Hoard" of 2000 provides a short discussion of the 745 coins in this hoard and their implications for understanding Anatolian and Phoenician regional mints in the late third and early second centuries BCE. This hoard provides evidence for dating and unique types, but is perhaps less significant for Seleucid studies than some of the other hoards included in these articles. Regardless, taken together with the other hoards it does much to fill gaps in the state of our knowledge. There is a full catalogue and numerous images.

Catharine Lorber's discussion of the "Demetrius I" Hoard, which was sold but photographed in its entirety in 2003, is valuable for its thorough treatment and discussion. This hoard (532 coins), buried in c. 151 BCE includes gold issues as well as numerous drachms. It is significant not just for chronology but for the light it sheds on Seleucid period mints including New Style Athenian issues, Temnus Alexanders, and Wreathed Tetradrachms minted in Western Asia Minor, and the economy of the eastern Mediterranean. The author does a particularly good job of linking this chapter to some of the other hoards discussed in the same volume, thereby providing readers with a better understanding of the larger implications of these hoards.

The sixth article, by Andrew Meadows and Arthur Houghton, expands on the important Gaziantep Hoard of 1994. Meadows and Houghton open with a discussion of the hoard's modern history in multiple lots and then move on to its burial in c. 143 BCE. Because of its size (1960 coins) the hoard is extremely important for the number of new issues it contains including (mostly) civic coins, Alexanders, and Seleucids. As with the previous chapter, the authors compare the Gaziantep hoard with other hoards and show how it has changed the dating and how it ties in with them and the Demetrius I hoard. Overall, it is a useful discussion that leaves the reader wanting more analysis and conclusions tying all these hoards and the broader economic network together. There is an addendum to the chapter cataloguing ten additional coins seen in 2009 from the same region as the hoard.

There follows a number of short articles, most of which do not include plates. Meadows contributed a two-page catalogue of the Beth Ummar 2001 hoard, Hoover discusses the Northern Israel hoard of 2002 of bronze coins from c. 120 BCE, and Catharine Lorber discusses the 2002 hoard of 10 coins from "Seleucia on the Calycadnus" hoard.

The final article of the book is Nicholas Wright's treatment of a hoard of 244 Seleucid bronze coins without context. Wright starts with a discussion of the hoard's history and significance, and after a detailed catalogue he focuses on other features including provenance and what the hoard tells us about circulation patterns. The author's lengthy treatment of circulation of bronze coins is welcome.

The volume is supplemented with concordances of IGCH and CH 10 numbers and CH to CH 10 numbers. The helpful indices include hoards, mints, and rulers. The sixty-seven plates are, as noted earlier, clear and well printed, but maps would have been helpful. The volume as a whole is a splendid assemblage, well organized and executed.

**Notes:**

1. Thompson, Margaret, Otto Morkholm, and Colin M. Kraay, *An Inventory of Greek Coin Hoards*, New York: American Numismatic Society, 1973; and *Coin Hoards*, 9 vols. London: Royal Numismatic Society, 1975-2002.
2. Houghton, Arthur, Catharine Lorber, and Oliver Hoover, *Seleucid Coins: A Comprehensive Catalogue*, 2 vols. New York: American Numismatic Society, 2002-2008.

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**BABYLONIAN MATHEMATICAL**  
**ASTRONOMY: PROCEDURE TEXTS**  
**SPRINGER, SOURCES AND STUDIES IN THE**  
**HISTORY OF MATHEMATICS AND**  
**PHYSICAL SCIENCES MATHIEU**  
**OSSENDRIJVER 2012**

xvi+615 pp., 207 illus., 68 in color.  
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Babylonian Mathematical Astronomy: Procedure Texts contains a new analysis of the procedure texts of Babylonian mathematical astronomy. These cuneiform tablets, excavated in Babylon and Uruk and dating from 350-50 BCE, contain computational instructions that represent the earliest known form of mathematical astronomy of the ancient world. The targeted readership includes assyriologists, historians of science, astronomers and others with an interest in Babylonian astronomy.

The book includes new translations of all 108 available tablets accompanied by commentaries and color photographs of the tablets. The preceding chapters are devoted to documentary, lexical, semantic, mathematical and astronomical aspects of the procedure texts. Special attention is given to issues of mathematical representation, a topic that had previously been largely ignored. Mathematical concepts are presented in a didactic fashion, setting out from the most elementary ones (numbers and elementary operations) to more complex ones (algorithms and computational systems). Chapters devoted to the planets and the Moon contain updated and expanded reconstructions and astronomical interpretations of the algorithms.

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Preface.- Acknowledgements.- Abbreviations and symbols.- 1. Procedure texts.- 2. Mathematical concepts - from numbers to computational systems.- 3. Planets.- 4. Moon.- 5. Critical editions.- Appendices.- Glossary.- Bibliography.- Indices.

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## **A BYZANTINE MATHEMATICAL MANUSCRIPT OF THE 15TH CENTURY**

Transcription, Introduction and mathematical comments:

[http://phdtheses.ekt.gr/eadd/browse?type=author&order=ASC&sort\\_by=2&rpp=20&value=%CE%A7%CE%AC%CE%BB%CE%BA%CE%BF%CF%85%2C+%CE%9C%CE%B1%CF%81%CE%AF%CE%B1](http://phdtheses.ekt.gr/eadd/browse?type=author&order=ASC&sort_by=2&rpp=20&value=%CE%A7%CE%AC%CE%BB%CE%BA%CE%BF%CF%85%2C+%CE%9C%CE%B1%CF%81%CE%AF%CE%B1)

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**IS ENERGY-DISPERSIVE SPECTROSCOPY IN  
THE SEM A SUBSTITUTE FOR ELECTRON  
PROBE MICROANALYSIS? IAN HOLTON,  
MICROSCOPY AND ANALYSIS, VOLUME 26  
ISSUE 4 (MAY 2012)**

**Ian Holton, Acutance Scientific Ltd, Tunbridge Wells, Kent, UK**

With improvements in energy-dispersive spectroscopy (EDS) there has been a growing misunderstanding that scanning electron microscope EDS is an adequate substitute for electron probe microanalysis (EPMA) and some blurring of the understanding of the limits of quantification of SEM-EDS, especially amongst newcomers. This introductory article reviews the reasons why, although SEM-EDS is perfectly adequate in many cases, EPMA is essential in certain classes of work for both reliable quantification and trace analysis.

Keywords:

scanning electron microscopy, energy-dispersive X-ray spectroscopy, wavelength dispersive X-ray spectroscopy, spectrometry, microprobe, microanalysis, materials science

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**MARK L. LAWALL, JOHN LUND (ED.),**  
**POTTERY IN THE ARCHAEOLOGICAL**  
**RECORD: GREECE AND BEYOND**

Bryn Mawr Classical Review 2012.05.33

Mark L. Lawall, John Lund (ed.), *Pottery in the Archaeological Record: Greece and Beyond*. Acts of the international colloquium held at the Danish and Canadian Institutes in Athens, June 20-22, 2008. Gösta  
Enbom monographs, 1. Aarhus: Aarhus University Press, 2011. Pp.  
168. ISBN 9788779345874. \$40.00.

Reviewed by Antonis Kotsonas, University of Amsterdam ([a.kotsonas@uva.nl](mailto:a.kotsonas@uva.nl))

[The Table of Contents is listed at end of review.]

Archaeologists introducing novel theoretical approaches typically wish that these are taken up by others, and such a wish is expressed by T. Peña in the final lines of his *Roman Pottery in the Archaeological Record* Cambridge, 2007. The author could not, however, have easily envisaged that only a year later a number of experts on Greek and Roman pottery would come together in Athens to reflect on his book in a colloquium, which was entitled “Pottery in the Archaeological Record: A view from the Greek world” and eventually resulted in the publication under review.

In his monograph, already a reference work on Mediterranean ceramics, Peña articulates a new conceptual framework for the life cycle of Roman pottery. Going beyond the model of ceramic production, distribution and consumption (which is well-known by now though still not widely applied by Classical archaeologists),<sup>1</sup> Peña defines a broader set of behaviors which governed the formation of the archaeological record. He focuses on the re-use of pottery for various purposes and regularly uses the example of transport amphorae.

Comparable emphases pervade the collective work under review, which largely follows the structure of Peña’s book: from production to discard. This structure was also employed in the Athens colloquium, although not all the papers presented made it to the published proceedings.

Lawall and Lund, the organizers of the colloquium and editors of the volume, rightly perceived a need to consider the significance of Peña’s influential work for periods and regions not treated by him.

Accordingly, the collection of papers covers Greece, the Eastern Mediterranean and adjacent areas—a broad region discussed considerably less than the Central and Western Mediterranean in Peña’s book. The chronological span of the book is basically Archaic to Late Roman, with most essays dealing with the Roman period. One could wish for more papers on earlier Greek pottery, especially in light of the colloquium’s original title, as well as for contributions on pre-Roman, non-Greek pottery. This range would have helped to conceptualize the applicability of Peña’s model beyond Roman material, particularly since most of those writing on Greek ceramics (Lawall, Lynch, Rotroff) seem to agree that this model is not directly applicable to their material.

The editors of the volume asked contributors to comment on both the general model and the specific examples presented by Peña. However, some of the contributors took that model as carved in stone and adopted it rather uncritically (it is suggestive that only Peña himself, in the epilogue, cites the many reviews of his work). A notable exception is the paper by Lawall, which focuses on Greek amphorae and compares their life cycle to that of Roman amphorae discussed by Peña. Lawall, like Peña, produces flow diagrams which cover the complexity of the ceramic life-cycle and take in more spatial and temporal variations than those considered by Peña. Here Lawall's great experience with Greek amphorae is evident and this essay deserves to be read by all specialists, in addition to those interested in Peña's work. Less innovative, but well researched, is Lund's complementary paper on Roman amphorae and the varied iconographic evidence for their life cycle. The argument that ancient pictures are not the equivalent of modern photographs should have been the author's starting point, rather than his conclusion.

Scholars interested in the repair and re-use of ancient pottery must read Rotroff's contribution on material from the Athenian Agora, which extends from the Neolithic to the Ottoman period with emphasis on Archaic to Hellenistic. Making the most out of the extensive pottery database of the Athenian Agora, Rotroff identifies and quantifies ancient repairs by date, shape/function, ceramic ware, method of mending and local or foreign provenance. This analysis lays the foundation for comparative studies with collections of material from other sites. To give an example, the number of pots with mends represented within the large assemblage of Early Iron Age pottery from the different contexts of the Agora is lower than that seen on material of similar date found in a single well in Voula, in the southern outskirts of modern Athens.<sup>2</sup> The pattern could well be explained by the markedly different distance which separates the two sites from the main center of pottery manufacture and sale in ancient Athens.

Mending and re-use, particularly of Roman pottery, is also treated by Handberg, Martin, Slane and Tomber. However, in these cases, a criticism advanced by Rotroff (p. 118) is largely applicable: "The anecdotal publication of random mends [and, I shall add, cases of re-use] leaves us without a sense of the scale of the practice and of its variability over time, over different classes of pottery, and in method". This said, some of the papers in question, and that by Tomber in particular, raise broader considerations on pottery and economy or ceramic quantification. Comparing these papers, which mostly regard Roman pottery, with those on Greek pottery one comes to the conclusion that the modification and re-use of ceramics, which was much discussed by Peña, is much more widely seen in the Roman period. It is unfortunate that this conclusion, which is of paramount importance given the scope of the volume, is left for the reader to discover.

The re-use of Greek pottery, including usable ceramics, as structural fill in the Athenian Agora at the time of the Persian Wars is discussed by Lynch. The analysis, which has now received a longer treatment in a very important monograph,<sup>3</sup> engages with the reaction of the Athenians after their return to their devastated city and the imprint of this reaction on the archaeological record. Lynch distances herself from Peña's approach and produces a particularly refreshing contribution, the only one in the entire volume which goes beyond the empirical and processual traditions.

The management of everyday, domestic ceramic waste in a Roman house at Kourion is discussed by Costello. By using spatial analysis, ceramic quantification and cross-joins,



the author convincingly defines areas of provisional discard of ceramic waste and monitors its circulation within the house. A potential complication of the fairly robust methodology arises from the treatment of space as two-dimensional in all relevant calculations. The third dimension, which involves, for example, the stacking of vessels on the ground or even on shelves, can have a grave impact on the density of material recovered and thus obscure the identification of discard areas.

Two papers, one by Hasaki and another by Murphy and Poblome, report on research projects on ceramic production, bringing in ethnographic and ethnoarchaeological work. Since these issues were little discussed in Peña's book (where they are basically singled out as lines for future investigation), the two essays do not directly engage with that work.

Hasaki presents her ethnoarchaeological project with traditional potters in Tunisia and its importance for reconstructing the physical setting of ancient Greek (and why not other Mediterranean as well?) pottery workshops. There is much of interest here with reference to the size and spatial layout of workshops and the scale of production.

Likewise, on the basis of their fieldwork at the potter's quarter at Sagalassos, Murphy and Poblome argue that existing models of ceramic production have not paid enough attention to the variability in the physical setting, production modes and technologies manifested within a single production site. The Sagalassos research project is stimulating and that is why one would like the paper in question to have been more detailed.

The volume closes with a brief response by Peña, who comments on few of the preceding contributions and cites some important works which appeared after his book was submitted for publication.

A special note should be made on the editorial standards of the volume under review. Thanks to the financial support of the Foundation of Consul General Gösta Enbom, the glossy paper, the many color illustrations and the other uses of color in this work are superb. The illustrations in particular compensate for the bad quality of many of the black and white photographs in Peña's book. The editorial work is also good, but the spelling of the much used terms re(-)use and life(-)cycle should have been consistent. Typos and other flaws are rare and insignificant and the only notable case is the confusion in the references to the illustrations on pp. 34-35. Likewise, the lengthy point made in the volume's preface (p. 5) on the overlooked case of pots concealing coin hoards should not have omitted citing the relevant discussion on pp. 92-93. I also note that the many secondary geographical, chronological and other designations which are taken as known, may limit the accessibility of the volume by scholars beyond Classical Archaeology.

The work under review is a welcome contribution on the subject of ancient pottery. It offers several thought-provoking papers and elaborates on the model and ideas put forward by Peña. Although the volume is unlikely to have the broad impact of Peña's monograph, it deserves the attention of all those interested in current approaches on Mediterranean ceramics.

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**Notes:**

1. For an application of this model to a large body of material see: A. Kotsonas. 2008. The archaeology of tomb A1K1 of Orthi Petra in Eleutherna: The Early Iron Age pottery Athens.
2. A brief reference to this new discovery: Γ. Κουράγιος. 2009-2010. Ο αρχαίος δήμος των Αιξωνίδων Αλών (σημ. Βούλα – Βουλιαγμένη) Αττικής. Ευλιμένη 10-11 (forthcoming).
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Please visit the site: <http://bmcr.brynmawr.edu/2012/2012-05-33.html>

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## **EΙΔΗΣΕΙΣ - NEWS RELEASE**

# **THE HOW AND WHERE OF ROMAN AGE GLASSMAKING**

An EU-funded interdisciplinary study has contributed a deeper understanding of glass production in Italy in the Roman age.

Roman glass tesserae [Credit: University of Nottingham] The project ‘The provenance of mosaic tesserae: an interdisciplinary study on Roman age glass production and trade in Italy’ contributed knowledge and offered possible answers to open questions surrounding the Roman age glassmaking industry. An existing reconstruction of the economic model of ancient glass production, focusing on Italy and vitreous mosaic tesserae materials dating from 3rd century BC to 2nd century AD, has been advanced on the basis of archaeological and archaeometric literature. Hypothesising a three-phase productive system, information was lacking on the location of the primary productive centres and trading routes.

The EU-funded study worked to improve knowledge of ancient vitreous materials and develop a work procedure for applying trace and isotope analysis to the ancient glasses, as well as clarify the origin of the Roman age glasses in Italy. Integrating archaeological fieldwork with analytical characterisation of glass samples, research was successful in a number of areas.

Observation of wall and floor mosaics helped unfold a chronology of the vitreous materials used by mosaicists during the period under study. The identification of certain vitreous materials made it possible to date mosaics.

The work protocol developed was tested in the laboratory for characterisation of the glasses. Based on the principle of analysis selection suited to solving archaeological problems, the research schedule gave priority to the application of non-destructive and micro-destructive techniques.

Interpretation of the lead, neodymium and strontium isotope analysis helped realise the overall aim of the project with analytical investigation clarifying that glasses used in Italy as Roman mosaic tesserae are comparable to raw glasses and glass vessels that circulated in the peninsula at that time. Analysis of the materials also helped prove the hypothesis that there existed few production centres, which were active for at least four centuries.

Promote activities and outcomes had a major impact both in terms of scientific results and training activity. The highly innovative data produced contributes a more in-depth understanding of the subject and the methodology developed is applicable to study of other glass artefacts from different historical periods.

**Please visit the site:**

**[http://cordis.europa.eu/fetch?CALLER=OFFR\\_TM\\_EN&ACTION=D&RCN=8504](http://cordis.europa.eu/fetch?CALLER=OFFR_TM_EN&ACTION=D&RCN=8504)**

**UNIVERSITY OF NEVADA, RENO**  
**RESEARCHERS DISCOVER NEW RESEARCH**  
**USE FOR PLAQUE INTERDISCIPLINARY**  
**WORK YIELDS NEW, EASIER, LESS**  
**DESTRUCTIVE WAY TO EXAMINE DIETS**  
**OF ANCIENT PEOPLES BY USING DENTAL**  
**CALCULUS, BY CLAUDENE WHARTON**

While we may brush and floss tirelessly and our dentists may regularly scrape and pick at our teeth to minimize the formation of plaque known as tartar or dental calculus, anthropologists may be rejoicing at the fact that past civilizations were not so careful with their dental hygiene.

University of Nevada, Reno researchers G. Richard Scott and Simon R. Poulson discovered that very small particles of plaque removed from the teeth of ancient populations may provide good clues about their diets. Scott is chair and associate professor of anthropology in the College of Liberal Arts. Poulson is research professor of geological sciences in the Mackay School of Earth Sciences and Engineering.

Scott obtained samples of dental calculus from 58 skeletons buried in the Cathedral of Santa Maria in northern Spain dating from the 11th to 19th centuries to conduct research on the diet of this ancient population. After his first methodology met with mixed results, he decided to send five samples of dental calculus to Poulson at the University's Stable Isotope Lab, in the off chance they might contain enough carbon and nitrogen to allow them to estimate stable isotope ratios.

"It's chemistry and is pretty complex," Scott explained. "But basically, since only protein has nitrogen, the more nitrogen that is present, the more animal products were consumed as part of the diet.

Carbon provides information on the types of plants consumed."

Scott said that once at the lab, the material was crushed, and then an instrument called a mass spectrometer was used to obtain stable carbon and nitrogen isotope ratios.

"It was a long shot," he said. "No one really thought there would be enough carbon and nitrogen in these tiny, 5- to 10- milligram samples to be measurable, but Dr. Poulson's work revealed there was. The lab results yielded stable carbon and nitrogen isotope ratios very similar to studies that used bone collagen, which is the typical material used for this type of analysis."

Scott explained that the common practice of using bone to conduct such research is cumbersome and expensive, requiring several acid baths to extract the collagen for analysis. The process also destroys bone, so in many instances, it isn't permitted by museum curators.

As for using hair, muscle and nails for such research, Scott said, "They are great, when you can find them. The problem is, they just don't hold up very well. They decompose too quickly. Dental calculus, for better or for worse, stays around a very long time."

Scott said that although additional work is necessary to firmly establish this new method of using dental calculus for paleodietary research, the results of this initial study indicate it holds great potential.

"This is groundbreaking work," Scott said. "It could save a lot of time and effort, and also allow for analysis when things like hair, muscle and nails are no longer available."

The study, "Stable carbon and nitrogen isotopes of human dental calculus: a potentially new non-destructive proxy for paleodietary analysis," is published in the May 2012 issue of the Journal of Archaeological Science.

Please visit the site: <http://www.unr.edu/nevada-today/news/2012/university-of-nevada-reno-researchers-discover-new-research-use-for-plaque>

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## **EXCAVATION SITE IN QATAR REVEALS 'SURPRISING' FIND WADI DEBAYAN, ONE OF THE EARLIEST NEOLITHIC- CHALCOLITHIC SITES IN THE GULF, HAS BENEATH ITS SURFACE SOME OF THE EARLIEST KNOWN STRUCTURES IN QATAR, BY BONNIE JAMES**

In a major development for the archaeological excavations across Qatar, an unmarked grave has been discovered at Wadi Debayan, an important site with human occupation dating back to about 7,500 years ago.

The exploration of Wadi Debayan, situated on the northwestern side of Qatar to the south of the site of Al Zubara and the Rá's 'Ushayriq peninsula, is part of the Remote Sensing and Qatar National Historical Environment Record (QNHER) Project.

“We have come across one burial, probably a full skeleton and though we cannot say that we have a cemetery there, it is a fair possibility,” project co-director Richard Cuttler told Gulf Times during a site visit.

QNHER is being developed as part of the Remote Sensing Project, a joint initiative between the Qatar Museums Authority under the guidance of Faisal al-Naimi (head of antiquities), and the University of Birmingham, where Cuttler is a research fellow.

“The grave was a very surprising find that came out of one of the several test pits. We have seen some pieces of the tibia, one of the two leg bones, which shows the skeleton is in a crouched position typical of Neolithic burials” he explained.

Given that the current season's exploration, which started in January, has been wound up due to the onset of summer, more work on the grave would be done the next season, scheduled from October.

“The bone fragments are very fragile and we need to sit back and think how to go about this. We also need to consult some osteologists and get more information,” Cuttler said.

By working with a complete skeleton or even bone fragments, osteologists can determine facts including the deceased individual's age, sex, diet and illnesses.

“The only other site I can think in the Gulf similar to this is the one at Jebel Al Buhais in Sharjah, the UAE, and there they had Neolithic cemeteries with no markers on the surface,” the expert recalled.

Cuttler has worked as an archaeologist for over 25 years working and directing projects across many countries including Qatar, the UAE, Libya, Georgia, Norway and Italy.

Wadi Debayan, one of the earliest Neolithic-Chalcolithic sites in the Gulf, has beneath its surface some of the earliest known structures in Qatar.

The fact that the site had human habitation as early as 7,500 years ago was proved scientifically during summer last year when samples from one of the post holes were radio carbon dated.

“When we first found the site, we thought well may be we have just got a flint scatter here, but when we began excavation we found lots of fire pits and many, many post holes”, explained al-Naimi, also a co-director of the project.

Evidence so far indicates that Wadi Debayan had about 3,000 years of occupation. It may not be the same people or continuous occupation.

“The very interesting thing here is an absence of clues on the surface that would indicate the presence of archaeology. It looks like a flat desert terrain, but literally below the surface is evidence for Neolithic occupation” said al-Naimi.

“However, the landscape does have clues that we can now use to help find similar sites in the future,” he added.

**Please visit the site:**

[http://www.gulf-times.com/site/topics/article.asp?cu\\_no=2&item\\_no=503582&version=1&template\\_id=57&parent\\_id=56](http://www.gulf-times.com/site/topics/article.asp?cu_no=2&item_no=503582&version=1&template_id=57&parent_id=56)

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## **MYSTERY OF THE DOMESTICATION OF THE HORSE SOLVED: COMPETING THEORIES RECONCILED**

New research indicates that domestic horses originated in the steppes of modern-day Ukraine, southwest Russia and west Kazakhstan, mixing with local wild stocks as they spread throughout Europe and Asia.

The research was published 07 May, in the Proceedings of the National Academy of Sciences.

For several decades scientists puzzled over the origin of domesticated horses. Based on archaeological evidence, it had long been thought that horse domestication originated in the western part of the Eurasian Steppe (Ukraine, southwest Russia and west Kazakhstan); however, a single origin in a geographically restricted area appeared at odds with the large number of female lineages in the domestic horse gene pool, commonly thought to reflect multiple domestication "events" across a wide geographic area.

In order to solve the perplexing history of the domestic horse, scientists from the University of Cambridge used a genetic database of more than 300 horses sampled from across the Eurasian Steppe to run a number of different modelling scenarios.

Their research shows that the extinct wild ancestor of domestic horses, *Equus ferus*, expanded out of East Asia approximately 160,000 years ago. They were also able to demonstrate that *Equus ferus* was domesticated in the western Eurasian Steppe, and that herds were repeatedly restocked with wild horses as they spread across Eurasia.

Dr Vera Warmuth, from the University of Cambridge's Department of Zoology, said: "Our research clearly shows that the original founder population of domestic horses was established in the western Eurasian Steppe, an area where the earliest archaeological evidence for domesticated horses has been found. The spread of horse domestication differed from that of many other domestic animal species, in that spreading herds were augmented with local wild horses on an unprecedented scale. If these restocking events involved mainly wild mares, we can explain the large number of female lineages in the domestic horse gene pool without having to invoke multiple domestication origins."

The researchers provide the first genetic evidence for a geographically restricted domestication origin in the Eurasian Steppe, as suggested by archaeology, and show that the tremendous female diversity is the result of later introductions of local wild mares into domestic herds, thus reconciling evidence which had previously given rise to conflicting scenarios.

The research was funded by the BBSRC, German Academic Exchange Service (DAAD), and the Leverhulme Trust.

**Please visit the site:**

<http://www.sciencedaily.com/releases/2012/05/120507154107.htm>

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## **3K OLD NECROPOLIS FOUND IN BULGARIA**

Archaeologists working along the route of Bulgaria's Struma Motorway, which when completed will lead from capital city Sofia to the Greek border, have found a necropolis estimated to date back about 2800 years, public broadcaster Bulgarian National Television said on May 1 2012.

For the archaeologists, the site has presented more questions than answers, with those working on the site surprised not only by the size of the necropolis but also by the long period during which it was in use.

Two ancient settlements had been found nearby, which could explain the large scale of the burial place, the report said.

Archaeologist Filip Mihailov was quoted as saying that the remains of the dead had been disposed on the site after cremation, and it was also probable that remains had been placed in clay urns.

A silver earring, pendant and beads had been found at the site. It seemed that more than 2500 years ago, blue glass beads had been believed – as some in the region still believe that they do – to ward off the evil eye.

Stone mounds had been found, adding to the "mystery" of the site because the stones had been brought from several kilometres away. Such burial practices were characteristic of mountain regions, while the site itself was a hillside of thick reddish clay with no stones.

**Please visit the site: [http://sofiaecho.com/2012/05/02/1818561\\_archaeology-ancient-necropolis-found-in-path-of-bulgarias-struma-motorway](http://sofiaecho.com/2012/05/02/1818561_archaeology-ancient-necropolis-found-in-path-of-bulgarias-struma-motorway)**

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## **OLDEST ASTRONOMICAL INSTRUMENT DISCOVERED IN CHINA**

Chinese scientists have proposed that an object collected 35 years ago from a tomb of the Western Han Dynasty in Fuyang city and called “lacquerware of unknown names” could be a gnomon with template.

The gnomon with template and a pair of overlapping lacquered disks from the tomb of Xiahou Zao, the 2nd Marquis of Ruyin of the Western Han dynasty (Yunli Shi)

In 1977, archaeologists unearthed a great number of precious relics, including the unknown object, in the tomb of Xiahou Zao (the 2nd century BCE), the 2nd Marquis of Ruyin of the Western Han dynasty.

However, no one has been able to identify the object as well as to explain the possible function of a pair of overlapping lacquered disks found in the same tomb.

A team of Yunli Shi, a professor at the Department of the History of Science and Scientific Archaeology, University of Science and Technology of China, has now proposed that the object is a special gnomon with template, while a pair of lacquered disks is an equatorial device for the positional observation of celestial bodies. Both are the oldest astronomical measuring instruments with definite information of date that can still be seen in the world. The findings appear in the *Studies in the History of Natural Sciences*.

The scientists noted that the gnomon with template is a typical instrument used by ancient Chinese astronomers in determining the advent of different seasons with the gnomon shadows cast on the template by the midday Sun.

The gnomon from the tomb of Xiahou Zao has two symmetric and foldable parts. As being fully set up in the south-north direction, the midday Sun will cast the shadow of a vertical tablet in the northern half onto three fixed positions on the template respectively on the days of the Summer Solstice, the Vernal/Autumnal Equinoxes, and the Winter Solstice.

“Geographically, this type of gnomon with template can only be used on the given latitude, and the one from the tomb of Xiahou Zao fits just right with the region between the capital of the dynasty Chang’an and the fief of the Marquis of Ruyin Fuyang,” explained Prof. Shi.

The edges of the two overlapping disks are marked respectively with the complete degrees of a celestial circle, and the names and degrees of each of the 28 lunar lodges.

Previous studies have suggested that they may make either an astrological tool similar to the two cosmic disks for divination from the same tomb, or a kind of astronomical instrument, but both theories are in need of definite evidence.

Mounted on top of a lacquerware box, the disks form a complete device good for the equatorial observation fitting just right with the geographical latitude of Fuyang, a prefecture-level city in northwestern Anhui province, China.

Please visit the site: <http://www.sci-news.com/archaeology/article00292.html>

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## **ANCIENT DOCUMENTS IN IRAQ OFFER CLIMATE CLUES, BY BOB BERWYN**

Baghdad became the most prosperous place at the time, and the center of international trade and agricultural development. Map courtesy Fernando Domínguez-Castro.  
Cold weather outbreaks may be linked with volcanic activity By Summit Voice

SUMMIT COUNTY — Spanish scientists have tracked a series of unusual cold snaps in the Middle East by translating written documents recorded by Arab historians.

Through painstaking work, the research team has constructed a chronology of climatic events between 816 and 1009, when the region apparently experienced regular cold spells and even snowfall.

“We have recovered an interesting chronology of climatic events, such as droughts, floods, rain, frost, heat and cold waves as well as strong winds during the period between 816-1009 in the areas now known as Iraq and Syria,” said Fernando Domínguez-Castro, lead author and researcher in the Physics department at the University of Extremadura.

This study, published in the *Weather* journal, highlights a high number of cold waves. “The period between 902 and 944 had a high number if we compare them to current weather data. Examples of this are the six snowfalls that occurred in that period, whilst in our era, we only know of one snowfall in Baghdad on 11 January 2008” Domínguez-Castro highlights.

The research team was especially surprised by the “unexpected” drop in temperatures in July 920. According to the documents analyzed, the people of Baghdad had to come down from their roofs (where they would usually sleep in the summer) and go inside their houses and even use blankets. The temperatures could have dropped 9 degrees Celsius compared to the current average for the month of July.

“It is difficult to identify the cause of this drop in temperature, but it could be due to a volcanic eruption the year before, as it is common for summer temperatures to drop in these cases” the expert points out and says that during some of those nights in July 920, temperatures did not exceed 18°C.

There were two significant volcanic eruptions during that period, which could be the cause of the cold waves, “although there is a lot of doubt surrounding the dates”, the researcher states. One of those was the Ceboruco volcano (Mexico), around 930, and the other was the Guagua Pichincha (Ecuador), around 910. Nonetheless, “more evidence is necessary to confirm this hypothesis” the expert warns.

The research shows that during the first half of the tenth century, the cold climatic events in Baghdad were more frequent and more intense than today. Although in the Iraqi city only two days with temperatures below 0°C were registered between 1954 and 2008, there were at least six very cold days in a 42 year period in the tenth century.

Baghdad, the center of the empire.

In 762, Abu Ja'far Abdallah al-Mansur, the second Abbasid Caliph (the second Islamic dynasty), founded the city of Baghdad and established it as the capital of the empire. The city soon became the most prosperous place at the time, and the centre of international trade and agricultural development, which attracted a growing population.

Historians of the era debated reasons as to why the Caliph gave so much importance to Baghdad. As well as its strategic location between the Tigris and Euphrates rivers, the city had good weather conditions.

“There was plenty of water, the weather was very warm in the summer, very cold in the winter, and moderate in spring and autumn,”

Al-Ya`qubi described, author of a geographical treatise in 891.

**Please visit the site: <http://summitcountyvoice.com/2012/05/02/ancient-documents-in-iraq-offer-climate-clues/>**

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# **THE PALAEOLITHIC ROCK ART IN WADI** **ABU SUBEIRA, EGYPT: LANDSCAPE,** **ARCHAEOLOGY, THREATS AND** **CONSERVATION, BY PER STOREMYR**

Rock art by a "fjord" along the Nile? This is how Wadi Abu Subeira may have looked like at the time of the making of the Late Palaeolithic rock art, some 15-20.000 years ago. The iron mining concessions that may destroy the rock art are also indicated. Hypothetical reconstruction by Per Storemyr based on information on rock art locations from Adel Kelany and on the general knowledge of the geomorphology in the area, provided in Wendorf & Schild (1989). Only field studies can confirm the hypothesis.

Since the publication of the threats to the Palaeolithic rock art in Wadi Abu Subeira three weeks ago, there has been much response through e-mail and social media, and the case has been covered by many online magazines and blogs. People in Egypt and elsewhere are concerned, and I wish to thank you all for your interest and for bringing the case along to friends and colleagues, as well as to administrators and politicians. There now seems to be a need for an "unbiased", comprehensive overview of what is actually known about the landscape, the archaeology, the rock art, the threats, current conservation efforts and options for the future. The overview below is based on published literature, and information that otherwise belongs to the public sphere. It is written in close cooperation with Adel Kelany, and we have benefitted from input by Dirk Huyge.

Content

This is a comprehensive article – here's an overview:

Wadi Abiu Subeira seen from west. Photo: Per Storemyr

The lower part of Wadi Abu Subeira seen from west. Photo: Per Storemyr Location and current infrastructure

Wadi Abu Subeira (or Chor [Khor] Abu Subeira) is a 60 km long and up to 1 km broad wadi in the Eastern Desert of Egypt. It has many small side-valleys and enters the Nile about 12 km north of Aswan, or 650 km south of Cairo. Historically, the wadi was an important gateway from the Nile Valley to the Eastern Desert and the Red Sea, and in more recent centuries it has particularly been frequented by the Ababda Bedouins.

The lowermost 4 km of the wadi has now villages, agricultural fields and a major stone quarrying area at its north flank. About 40 underground clay mining operations are located along the flanks of the wadi, from the mouth and 10 km upward. Open-cast iron mineral mining takes place between 10 and 13 km from the mouth. Higher up there is little or no modern activity. There is a rough track going through the wadi, but no asphalt road. In the lower reaches there is a network of tracks for transportation of clay and iron minerals with heavy trucks.

Except at the mouth by the Nile, which has been inhabited and cultivated for a long time, there was hardly modern infrastructure in the wadi until 20-30 years ago. Since fields and villages are occasionally threatened by flash flood, a security dam has been built 4 km from the mouth.

The 60 km long Wadi Abu Subeira and its location in Upper Egypt. Late Palaeolithic rock art sites are marked with green. The current iron mineral mining concessions in Subeira with red.

The 60 km long Wadi Abu Subeira and its location in Upper Egypt. Late Palaeolithic rock art sites are marked with green. The current iron mineral mining concessions that may destroy the rock art with red.

#### Geology, climate and wildlife

The wadi is located in the Nubian sandstone province of Upper Egypt and it developed along a major east-west fault line. At the steep, 50-100 m high northern flank, which is almost an escarpment, characterised by scree and rock fall, the sandstone has been altered by so-called silicification, implying that it frequently has become hard like quartzite. The southern flank is hardly silicified and not as steep as the northern flank. Iron ore, in the form of so-called oolitic ironstone, forms layers within the Nubian sandstone. This is also the case with the various types of clay.

At the time of the making of the first rock art, in the Late Palaeolithic (geologically the Late Pleistocene), some 15-20.000 years ago, it is known that the Nile River at Aswan at times ran an estimated 15 m higher than today, probably forming a braided river. This may imply that Wadi Abu Subeira at times was a shallow and narrow “fjord”, reaching several km up the wadi (9-10 km?). The occurrence of patches of Nile silt in the wadi is a testimony of the once higher Nile elevation. However, it is also a possibility that the mouth was sometimes blocked by sand dunes – and thus the “fjord” would rather have been an occasional lake (fed by ground water and occasional rain).

Towards the very end of the Late Palaeolithic (c. 12.000 years ago), a phase known as the “Wild Nile” brought exceptionally high floods. It is likely, but not yet confirmed, that extensive layers of the mineral calcite formed at the stones along the wadi flanks at this time. Such layers are found immediately below the Late Palaeolithic rock art.

The Late Palaeolithic was hyper-arid in the region, but with the beginning of the Holocene, about 10.500 years ago, a moister climate took over. This implied that the Nile eroded away the massive layers of silt that had previously been deposited. Moreover, since many wadis, including Wadi Abu Subeira, carried water at this time, previous deposits within the wadis – and remains of human activity – were also subject of erosion. Since the current arid to hyper-arid climate was established about 7.000 years ago (5.000 BC) there has been little erosion, though detrimental flash floods may occur after local, heavy rainfall in the Eastern Desert.

There is now little vegetation in Wadi Abu Subeira, but though there are, as far as we know, no trees, bushes are a main feature of the occasionally active water courses. Current wildlife has not been studied. It will certainly be rather limited, but may very well be representative of the Eastern Desert in general (ibex, gazelle, striped hyena etc.). Moreover, this part of Egypt is on very important bird migration routes, but it is not known whether Subeira constitute some kind of stop-over place.

The general archaeology of the wadi is poorly known and hardly published. It is the subject of the on-going survey by a team of archaeologists/Egyptologists with the

Ministry of State for Antiquities (MSA) (formerly Supreme Council of Antiquities, SCA). The survey is headed by Adel Kelany, who is with the regional antiquities office in Aswan. Kelany is also in charge of the Mines and Quarry Department of MSA, a department that concentrates on survey and protection of the many ancient quarries and mines in Egypt. The ongoing work was launched in 2005-2006 as a rescue survey in response to the modern clay mining going on in the wadi. At the start the rescue survey focused on remains of ancient quarries, then in cooperation with the international, EU-funded QuarryScapes project. It widened to include all archaeology after the Late Palaeolithic rock art was discovered in 2006. My own field involvement has been through the QuarryScapes project and additional site visits with Kelany and team.

A more limited survey of Predynastic rock art from the period 4-3.000 BC has also taken place in recent years. This has been carried out by the Aswan-Kom Ombo Archaeological Project, an American-Italian-British mission headed by Maria Gatto of Yale University. The mission has in particular concentrated on a fine ensemble of Predynastic rock art that was discovered in 1930 in a small valley at the southern side of the wadi. Generally, the occurrence of Predynastic rock art in the wadi has been made public by archaeologists and other people occasionally visiting the wadi throughout the 20th century. It was, in fact, reported already in 1892 by Greville Chester and is quite well documented by one of the famous DIAFE expeditions by Leo Frobenius in 1926. But the articles never mention images looking like the Late Palaeolithic ones.

Limited remains of Middle Palaeolithic (40-100.000 years ago) occupation close to the mouth of the wadi was excavated and reported by the Combined Prehistoric Expedition of Wendorf and Schild in the 1980s. Occasional observations indicate that there are, despite erosion, more remains of Palaeolithic occupation in the wadi, but nothing of this has been made public yet.

The work of the Combined Prehistoric Expedition in the Aswan region was concentrated to Wadi Kubbania, just opposite Wadi Abu Subeira, on the west bank of the Nile. The now very famous occupation sites in Kubbania is a grand testimony to the widespread occupation of the area in the Late Palaeolithic (c. 20-12.000 years ago), but also to earlier presence.

Palaeolithic stone tool workshop (foreground) at the northern "escarpment" of Subeira. The makers used solid quartzite bedrock (small hills) for their tools. This is quite uncommon, since pebbles are often used as raw material for quartzite tools. Photo: Per Storemyr

Palaeolithic stone tool workshop (foreground) at the northern "escarpment" of Subeira. The makers used solid quartzite bedrock for their tools. This is quite uncommon, since pebbles and loose blocks are often used as raw material for quartzite tools. Photo: Per Storemyr  
Summary of known and anticipated archaeological sites

Palaeolithic occupation and quarrying (until 12.000 years ago)

In addition to the Middle Palaeolithic occupation and anticipated, more Palaeolithic occupation sites, there are extensive traces of Palaeolithic tool working along the northern wadi flank and on top of the "escarpment". The nature and age of this tool working has not been studied, but there is reason to believe that it may reach back to the Early Palaeolithic (more than 100.000 years ago) and that it continued in the Middle



Palaeolithic (Levallois cores). The tool makers took advantage of the fine, hard and colourful quartzite, like they did at several other places in Upper Egypt and Lower Nubia in these periods.

It is unlikely that the tool making continued to any great extent into the Late Palaeolithic, since at this time Egyptian flint was the main stone used for tools. But quartzite may have been used to make grinding stone in the Late Palaeolithic, just as it was in Wadi Kubbania across the Nile (in order to process wild plants). It will, however, be very difficult to find clear Palaeolithic grinding stone workshops among the numerous such workshops from later periods (see below).

Karl Butzer in 1968 proposed that Wadi Abu Subeira, given its accessibility and iron mineral deposits, especially at the current location of iron mining (see below), would have been a logical source of red pigment (hematite, goethite) for Palaeolithic man (e.g. for body paints). This is very likely, but has not been confirmed.

The Late Palaeolithic rock art (20-15.000 years ago)

Like the several Late Palaeolithic occupation sites in Upper Egypt, the late Palaeolithic rock art in Subeira should be seen within a group, also comprising the occurrences at Qurta close to Gebel el-Silsila, 50 km north of Subeira, as well as at el-Hosh, 10 km north of Gebel el-Silsila. Qurta is the most well-known site, with its 4 sub-sites and nearly 200 individual images. It was initially discovered by a Canadian expedition in the 1960s, but its tremendous significance as a Late Palaeolithic site was recognised a few years ago only, by the Belgian Archaeological Mission to Egypt led by Dirk Huyge. Since then intensive investigation and publication have been undertaken, culminating in a 2011-article in *Antiquity*, in which the Late Palaeolithic age of the rock art was confirmed by a scientific technique known as OSL (Optically Stimulated Luminescence). The occurrences at el-Hosh (at Abu Tanqura Bahari), comprising c. 35 images, are less well-known, awaiting full publication. It was found by the Belgian team in 2004.

Until now the richest site of Late Palaeolithic rock art in Subeira,

The occurrences in Wadi Abu Subeira were first discovered by Adel Kelany and his MSA team in 2006. It was a chance find, at a place 2.5 km from the Nile (sub-site CAS-6), where modern clay mining had been attempted, but ultimately failed (Alhamdulillah!). The find was briefly published by Kelany and team with the undersigned in 2008.

Since then 3 other sub-sites have been discovered by Kelany and team, sub-sites CAS-13, 14 and 20, located between 5 and 8 km from the wadi mouth. Some of these are now awaiting publication by Kelany (in press). More than 68 panels have been found as of March 2012; each panel usually have one individual image only, but many have 2 or more.

Since survey is ongoing and far from completed, it is very likely that there are additional panels and images and thus it is not possible to give an exact number of individual images at the moment.

So far, all images are located relatively high up on cliffs or wadi slopes, both at Qurta, el-Hosh and Subeira. They were, in other words, made above the Late Palaeolithic level of the Nile. But whereas the Qurta and el-Hosh occurrences are mainly found in-situ on vertical cliffs, the Subeira drawings are commonly found on larger and smaller boulders that have tumbled down the wadi slope. It is anticipated that this mode of occurrence is

related to specific geological/climatic events at the end of the Late Palaeolithic or later (e.g. earthquake, heavy rainfall).

The subject matter at all these sites mainly consists of aurochs, but there are also other bovines such as hartebeest and gazelle, as well as hippos and many fish images. At Qurta there are, additionally, birds, “monsters” or “hybrids” and stylized humans, whereas Subeira feature wild dog and a superbly drawn, almost life-size Nubian ibex (tracing of the latter is not yet published). This repertoire closely resembles the known wildlife of the Late Palaeolithic along the Nile.

The techniques used were hammering and incision, or a combination of the two. There are no painted images, like in the contemporary, great “Ice-Age” cave art of France and Spain. However, hammered and incised images are also known from the same time in Europe, for example the outdoor art in the Côa Valley (Portugal). Otherwise, the naturalistic style of drawing is a common trait of both the European and the Egyptian Late Palaeolithic images.

In addition to age, it is mainly the similar naturalistic style that leads to questions about contact or transfer of aesthetic concepts between Europe and North-Africa in general and the Nile Valley in particular during the Late Palaeolithic. Such research has hardly begun, but will have to take account of discoveries of rather similar images near the coast of Libya and in Italy. All these images were made at the end of the last Ice-Age – at a time when the level of the Mediterranean was some 100 m lower than at present. Consequently, the ways of possible contacts may have been easier than we commonly tend to think of.

Though there is older rock art in the southern part of Africa (e.g. Blombos cave), the Late Palaeolithic group in Upper Egypt is so rich, so diverse and so well dated, that it can firmly be designated “the oldest rock art in North Africa”. And it is not exaggerated to speak of it as unique, thus true world heritage. This said, there is bound to be more, similar rock art at favourable places in North-Africa. It has just not been looked for yet.

The Predynastic and later rock art (From c. 4.000 BC)

Nothing has been published about occupation and quarry sites after the Late Palaeolithic, through the Epipalaeolithic and Neolithic (c. 10-4.000 BC) and into the Predynastic period (c. 4-3.000 BC). However, if they are not eroded away, there may very well be sites from these periods, especially since it is likely that the wadi was an important gateway to the Eastern Desert at this time.

Occupation is corroborated by the numerous Predynastic and later rock art occurrences. Three specific sites are mentioned in the literature and designated with sub-site numbers in the ongoing MSA survey. CAS-6 is located just below the Late Palaeolithic rock art at the sub-site with the same site code. It is an extremely rich rock art occurrence, mainly consisting of animals (especially cattle and ibex), but also with depictions of humans with bows and some boats. It is likely that rock art was made here almost continuously from the Predynastic and into the Middle Kingdom-New Kingdom/Nubian C-Group period. There are also much later engravings, for example of camels, and “wasm” or tribe symbols belonging to relatively recent times.

Contrary to CAS-6, site CAS-2 (also named KASS1), has been properly studied by Maria Gatto and her team. This is also a very rich rock art site, located in a small, “hidden” valley at the south side of the wadi. There are depictions of ibexes, donkeys, gazelles, cattle, ostriches, a few giraffes and elephants, a single hippo and an amphibian. And hunting figures (archers) are sometimes associated with the wild fauna. More than 20 boats represent some of the most prevalent images depicted. These and most other images belong to the Predynastic period. Importantly, at the location there are two gueltas, or pools that become filled with water during occasional heavy rainfall. The specific location and the nature of the rock art has led Gatto and team to suggest that it may have been a site for elite hunting, but also of great ritual significance in the Predynastic period.

There is limited destruction by modern quarrying at CAS-6, as well as problems with dust from the heavy trucks passing by, but CAS-2 is still in very good condition. This is not the case at rock art site CAS-7, which is located just 500 m from the Nile. This site shows Middle Kingdom boats and various animals, but has been almost obliterated by both ancient (Roman?) and modern quarrying.

In addition to these three known sites, there are numerous other rock art sites along the wadi. Many are small, with a few animals only; others comprise dozens of images.

Generally, this type of Predynastic and later rock art is well-known, both along the Nile and in the Eastern Desert. Hence, with a possible exemption for site CAS-2, it is not unique, but of tremendous importance for understanding the use of Wadi Abu Subeira over the last 6.000 years.

#### Ancient stone quarries

Last, there are numerous ancient quarries of generally unknown age along the wadi. None of these have been properly published, but have been briefly communicated at conferences. Several were spotted at the time when QuarryScapes were part of the survey of the wadi (2006-2007).

Like in the Palaeolithic, the quarriers took advantage of the silicified sandstone or quartzite, especially along the northern side of the wadi. They made hand-held grinding stone, typically oval or boat-shaped, and there are remains of quarry activities both along the slope and on the “escarpment”. A few extensive quarry sites have been seen, but most are almost “hidden” among the boulders and stones that have tumbled down the wadi slope. There are also remains of ornamental quartzite quarries, but what was actually procured is not known.

The quarrying in Wadi Abu Subeira must be seen in connection with the extremely widespread, similar quarrying of quartzite in the Aswan region as a whole, especially in the area around Wadi Abu Agag south of Subeira and on the West Bank (Gharb Aswan). At the west bank grinding stone was procured in the Late Palaeolithic and then again – in massive amounts – from the Predynastic to relatively recent times.

Aswan was indeed a big supplier of grinding stone to all of Egypt for 3.000 years, from roughly the Old Kingdom to the Roman period. Aswan is also renowned for its ornamental stone quarrying, of which quartzite was an important commodity, especially in the New Kingdom, but also in the Roman period.

Sandstone for building purposes was also quarried at Subeira in ancient times. Most traces of the production are no destroyed by modern quarrying, but there is reason to believe that there once were relatively substantial quarries on both flanks close to the mouth of the wadi (Gebel el-Hamman and Khattarah). This type of quarrying, especially for building temples, was widespread in the Aswan region in the Pharaonic and Graeco-Roman periods.

Thus, the quarrying at Subeira is a reflection of what was generally going on in the Aswan region through history – and prehistory.

#### Threats to the archaeology

The threats to the archaeology in general and the Late Palaeolithic rock art in particular are similar to most other places in modern Egypt: Expansion of villages, cultivation, stone quarrying, and mining activities. Egypt still experiences strong population growth; hence there is a need for more housing and agriculture. Expansion of infrastructure and industry follows, and thus quarrying and mining expand, especially in the desert areas bordering the Nile Valley.

Subeira is located exactly in this, from an archaeological perspective, heavily threatened border zone between the valley and the desert.

#### Village and agricultural expansion

The mouth of Wadi Abu Subeira was inhabited 200 years ago and probably also much longer back in time. In first half of the 20th century there was no particular development at the wadi mouth, but in the 1950s and 60s, in the era of construction of the High Dam at Aswan, the cultivated area was expanded and a canal built from the Nile to feed the fields. Since then cultivation has expanded about 4 km into the wadi. Khattarah and Makla villages by the mouth (on the south side) has also greatly expanded over the last 40-50 years, and since the 1960s a new village has been built close to a side valley (Khor el-Usina) on the north flank, about 1.5 km from the Nile.

The expansion of agricultural fields has now reached to the dam protecting from flash floods, and there may not be immediate risks from further expansion of cultivated areas. Also, the giving of new concessions for land cultivation appears to have stopped in Subeira.

However, within these areas, as well as in the villages, there will, naturally, be changes also in the near future. Generally, the lowermost 4 km of the wadi is now so affected by modern development that there is little archaeology left to preserve at its floor. At the flanks, however, there are still many sites; CAS-6 with its Palaeolithic rock art is a testimony! And, importantly, the mouth of the wadi is of particular significance for understanding the geomorphology of the wadi – how it developed in the Late Palaeolithic and later. In other words: the mouth is the important place for finding out whether Wadi Abu Subeira was a “fjord” at the time the Late Palaeolithic rock art was made. To find out, one way to proceed is to investigate the old sediments by digging and drilling within the agricultural zone (but, of course, also higher up in the wadi).

#### Stone quarrying

The ancient sandstone quarries by the mouth of the wadi have been “reactivated” over the last 40-50 years. One reason is that there has been a ban on using Nile silt (traditional mud brick) for house building at least since the High Dam at Aswan was finished by 1970.

This is because silt is no longer deposited: The building of the first dam at Aswan around 1900 and later the High Dam implied the cessation of the annual flood downstream of the dams. Thus, people reverted to stone for building their houses. Consequently, legal and illegal small-scale stone quarrying has been going on along the Nile throughout Egypt. But this is “artisan” quarrying, to some extent following age-old traditions. It damages archaeology, and has done so at several places in Wadi Abu Subeira (also by CAS-6), but it is not as destructive as larger-scale, fully legal building stone quarrying:

A very big quarry has developed over several decades in an area of 1 square km at the north side of the wadi mouth (Gebel el-Hamman). The quarrying has, in practice, destroyed almost all archaeology (very probably also Palaeolithic rock art).

Small-scale quarrying is very difficult to control and thus may still pose a minor risk in the lower reaches of the wadi. The same is true for the large quarry at the mouth, which may, at some stage, wish to expand.

#### Clay or tafla mining

Aswan clay (Egyptian: Aswan tafla) is famous and has a tradition for pottery production since several thousand years. This is not clay from the Nile, or Nile silt, which was generally the main source for pottery in Ancient Egypt, but various types of very fine-grained rocks, deposited as layers within the Nubian sandstone. Hence, Aswan clay must be mined to be useful for pottery and other forms of ceramics and, consequently, the Aswan region abounds in smaller or larger holes in the bedrock since it is often easier (or more economic) to procure the clay by underground as opposed to open-pit mining.

With the industrial expansion since the 1952 Revolution, production of ceramics also gained in importance and so did Aswan clay. But it seems that Wadi Abu Subeira was opened up for clay mining only some 15-20 years ago, intended for the general ceramics industry, as well as for lining in high-temperature furnaces. According to satellite images (Google Earth), there were few clay mines in 2002. From then on the mining greatly expanded to about 40 individual operations by several, mainly private companies, but also the state-owned El Nasr Mining Company. However, the development has come to a virtual standstill over the last couple of years. This is thanks to the conservation efforts by Adel Kelany and his MSA team (see below). Some of the clay is used for brick production and there is a small factory (furnace) at the south side of the wadi, about 5.5 km from the mouth. It was constructed between 2005 and 2007.

Since the clay mining is going on underground, existing mines have limited impact on archaeology. But when they were opened, they heavily altered the landscape around the mine openings because there was a need for both access tracks and for depositing non-useful rock taken out from the shafts. Thus, there are big spoil heaps around each mine. And the network of tracks laid down on the wadi floor certainly has an impact on fragile archaeological sites, such as ephemeral camps.

Clay mining also takes another, specific form in Wadi Abu Subeira, just as it does along the entire Nile Valley. Since there is no more any annual Nile flood to leave fertile silt on



the fields, people have found other ways of getting their cultivated areas fertilised not only by chemical means: They go up on the hills along the Nile, dig up clay and silt stone from the bedrock in small, open pits and transport it back to the fields. It is an ecological, though work-intensive, way of replacing the former Ethiopian silts brought by the river with a natural, domestic product, present in unlimited quantities. Virtually uncontrolled, the clay and silt stone probably also used for construction purposes, the only trouble is that it endangers archaeological sites, also in Wadi Abu Subeira – in particular Palaeolithic tool workshops on top of the escarpment at the north side of the wadi. However, it seems that there is now little expansion of this “home industry” and it may not pose any great risk at the moment.

#### Iron mineral mining

Aswan iron ore is also a famous commodity and, as we have seen, may have been in use as far back as the Palaeolithic. It was procured for red pigment throughout the Pharaonic period, and later (then perhaps also for iron-making), but we only know of one large mine in the region from these times; it is located at the West Bank, just opposite the Island of Elephantine. Modern mining started with the industrial expansion in the 1950s, especially just to the east of Aswan City in the Wadi Abu Agag area. It was meant for sustaining a national steel industry, but due to the relatively low-grade iron ore, most of the mining ceased in the 1970s and was relocated to the Bahariya oasis in the northern part of the Western Desert, from where a railway was built to connect with the steel plant at Helwan near Cairo.

Over the years there have been many attempts at revitalising the iron mining in Aswan, but with limited success, as seen from the perspective of the steel industry. However, red pigment (hematite) can also be obtained from the iron deposits; it is used, for example, for the paint industry and as a concrete aggregate. On Google Earth the slow expansion of the mines in the Agag area can be followed from 2002 and at this time there were also a few signs of exploitation about 12 km up in Wadi Abu Subeira, some 7-8 km north of Agag.

Since then this iron mineral mining has greatly expanded in Subeira, but it was not until recently that the great risks it poses to archaeology became fully realised. The operations are now undertaken by 2 companies and goes on as large-scale, open-cast mining, since it is not economically viable to carry out underground mining. Thus, big areas have already been totally altered and potentially important archaeology may thus have fared pretty bad.

Contrary to the clay mining, which is controlled by the Aswan Governorate that is obliged to report to the regional antiquities authorities (MSA), iron mineral mining is under the jurisdiction of the Egyptian Mineral Resources Authority (EMRA), a part of the Ministry of Petroleum. EMRA does not have to report new mining/quarrying concessions in “deep” desert areas to MSA, but only those concessions that relate to areas near the Nile Valley. Wadi Abu Subeira is considered “deep” desert, and thus it was only by chance that it was recently found out that there are plans for greatly increasing the iron mineral exploitation in Subeira. Several concessions have been given, covering a huge tract of land along a 10 km stretch of the wadi (see maps). If operation begins within these concessions it may be the death to some 75% of the archaeology. Three Late Palaeolithic rock art sites are also within the concessions.

Clearly, the reporting practices of EMRA is a huge problem, since there is, of course, much archaeology in the “deep” Egyptian deserts!

As leader of the Ancient Quarries and Mines Department of MSA, Adel Kelany is now working on changing these practices.

#### Conservation efforts

Fortunately, following very recent contacts between MSA and EMRA, there are indications that EMRA may go back on a part of the concessions, changing them so that they are not touching known archaeological sites. For the part of the wadi that has already been roughly surveyed, there are few problems for Kelany and team to draw up reasonable maps, handing them over to EMRA for inspection so they can alter the concessions. However, around the ongoing iron mineral mines, survey has hardly begun and thus very rapid work is now necessary in order to save as much archaeology as possible also in this area. It should be rather clear that the ongoing iron mining should not expand, at least not until the area is thoroughly surveyed.

The strategy followed in this particular conservation effort is not to stop iron mineral mining in the desert district east of Aswan, but to relocate it to areas with little or no archaeology. The same strategy has been followed by Kelany and his MSA team for the clay mines. In the course of the last few years they have worked very closely with the clay industry and the Governorate and so been able to prevent opening of new mines in Subeira. New concessions have, however, been given in another wadi to the south of Subeira (near Wadi Abu Agag).

This wadi has been surveyed and displays limited archaeological remains. The same strategy has been followed in another work by MSA Aswan, the protection of the ancient granite quarries close to the city centre. Many modern quarries, which formerly destroyed the archaeological remains, are now relocated to other areas.

Another important conservation strategy followed over the last few years has been to hire local guards for controlling the most important archaeological sites in Subeira, primarily the Palaeolithic rock art sites. At CAS-6 there has also been put up a simple fence in order to show that this is archaeological ground.

Current nature protectorates in Egypt. Could Wadi Abu Subeira enter this list? Source: Egyptian Environmental Affairs Agency

Current nature protectorates in Egypt. Could Wadi Abu Subeira enter this list? Source: Egyptian Environmental Affairs Agency Future protection

With the legal basis provided by the Egyptian Antiquities Law (no. 117/1983), the current conservation regime aims at “spot protection” of important archaeological sites, thus allowing mining to go on immediately beside the archaeology, but banning new operations. Given the specific history and geography of Egypt, 117/1983 has not been an inefficient law, and many archaeological sites have been saved on its basis. Until now Subeira is also a good example of this (given that the iron mining can be controlled and relocated).

However, with the tremendous pressure on land resources in Egypt, the trouble with “spot protection” according to 117/1983 is that landscape and connections between

archaeological sites are not properly taken into account. The context of the archaeology is, in other words, not being pursued. This has for quite some time been realised on the international arena and in many other countries, and, accordingly, new laws have been issued. This topic is also discussed in Egypt.

Until new laws are being issued, one way to protect larger tracts of landscape is to bring law no. 102/1983 into play. This law is for nature protectorates, of which many have been declared in Egypt over the last 20-30 years, indeed. Some nature protectorates are large, some are small, some enjoy good protection, some not – but often they have in common that they also provide a means to secure the context of the archaeology within their boundaries. In many cases archaeology has thus been protected without the Egyptian state even knowing it is there.

Subeira may be a candidate for protection according to law 102/1983.

For many people it may seem that the landscape is so thoroughly “industrialised” by mining that there is hardly any “nature” left.

However, it is important to recall that Subeira is 60 km long, very little disturbed in the upper reaches and there is even no proper road through the wadi (there are asphalt roads in many other wadis in Upper Egypt). Moreover, the current mines, though numerous, are not entirely altering the overall landscape. All this stand, in fact, in quite some contrast to many other substantial wadis entering the Nile Valley from the Eastern Desert, especially in the Aswan Governorate. Moreover, it may well be that the flora and fauna of Subeira is richer than we usually anticipate. Only further studies can give an answer to this.

Thus, Subeira – and first of all its unique, irreplaceable and immovable Late Palaeolithic rock art – deserves many further seasons of hard fieldwork, and consideration in view of a possible landscape protectorate. It may not only be a big chance to protect the rock art and the archaeology as such, but also to save one of the few, relatively undisturbed tracts of beautiful desert land bordering the Nile Valley in the Aswan region – a region that greatly relies on the income from tourists. In the future they won’t necessarily travel to an entirely industrialised region, but they will certainly keep coming if they can admire, in addition to temples and tombs, beautiful desert landscape – and the oldest rock art in North-Africa.

Returning to the fantastic group of Late Palaeolithic rock art sites in Upper Egypt – Qurta, el-Hosh and Subeira – it should be kept in mind that Qurta is already visited by tourists and described in major travel guides. This shows that there is considerable public interest in this very special archaeology. And one can also look to the extremely popular Palaeolithic rock art in Europe! What is more; Qurta has been discussed in terms of nomination as a World Heritage Site.

Clearly, all the three sites deserve World Heritage status – it is just this kind of unique archaeology that UNESCO initially thought of as belonging to the heritage of all mankind. Thus, the similar rock art in the Côa Valley and at several places in France and Spain are since long designated as World Heritage Sites.

So a vision may be that Qurta, el-Hosh and Subeira were pursued for nomination as one World Heritage Site. There is a very long way to go in Subeira, for first of all much fieldwork is needed to assess the full potential of the rock art and other archaeology. Simultaneously risks have to be mitigated and a proper management regime established.



Then a possible nomination procedure can follow. This is not only World Heritage, it is also very fragile heritage. It needs to be handled with the utmost care!

...and also the current rock art in Subeira is a testimony to what is really important for people. (But the truck looks so old? Could it be Late Palaeolithic? The Flintstones? Answer: It is the dust from the clay mines that sets in the pecked outlines and so is responsible for the patination...) Photo: Per Storemyr Sources

Personal communication

This article has been written in close cooperation with Adel Kelany, and we thank Dirk Huyge for providing much information and for comments. Thanks also to Mindy Baha El Din for input on nature protection.

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#### Nature Protectorates in Egypt

Egyptian Environment Affairs Agency

Please visit the site: <http://per-storemyr.net/2012/05/01/the-palaeolithic-rock-art-in-wadi-abu-subeira-egypt-landscape-archaeology-threats-and-conservation/> Go there for nice pix, embedded links, maps, and charts]

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## **EARLIEST WALL ART IS FOUND IN FRANCE, BY JEAN-LOUIS SANTINI**

A massive block of limestone in France contains what scientists believe are the earliest known engravings of wall art dating back some 37,000 years, according to a study published Monday.

The 1.5 metric ton ceiling piece was first discovered in 2007 at Abri Castanet, a well known archeological site in southwestern France which holds some of the earliest forms of artwork, beads and pierced shells.

According to New York University anthropology professor Randall White, lead author of the paper in the Proceedings of the National Academy of Sciences, the art was likely meant to adorn the interior of a shelter for reindeer hunters.

"They decorated the places where they were living, where they were doing all their daily activities," White told AFP.

"There is a whole question about how and why, and why here in this place at this particular time you begin to see people spending so much time and energy and imagination on the graphics."

The images range from paintings of horses to "vulvar imagery" that appears to represent female sex organs, carved into the low ceiling that rose between 1.5 to two meters (yards) from the floor, within reach of the hunters.

The work is less sophisticated than the elaborate paintings of animals found in France's Grotte Chauvet, which was more remote and difficult to access, believed to be between 30,000 and 36,000 years old.

In contrast, the engravings and paintings at Castanet, which carbon dating showed were about 37,000 years old, are rougher and more primitive in style, and were likely done by everyday people.

"This art appears to be slightly older than the famous paintings from the Grotte Chauvet in southeastern France," said White, referring to the cave paintings discovered in 1994.

"But unlike the Chauvet paintings and engravings, which are deep underground and away from living areas, the engravings and paintings at Castanet are directly associated with everyday life, given their proximity to tools, fireplaces, bone and antler tool production, and ornament workshops."

However, even though the artwork is vastly different, archeologists believe the artists came from the same Aurignacian culture which comprised the first modern humans in Europe, replacing the Neanderthals. They lived from 40,000 years ago until about 28,000 years ago.

"Early Aurignacian humans functioned, more or less, like humans today," said White.

"They had relatively complex social identities communicated through personal ornamentation, and they practiced sculpture and graphic arts."

Co-authors on the paper came from leading archeology labs and universities in France and Britain.

In a separate study published last week in the Proceedings of the National Academy of Sciences, French scientists described the paintings at Chauvet as "the oldest and most elaborate ever discovered."

Those findings were based on an analysis -- called geomorphological and chlorine-36 dating -- of the rock slide surfaces around what is believed to be the cave's only entrance.

**Please visit the site: <http://tinyurl.com/7ux9v9x>**

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## **THE OLDEST FARMING VILLAGE IN THE MEDITERRANEAN ISLANDS IS DISCOVERED IN CYPRUS**

The oldest agricultural settlement ever found on a Mediterranean island has been discovered in Cyprus by a team of French archaeologists involving CNRS, the National Museum of Natural History, INRAP, EHESS and the University of Toulouse. Previously it was believed that, due to the island's geographic isolation, the first Neolithic farming societies did not reach Cyprus until a thousand years after the birth of agriculture in the Middle East (ca. 9500 to 9400 BCE). However, the discovery of Klimonas, a village that dates from nearly 9000 years before Christ, proves that early cultivators migrated to Cyprus from the Middle Eastern continent shortly after the emergence of agriculture there, bringing with them wheat as well as dogs and cats.

The findings, which also reveal the early development of maritime navigational skills by these populations, have been published in Proceedings of the National Academy of Science (PNAS).

Sedentary villagers of the Early Neolithic began cultivating wild grains in the Middle East in about 9500 BCE. Recent discoveries have shown that the island of Cyprus was visited by human groups during that period, but until now the earliest traces of cereal crops and the construction of villages did not predate 8400 BCE. The latest findings from the archaeological excavations of Klimonas indicate that organized communities were built in Cyprus between 9100 and 8600 BCE: the site has yielded the remnants of a half-buried mud brick communal building, 10 meters in diameter and surrounded by dwellings, that must have been used to store the village's harvests. The archaeologists have found a few votive offerings inside the building, including flint arrowheads and green stone beads. A great many remnants of other objects, including flint chips, stone tools and shell adornments, have been discovered in the village. The stone tools and the structures erected by these early villagers resemble those found at Neolithic sites from the same period on the nearby continent. Remains of carbonized seeds of local plants and grains introduced from the Levantine coasts (including emmer, one of the first Middle Eastern wheats) have also been found in Klimonas.

An analysis of the bone remains found on the site has revealed that the meat consumed by these villagers came from the hunting of a small wild boar indigenous to Cyprus (the only large game on the island at the time), and that small domestic dogs and cats had been introduced from the continent. This would indicate that these early farming societies migrated from the continent shortly after the emergence of agriculture there. In addition, their ability to move a whole group of people long distances shows that they had already mastered maritime navigation at the dawn of the Neolithic period.

The Klimonas site will be excavated until the end of May 2012, and a new round of excavations will begin in 2013. Uniting several laboratories, the research is funded by CNRS, the European LeCHE project, the Muséum National d'Histoire Naturelle (French National Museum of Natural History, or MNHN), INRAP, the French Ministry of

Foreign and European Affairs and the Ecole Française d'Athènes (French School at Athens).

More information: First wave of cultivators spread to Cyprus at least 10,600 y ago. Jean-Denis Vigne, et al. Proceedings of the National Academy of Science, May 7, 2012.

Please visit the site: <http://phys.org/news/2012-05-oldest-farming-village-mediterranean-islands.html>

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## **ASTRONOMERS DISCOVERED ANCIENT EGYPTIAN OBSERVATIONS OF A VARIABLE STAR, BY STAFF WRITERS HELSINKI, FINLAND (SPX)**

"Did the ancient Egyptians record the period of the eclipsing binary Algol - the Raging one?" L. Jetsu, S. Porceddu, J. Lyytinen, P. Kajatkari, J. Lehtinen, T. Markkanen, J. Toivari-Viitala

<http://arxiv.org/abs/1204.6206>

The study of the "Demon star", Algol, made by a research group of the University of Helsinki, Finland, has received both scientific and public attention. The period of the brightness variation of this eclipsing binary star has been connected to good prognoses three millennia ago. This result has raised a lot of discussion and the news has spread widely in the Internet.

The Egyptian papyrus Cairo 86637 calendar is probably the oldest preserved historical document of bare eye observations of a variable star. Each day of one Egyptian year was divided into three parts in this calendar. A good or a bad prognosis was assigned for these parts of a day.

+ The texts regarding the prognoses are connected to mythological and astronomical events, says Master of Science Sebastian Porceddu.

A modern period analysis revealed that two statistically significant periods of 29.6 and 2.850 days have been recorded into the good prognoses. The former is clearly the period of the Moon. The second period differs slightly from the period Algol. In this eclipsing binary, the dimmer star partially covers the brighter star with a period of 2.867 days.

+ These eclipses last about ten hours and they can be easily observed with bare eyes. Their period was discovered by Goodricke in the year 1783, says docent Lauri Jetsu.

+ We can explain why the period of Algol has increased by about 0.017 days, says Lauri Jetsu. The period increase during the past three millennia could have been caused by the observed mass transfer between the two members of this binary. In fact, this would be the first observation that confirms the period increase of Algol and it also gives an estimate of the mass transfer rate.

The ancient Egyptians have made accurate measurements that provide useful constraints for modern astronomers.

+ It seems that the first observation of a variable star was made 3000 years earlier than was previously thought, says Lauri Jetsu. However, I want to emphasize that our research has only been sent to a scientific journal about two weeks ago. This type of results can raise a lot of controversy before they are accepted.



The research was made in collaboration by the researchers from the Department of Physics and the Department of World Cultures of the University of Helsinki. It has been published electronically in the arXiv on April 30th, 2012. The Egyptology part of the research will be published separately.

**Please visit the site:**

**[http://www.spacedaily.com/reports/Astronomers\\_discovered\\_ancient\\_Egyptian\\_observations\\_of\\_a\\_variable\\_star\\_999.html](http://www.spacedaily.com/reports/Astronomers_discovered_ancient_Egyptian_observations_of_a_variable_star_999.html)**

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