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**ΔΙΟΙΚΗΤΙΚΟ  
ΣΥΜΒΟΥΛΙΟ:**

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Ι. Μπασιάκος (αντιπρόεδρος),  
Ι. Καρατάσιος (γραμματέας),  
Ε. Κουλουμπή (ταμίας),  
Ε. Φιλιππάκη (βοηθός γραμ.),  
Β. Κυλίκoglou (μέλος),  
Α. Hein (μέλος)

**Πληροφορίες:**  
Γ. Φακορέλλης

**E-mail:** [yfacorel@teiath.gr](mailto:yfacorel@teiath.gr)

Scientific Association, Year  
of Establishment 1982,  
Headquarters: Kaniggos 27,  
106 82 Athens (Association  
of Greek Chemists)

**BOARD:**

Ε. Photos-Jones (president),  
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V. Kilikoglou (member),  
Α. Hein (member)

**Information:** Y. Facorellis

**E-mail:** [yfacorel@teiath.gr](mailto:yfacorel@teiath.gr)

# Πληροφοριακό Δελτίο της Ελληνικής Αρχαιομετρικής Εταιρείας

**- Φεβρουάριος 2012 -**

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## Newsletter of the Hellenic Society of Archaeometry

**- February 2012 -**

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## **ΣΥΝΕΔΡΙΑ - CONFERENCES/WORKSHOPS**

### **CALL FOR ABSTRACTS: AOGS-AGU Joint Assembly, Singapore (August 2012)**

Dear colleagues,

We would like encourage interested researchers to submit an abstract to our inter-disciplinary session (see below) at the forthcoming **AOGS-AGU Joint Assembly** (13th - 17th August 2012) in Singapore.

**Session Title:** Insights to the modern and palaeo carbon cycle: an isotopic and biomarker perspective

**Description:**

Understanding the carbon (C) cycle is central to constraining environmental processes from biological productivity through to palaeo environmental interpretations. Rigorously quantifying these processes at different spatial and temporal scales requires an integrative inter-disciplinary approach incorporating both organic and inorganic C. This session aims to bring together plant physiologists, ecologists, pedologists, carbon capture and sequestration researchers, atmospheric chemists, biogeochemists and palaeoclimatologists that use bulk and compound specific  $\delta^{13}\text{C}$ ,  $\text{D}^{14}\text{C}$  and biomarker distributions in aquatic and terrestrial, modern and palaeo environments. We particularly encourage contributions investigating biological productivity (i.e. photosynthesis; air-plant-land interactions); short- and long-term C fluxes; diagenesis and soil processes; the use of C to investigate modern and palaeo-environments; and method development. This session forms part of the activities of the “Development of Isotopic Proxies for Palaeoenvironmental Interpretations: A Carbon Perspective” (DIPPI-C) working group ([www.dippi-c.org](http://www.dippi-c.org)).

Link: <http://www.asiaoceania.org/aogs2012/mars/confSessionView.asp?sID=3>

**Convenors:** Chris Brodie (Hong Kong University, China); James Casford (Durham University, UK); Prof. Michael Bird and Dr. Christopher Wurster (James Cook University, Australia).

Abstract submission is via <http://www.asiaoceania.org/aogs2012/public.asp?page=abstract.htm> and the deadline is 12th March 2012.

We are very keen to receive abstracts from researchers working in modern through to palaeo, terrestrial and aquatic environments using bulk and compound specific  $\delta^{13}\text{C}$  and biomarker distributions across all disciplines. This session will be of interest to many users of this forum (and others not on this list, so please do pass this on to any colleagues you think may be interested) and is designed to be inter-disciplinary in nature. We are very open to all strands of research utilizing these proxies to gain an insight into modern and palaeo biogeochemical processes (including water column and surface sediment research; atmospheric biochemistry; archaeology; and related research), and what this

means for understanding environmental and climatic processes, as well as the caveats in the scientific understanding, from an inter-disciplinary perspective.

All the best,

\*\*\*\*\*

Dr. Chris Brodie  
Department of Earth Sciences  
James Hsioung Lee Science Building  
The University of Hong Kong  
Pokfulam Road  
Hong Kong SAR, China

Associate Editor for Geochemistry, Geophysics, Geosystems (G-Cubed) for DIPPI-C theme.

Co-Chair of Development of Isotopic Proxies for Palaeoenvironmental Interpretation: A Carbon Perspective (DIPPI-C) working group

[DIPPI-C working group](#)  
[HKU department profile](#)  
[Academia Profile](#)

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**EUROMED2012 - CALL FOR PAPERS,**  
**RESEARCH, DEVELOPMENT,**  
**TECHNOLOGIES, STANDARDS, EDUCATION**  
**AND TRAINING TO PROTECT, RESTORE,**  
**DOCUMENT, PRESERVE, COMMUNICATE**  
**AND PREVENT THE DESTRUCTION OF OUR**  
**FRAGILE TANGIBLE AND INTANGIBLE**  
**CULTURAL HERITAGE, OCTOBER 29TH --**  
**3RD NOVEMBER, 2012, LIMASSOL, CYPRUS**

<http://www.euromed2012.eu>

Euromed 2012, the 4th International Euro-Mediterranean Conference will take place in Cyprus, October 29 - November 3, 2012. This important event is being held in cooperation with the European Commission and will investigate cultural heritage (CH) research and practice in one of the most famous archaeological areas of the world.

The 4th EuroMed2012 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 CH, the use of cutting edge technologies for the protection, restoration, preservation, massive digitalization, documentation and presentation of the CH content. 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, SME's, owners, managers and conservators of cultural patrimony.

Several organizations have decided to join together in order to create an optimal environment for the discussion, explanation of new technologies, exchange of modern ideas and in general to allow the transfer of knowledge between a maximum number of professionals and participants during one common time period.

Its main objectives are further to:

1. Highlight the role of European cultural heritage research and developments within international activities and co-operation.
2. Assess the impact of EU policies on the protection, restoration, preservation and digitalization (e-documentation) of European CH and evaluate the positive contribution of cultural heritage innovative research and developments for competitiveness and job creation.
3. Disseminate the results of EU cultural heritage innovative research and developments



acquired at large research facilities and discuss new developments and innovation in research infrastructure.

4. Discuss and consolidate co-ordination of national research into educational programmes for CH within Europe and the world.

5. Refine, amend and publish main ideas and visions of technological platforms opened to the entire field of CH in the context of preparation of the EU Horizon 2020 Framework Programme (2014-2020).

6. Emphasize the relation of conservation practice to contemporary legislation, especially experienced by SMEs and public institutions, problems of orphan works and re-use, fraud and crime regarding movable cultural heritage market; health and safety issues in conservation practice.

7. Discuss the influence of research on the impact of EU policies and directives on CH, and mitigation of possible adverse effects (for example: Galileo project, Digital Agenda, Open Access, Orphan works, Public Sector Information-PSI, etc).

8. Underline and discuss the role of the current and future developments on international activities, agreements and co-operations:

a. Against demolishing and/or looting in CH (UNESCO, Interpol, Europol, ICOMOS, ICCROM, etc).

b. on the e-documentation and e-preservation in CH (European Union Europeana, Google, Wikipedia, UNESCO, World Library, MSoft-Bing, etc);

c. on the establishment of standards in the field of CH;

d. on conventions (like the UNESCO Convention for the Safeguarding of the Intangible CH; EU CH Label, WHL, etc);

e. on documenting, archiving, monitoring, preserving, protecting and presenting worldwide the CH using innovative ICT solutions;

f. on the legal and ethical responsibilities of CH Informatics;

g. on CH and the expansion of Tourism in Europe and in general worldwide.

Those researchers who wish to participate in this event are invited to submit papers on original work addressing the following subjects or related themes in the following two categories:

I. PROTECTION, RESTORATION, AND PRESERVATION OF TANGIBLE AND INTANGIBLE CH

II. DIGITAL HERITAGE DOCUMENTATION AND PRESENTATION

More detail information can be found under the following weblink:  
<http://www.euromed2012.eu/index.php/call-for-participation/>

Submission of Papers:

Submissions for the joint event are completely electronic, and both the paper and all supplementary material must be submitted through the on-line submission website. The

conference accepts only original, unpublished work written in English. We are soliciting three types of contributions:

. Full research papers presenting new innovative results. These papers will have 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.

. Project papers focusing on the description of project organization, use of technology, and lessons learned. Each submitted paper must not exceed 10 pages in total.

. Short papers presenting preliminary ideas and works-in-progress. These papers will have a short oral presentation and will be available as posters in conference breaks. Each submitted paper must not exceed 6 pages in total.

For information concerning style and format of all submissions, please refer to: <http://www.euromed2012.eu/index.php/paper-submission/>

Important Dates:

Paper submission:

28th of May, 2012 (24:00 London-UK time) Notification of Refereeing results:

July 15th and 16th, 2012

Camera ready papers to printer:

20th of August, 2012

For more information about the joint conference please visit the webpage <http://www.euromed2012.eu> or directly contact the chair of the event at: [chairman@euromed2012.eu](mailto:chairman@euromed2012.eu)

Best Regards,

Marinos Ioannides (CY), Dieter Fritsch (DE), Fabio Remondino (IT), Rob Davies (UK) and Rossella Caffo (IT)

Chairs of Euromed2012

The Ancient Cyprus site is at <http://www.ancientcyprus.ac.uk>

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**ICONEA (INTERNATIONAL  
CONFERENCE OF NEAR EASTERN  
ARCHAEOLOGY) - SPRING  
TERM 2012**

**Seminars**

Wednesday 1 February (Stewart House, Room ST276), 5 - 6 30pm Bruno de Florence,  
Between Freudian libido and Lacanian jouissance: the X factor of emotion in musicology  
and its sublime object a.

Wednesday 29 February (Stewart House, Room ST276), 5 - 6.30pm Richard Dumbrill  
and Bruno de Florence, The Pythagorean conspiracy and the contingency of arithmetics  
and geometrics in the theory of music

Wednesday 28 March (Stewart House, Room ST276), 5 - 6.30pm Leon Crickmore,  
Exploring the Musical Tetractys

Free of charge. Open to the public. No advance booking required.

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# **CALL FOR PAPERS - BRONZE AND IRON AGE ARCHAEOLOGICAL MUSICOLOGY IN ANCIENT TURKEY, 16 - 20 OCTOBER 2012, BURSA, TURKEY**

Jointly organised by:

The Research Center of Archaeology of the University of Uludağ, Bursa, Turkey, and  
ICONEA

The conference will explore all aspects of music practice and theory in Ancient  
Turkey, through iconographic and textual materials, and other relevant media.

## **Languages and translation**

The official language will be English. Papers in Turkish will be presented with an  
abstract in the English language. Only papers in those languages for presentation and  
publication of proceedings will be accepted.

## **Venues**

The opening session and the conference sessions will be held in conference halls  
at the University Campus.

## **Presentations**

Presentations will be limited to 30 minutes with an additional 20 minutes for  
questions. Guidelines for presentation and publication will be available from this page  
shortly.

## **Conference excursions**

There will be a short visit of the city of Bursa and its Archaeological Museum;  
Hagia Sophia in Iznik, and Büyük Orhan Basilica. (Excursion programme may change.)

## **Registration and fees**

Registration guidelines and fees will be posted shortly on this page.

\*\*\*\*\*

Richard Dumbrill  
Director of ICONEA  
Institute of Musical Research  
School of Advanced Study  
University of London  
Senate House

Malet Street  
London WC1E 7HU  
+44(0)2077515770  
+44(0)7930150600  
email: [rdumbrill@icones.org](mailto:rdumbrill@icones.org)

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# **ANCIENT STARS IN BYZANTIUM: THE CODEX VATICANUS GRAECUS 1087 PISA, SCUOLA NORMALE SUPERIORE, FEBRUARY 8TH, 2012**

To everyone interested:

The Illuminated Astronomical Manuscripts research group at the Scuola Normale Superiore, Pisa (<http://www.sns.it/en/ricerca/lettere/manoscrittiastronomici>) is delighted to announce its first meeting:

Ancient Stars in Byzantium: The Codex Vaticanus Graecus 1087, Pisa, Scuola Normale Superiore, February 8th, 2012

The Codex Vaticanus Graecus 1087 was written in Constantinople in the 14th century, probably in the monastery of Chora. It preserves, among other Byzantine and Late Antique astronomical works, some mythological excerpts by Eratosthenes (the so-called Fragmenta Vaticana) and a remarkable series of illustrations, belonging to the tradition of Aratus' Phaenomena and its ancient commentaries.

Conference programme:

10:30

Introduction

(Anna Santoni, Scuola Normale Superiore)

10:45

The Cod. Vat. Gr. 1087: Nicephorus Gregoras and Byzantine Astronomy (Mariella Menchelli, University of Pisa - Filippomaria Pontani, University of Venice)

11:45

The text of the Fragmenta Vaticana and the tradition of Eratosthenes' Catasterisms (Jordi Pàmias, Universitat Autònoma de Barcelona)

12:15

The Cod. Vat. Gr. 1087 between Aratus and Eratosthenes (Anna Santoni, Scuola Normale Superiore)

14:00

The sequences of excerpts and illustrations in the Fragmenta Vaticana (Leyla Ozbek, Scuola Normale Superiore - Allegra Iafrate, Scuole Normale Superiore)

14:30

The iconography of Jupiter on the eagle

(Fabio Guidetti, Scuola Normale Superiore)

15:00

The iconography of Cetus the sea-monster (Stefano Riccioni, University of Venice)

15:30

Presentation of the 'Certissima Signa' database of illuminated astronomical manuscripts.

<http://www.sns.it/en/didattica/lettere/menunews/convegni/annoincorso/bisanzio>

The conference can be watched live on streaming: <http://tv.sns.it>

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**ICOMOS HELLENIC AND ICAHM**  
**INTERNATIONAL CONFERENCE, FROM**  
**PAST EXPERIENCE TO NEW**  
**APPROACHES AND SYNERGIES: THE**  
**FUTURE OF PROTECTION HERITAGE**  
**MANAGEMENT FOR**  
**ARCHAEOLOGICAL HERITAGE IN**  
**TIMES OF ECONOMIC CRISIS, ATHENS**  
**NEW ACROPOLIS MUSEUM 24-26 MAY**  
**2012**

Dear Colleagues.

We are organizing an international conference on the future and new challenges facing the Protection Management of Archaeological Heritage.

The scope of this international meeting is to present and use past experience with a view to contribute as a think tank to new ways of managing the protection and preservation of our archaeological heritage in times of economic crisis. The challenges are now greater than ever as the cultural society needs to regroup its forces, reinforce its role, create new synergies and undertake fresh initiatives in order to maintain standards and offer sustainable solutions. The conference will function as a platform for discussion and exchange of ideas by all professionals involved in protection management in these difficult times.

As there are many sectors of occupation, which play an important role in protection management and which face serious challenges and threats in the present days but also in view of the future, we have identified 15 topics for distinctive panel discussions during the conference sessions.

We believe that bringing together and publishing expert opinion and experience in so many fields, in regard to preoccupations and possible solutions concerning the future in Protection Heritage Management in times of economic crisis, will accumulate food for thought and reference on the one hand side and on the other shall stimulate closer and better collaboration possibilities. The fortieth anniversary of the World Heritage Convention is a momentum that should trigger new inspiration and instigate creativity for a stronger and broader framework of protection for our cultural heritage.

Furthermore, as Greece belongs to the ICAHM South- East Mediterranean Region a special session will be dedicated to this area and the grave difficulties it faces.

You are cordially invited to submit your abstract by February 29.

On behalf of ICOMOS Hellenic

Dr. Elena Korka, archaeologist Director, Hellenic Ministry of Culture and Tourism  
Antique Shops and Private Archaeological Collections  
Vice-president for S E Mediterranean Region ICAHM



## DOCUMENTATION

### A. ABSTRACT SUBMISSION

Abstracts shall first specify the topic selected according to the Topic Index and then state the title. They must form clear statements of the presentation which will be delivered at the conference. They shall be uploaded on the ICOMOS Hellenic web-site and circulated during the conference.

Abstracts must be in English and should not exceed 500 words (without pictures). The headings should be in Times New Roman 14, bold, with the text centered in Times New Roman 12, 1,5 spacing.

Please state clearly NAME, SURNAME, AFFILIATION, COUNTRY, MAILING ADDRESS and TELEPHONE. Submission deadline is February 29 2012. Confirmation of acceptance shall be sent by March 15 2012.

### B. PRESENTATION AND PUBLICATION

Presentations shall strictly be limited to 15 minutes.

At the end of the conference a Cd shall be given by each speaker to the secretariat with text of presentation and a maximum of 5 pictures. All texts will be uploaded on the ICOMOS Hellenic site. For this reason please follow the instruction referring to the style and formatting of the texts: The first order headings should be in Times New Roman 14, bold upper/lower letters, with the text in Times New Roman 1, 1,5 spacing.

References should be listed at the end of the entry, which can also include general resources that a reader could use to locate further information. Depending on your entry type, please provide the appropriate number of references, pointing the reader towards key literature only, such as relevant articles in journals and important websites. Within the text, please cite references as name year, e.g., [Smith 2009]. Please provide the full information of each reference and use Antiquity style for all references. Please do not use passim, op. Cit, ibid. or vague page ranges, e.g. 283f and 283ff.

## Topic Index

- Environmental harmonization
- Survey and remote sensor monitoring. Buffer zones
- Management best practices in sustainability
- Management/ Action plans
- Risk mitigation and confrontation ( natural and man –provoked risks, threats and disasters)
- Research in protection technologies
- Shelter protection
- Conservation and restoration coordination
- Site use
- Illicit excavation and trafficking. Metal detector use
- Protection of movable finds and collections
- International charters and conventions- implementation analysis and evaluation
- Education and communication for heritage preservation. New technologies □Promotion and preservation of intangible heritage in sites and monuments. □Capacity building for S E Mediterranean region

## Communication

The conference shall be carried out fully in English as no translation is offered. It will absorb two days and a half with the possibility of many guided site visits.

There shall be a participation and attendance fee.

The conference will be promoted through the official website of ICOMOS Hellenic, where all the info of the conference will be displayed, together with the abstracts of the participants.

A travel agency is suggested concerning special packages for travel, accommodation, food, localities, main monuments and other useful details:

Citi Travel : Tel. 0030 210 3223373 (Mrs. Marigo Mitrakou ) Fax 00302103223307

E-mail [cititry@otenet.gr](mailto:cititry@otenet.gr)

We cordially invite you to participate as speaker or attendant.

For more information regarding organizational details (program, papers, invitation letter, etc.) please contact us at: [ekorka@culture.gr](mailto:ekorka@culture.gr), t. +030 32 10 143 [sspiropoulou@culture.gr](mailto:sspiropoulou@culture.gr), t. +030 210 32 26 203

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### **Committees**

#### **Honorary**

Mounir BOUCHENAKI Gustavo ARAOZ Aikaterini TZITZIKOSTA Stefano DE CARO Francesco BANDARIN Alain GODONOU Juliens ANFRUNS Rohit JIGYASU Mike TURNER Shehab A.H. SHEHAB Donatius KAMAMBA Vassilis PALANTZAS Sofia AVGERINOY Nikos LIANOS

#### **Scientific**

Douglas COMER Willem WILLEMS Ian LILLEY Athanasios NAKASIS Elena KORCA Sophia SPIROPOULOU

#### **Organizing**

Athanasios NAKASIS Elena KORCA Sophia SPIROPOULOU

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**FIRST GRC ON SCIENTIFIC METHODS  
IN CULTURAL HERITAGE RESEARCH  
NON-DESTRUCTIVE IMAGING AND  
MICROANALYSIS IN CULTURAL  
HERITAGE JULY 29 – AUGUST 3, 2012,  
MOUNT SNOW RESORT, WEST DOVER,  
VERMONT, USA**

**Application and Registration:**

Online applications are now being accepted. The application deadline is July 1, 2012. We expect this meeting to fill quickly. Apply today! Registration information will be sent upon acceptance of your application. Prompt registration is recommended to assure your place at this exciting, new GRC!

Follow the GRC website for more information [www.grc.org](http://www.grc.org) (e.g. on registration fee, which will be approx. 1200 \$)

**Financial Assistance:**

For a limited number of participants, financial assistance to partially support the registration fee may be granted based on the information provided in the application.

**Location:**

Mount Snow Resort  
89 Pisgah Road  
West Dover, VT 05356, USA

**Website:**

<http://www.grc.org/programs.aspx?year=2012&program=heritage>

**Scope:**

This conference seeks to foster the dialogue between those pushing the boundaries on methods and instrumentation and researchers in cultural heritage. Research in this field not only increases our understanding of ancient technology, artist intent, deterioration processes, and preservation strategies, it also has clear impact in the humanities, basic science, and science education. This conference will focus on the investigation of materials relevant to cultural heritage at multiple scales with an emphasis on microanalysis and imaging techniques and on opportunities at large scale facilities. Recent and upcoming developments in techniques such as hyperspectral imaging, Terahertz spectroscopy, tomography, elemental and molecular analysis using photons, neutrons and ions at large scale facilities as well as new labsize sources will be discussed.

**Chairs:**

Heinz-Eberhard Mahnke, FU Berlin  
Marco Leona, Metropolitan Museum of Art, New York

**Vice chairs:**

Francesca Casadio, Art Institute of Chicago  
Philippe Walter, CNRS Paris

**Topics (discussion leaders), speakers:**

Complex Materials: Case Studies from the Old and the New World (*Ernst Pernicka, Tübingen*): Ira Rabin, Berlin / Luis Ruvalcaba Sil, Mexico D.F.

Structures at the Nanoscale (*Karen Trentelman, Los Angeles*): Marc Walton, Los Angeles / Xiu Zhen Janice Li, London / Tim Wess, Cardiff

Hard X-Rays: from Large Scale Facilities to Tabletop Sources (*Ercan Alp, Argonne*): Eric Dooryhee, Upton / Marie Jacquet, Orsay

Structures at the Microscale I: the Role of Spectroscopy (*Sandra Lopez Varela, Cuernavaca*): Costanza Miliani, Perugia / Marine Cotte, Grenoble / Carol Hirschmugl, Milwaukee

Structures at the Microscale II: from Bio-Organic Heritage to Modern Art (*Ioanna Kakoulli, Los Angeles*): Catherine Higgitt, London / Jennifer Mass, Wilmington

Structures at the Macroscale (*Marie-Claude Corbeil, Ottawa*): Robert van Langh, Amsterdam / Eberhard Lehmann, Villigen / Katja Kleinert, Berlin

Lasers: from Molecules to Macrostructure (*Y. Lawrence Yao, New York*): Richard van Duyn, Evanston / Piotr Targowski, Torun

Imaging and Depth Profiling (*Kaori Fukunaga, Tokyo*): John Delaney, Washington / Margriet van Eikema Hommes, Delft / Bernhard Blümich, Aachen

Interdisciplinary Investigations in Archaeology (*Markus Reindel, Bonn*): Friederike Seyfried, Berlin

**Panel discussions (chairs):**

**Panel 1:** The Role of Large Scale Facilities in Cultural Heritage Studies (*Uwe Bergmann, Stanford, Koen Janssens, Antwerp*)

**Panel 2:** New Trends in Chemistry for Cultural Heritage Studies (*Christian Amatore, Paris, Jonathan Sweedler, Urbana-Champaign*)

**Poster sessions:**

Participants are encouraged to submit posters (see the website [www.grc.org/sites.aspx?id=73](http://www.grc.org/sites.aspx?id=73)) The best poster abstract, submitted with the application, will be awarded and invited for oral presentation.

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## ΠΡΟΓΡΑΜΜΑ ΟΜΙΛΙΩΝ ΦΕΒΡΟΥΑΡΙΟΥ-ΙΟΥΝΙΟΥ 2012 ΤΗΣ E.M.A.E.M.

Αγαπητοί Φίλοι και Μέλη της E.M.A.E.M.,

Σας ενημερώνουμε ότι το πρόγραμμα των ομιλιών της «Εταιρείας Μελέτης Αρχαίας Ελληνικής Μυθολογίας» για το διάστημα Φεβρουαρίου-Ιουνίου 2012 θα έχει ως ακολούθως:

1. Παρασκευή, 3 Φεβρουαρίου 2012, 6 μ.μ.

**Θέμα:** « Αρχαίοι Σχολιαστές του Ομήρου και άλλες πηγές για τα Ομηρικά »

**Ομιλητής:** κ. Γ. Λεκάκης (Λαογράφος/Συγγραφέας)

2. Παρασκευή, 2 Μαρτίου 2012, 6 μ.μ.

**Θέμα:** « Ηφαιστειακά Τοπία και Αρχαιολογία των Καταστροφών »

**Ομιλήτρια:** κα Αμ. Λαούπη (Δρ. Περιβαλλοντικής Αρχαιολογίας)

3. Παρασκευή, 4 Μαΐου 2012, 6 μ.μ.

**Θέμα:** « Πτώση Μετεωρίτη στην προϊστορική λίμνη του Βόρειου Ευβοϊκού Κόλπου: Παρουσίαση αποτελεσμάτων πολυεπιστημονικής έρευνας του Ελληνικού Κέντρου Θαλάσσιων Ερευνών »

**Ομιλητής:** κ. Δ. Σακελλαρίου (Δρ. Γεωλόγος /Διευθυντής Ερευνών στο Ινστιτούτο Ωκεανογραφίας, ΕΛ.ΚΕ.Θ.Ε.)

4. Παρασκευή, 8 Ιουνίου 2012, 6μ.μ.

**Θέμα:** « Δύο Προφητείες – Δύο Αστρονομικά Φαινόμενα: Χρονολόγηση Επιστροφής του Οδυσσέα στην Ιθάκη »

**Ομιλήτρια:** κα Π. Πρέκα- Παπαδήμα (Επικ. Καθηγήτρια Αστροφυσικής)

*Η ομιλία της κας Πρέκα –Παπαδήμα θα έχει διάρκεια άνω της μίας ώρας.*

Όλες οι ομιλίες θα πραγματοποιηθούν στην αίθουσα του ισογείου του Εθνικού Ιδρύματος Ερευνών (Βασ. Κωνσταντίνου 48).

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**ΣΕΜΙΝΑΡΙΟ “ΔΙΑΓΝΩΣΤΙΚΕΣ  
ΤΕΧΝΙΚΕΣ ΣΤΗΝ ΕΠΙΣΤΗΜΗ ΤΗΣ  
ΣΥΝΤΗΡΗΣΗΣ ΈΡΓΩΝ ΤΕΧΝΗΣ”,  
ΘΕΣΣΑΛΟΝΙΚΗ 17, 18, 19  
ΦΕΒΡΟΥΑΡΙΟΥ 2012**

Αριστοτέλειο Πανεπιστήμιο Θεσσαλονίκης, Πολυτεχνική Σχολή  
Διατμηματικό Πρόγραμμα Μεταπτυχιακών Σπουδών  
«Προστασία, Συντήρηση και Αποκατάσταση Μνημείων Πολιτισμού»

Διευθύντρια Προγράμματος: Αιμιλία Στεφανίδου, Αναπλ. Καθηγήτρια ΑΠΘ

ΑΜΦΙΘΕΑΤΡΟ I, Κέντρου Διάδοσης Ερευνητικών Αποτελεσμάτων Α.Π.Θ, 3ης  
Σεπτεμβρίου, Πανεπιστημιούπολη

**Οργανωτική Επιτροπή:**

Ιωάννης Στράτης, Ρωξάνη Τζήμου-Τσιτουρίδου, Γεώργιος Λιτσαρδάκης, Γεώργιος  
Κυριάκου

**Γραμματεία:**

N. Τριανταφυλλίδου, Α. Κοσκινά, τηλ. +30 2310 995559, φαξ: +30 2310 995483, email:  
striant@auth.gr, koskina@arch.auth.gr

**Π Ρ Ο Γ Ρ Α Μ Μ Α**

*15:00-16:00 Εγγραφές*

*16:00-16:45 Χαιρετισμοί*

**Ιωάννης Μυλόπουλος**, Πρύτανης Α.Π.Θ.

**Νικόλαος Μάργαρης**, Κοσμήτορας Πολυτεχνικής Σχολής ΑΠΘ

**Γεώργιος Παπακόστας**, Πρόεδρος Τμήματος Αρχιτεκτόνων

**Αιμιλία Στεφανίδου**, Διευθύντρια Προγράμματος

**Ρωξάνη Τζήμου-Τσιτουρίδου**, Υπεύθυνη Προγράμματος Β' Κατεύθυνσης

**I Εισαγωγικά-Αποτυπώσεις-Χρονολογήσεις** Συντονιστές: *I.Στράτης, P.Τζήμου-Τσιτουρίδου*

*16:45-17:15* **I.Στράτης**, χημικός, Καθηγητής Α.Π.Θ., **Χ.Κατσίφας**, χημικός, Υπουργείο Πολιτισμού,

**Δ. Λαζίδου**, Mcs Συντηρήτρια, Υπουργείο Πολιτισμού

*Τα υλικά απαιτούν τις τεχνικές τους*

*17.15-17.45* **Μαρίνα Λυκιαρδοπούλου - Πέτρου**, συντηρήτρια, Αρχαιολογικό Μουσείο Αιανής Κοζάνης

*Η συμβολή των μεθόδων ανάλυσης και εξέτασης στην εξέλιξη της συντήρησης*

*17.45-18.00 Διάλειμμα*

**18.00-18.30 Κουτσούδης Ανέστης**, ερευνητής, Ινστιτούτο Πολιτιστικής και Εκπαιδευτικής Τεχνολογίας

Γραφικά & τεχνολογίες τρισδιάστατης ψηφιοποίησης. Αποτυπώνοντας το πολιτιστικό απόθεμα

**18.30-19.00 Παυλίδης Γεώργιος**, ερευνητής, Ινστιτούτο Πολιτιστικής και Εκπαιδευτικής Τεχνολογίας

Τεχνολογίες διαχείρισης και διάχυσης της τρισδιάστατης ψηφιακής πληροφορίας

**19.00-19.30 Κίτης Γεώργιος**, φυσικός, Αναπλ. Καθηγητής Α.Π.Θ.

Θερμικώς και οπτικώς προτρεπομένη φωταύγεια στην υπηρεσία της πολιτιστικής κληρονομιάς

**19.30-20.00 Φακορέλλης Γεώργιος**, Δρ χημικός, Καθηγητής ΤΕΙ Αθήνας

Χρονολόγηση αρχαιοτήτων και έργων τέχνης με μέθοδο άνθρακα14-συνεισφορά και προβληματισμοί

**20:00- 21:00 Συζήτηση**

**Η Μη καταστρεπτικές τεχνικές Συντονιστές: Γ.Λιτσαρδάκης, Γ. Κυριάκου**

**10:00-10:30 Μισαηλίδης Παναγιώτης**, χημικός, Καθηγητής Α.Π.Θ.

*ΟΙ ΦΥΣΙΚΟΙ ΕΠΙΣΤΗΜΟΝΕΣ ΞΑΝΑΓΡΑΦΟΥΝ ΤΗΝ ΙΣΤΟΡΙΑ: Μία εισαγωγή στη συμβολή των φυσικών*

*μεθόδων χαρακτηρισμού στην τέχνη και την αρχαιολογία.*

**10:30-11:00 Sarel Shalev**, αρχαιολογος, Καθηγητής, Dept. of Archaeology & School of Marine Sciences, University of Haifa

*What are we really looking at? XRF and neutrons diffraction analyses of Middle Bronze Age artifacts from the southern Levant.*

**11:00-11:30 Καντηράνης Νικόλαος**, γεωλόγος, Λέκτορας Α.Π.Θ.

*Η μέθοδος περιθλασιμετρίας ακτίνων X, εφαρμογή της σε αρχαιολογικά δείγματα*

**11:30-12:00 Διάλειμμα-καφές**

**12:00-12:30 Φωτάκης Κωνσταντίνος**, φυσικός, Πρόεδρος ΙΤΕ Κρήτης, Καθηγητής Πανεπιστημίου Κρήτης

*Εφαρμογές Λέιζερ για διάγνωση και ανάδειξη έργων τέχνης και μνημείων*

**12:30-13:00 Mikhail Zheludkevich**, χημικός, Καθηγητής, Dept. of Ceramics and Glass Engineering, University of Aveiro

*Self-healing coating as a way to extend life of metallic materials*

**13:00-13:30 Καλλίθρακας-Κόντος Νίκος**, χημικός, Καθηγητής, Πολυτεχνείο Κρήτης

*Η Φθορισμομετρία Ακτίνων X (XRF) ως Διαγνωστικό Εργαλείο σε Έργα Τέχνης*

**13:30-14:00 Γκανέτσος Θεόδωρος**, φυσικός, Τακτικός Καθηγητής, ΤΕΙ Λαμίας

*Μελέτη με χρήση της τεχνικής RAMAN SPECTROSCOPY Τέχνηργων από ημιπολύτιμους λίθους.*

**Καταστρεπτικές τεχνικές Συντονιστές: Γ. Ζαχαριάδης, Α. Ανθεμίδης**

**16:30-17:00 Καραπαναγιώτης Ιωάννης**, χημικός μηχανικός, Επικ.Καθηγητής, Ανωτάτη Εκκλησιαστική Σχολή

*Ταυτοποίηση φυσικών οργανικών χρωστικών σε υφάσματα του Αγίου Όρους με τη μέθοδο της υγρής χρωματογραφίας*



**17:00-17:30 Perla Colombini**, χημικός, Καθηγήτρια, Dipartimento di Chimica e Chimica Industriale, University of Pisa

*Mass spectrometry in art*

**17:30-18:00 Alessia Andreotti**, χημικός, Dipartimento di Chimica e Chimica Industriale, University of Pisa

*Multi-analytical approach applied to Cultural Heritage problems: revealing the painting technique of Giotto di*

*Bondone in the mural paintings at the Bardi and Peruzzi Chapels (Santa Croce, Florence, Italy)*

**18:00-18:30 Συζήτηση**

**18:30-19:00 Διάλειμμα-καφές**

**Καταστρεπτικές τεχνικές Συντονιστές:** Κ. Φωτάκης, Ν. Καντηράνης

**19:00-19:30 Ιωάννης Στράτης**, χημικός, Καθηγητής Α.Π.Θ.

*Εισαγωγή στις καταστρεπτικές τεχνικές*

**19:30-20:00 Γεώργιος Ζαχαριάδης**, χημικός, Αναπλ. Καθηγητής Α.Π.Θ.

*Σύγχρονες αναλυτικές τεχνικές με βάση τη φασματομετρία και την ατομοποίηση σε πλάσμα. Παραδείγματα αρχαιομετρικής προσέγγισης*

**20:00-20:30 Αριστείδης Ανθεμίδης**, χημικός, Αναπλ. Καθηγητής Α.Π.Θ.

*Η ανάγκη αυτόματων τεχνικών χημικής ανάλυσης σε μουσεία και κέντρα συντήρησης*

**20:30-21:00 Τελική Συζήτηση** Συντονιστές: Ι. Α. Στράτης, Καραπαναγιώτης, Κ. Φωτάκης

**Εκδρομή στην Ξάνθη**

*Αναχώρηση στις 9:00 π.μ. με πούλμαν από την Πολυτεχνική Σχολή του ΑΠΘ. Επιστροφή στις 18:00 μ.μ. περίπου.*



# **G-CUBED SPECIAL THEME OPEN CALL FOR MANUSCRIPTS: DEVELOPMENT OF ISOTOPIC PROXIES FOR PALAEOENVIRONMENTAL INTERPRETATION: A CARBON PERSPECTIVE (DIPPI-C)**

Dear list members:

## **G-Cubed special theme OPEN CALL FOR MANUSCRIPTS: Development of Isotopic Proxies for Palaeoenvironmental Interpretation: A Carbon Perspective (DIPPI-C)**

We invite you to submit a manuscript to our special theme in Geosystems, Geophysics, Geochemistry (G-Cubed). The theme is called “Development of Isotopic Proxies for Palaeoenvironmental Interpretation: A Carbon Perspective” (DIPPI-C) and has an open call for manuscripts. We encourage you to consider submitting a manuscript if your research is related to (but not strictly limited to) the following:

Constraining the carbon (C) cycle is vital to understanding environmental processes at a variety of spatial and temporal scales. A robust quantification and interpretation of these processes requires an integrative inter-disciplinary understanding of the complex, non-linear mechanisms that control the behavior of C isotopes and biomarker distributions in the environment. This special theme forms part of the “Development of Isotopic Proxies for Palaeoenvironmental Interpretation: A Carbon Perspective” (DIPPI-C) working group ([www.dippi-c.org](http://www.dippi-c.org)) which specializes in the synthesis, analysis and interpretation of organic and inorganic carbon in the natural environment at all spatial and temporal scales. We seek contributions covering (but not limited to) plant physiology/biology; soil processes; ecology; diagenesis and recalcitrance; modern aquatic and sedimentary environments; carbon transport pathways; palaeoenvironmental reconstructions; archaeology; biogeochemistry; carbon capture and storage; and method development.

Manuscript submission and guidelines will follow standard G3 publication procedures (see G3 [author information](#))

To submit a manuscript, please use the Geophysical Electronic Manuscript System (GEMS), which can be found [here](#).

If you have any queries on the suitability of your manuscript for this theme, or any other manuscript related queries, please do not hesitate to contact Dr. Chris Brodie (Theme Editor; [brodie@hku.hk](mailto:brodie@hku.hk)). If you are working on stable and radio isotopes of carbon and/or biomarker distributions either on their own or in conjunction with other data, we'd be interested to hear from you!

All the best,

Brodie

\*\*\*\*\*

Dr. Chris Brodie  
Department of Earth Sciences  
James Hsioung Lee Science Building  
The University of Hong Kong  
Pokfulam Road  
Hong Kong SAR, China

Associate Editor for Geochemistry, Geophysics, Geosystems (G-Cubed)

Co-Chair of Development of Isotopic Proxies for Palaeoenvironmental Interpretation: A Carbon Perspective (DIPPI-C) working group

[www.dippi-c.org](http://www.dippi-c.org)  
<http://hku-hk.academia.edu/ChrisBrodie>

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# **STATISTICAL TOOLS SESSION AT RADIOCARBON CONFERENCE, PARIS 2012**

Dear colleagues,

Andrew Millard (Durham University), Marian Scott (University of Glasgow) and Maarten Blaauw (Queen's University Belfast) will be convening a session on Statistical Tools at the 21st International Radiocarbon Conference, July 9-13, Paris (France).

Here's the session abstract:

Statistical tools are increasingly used to synthesize elements of radiocarbon science with other scientific information, for example:

-chronological models incorporating stratigraphic and depositional processes -spatial modelling of radiocarbon measurements -statistical analysis for quality control -representations of laboratory processes -uses of calibration curve data for purposes other than calibration, e.g. palaeoclimate or forensic studies This session will bring together this broad field of applications, to encourage discussion and cross-fertilisation.

The deadline for submitting abstracts is in two weeks time, 2 February 2011.

For more details of the session and conference, see <http://www.radiocarbon2012.com>

We hope to receive lots of interesting abstracts. Please forward this mail to anyone potentially interested.

Many thanks,

Andrew, Marian and Maarten

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Dr. Maarten Blaauw  
Lecturer in Chronology

School of Geography, Archaeology & Palaeoecology Queen's University  
Belfast, UK

www <http://www.chrono.qub.ac.uk/blaauw>  
tel +44 (0)28 9097 3895

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# **NARNIA WORKSHOP ON** **ARCHAEOLOGICAL AND HISTORICAL** **GLASS AND EUROPE'S LARGEST** **CONFERENCE ON PHOTONICS**

**FYI, forwarded on behalf of the NARNIA team at Vrije Universiteit Brussel:**

Dear (ancient glass) researcher,

We shall organise a second NARNIA workshop in Brussels on interdisciplinary research of archaeological and historical glass from the 16th until the 20th of April 2012. The workshop has both a theoretical and an experimental component. We are pleased that we have the opportunity to organise the theoretical component in the scope of Europe's largest conference on Photonics (SPIE Photonics Europe – Square Brussels Meeting Centre Brussels, Belgium).

*This implies that the papers will be published in proceedings that will be included in the Web of Science.*

This conference section, which will take place between the 16th and 17th of April 2012, is focused on methods and methodologies for the study, documentation and conservation of ancient glasses. Submissions can target on studies where analytical tools and measurement techniques are applied to specific archaeological and art historical questions. This includes but is not limited to the use of SEM-EDX (EPMA), LA-ICP spectrometry, PIXE, XRF, Raman spectroscopy, UV-VIS-NIR spectroscopy, luminescence, isotope analysis, X-ray diffraction and Xanes.

If you want to contribute to this event, we expect an abstract of maximum 300 words to be submitted before the 27th of January 2012 to Dr Wendy Meulebroeck via e-mail ([wmeulebr@vub.ac.be](mailto:wmeulebr@vub.ac.be)).

The conference paper (6-12 pages – following the SPIE manuscript format see template in attachment) must be uploaded by the 2nd of April 2012 on the SPIE website (details will follow once the abstract is received). In addition, we would like to ask you to forward this message to other colleagues who might be interested to present their research during this event. We apologise for the short notice of this announcement and request, which is due to the delayed confirmation of SPIE. However we considered the opportunity to be included into the proceedings of an international conference with Web of Science notification, as an enhancement of the NARNIA workshop.

Looking forward to receiving your reply we remain yours truly,

The organising committee,

*Prof. Dr. Hugo Thienpont & Dr. Wendy Meulebroeck, Vrije Universiteit Brussel – Applied Physics and Photonics Department – Brussels Photonics Team B-Phot*

*Prof. Dr. Karin Nys, Peter Cosyns & Hilde Wouters*, Vrije Universiteit Brussel –  
Department of Art Studies and Archaeology – Mediterranean Archaeological Research  
Institute MARI

*Prof. Dr. Herman Terryn & Kitty Baert*, Vrije Universiteit Brussel – Department of  
Electrochemical and Surface Engineering, Materials and Chemistry – Electrochemical  
and Surface Engineering SURF

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Maria Dikomitou

Project Manager

New Archaeological Research Network for Integrating Approaches to ancient material  
studies (NARNIA)

FP7 - PEOPLE - Marie Curie European Actions

[www.narnia-itn.eu](http://www.narnia-itn.eu)

Research Fellow

Archaeological Research Unit

Department of History and Archaeology

University of Cyprus

P.O.Box 20537 CY-1678 NICOSIA Cyprus

email: [m.dikom@ucy.ac.cy](mailto:m.dikom@ucy.ac.cy)

tel. +357-22-893573

fax: +357-22-674101

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**26<sup>TH</sup> INTERNATIONAL CONFERENCE**  
**ON SURFACE MODIFICATION**  
**TECHNOLOGIES, ECOLE CENTRALE DE**  
**LYON IN ECULLY, FRANCE, JUNE 20<sup>TH</sup> –**  
**22<sup>ND</sup>, 2012**

The 26<sup>th</sup> International Conference on Surface Modification Technologies will be held at Ecole Centrale de Lyon in Ecully, France, on June 20<sup>th</sup> – 22<sup>nd</sup>, 2012.

The session "Arts and Surfaces" is dedicated to archaeometric studies of surfaces on archaeology and art objects made of any materials: ceramics, glass, metals, organic materials etc.

Topics on any kind of surface layers, such as paint, laquer, varnish, alterations, corrosion, plating, linings, applications, glaze etc. are suitable.

More information on the site: <http://smt26.ec-lyon.fr/>

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## **8th ICAANE, WARSAW 2012 -** **ADDITIONAL CALL FOR PAPERS:** **CONSERVATION, PRESERVATION AND** **SITE MANAGEMENT**

As there are still a few openings available in Theme V:

"Conservation, Preservation and Site Management"

The Organizing Committee of 8th ICAANE, to be held in Warsaw, Poland (30th April - 4th May 2012) encourages additional submissions of papers. The continuous threat to cultural heritage from political instability, industrialization and globalization has made issues related to preservation of heritage a recurring theme at successive ICAANE conferences in Paris, Rome and, most recently, London. Within the framework of this topic the organizers would like to invite contributions relating, among others, to preservation and conservation of artifacts, sites and landscapes, management of heritage within museums and on archaeological sites, as well as case-study contributions concerning particular instances of mistreatment or misbehavior. Papers concerning dissemination of knowledge of the Ancient Near East and of cultural heritage issues via the media, first of all via the internet are especially encouraged.

The deadline for submitting abstracts to this Theme has been prolonged till February 15th, 2012.

The themes and abstracts of proposed lectures should be submitted via e-mail, as it is no longer possible to submit them via the website, to the following address: [warsaw@8icaane.org](mailto:warsaw@8icaane.org)

For additional information please, consult our web-site [www.8icaane.org](http://www.8icaane.org).

\*\*\*\*\*

Dr. Rafał Koliński  
Organizing Committee  
8th ICAANE, Warsaw, Poland

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**FINAL CALL FOR ABSTRACTS - UMASS  
CENTER FOR HERITAGE & SOCIETY'S 2ND  
ANNUAL INTERNATIONAL HERITAGE  
CONFERENCE, HIGH-TECH HERITAGE:  
HOW ARE DIGITAL TECHNOLOGIES  
CHANGING OUR VIEWS OF THE PAST?  
MAY 2-4, 2012, UMASS AMHERST CAMPUS,  
AMHERST, MA USA**

**Submission Deadline Extended to February 1, 2012**

**Introduction**

Major questions about the past have long been studied through chronology, typology, space, and narrative. But are digital technologies creating a new means of envisioning past cultures, eras, and landscapes in a virtual, non-narrative immediacy? What implications does that have for historiographical representation? What role do they play in complicating or simplifying the stewardship of historic resources? How do they enhance or trivialize the public interpretation of sites and monuments for the purposes of cultural tourism?

The goal of this conference is to bring together a wide range of academics, museologists, digital technologists, heritage professionals, and community leaders to examine the achievements, opportunities, and serious social challenges of digital heritage. The program will highlight ongoing projects, technological breakthroughs, educational assessments, economic evaluations, and philosophical reflections on the impact of new technologies on heritage research, on collective memory, and on the very concepts of "Place" and "Time." Selected papers will be published in *Heritage & Society*, a peer-reviewed journal, whose editorship has been assumed by the UMass Amherst Center for Heritage and Society. Organized by Elizabeth S. Chilton and Neil A. Silberman.

**Plenary Speakers**

**Maurizio Forte, "The Past in the 'Clouds': Dreams and Nightmares of Virtual Heritage"**

Dr. Maurizio Forte is full professor of World Heritage at the University of California, Merced. He was director of Virtual Heritage and Senior Researcher at the Italian National Research Council. He has coordinated research and fieldwork projects in Italy, India, Turkey Ethiopia, Egypt, Syria, Kazakhstan, Peru, China, Oman, USA and Mexico. He created the first virtual collaborative museums in Europe with the Digital Scrovegni Chapel Project (Padova) and the Virtual Via Flaminia Project (Rome). He is editor and author of several books including *Virtual Archaeology*, *Virtual Reality in Archaeology*, and 200 scientific papers. He achieved several international awards: Best paper awards VSMM 2002, 2008, 2010. E-content, E-culture Award 2005-2008; 2009 Tartessos Prize.



**Francis P. McManamon, "Archaeological Information: Access, Preservation, and Use in the 21st Century"**

Dr. Francis P. McManamon is the Executive Director of the Center for Digital Antiquity, an organization devoted to broadening and improving the ease of access to archaeological information and to the long-term preservation of archaeological information. He also is a Research Professor in the School of Human Evolution and Social Change at Arizona State University. Prior to joining Digital Antiquity, McManamon served as the Chief Archeologist of the National Park Service and the Departmental Consulting Archeologist of the U.S. Department of the Interior. He has authored many articles on a variety of topics related to American archaeology. Most recently, he is the general editor of a 4-volume encyclopedia, *Archaeology in America* (2009), which was named as an outstanding reference work by the American Library Association in 2010.

**Maria Roussou, "Designing User-centered Digital Heritage Experiences Based on Personalized Interaction and Storytelling"**

Dr. Maria Roussou is Founding Director of *makebelieve design & consulting*, as well as a researcher and Adjunct Lecturer at the University of Athens, Greece, teaching courses on Museums and Digital Technologies and Human Computer Interaction. Previously (1998-2002), she established and directed the Virtual Reality Department at the Foundation of the Hellenic World in Athens. She holds a PhD in Computer Science from the University of London, UK, a MFA degree in Electronic Visualization and a MSc in Computer Science from the University of Illinois at Chicago.

**Submission of Abstracts**

Abstracts for poster presentations, research papers (20 min.), demonstrations, workshops, roundtables, and organized sessions or symposia on the conference themes will be accepted until **FEBRUARY 1, 2012**. They should be a maximum of 300 words in English with a maximum of one illustration or screenshot. Note to session organizers: if you are proposing a session or symposia, you are responsible for submitting each paper abstract (or discussant slot) individually and repeating the session information on each form verbatim.

**[Please submit abstracts online by clicking here](http://scholarworks.umass.edu/hightechheritage)** (or visiting the conference website at **<http://scholarworks.umass.edu/hightechheritage>**).

For questions or requests for additional information, please contact Angela Labrador (**[alabra@anthro.umass.edu](mailto:alabra@anthro.umass.edu)**). Details for registration and accommodations will be announced soon. We hope you will find this conference to be of interest and look forward to seeing you in Amherst in May!

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**CALL FOR ABSTRACT, YTU ICORP -  
CULTURAL HERITAGE PROTECTION IN  
TIMES OF RISK: CHALLENGES AND  
OPPORTUNITIES, 15-17 NOVEMBER,  
2012, ISTANBUL TURKEY**

Dear Colleagues,

Yıldız Technical University and ICOMOS-ICORP (International Committee on Risk Preparedness) are organizing an international symposium on “Cultural Heritage Protection in Times of Risk: Challenges and Opportunities” between 15-17 November, 2012 in Istanbul Turkey.

The aim of this symposium is to contribute towards developing solutions on an international platform by sharing planned and realized works on defining and mitigating slow as well as catastrophic risks, especially natural and human induced disasters and conflict situations, that threaten cultural heritage in short and long terms.

You are cordially invited to submit your abstract until 20th March, 2012.

Detailed information can be found by visiting the webpage at <http://www.har.yildiz.edu.tr>

For further information, please contact the Secretariat at [har@yildiz.edu.tr](mailto:har@yildiz.edu.tr)

Yours sincerely,

On behalf of the Organization Committee,

Dr. Zeynep Gül ÜNAL

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

**WITHIN THE FRAME OF THE**  
**COLLABORATIVE ACTIVITIES OF THE**  
**“MAX PLANCK-WEIZMANN INSTITUTE**  
**CENTER IN THE FIELDS OF**  
**INTEGRATIVE ARCHAEOLOGY AND**  
**ANTHROPOLOGY”**

The Weizmann Institute of Science offers the position of **Track Leader in Archaeological Science** to lead a group dedicated to

**The Timing of Cultural Change**

The new group will be established in Rehovot, Israel and will work in close contact with the Kimmel Center for Archaeological Science at the Weizmann Institute of Science (Director: Steve Weiner) and with the Department of Human Evolution of the Max Planck Institute for Evolutionary Anthropology (Director: Jean-Jacques Hublin).

Applicants should have demonstrated outstanding research potential, leadership and clear evidence of achievement. The candidate should have expertise in radiocarbon dating, with a good understanding of archaeological materials and their preservation, and should be able to direct a major research program that starts in the field collecting samples in reliable contexts and ends with the radiocarbon dating of well-characterized samples.

This is a fulltime research position. The salary will be equivalent to an associate professor in Israel. Funds for conducting research including salaries for post-doctoral scientists, PhD candidates and an administrative assistant are available. The appointment will be for a term of 5 years.

Applications should include a recent CV, a detailed research plan, and the names of three referees. Documents should be sent by e-mail in pdf form to Ms. Aline Ratley, office of the President the Weizmann Institute of Science <aline.ratley@weizmann.ac.il> by **April 30, 2012**. The identities of applicants will be known only to those participating directly in the decision making process.

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## **ADVANCED TRAINING FELLOWSHIP IN IMAGING SCIENCE OF WORKS OF ART ART IN WASHINGTON, DC**

The National Gallery of Art in Washington, DC, with support from the Samuel H. Kress and the Andrew W. Mellon Foundations, is offering a three-year advanced training fellowship in imaging science applied to the study of works of art. The fellowship includes an annual stipend and allowances for research-related travel. The stipend is commensurate with the candidate's education and experience. The fellow will work in the Scientific Research Department, Conservation Division, under the guidance of the Senior Imaging Scientist and is expected to collaborate with the Gallery's scientists, conservators, and curators.

### **Research Program**

The Gallery is developing and optimizing imaging based in-situ (non-invasive) tools to help address questions of material identification and construction methods in works of art. The spectral range and technologies being investigated are large and include:

- *High spatial resolution hyperspectral and multispectral infrared imaging of paintings to improve the visualizing of preparatory sketches and compositional paint changes.* See “Visible and infrared reflectance imaging spectroscopy of paintings: pigment mapping and improved infrared reflectography,” *Optics for Arts, Architecture, and Archaeology II, Proceedings of the SPIE 7391* (2009), 739103-739103-8.
- *Reflectance and luminescence imaging spectroscopy in the visible to infrared to help in identifying and mapping artist pigments and materials such as binders.* See “Visible and Infrared Imaging Spectroscopy of Picasso's Harlequin Musician: Mapping and Identification of Artist Materials in Situ,” *Applied Spectroscopy* 64 (2010), 6, 584.
- *Spectral and spatial image processing algorithms.* See “Towards Automatic Registration,” *Computer Vision and Image Analysis of Art II, Proceedings of the SPIE 7869* (2011).

The results of these techniques are being evaluated by comparison to results obtained from more traditional analytical methods carried out by scientists in the Gallery's well-equipped scientific research department. This work is being done in collaboration with researchers at academic institutions and other research laboratories such as those at George Washington University. The Gallery has several high-performance visible and infrared multispectral and scanning hyperspectral cameras, a 2-D scanner, a diffuse reflectance visible to infrared fiber optic spectrometer, as well as transmission and luminescence spectrometers.

### **Training**

The fellow will receive training in the areas of visible and infrared imaging spectroscopy and its application to art conservation. He or she will also receive training in visible and infrared imaging and spectral image processing. The fellow will also have opportunities to work on research projects with conservation scientists and conservators using these methods to further his or her knowledge and skill level.

**Responsibilities of the Fellow**

The fellow will help in the design, construction, and testing of instrumentation and in developing analytical procedures and tools. The fellow will produce written reports, present research results at the department level as well as at scientific and conservation meetings, and publish at least one paper in a scholarly scientific journal.

**Eligibility**

Candidates should have a graduate degree in one of the physical sciences, or equivalent training with a specialization in at least one of these three areas: reflectance, luminescence, or vibrational spectroscopy. The degree must have been obtained within the last five years. Candidates must be familiar with relevant scientific methods and instrumentation associated with digital imaging and spectroscopy. A strong interest in art conservation and image science is required and previous experience in art conservation is desirable. English-language skills and a proven record of research and writing ability are required. Fellowships are awarded without regard to age, sex, nationality, or race. Finalists who are not United States citizens must provide proof of their own health insurance coverage before starting the position.

**Application**

Prospective applicants must submit three letters of recommendation, a current CV, and a graduate-school transcript. Candidates should also submit a letter expressing why they are interested in the position and how their unique background makes them suitable for the fellowship. Candidates should indicate clearly in the cover letter that they are applying for the Kress/Mellon Advanced Training Fellowship. All applications must be submitted by February 1, 2012. Selection of a candidate is expected to be made by March 1, 2012.

Applications should be addressed to:

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**Michael Skalka, Conservation Administrator**  
Conservation Division, DCL  
National Gallery of Art  
2000B South Club Drive  
Landover, Maryland 20785  
USA

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# **ANDREW W. MELLON ADVANCED TRAINING FELLOWSHIP IN PAINTING CONSERVATION**

The conservation division of the National Gallery of Art is offering a conservation fellowship in the painting treatment studio supported by the Andrew W. Mellon Foundation. The three-year fellowship will commence in the fall of 2012 and will include a \$33,000 annual stipend plus \$2,000 each year for travel and research.

The fellowship will be devoted to conservation treatments at the National Gallery of Art and research related to the collections. The fellow will be expected to produce a publishable paper based on his or her research project before the end of the appointment. Lectures, symposia, and informal discussions contribute to the fellowship program, as do the significant resources of the Gallery, including the library, photographic archives, and the scientific research department.

## **Eligibility**

Graduates from recognized training programs or candidates with equivalent training will be considered. Applicants should have no more than five years of conservation-related work experience. A proven record of research and writing ability, as well as English-language skills, are required. Fellowships are awarded without regard to age, sex, nationality, or race. Selected finalists who are not United States citizens must provide proof of their own health insurance coverage during the fellowship period.

## **Application Procedure**

Interested candidates must submit the following materials in English:

- Transcripts of both undergraduate and graduate courses of academic study (although official transcripts are preferred, unofficial copies are acceptable)
- A curriculum vitae including basic biographical information, current and permanent addresses, and telephone numbers, and a description of previous conservation experience and internships
- A short statement of the applicant's interests and intent in applying for the fellowship; applicant must specify the treatment discipline desired within the short statement
- Offprints of any publications or lectures
- Two supporting letters of recommendation from conservation professionals familiar with the candidate's work and one letter of personal reference (sent directly to the address below)

The materials should be postmarked no later than **February 15, 2012**, and sent to:

\*\*\*\*\*

**Michael Skalka, Conservation Administrator**  
Conservation Division, National Gallery of Art  
2000B South Club Drive  
Landover, Maryland 20785  
USA

\*\*\*\*\*

Formal applications must be postmarked and mailed. E-mail address for inquiries only:  
[dcl@nga.gov](mailto:dcl@nga.gov)

After a preliminary selection, final candidates may be invited for an interview. A portfolio of conservation treatments and research should be presented by the candidate at the interview. All applicants will be notified by **March 30, 2012**, of the decision of the selection committee.

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## **INTERDISCIPLINARY POSTDOCTORAL FELLOWSHIP POSITION IN SCIENCE AND ART IN WASHINGTON, DC**

The National Gallery of Art in Washington, DC, in conjunction with George Washington University, is offering the opportunity to join an interdisciplinary team consisting of image scientists, spectroscopists, conservation scientists, and conservators to develop novel remote sensing/imaging spectroscopy cameras and spectral imaging algorithms for identification and mapping of artists' materials in support of the fields of art conservation and art history.

A new program at the National Science Foundation in Cultural Heritage Science funds this two-year position. The goal is to build, optimize, and validate a portable, high-sensitivity imaging system operating in the reflective near-infrared (1000 to 2500 nm) range. Its primary application will be to map and identify pigments and paint binders.

The successful candidate will have prior experience with either or both (1) spectral imaging systems and the associated image-processing techniques and (2) a basic understanding of electronic and vibrational spectroscopy of organic and inorganic pigments.

Because of its interdisciplinary nature, the experience gained from this position will also be applicable in the biomedical, industrial, and earth science fields. The appointment will be made jointly between the Department of Electrical and Computer Engineering at George Washington University and the Scientific Research Department at the National Gallery of Art. The incumbent will gain experience at both locations.

Research Program in Imaging Science at the National Gallery of Art

The Gallery is developing and optimizing imaging based in-situ (non-invasive) tools to help address questions of material identification and construction methods in works of art. The spectral range and technologies being investigated are large and include:

- *High spatial resolution hyperspectral and multispectral infrared imaging to improve visualizing preparatory sketches and compositional paint changes in paintings.* See "Visible and Infrared Reflectance Imaging Spectroscopy of Paintings: Pigment Mapping and Improved Infrared Reflectography," *Optics for Arts, Architecture, and Archaeology II, Proceedings of the SPIE 7391* (2009), 739103-739103-8.
- *Reflectance and luminescence imaging spectroscopy in the visible to infrared to help in identifying and mapping artist pigments and materials such as binders.* See "Visible and Infrared Imaging Spectroscopy of Picasso's Harlequin Musician: Mapping and Identification of Artist Materials in Situ," *Applied Spectroscopy* 64 (2010) 6, 584.
- *Spectral and spatial image processing algorithms.* See "Towards Automatic Registration," *Computer Vision and Image Analysis of Art II, Proceedings of the SPIE 7869* (2011).

The results of these techniques are being evaluated by comparison to results obtained from more traditional analytical methods carried out by scientists in the Gallery's well-equipped Scientific Research Department. The Gallery has several high performance visible and infrared monochrome and scanning hyperspectral cameras, a 2-D mechanical scanner, a diffuse reflectance optical fiber visible-to-infrared spectrometer, as well as transmission and luminescence spectrometers. There is also an active collaboration with



the School of Engineering and Applied Science at George Washington University in the area of advanced image processing.

### **Training**

The fellow will receive training in image science, spectroscopy, and optical systems engineering as well as in the use of imaging spectroscopy in conservation science.

### **Responsibilities of the Fellow**

The fellow will help in the designing, constructing, and testing of hyperspectral instrumentation and will develop analytical procedures and image processing tools as previously noted. The fellow will produce written reports, present research results at scientific and conservation meetings, and publish at least one paper in a scholarly scientific journal.

### **Eligibility**

Candidates should have a PhD in one of the physical sciences or electrical engineering. The degree must have been obtained within the last three years. Candidates must be familiar with relevant scientific methods and instrumentation.

Experience is required in some or all of the following:

- Scientific programming (MATLAB, C, LabVIEW)
- Design, construction, evaluation of novel instrumentation and analysis of data
- Signal/image processing

A strong interest in art conservation is required. English-language skills and a proven record of research and writing ability are required. Fellowships are awarded without regard to age, sex, nationality, or race. Finalists who are not United States citizens must provide proof of their own health insurance coverage before starting the position.

### **Application**

Prospective applicants must submit three letters of recommendation, a CV, and a graduate-school transcript. Candidates should also submit a letter expressing why they are interested in the position and how their unique background makes them suitable for the fellowship. Candidates should indicate clearly in the cover letter that they are applying for the NSF Interdisciplinary Postdoctoral Fellowship. All applications must be submitted by **February 1, 2012**. Selection of a candidate is expected to be made by **March 1, 2012**.

Applications should be addressed to:

\*\*\*\*\*

#### **Michael Skalka, Conservation Administrator**

Conservation Division, DCL  
National Gallery of Art  
2000B South Club Drive  
Landover, Maryland 20785  
USA

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**VACANCY LECTURER**  
**ARCHAEOZOOLOGY GRONINGEN**  
**INSTITUTE OF ARCHAEOLOGY**

Dear ZOOARCHers,

The vacancy for lecturer in archaeozoology (1.0 fte) at the Groningen Institute of Archaeology, University of Groningen, was just opened.

<http://www.rug.nl/corporate/vacatures/jobOpportunitiesRUG>

The vacancy closes February 19, 2012.

For any information you may contact me (the present archaeozoologist of the institute).

Yours sincerely,

Wietske Prummel

\*\*\*\*\*

ms. Wietske Prummel

archaeozoologist

University of Groningen

Groningen Institute of Archaeology

Poststraat 6, NL-9712 ER Groningen, Netherlands tel. +31(0)50-3636732

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**ΑΝΑΚΟΙΝΩΣΕΙΣ - ANNOUNCEMENTS**

**CALL FOR RESPONSES TO SURVEY ON  
ARCHAEOLOGICAL CONSERVATION  
NEEDS**

If you direct an archaeological field project, please assist us by taking this brief online survey. The survey is designed to gather information about archaeologists' engagement with conservation and identify areas in which the conservation community can improve. We would appreciate your participation whether or not you have used the services of a professional conservator, and we hope to have responses from a broad range of archaeologists working on different types of sites, both terrestrial and underwater.

· The survey is primarily multiple-choice and takes approximately 5 minutes to complete. Your response will be anonymous unless you choose to provide contact information. If you do give us your name, your contact information and survey responses will be kept confidential and only discussed without attribution.

· The survey results will be shared with both the archaeological and conservation communities.

· The survey will be active for three weeks, until the 19th February 2012. If you know other directors who are good candidates for this survey, please forward the link.

Survey link: [http://umichlsa.qualtrics.com/SE/?SID=SV\\_5sWNz6StWlxY4FC](http://umichlsa.qualtrics.com/SE/?SID=SV_5sWNz6StWlxY4FC)

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Suzanne Davis and Claudia Chemello  
Conservators  
Kelsey Museum of Archaeology  
University of Michigan  
434 South State Street  
Ann Arbor, MI 48109

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## **ΠΡΟΣΚΛΗΣΗ ΓΙΑ ΤΗΝ ΚΟΠΗ ΤΗΣ ΠΡΩΤΟΧΡΟΝΙΑΤΙΚΗΣ ΠΙΤΑΣ ΤΗΣ ΕΑΕ**

Το Δ.Σ. της Ελληνικής Αρχαιομετρικής Εταιρείας προσκαλεί τα μέλη της για την κοπή της πρωτοχρονιάτικης πίτας **την Τρίτη 7/ 2/ 2012, στις 18:30**, στα γραφεία της Σπηλαιολογικής Εταιρείας, στην οδό Σίνα 32, στο Κολωνάκι.

Με αφορμή τη συνάντηση, θα γίνει η πρώτη παρουσίαση στην Ελλάδα του νέου βιβλίου των Effie Photos-Jones και Allan Hall με τίτλο *Lemnian Earth and the earths of the Aegean*.

Σας περιμένουμε όλους με μεγάλη χαρά, να ξεκινήσουμε μαζί τη νέα χρονιά και να ανταλλάξουμε απόψεις για την πορεία της ΕΑΕ και την οργάνωση του επόμενου συνεδρίου!

**Η πρόεδρος και τα μέλη του Δ.Σ.**

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# **MICHAEL VENTRIS MEMORIAL** **AWARD FOR MYCENAEAN STUDIES** **2012**

The Michael Ventris Memorial Fund was founded in 1957 in appreciation of his contribution to the fields of Mycenaean civilization and architecture. The Trustees of the Fund offer an annual award of up to £2,000 to a junior scholar for research into Mycenaean studies or kindred subjects: (1) Linear B and other Bronze Age scripts of the Aegean and Cyprus, and their historical and cultural connections and (2) all other aspects of the Bronze Age of the Aegean and Cyprus. It is intended that the Award should support a specific project, which may be part of a continuing programme of post-doctoral research.

The Award is open to applicants from all countries who have completed their doctorate within the past eight years. Applications are also accepted from postgraduate students who are about to complete their doctorate, but the Award is **not** intended to fund doctoral research per se.

**Applications must reach the Deputy Director, Institute of Classical Studies, Senate House, Malet Street, London WC1E 7HU not later than 15 February 2012. Applicants should give particulars of their age, qualifications, academic record, and should outline the work they intend to pursue in the event of the Award being made to them, including projected costs. Applications should not exceed 6 single-sided pages (A4). They may be submitted either as hard copy or by email (the attachment to be in PDF or compatible with Word 2003).**

**Applicants must also supply the names and addresses of two referees, and, at the same time, ask the referees to write independently in support of their application.**

For further information please contact [admin.icls@sas.ac.uk](mailto:admin.icls@sas.ac.uk)

The Award will be made by a Committee appointed by the Institute of Classical Studies and Architectural Association acting jointly. Payment will be in one single sum in May of each year. The Committee reserves the right to make no Award in any given year or to invite a scholar to hold the Award in a particular year. If sufficient money is available, the Committee may from time to time make small grants from the Fund.

The successful candidate will be required to submit a written report to the Advisory Committee on the work that the Award has enabled him or her to complete. He or she may be invited to make a public presentation of the results at the Institute of Classical Studies.

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## *INTERNET SITES*

# **ANCIENT CYPRUS PROJECT**

The Ancient Cyprus WebProject is a new venture in scholarship and knowledge-sharing. It offers the opportunity for people with all levels of experience to participate, from undergraduates and knowledgeable amateurs to the most senior figures in archaeological research.

We are building a website that will provide information such as extensive bibliographies, sources of funding, centres of study, lists of collections and access arrangements, scholar and project contact details, bulletins on excavations and projects, and excavation reports. Major archaeological topics will be introduced by straightforward essays, and guidance given on further reading. Details can be found through the call for contributions section, at: <http://www.ancientcyprus.ac.uk/study/contributions.html>

More complex topics will be presented by specialists:  
<http://www.ancientcyprus.ac.uk/papers.html>

Collaborative projects are indexed at <http://www.ancientcyprus.ac.uk/projects.html>  
Pages can be printed off for display on noticeboards, circulation to colleagues, etc. If you take a look at the rest of the site please remember that it is a work in progress.

The website is linked to a discussion list, at  
<http://groups.yahoo.com/group/ancientcyprus/>

The list covers the archaeology and history of Cyprus from earliest times to 1900 AD. Aim: to stimulate discussion and disseminate knowledge. No discussion of events after 1900 AD permitted, to ensure focus on scholarly rather than political issues. Open to archaeologists, historians, and interested members of the public. Discussion papers are welcomed, as are bulletins on current excavations and research, and practical advice on support for research, reading lists, etc.

We look forward to your involvement.

Freya Horsfield  
[Co-ordinator@ancientcyprus.ac.uk](mailto:Co-ordinator@ancientcyprus.ac.uk)

The Ancient Cyprus WebProject is affiliated to the Council for British Research in the Levant.

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## **THE AEGEAN MINOAN 3D GIS PROJECT**

Dear All,

The Aegean Minoan 3D GIS project ([ETANA ABZU Record 20688](#)) based on Google Earth has been redesigned for improved ease of use, etc. and permanently moved to a better, more robust home in the server clouds along with our website. Please note that all enquiries and support will be provided for these URLs only in the future.

[The Archaeological Sites of the Aegean Minoans](#) - 243 Archaeological Sites and Geographical Features

This includes the two accompanying GIS publications derived directly from it.

[The End of Minoan Linear A Writing and the Late Minoan IB Fire Destruction of Crete](#)

[The Extent of the Santorini Eruption's Tsunami Inundation of Minoan Crete](#)

Sheppard Baird

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# **ΘΕΣΗ ‘ΡΟΥΔΙΑΣ’ ΣΤΙΣ ΥΠΩΡΕΙΕΣ ΤΟΥ** **ΤΡΟΟΔΟΥΣ: ΑΡΙΣΤΟΤΕΛΕΙΟ** **ΠΑΝΕΠΙΣΤΗΜΙΟ ΘΕΣΣΑΛΟΝΙΚΗΣ**

(Υπεύθυνος έρευνας: Δρ. Ν. Ευστρατίου)

## **2011**

Το Υπουργείο Συγκοινωνιών και Έργων, Τμήμα Αρχαιοτήτων, ανακοινώνει τη λήξη σύντομης ερευνητικής περιόδου για το 2011 του Τμήματος Ιστορίας και Αρχαιολογίας του Αριστοτέλειου Πανεπιστημίου Θεσσαλονίκης (ΑΠΘ) στην προ-νεολιθική εγκατάσταση ‘Βρέτσια-Ρουδιάς’ στο Τρόδος (επαρχία Πάφου). Οι έρευνες διεξήχθησαν υπό τη διεύθυνση του Καθ. Νικόλαου Ευστρατίου.

Η επιτόπια έρευνα στην εντυπωσιακή για την τοποθεσία της πλειστοκαινική αναβαθμίδα του Ξερού ποταμού πραγματοποιήθηκε και φέτος στα τέλη Νοεμβρίου 2011 από μια ολιγομελή ομάδα προπτυχιακών και μεταπτυχιακών φοιτητών και αρχαιολόγων του ΑΠΘ και με τη συμμετοχή Κυπρίων αρχαιολόγων και ειδικών επιστημόνων.

Οι στόχοι της ανασκαφής του 2011 ήταν α. η διεύρυνση του ανασκαμμένου χώρου, β. η ολοκλήρωση της αφαίρεσης της συνολικής επίχωσης της θέσης, τουλάχιστον στο σημείο αυτό του χώρου, γ. η μελέτη της συνολικής στρωματογραφικής ακολουθίας που έχει αποκαλυφθεί, δ. η αποκάλυψη του λεγόμενου ‘λιθόστρωτου’ το οποίο είχε αρχίσει πέρυσι να αποκαλύπτεται και τέλος ε. η γεωαρχαιολογική μελέτη της θέσης.

Η ανασκαφή απέκτησε μια διαφορετική και πιο συγκροτημένη εικόνα με βάση κάποια κυρίαρχα αρχιτεκτονικά στοιχεία όπως ήταν η αποκάλυψη σε ικανή έκταση του λεγόμενου ‘λιθόστρωτου’ στην επιφάνεια του οποίου βρέθηκαν λίθινα εργαλεία όπως μυλόλιθοι, κρουστήρες, πυρήνες για την κατασκευή εργαλείων, βότσαλα καμένα κλπ αλλά και πολλά εργαλεία, που όλα παραπέμπουν σε μια ‘κατασκευή’. Επιπρόσθετο σημαντικό στοιχείο είναι ότι η κατασκευή αυτή έχει ‘σφραγιστεί’ από ένα μαύρο καμένο στρώμα, αποτέλεσμα έντονης φωτιάς. Η χρήση της βέβαια παραμένει άγνωστη.

Ίσως όμως το πιο εντυπωσιακό στοιχείο της φετινής έρευνας ήταν το συνολικό βάθος της αρχαιολογικής επίχωσης το οποίο ξεπέρασε σε βάθος τα 1,20 μ. και η πραγματικά οπτικά εντυπωσιακή στρωματογραφική ακολουθία που τη χαρακτηρίζει. Η τελευταία επιτρέπει την κατανομή των ευρημάτων σε συγκεκριμένα στρώματα, με ό, τι αυτό συνεπάγεται για τις τυπολογικές και τεχνολογικές ακολουθίες της Κύπρου για την περίοδο των αρχών του Ολόκαινου όπου ανήκει η θέση δηλ. της Επι-παλαιολιθικής περιόδου και της πρώιμης Νεολιθικής (10.000 – 6.000 π.Χ.). Επιπλέον οι βαθιές επιχώσεις της θέσης μας επιτρέπουν να είμαστε αισιόδοξοι ότι ίσως θα εντοπιστούν στο χώρο ακόμα παλαιότερες φάσεις της προϊστορίας του νησιού. Υπό αυτή την έννοια η ανασκαφή του ‘Ρουδιά’ για το άμεσο μέλλον αποκτά μια ιδιαίτερη δυναμική.

Στα ανασκαφικά ευρήματα της φετινής περιόδου συγκαταλέγονται σημαντικές ποσότητες λίθινων εργαλείων διαφορετικών μεγεθών που ανέρχονται σε εκατοντάδες, επιβεβαιώνοντας ότι η θέση αποτελούσε χώρο επίμονης επίσκεψης και ίσως προσωρινής διαμονής κυνηγετικών και τροφοσυλλεκτικών ομάδων σ’ όλη τη διάρκεια της πρώιμης



προϊστορίας του νησιού από τη 10 χιλ. π.Χ. και μέχρι τα μέσα της 7ης χιλ. π.Χ. (Efstratiou et al 2010 in press).

Η τρίτη ανασκαφική περίοδος στην ορεινή εγκατάσταση του 'Ρουδιά' επιβεβαιώνει τις πρώτες εκτιμήσεις μας για το ρόλο της ορεινής ενδοχώρας της Κύπρου στις άγνωστες ακόμα εξελίξεις του τέλους του Πλειστόκαινου και των αρχών του Ολόκαινου στο νησί.

Όπως κάθε χρόνο έτσι και φέτος η ερευνητική ομάδα οφείλει ιδιαίτερες ευχαριστίες στο Τμήμα Δασών Κύπρου για τη συνδρομή του στην αρχαιολογική έρευνα του ΑΠΘ στο Τρόδος.

### **Βιβλιογραφικές Αναφορές**

Efstratiou, N, McCartney, C, Karkanias, P and D. Kyriakou 2010. An Upland Early Site in the Troodos Mountain, RDAC (in press).

Efstratiou, N, McCartney, C, Karkanias, P and D. Kyriakou 2011. The Early Camp-Site of 'Vretsia-Roudias' in Upland Troodos: the third season of fieldwork (2011), RDAC (in preparation).

**Παρακαλώ επισκεφθείτε το δικτυακό τόπο:**

**<http://www.mcw.gov.cy/mcw/DA/DA.nsf/All/AA990E47478936A0422577AB00406E04?OpenDocument>**

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## **CSA NEWSLETTER, 2012, ISSUE –** **VOLUME XXIV, NO. 3**

Announcing that the January, 2012, issue – Volume XXIV, No. 3 – of the \_CSA Newsletter\_ is now available at <http://csanet.org/newsletter/#winter12>

"Website Review: Ara Pacis Augustae"

In-depth visual documentation. -- Martin Beckmann  
<http://csanet.org/newsletter/winter12/nlw1201.html>

"Websites as Stable Resources"

Too many have disappeared. -- Harrison Eiteljorg, II  
<http://csanet.org/newsletter/winter12/nlw1202.html>

" Website Review: Dikili Tash"

A good beginning, but only a beginning. -- Andrea Vianello  
<http://csanet.org/newsletter/winter12/nlw1203.html>

"Evolving Web Standards: a Blessing and a Curse"

Why eliminate good, useful tags? -- Harrison Eiteljorg, II  
<http://csanet.org/newsletter/winter12/nlw1204.html>

"Project Publication on the Web - Addendum"

Making it clear that a final report is just that. -- Harrison Eiteljorg, II  
<http://csanet.org/newsletter/winter12/nlw1205.html>

Comments on any Newsletter article are welcome. Please write to the editor at [csanet.org](http://csanet.org).

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**ΝΕΕΣ ΕΚΔΟΣΕΙΣ – NEW PUBLICATIONS**

**LEMNIAN EARTH AND THE EARTHS OF  
THE AEGEAN, EFFIE PHOTOS-JONES  
AND ALLAN HALL**

The earths of the Aegean, the ‘industrial minerals’ of antiquity, were used daily by people as medicines, pigments, fumigants, mordants or washing powders. Yet they are elusive in the archaeological record. This book, (144 pages and illustrated in full colour), attempts to pull these elusive substances out of the relative obscurity of the documentary sources and asks the question: can they be found today on the islands that gave them their names? and if they are indeed found, will they work? The extraction of the Lemnian Earth, from the island of Lemnos, in the north Aegean, was bestowed with rituals blessed by both pagan gods and the Church for over two thousand years; but did it work simply because people willed it to work?

The authors suggest that ancient myths and rituals may be covert ways of expressing geochemical and/or industrial processes, the aim of which was to enhance the properties of a natural material with positive results to health and the prevention of deceases. There are many good reasons why it is important to examine closely the earths of the Aegean: they can potentially throw light into a well recorded practice known as *geophagia*, or the deliberate consumption of clays by both humans and animals; equally, they can perhaps guide current and ongoing pharmacological research into minerals-based antibiotics.

Effie Photos-Jones is an archaeological scientist specialising in the technical characterisation of archaeological materials; she has published extensively and is the writer of over 200 technical reports. Allan Hall is a geoarchaeologist specialising in the application of mineralogy and geochemistry in research at the University of Glasgow, UK. The authors’ interest in the earths stems from their long term research on volcanic islands in the Aegean.

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**BRICE L. ERICKSON, CRETE IN  
TRANSITION: POTTERY STYLES AND  
ISLAND HISTORY IN THE ARCHAIC  
AND CLASSICAL PERIODS. HESPERIA  
SUPPLEMENTS, 45. PRINCETON:  
AMERICAN SCHOOL OF CLASSICAL  
STUDIES AT ATHENS, 2010**

Pp. xxvii, 380. ISBN 9780876615454. \$75.00 (pb).  
Bryn Mawr Classical Review 2012.01.26

Reviewed by Nicolas Kyriakidis, Université Paris 8 Vincennes-Saint-Denis  
([nicolas.kyriakidis@univ-paris8.fr](mailto:nicolas.kyriakidis@univ-paris8.fr))

Table des matières

Brice Erickson livre à la communauté scientifique une version remaniée de son Ph.D. consacré à la céramique fine crétoise entre 600 et 400 av. J.-C. Ce sont les fruits de presque une décennie de travail sur une catégorie de matériel restée largement inédite qui sont ici présentés. L'étude se fonde sur un catalogue de 549 entrées qui correspondent à des pièces jugées significatives provenant de plusieurs sites et qui sont illustrées au moyen d'une photographie ou d'un dessin. Il faut d'emblée signaler qu'il s'agit, au sens matériel du terme, d'un beau livre, bien imprimé et largement illustré, notamment avec un grand nombre de profils de vases qui seront d'une grande utilité aux céramologues confrontés à ce type de trouvailles.

Les cartes sont nombreuses, de grande taille, et le relief y est figuré, ce qui est une nécessité trop souvent oubliée pour qui étudie une aire géographique où les contraintes topographiques sont si importantes. Un index détaillé et des tables permettent de s'orienter dans l'ouvrage. Le lecteur qui n'est pas issu de la culture éditoriale anglo-américaine regrettera que la table des matières se limite au titre des chapitres. Par ailleurs, nombre de remarques intéressantes sont renvoyées en notes, celles-ci ne se limitant donc pas à recueillir les références bibliographiques. Il faut également louer les qualités pédagogiques de ce travail : bien qu'il s'agisse d'un ouvrage érudite, l'auteur n'hésite jamais à rappeler les évidences ou à détailler les enjeux de sa démarche, de sorte que ce livre sera accessible même aux non-spécialistes.

Si une part importante de l'étude consiste en la publication d'un abondant matériel inédit, son projet est autrement plus ambitieux.

L'auteur a voulu proposer ici un système de classification et de datation de la céramique crétoise à vernis noir entre 600 et 400 av. J.-C. Cette catégorie de matériel revêt une importance particulière.

On sait que les VI<sup>e</sup> et Ve s. av. J.-C. ont laissé très peu de vestiges dans l'île, de sorte qu'on a été fondé à dresser un tableau très noir de la situation économique et artistique,

d'autant plus sombre que le VIIe s. est une période riche en découvertes marquantes, que l'on pense à la statuaire de style dédalique ou à la toreutique. Il faut attendre le IVe s. pour disposer à nouveau de traces plus abondantes et, surtout, mieux datées. La céramique fine est généralement le meilleur marqueur de datation et la période considérée est sans doute une des moins connues de l'histoire de la Crète. Le but avoué de cette étude est, par une approche sérielle, de fonder un système chronologique à partir de la catégorie de matériel la plus à même de le fournir -- c'est-à-dire, en l'absence presque totale de céramique figurée, la céramique fine à vernis noir. Il semble impossible au vu de la rareté des contextes stratifiés disponibles pour cette époque de se livrer à une étude des assemblages céramiques.

La première partie de cet ouvrage est consacrée à la céramique fine locale de quelques sites bien étudiés (chapitres 2 à 8 ; p. 23 à 234) à fin d'identifier les ateliers et d'établir une typo-chronologie.

Après un chapitre exposant la méthodologie céramologique suivie, l'auteur présente successivement le matériel trouvé à Éleutherne, Cnossos, Gortyne, Vrokastro, Gournia et Praisos. Un chapitre distinct rassemble les lampes d'Éleutherne et de Cnossos. À chaque fois, l'exposé commence par une description des contextes disponibles et des importations de céramique fine continentale qui seules permettent d'ancrer chronologiquement les typologies de la céramique insulaire.

L'inégale exploration des sites et le fait qu'une part du matériel découvert en fouille n'ait jamais été publié ou soit confié à d'autres induisent une disparité certaine dans l'avancement de l'étude des différents ateliers. Les productions d'Éleutherne et de Cnossos se taillent la part du lion. Au contraire, presque aucun matériel ne provient de l'isthme de Hiérapytna où des fouilles en cours promettent cependant une évolution rapide de nos connaissances. Dans le détail, le petit nombre de dépôts stratifiés découverts et l'absence ou la rareté de céramique d'importation associée font que la datation des productions de plusieurs ateliers se fonde presque essentiellement sur des parallèles stylistiques d'Éleutherne et de Cnossos. C'est ainsi le cas de la production de Praisos (étudiée à travers les coupes provenant du Survey Site 14, sans doute un four de potier) ou de Gortyne (céramique de l'Odéon trouvée dans des remblais postérieurs).

Le degré de certitude atteignable à Éleutherne et Cnossos est lui-même plus limité qu'on pourrait le souhaiter. Ainsi, les 24 dépôts qui fondent la chronologie à Éleutherne ont été perturbés à l'époque hellénistique de sorte qu'ils contiennent tous des exemples de contamination par du matériel postérieur. De plus, leur interprétation n'est pas certaine : pour Erickson, il s'agit de vestiges de sépultures détruites ; A. Kotsonas préfère y voir les restes de banquets funéraires. Il n'est pas impossible au demeurant que certains de ces « dépôts » ne soient en réalité des épandages de matériel dévalé d'un quartier d'habitation situé en contre-haut. À Cnossos, la variété et la rapidité d'évolution des formes locales datées grâce à la céramique importée des années 500-480 et le faible nombre de dépôts du milieu du siècle amènent Erickson à proposer de descendre la datation de plusieurs contextes entre 475 et 425 : la présence conjointe d'un matériel d'importation plus ancien et de formes locales plus récentes s'expliquerait par l'interruption de l'approvisionnement en céramique attique vers 480-475. Même avec cet étalement de la typologie dans le temps, le milieu du Ve s. demeure sous-représenté.

Nombre de points de détail de la reconstruction proposée seront sans doute discutés par des études postérieures ou remis en cause par de nouvelles découvertes. Néanmoins, gageons que c'est le cadre patiemment construit par Erickson qui servira de référence et de point de départ à la recherche future.

La seconde partie de cette étude est consacrée aux reconstructions historiques que permettent les sources matérielles, plus particulièrement la céramique fine (chapitres 1 et 9 à 12 ; p. 1-22 et 235-345). Après un chapitre liminaire où est posé le problème de la « crise » crétoise de la fin de l'archaïsme, Erickson propose un aperçu général des productions locales en insistant particulièrement sur les régionalismes et les rapports avec la céramique importée. L'étude a permis à l'auteur de distinguer une dizaine d'ateliers locaux. Toutes ces productions crétoises partagent deux points communs : la domination écrasante de la forme de la "high necked cup" et l'absence presque totale de céramique figurée. Dans ce cadre insulaire commun, il est possible de distinguer entre plusieurs régions, en fonction notamment du rapport aux productions importées. En Crète orientale (Lyktos, Aphrati, Praisos) au Ve s., chaque atelier a sa propre identité, alors que les importations sont très peu nombreuses et qu'elles ne semblent pas influencer les potiers locaux. Itanos constitue une exception dans cet ensemble : la cité, grâce à son port, reçoit beaucoup d'importations, tant crétoises qu'extérieures, ce qui a un impact sur ses propres productions. En Crète centrale, les importations extérieures sont nombreuses (Éleutherne, Cnossos), mais elles n'influencent que très progressivement les styles locaux pour aboutir à des productions hybrides (Cnossos, Gortyne). Au contraire, en Crète occidentale (Kydonia, Phalassarna), de très nombreuses importations éclipsent rapidement les spécificités locales de sorte que les potiers de ces villes se contentent de produire des imitations des céramiques importées. La documentation est trop parcellaire pour établir l'existence d'éventuelles sous-régions stylistiques.

Néanmoins, l'étude de la seule céramique fine ne peut déboucher sur une reconstitution de la situation économique, sociale et politique de l'île pendant la période étudiée. Aussi, l'auteur récapitule les autres indices disponibles qui indiquent tous un appauvrissement de la culture matérielle (fin des pratiques funéraires ostentatoires, offrandes plus modestes dans les sanctuaires où les figurines en terre cuite remplacent les bronzes et les ivoires, et al.). S'il accepte l'idée d'un quasi-abandon du site de Cnossos vers 600-525 (à mettre peut-être en rapport avec la destruction de Prinias et une éventuelle expansion de Gortyne vers le nord, comme il le suggère de manière séduisante), il remet en cause les explications habituelles de cette pauvreté matérielle par des catastrophes économiques et démographiques. C'est la nature des traces archéologiques qui change, non forcément l'occupation ou le peuplement. Ajoutons que la moindre visibilité archéologique du VIe et du Ve s. lors des fouilles sur des sites longuement occupés, comparée aux vestiges du VIIe s. sur laquelle l'auteur s'interroge (p. 248) pourrait également s'expliquer par le fait que l'occupation postérieure des époques hellénistique et romaine se serait faite après un nettoyage par excavation et donc destruction des couches immédiatement sous-jacentes ; c'est le cas par exemple à Delphes où il est courant de voir des couches d'époque impériale reposant directement sur celles de l'âge du fer, alors que l'occupation du site aux époques archaïque et classique est évidente...

L'austérité de la culture matérielle crétoise de cette époque s'éclairerait par un double contexte, commercial et idéologique. La Crète était au cœur des échanges avec l'Orient au VIIe s. ; elle semble rester à l'écart des nouvelles routes commerciales qui se structurent selon des axes différents après la fin de l'influence phénicienne. L'extrême est de la Crète est situé sur une route commerciale qui relie Itanos et Olonte aux Cyclades ; à l'ouest, Phalassarna et Kydonia sont des points de relâche sur la route du commerce éginétique et péloponnésien vers la Lybie. En revanche, la région centrale de la Crète semble marginalisée. Néanmoins, contrairement à ce que l'on aurait pu croire, la vraie période d'isolement de la Crète est beaucoup plus tardive : de 460 à 400, on ne trouve plus de céramique importée à Cnossos et Éleutherne certes, mais pas non plus à Kydonia,

Phalassarna, Olonte et Itanos. Il faudrait y voir le contrecoup d'une politique athénienne de désorganisation des routes du grand commerce péloponnésien. Cependant, la disparition d'objets de prestige dans les tombes et les sanctuaires ne peut être le fruit de cette seule mutation. L'auteur se tourne alors vers des explications idéologiques et sociales, en étudiant la dimension matérielle de la culture d'austérité triomphante. Elle serait la traduction dans la vie quotidienne des nouveaux idéaux d'austérité et d'égalité de l'aristocratie crétoise. Après avoir montré en quoi la pauvreté matérielle n'est nullement exclusive de la domination sociale d'un groupe restreint, il met en regard les sociétés crétoises et lacédémoniennes, la première paraissant – comme le croyaient les Anciens – avoir précédé la seconde sur cette voie (une mutation analogue ne se produit à Sparte qu'au second VIe s.).

Cette culture de l'austérité aurait été la plus forte dans le centre de l'île, d'Éleutherne à Dréros et Aphrati en passant par Cnossos et Gortyne. À l'exception d'Éleutherne où les importations sont nombreuses, il s'agit justement de la zone qui reste à l'écart des nouveaux courants commerciaux.

Il faut rendre hommage à l'auteur d'avoir eu le courage d'affronter un matériel si ingrat esthétiquement pour des résultats qui devaient paraître, au début de l'étude, largement incertains. En faisant une première synthèse du travail qu'il a engagé depuis près d'une décennie, Erickson propose un cadre d'analyse du matériel précis et détaillé en même temps qu'il discute et prend parti entre les différents modèles qui peuvent prétendre en rendre compte. Par l'ampleur du matériel étudié comme par la largeur de ses vues, cet ouvrage sera très probablement amené à devenir une référence dans l'étude de la céramique locale crétoise ainsi que dans le débat historique sur la nature de la société de l'île au tournant des époques archaïque et classique.

**Please visit the site: <http://bmcr.brynmawr.edu/2012/2012-01-26.html>**

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## **MARIO GEYMONAT, THE GREAT** **ARCHIMEDES. WACO: BAYLOR** **UNIVERSITY PRESS, 2010**

Pp. xvi, 116, 16 p. of plates. ISBN 9781602583115. \$24.95 (pb).

Bryn Mawr Classical Review 2012.01.14

Contributors: Translated and edited by R. Alden Smith.

Reviewed by Anna Toscano, Università degli Studi di Milano ([toscano.anna@virgilio.it](mailto:toscano.anna@virgilio.it),  
[anna.toscano@unimi.it](mailto:anna.toscano@unimi.it))

In 2006, Mario Geymonat, a distinguished Latinist of the Ca' Foscari University of Venice, published for Sandro Teti Editore a delightful and richly illustrated biography of the great mathematician Archimedes—one of the most brilliant minds of antiquity—which included a preface by the classical philologist and historian Lucio Canfora as well as an introduction by Zhores Alferov, winner of the Nobel Prize in Physics in 2000.

In 2010 the Baylor University Press published the English edition of the book, edited by R. Alden Smith in an enriched format. This publication makes Geymonat's interesting work available to the international public, acknowledging his praiseworthy objective of offering an excellent example of high-level scientific popularization.

Boasting an extensive scientific background, especially as regards mathematics, Geymonat fluently translates both sources contemporary with Archimedes and the writings of this Syracusan mathematician, thus outlining for the readers, empathically involved in the narration, the image of a scientist with a free spirit and a sharp, open mind, whose thought, in the pages of this volume, is rendered with all its strength.

Geymonat deserves credit for having taken out of the “mouldy essays” for “specialists in the field” the recent achievements of the studies of history of science on the Syracusan scientist, making them accessible to a wider readership. Such research makes possible the redesign of the cultural panorama of the Alexandrian age, thus giving history a new awareness of the content of Archimedes' works, as well as the knowledge of what can be rightly considered the scientific revolution of the 3rd century B.C., “erased” for over two millennia from the memory not only of European culture but of others as well.

The most important contributions to the reevaluation of Archimedes were made in the large number of studies carried out over the years on the Palimpsest containing little-known and unknown works by Archimedes, the so-called Codex C, found in Istanbul in 1906, then lost during the First World War and rediscovered in a high-priced auction at Christie's in New York in 1998. These studies added new elements to the comprehension of Archimedes' mathematical thought, and scholars have used the most recent technologies to enable a reading of new sections of the *Stomachion* and of the *Method on Mechanical Theorems* previously inaccessible. Thanks to modern techniques using X-rays and synchrotron light, it was possible both to understand the combinatorial nature of the problem dealt with in the *Stomachion* and to ascertain in theorems present in the

Method, and never before read, a different use of the concepts of infinity and the infinitesimal from those adopted in the other known works by Archimedes.<sup>1</sup>

Likewise, the reconstruction and decoding, concluded in 2005, of the charming Antikythera Mechanism, dating from the 1st century B.C., which was found in a shipwreck off the coast of Antikythera in the Aegean Sea, confirmed the results achieved in 1974 by the historian Derek de Solla Price. He proved that the Greeks had attained an advanced level of technology that reached its height in the Antikythera Mechanism, which turned out to be a true astronomical “analogical calculator” operated by the advanced technology which next appeared in Europe in the 16th century. The clockwork device had been one of the technological marvels of ancient Greece which came out of the cultural background inherited from Archimedes.

Furthermore, one of Archimedes’ most admired technical achievements in antiquity was his Planetarium (Orrery). Detailed information on this object has been handed down to us through Cicero’s writings, where he narrates that in the year 212 B.C., when Syracuse was sacked by the Roman troops, Consul Marcus Claudius Marcellus brought to Rome a device built by the Syracusan mathematician which reproduced the vault of heaven on a sphere and another device that represented the apparent motion of the Sun, Moon and Planets, hence the equivalent of a modern planetarium. In his report of the impressions of Gaius Sulpicius Gallus, who could personally observe the extraordinary object, Cicero<sup>2</sup> remarks how Archimedes’ genius was able to generate the motions of the planets, so different from each other, starting from a single rotation. Thanks to the account of Pappus of Alexandria, we know that Archimedes had described the construction of the planetarium in *On Sphere-Making*,<sup>3</sup> a work now lost.

Attesting to the complexity of the early mechanisms built to represent the motion of the celestial bodies, the Antikythera Mechanism revived interest in Archimedes’s Planetarium (Orrery). But a gear brought to light in Olbia in Sardinia in July 2006 especially aroused the attention of scholars, as it was probably to be identified with a device that belonged to the same Planetarium of the Syracusan mathematician.<sup>4</sup> The first results of the studies on the object were presented to the public in a conference organized in April 2011 by the Ministero per i Beni e le Attività Culturali. According to a first reconstruction, the planetarium, which was presumably handed down to the descendants of the conqueror of Syracuse, might have been lost at Olbia before the wreck of the ship taking Marcus Claudius Marcellus to Numidia. The gear, dated from between the end of the 3rd century and the mid-2nd century B.C., although made at an earlier date than the other mechanisms discovered so far, shows gear teeth which are extraordinarily similar to that of the mechanical components of a contemporary device.<sup>5</sup>

Such important finds testify to the high level of physical and mathematical skill as well as to the remarkable ability in technical design and implementation which Archimedes and contemporary Alexandrian science and technology had attained.

In his letter to Eratosthenes which opens his *Method*, Archimedes talks about his work, describing his innovative approach based on the ability to link theoretical considerations with practical achievements. He produced mechanical applications to solve concrete problems, on the basis of theoretical considerations connected to suggestions derived from experience and subsequently systematized, specified, and elaborated systematically.

This ability to avail himself of different methods showed both Archimedes' extreme mental agility and his new attitude towards research, that he considered a living element, very far from the idea of a mass of shackles and chains. As underlined by Geymonat in his book, Archimedes "among the ancient mathematicians must be thought of as the one who could avail himself of intuition with the most daring liberty, convinced of the free use of all of man's cognitive resources" (p. 7-8). Precisely for this ability, Archimedes's works were copied and circulated widely, not only in the Greek world, but also among the Arabs and Europeans one thousand years later. In the European culture of the Renaissance, his treatises, partially just rediscovered, led to an exponential development of mathematical and mechanical competences, triggering the process that would give rise to modern science.

The triumph of the great Syracusan mathematician at the height of the Renaissance attested to the revived interest in his work, brought about by the arrival in Florence of the Greek codex of his works, the Codex A, today kept in the Medicean-Laurentian Library. Between the late 16th century and the early 17th century the Apotheosis of Archimedes<sup>6</sup> was actually painted, in Florence on the walls and ceilings of the Stanziino delle Matematiche in the Uffizi Gallery: next to the visual narrative of the Syracusan scientist's exploits, the frescoes in the Stanziino reproduced works by Pythagoras, Ptolemy, and Euclid surrounded by paintings of the numerous mathematical instruments showcased in the room at that time. Sixty years later, in the decorations of the eastern Corridor of the Gallery Galileo would be celebrated by Grand Duke Ferdinando II de' Medici and by Prince Leopoldo de' Medici as the "New Archimedes".

The figure of Galileo has a fundamental importance because of his central role in recovering the scientific method developed in the Hellenistic age, which later on had almost been forgotten. This rediscovery was due to his careful study, carried out "with infinite amazement",<sup>7</sup> of some scientific works by Archimedes, admired and worshipped by all the scientists of the time for his daring inventions and taken as a model of rigour and whose research Method they tried in particular to reconstruct, deeming that Archimedes himself had concealed his secret from posterity.

With the rediscovery of the Method, it was possible to enter the philosophical-epistemological workshop of Archimedes where the physical and geometrical atomism of Democritus stands out as an important feature. For the Syracusan scientist there exists a close correspondence between physical and geometrical atomism; the same ratio existing between geometrical lines is also true for the physical lines, imagined as homogeneous, which balance each other in a lever.

Indeed, it is possible to maintain that Archimedean physics and geometry were created in controversy with Plato,<sup>8</sup> violating the prohibition against connecting mechanics and geometry, and even defying the Aristotelian veto according to which infinitesimal quantities of forces can, by adding up, overcome any finite resistance, no matter how strong, and introducing with his law of the lever the concept of the moment of a force. Archimedes, describing how a spiral originates from the movement of a point on a segment of a straight line moving in its turn in a circle around one of its fixed extremes, doubly contravened Aristotle's prohibition. He thus paved the way for a line of research that has allowed such progress in the technological use of mathematics as to send objects into space, besides providing the basis for the imaging science which is so essential today for deciphering the palimpsest with his works, as well as the Antikythera Mechanism and the device of Olbia.

Recently, the theme of the scientific and technological legacy of the Hellenistic culture and of its pedagogical value has regained importance thanks to theories of experimental education where classical geometrical and mathematical knowledge is substituted by branches of learning pertaining to financial and managerial themes in an attempt to devise educational paths more attuned to the trends of contemporary world aimed at training the younger generations.<sup>9</sup> Geymonat's book, in its well-conceived literary form, stands in contrast to such a theory.

Having iconographic references, which partly reproduce some images taken from the frescoes of the Stanzino in the Uffizi Gallery, Geymonat's book consists of ten chapters ranging from The Adventurous Life of a Remarkable Scientist to The Myth of Archimedes, Yesterday and Today, through the testimony of the Latin poets Catullus and Virgil and Vitruvius's account.

The well-organized Notes, a short and up-dated Bibliography and an Index of Names complete the text.

#### Notes:

1. Stephanos Paipetis-Marco Ceccarelli, ed., *The Genius of Archimedes*, New York, Springer Publishing, 2010.
2. Cicero, *De re publica*, I, 14; *Tusculanae Disputationes*, I, 25; *De Natura Deorum*, II, 34.
3. *Collectio*, VIII, 1026.
4. Cicero, *Tusculanae disputationes* I, 63.
5. The restoration of the gear found in Olbia has revealed a very surprising feature: besides its very refined engineering workmanship, it is made of a brass alloy, a characteristic which had never been found so far in other metal artefacts with the same dating. Considering the perfect concordance between scientific evidence and historical, literary and archaeological outcomes, it was possible to consider the fragment from Olbia a mechanical component of the Planetarium of Archimedes. During the conference, all the reasons and scientific evidence were presented which led the engineer Giovanni Pastore, contract professor of Mechanical Construction at the University of Bari, to attribute the gear fragment found in Olbia to the Planetarium of Archimedes.
6. A. Toscano, *Mathematics and physics in Tuscany*.
7. G. Galilei, *Opere*, Utet, Torino, 1964, Vol. II, p. 613
8. Plutarchus, *Vitae Parallelae*, Marcellus
9. For example, this article from the Washington Post.

Please visit the site: <http://bmcr.brynmawr.edu/2012/2012-01-14.html>

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THE FIRST ARCHAEOLOGICAL CHARACTERIZATION OF ROMAN MILLSTONES FOUND IN THE AQUILEIA ARCHAEOLOGICAL SITE (UDINE, ITALY)\* (pages 1–17) F. ANTONELLI and L. LAZZARINI Article first published online: 7 JUL 2011 | DOI: 10.1111/j.1475-4754.2011.00615.x

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Please visit the site: <http://onlinelibrary.wiley.com/doi/10.1111/arcm.2012.54.issue-1/issuetoc>



## **KAROL B. WIGHT, MOLTEN COLOR: GLASSMAKING IN ANTIQUITY**

Los Angeles: J. Paul Getty Museum, 2011. Pp. 136. ISBN 9781606060537. \$20.00.

Bryn Mawr Classical Review 2011.12.62

Reviewed by Chloë N. Duckworth, University of Nottingham

([chloe.duckworth@nottingham.ac.uk](mailto:chloe.duckworth@nottingham.ac.uk))

There exist several works which provide introductions to ancient glass production,<sup>1</sup> reflecting the many faceted nature of the material itself and its study. Molten Color seeks to add to this volume of publications by presenting glass objects from the exhibit of the same name at the Getty Villa. The book is offered as an introductory work in seven brief chapters, accompanied by color images of objects from the collection. A small number of objects on display at the Corning Museum of Glass, New York, and the Römisch-Germanisches Museum, Cologne, are also illustrated where suitable examples, such as the extremely rare cage cups, could not be found in the Getty collection.

The book focuses on glass from the second millennium BC to Late Antiquity, predominantly from the Mediterranean area. The vast majority of the pieces in the collection are Roman, and the writing is also heavily focused towards Roman material, which is Wight's primary area of expertise. Following a brief introduction in which modern uses of glass and attitudes to ancient glass are discussed, Chapter 1 provides a background to the earliest discovery of glassmaking and the raw ingredients and colorants required. Chapters 2 and 3 examine the earliest use and spread of glass in the second and first millennia BC, including an extended and useful description of the production of mosaic glass and its variants in chapter 3. Chapter 4 introduces the subject of glass blowing and discusses the profound changes this discovery had on the nature and value of glass, which went from being a rare luxury to a material which was widely produced and consumed.

Chapter 5 presents some of the glass working techniques practiced in the Roman Empire and provides a detailed discussion of mold-blowing.

Chapter 6 deals with diversification and regional distinctions in the later Roman Empire, while chapter 7 addresses the issue of how glass was used, and more specifically how it became widely available.

The writing is clear and accessible, providing a basic introduction to ancient glass suitable for the non-specialist. Members of an academic audience may find the text lacking in detail, but will find the work factually accurate and up to date. Despite the brevity of the work the author excels at describing glass forming – or 'working' – techniques. A rather small non-annotated bibliography and further reading section is provided, and reference to limited examples of specific research mentioned in the text can be found here.

The book features 92 color images and several black and white line drawings illustrating various glass-working techniques. The color images are of a relatively high quality and should be of interest to the glass scholar. Of particular note are some more unusual items from the Getty Museum collection, including a Greek core-formed amphoriskos to which

the suspension chain is still attached (JPGM 2003.168), and a number of fine examples of Hellenistic to Early Roman mosaic and ribbon-ware vessels. The black and white illustrations of glass-working techniques are reminiscent of the photographs in Hugh Tait's *Five Thousand Years of Glass*,<sup>2</sup> and cannot always be clearly made out. The corresponding written descriptions, however, are very easy to follow.

In some places it could be argued that historical sources are emphasized at the cost of other evidence. For example, the discussion of furnaces and glass production tools in chapter 1 refers only to depictions dating from the post-Medieval period, despite the fact that earlier furnaces are known to have been rather different, based on archaeological evidence. Just such evidence is found in the depiction of a glass furnace on two second-century AD clay lamps which is discussed in some detail in chapter 4 but not illustrated. Descriptions of important furnace remains, such as the 14th-century BC glass-melting furnace from Amarna in Egypt or the large slab of raw glass found at Beth She'arim, Israel, suggesting the use of tank furnaces in the 4th century AD, were omitted.

Minor criticisms aside, this work provides a succinct, factually accurate and eminently readable introduction to techniques of glass working in antiquity. Written by an established expert in the field, the non-specialist will find the text a valuable introduction, particularly to the processes involved in forming glass objects, and both specialist and non-specialist can benefit from the catalogue aspect of the work and the useful illustrations from this interesting collection.

#### Notes:

1. See for example Henderson, Julian. 2000. "Glass" in *The Science and Archaeology of Materials*. London: Routledge; Newton, R. G. and Davison, S. 1996. *Conservation of Glass*. Oxford: Butterworth-Heinemann Ltd.; Stern, E. Marianne and Schlick-Nolte, B. 1994. *Early Glass of the Ancient World 1600 BC – AD 50*. Ostfildern: Verlag Gerd Hatje; Tait, Hugh (ed.). 1991. *Five Thousand Years of Glass*. London: British Museum Press; Grose, David Frederick. 1989. *Early Ancient Glass: Core-formed, Rod Formed and Cast Vessels and Objects from the Late Bronze Age to the Early Roman Empire, 1600 BC to AD 50*. New York: Hudson Hills Press; Goldstein, Sidney M. 1979. *Pre-Roman and Early Roman Glass*. New York: the Corning Museum of Glass.
2. Tait, Hugh (Ed.). 1991. *Five Thousand Years of Glass*. London: British Museum Press.

Please visit the site: <http://bmcr.brynmawr.edu/2011/2011-12-62.html>

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# **AMS RADIOCARBON DATING OF THE MESOLITHIC SITE MAROULAS ON KYTHNOS AND CALCULATION OF THE REGIONAL MARINE RESERVOIR EFFECT**

Y. Facorellis, B. Damiata, E. Vardala-Theodorou, M. Ntinou and J. Southon, 2010, in “*The Prehistory of the Island of Kythnos (Cyclades, Greece) and the Mesolithic settlement at Maroulas*”, A. Sampson, M. Kaczanowska and J.K. Kozłowski (eds), Krakow 2011, The Polish Academy of Arts and Sciences and The Aegean University - Rhodes, 127-135.

The prehistoric settlement of Maroulas on Kythnos (37° 26' 50'' N Lat., 24° 25' 53'' E. Long, Figure 1) is the second Mesolithic site excavated on an Aegean island – after the excavation of the Mesolithic strata of the Cave of Cyclops on the island of Youra near Alonnessos (Sampson 1996a, 1996b, 1998, 2001; Sampson and Kosłowski, 1998, 1999) – and is the first open-air Helladic Mesolithic site ever located. During the excavation, very rare small pieces of marine and terrestrial materials suitable for radiocarbon dating were revealed. The objectives of the present study included: (1) determine the time limits of the Mesolithic phase of this site, (2) date the contemporaneous marine mollusc shell-charcoal pairs in order to calculate the “marine reservoir effect” (Stuiver *et al.* 1986; Stuiver and Braziunas 1993) for this region of the Cyclades and to compare values with coeval ones from nearby Youra (Facorellis *et al.*, 1998; Facorellis, 2003; Facorellis, 2009) and (3) calibrate previously published radiocarbon ages from Maroulas (Sampson *et al.*, 2002) using the latest version of the international atmospheric calibration curve (IntCal04; Reimer *et al.*, 2004) and reassess the results.

This study represents the initial phase of a larger-scale project whose objective is to establish a marine reservoir correction curve for the entire Aegean Sea region. This curve will have wide application to the dating of archaeological strata throughout the region and will be particularly useful where marine shells are the only datable material for a site. Although the project emphasizes archaeological applications, the results will be of importance also to palaeo-climatic and palaeo-oceanographic studies.

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## **EΙΔΗΣΕΙΣ - NEWS RELEASE**

# **ANCIENT SECRETS UNEARTHED BY TOP TEAM DIGGING DEEP INTO REMAINS OF THE PAST**

In one room a student is analysing limpets from northern Spain. In another, soil specimens from Turkish burial grounds are being put under the microscope. Across the courtyard, an ancient cellar is home to endless boxes of everything from bone fragments to shards of Roman pottery.

When York University's archaeology department moved into King's Manor back in the mid-1990s, they couldn't have asked for a better location. The 16th century building, once a royal palace and headquarters of Henry VIII's Council of the North, is an archaeological project in itself.

However, behind the arched gateways and stone walls, lies pioneering technology and groundbreaking research which has helped map more than 10,000 years of history both in this country and abroad.

It's one of the reasons why members of the department will travel to Buckingham Palace next month to receive a Queen's Anniversary Prize for Higher and Further Education. It's the fifth time in 15 years the university has won the accolade, but the first time an archaeology department has been recognised. For head of department, Professor Julian Richards, it's welcome recognition of their attempts to blow the dust off the often fusty world of academia.

"I was hooked on archaeology ever since I saw an excavation as a child," says Prof Richards, who as a student at the university worked on the famous Coppergate dig which saw more than 40,000 objects unearthed along with a series of Viking age buildings. "As an archaeologist, seeing the pewter brooch you dug out from a trench on display in a museum is a nice feeling, but archaeology has to be about more than just personal satisfaction.

"The main thing we had to prove to even be nominated for this award was that our work had an impact outside the walls of the department. Historically, I think it's probably true that archaeologists operated within their own bubble, but over the last 10 years that's something we have worked hard to change."

One of the department's showpiece finds has undoubtedly been the work carried out at Star Carr, near Scarborough. The site, Yorkshire's answer to Stonehenge, was first identified by an amateur archaeologist back in the 1940s and a number of early excavations seemed to confirm the presence of nomadic hunter-gatherers.

However, a team from York University, led by senior lecturer Dr Nicky Milner, rewrote the history books two years ago when they discovered the country's oldest surviving house beneath the waterlogged landscape. Dating to around 8,500BC, the building,

together with a wooden platform – the earliest evidence of carpentry in the whole of northern Europe – suggested the ancient inhabitants were a much more settled tribe.

Despite the recent cuts to funding streams, the university has recently secured another £1.5m to fund five more years of research at Star Carr. With the site having degraded significantly over the last decade, that work is likely to prove crucial.

“We really are in a race against time at Star Carr,” says Dr Milner, who devoted her PhD to the study of oysters. “We are not entirely sure why, but the water level has dropped, rain patterns have changed and the soil conditions have altered dramatically. Partly it’s a knock on effect of modern farming practices and drainage systems, but the end result is the peat has become very acidic, it’s like working in the stuff from car batteries.

“In the first set of excavations we quite quickly found a dark area on the site which contained a lot of remnants of flint. Often on excavations you can spend hours digging in the rain and find nothing, so that in itself was a bonus. However, when we then found the remains of holes where the posts would have been and then the actual timber structure, it was an incredible moment.

“I suspect I will see nothing like it again, although I haven’t given up hope. We know that they moved between different small islands and while they may have just swam, if we could find evidence of boats, it would take the story of these people onto yet another chapter.

“The reality is that when we go back this time a lot of the bone and wood remains will have disintegrated, but the site still has a lot to tell us about the life of ancient Britons. If we don’t record what lies beneath Star Carr now it will be lost forever.”

New computer systems developed at the university means when the Mesolithic house does disappear it will be preserved as a 3D model and it’s not the only development which is changing the face of archaeology . In another corner of King’s Manor the analysis of tiny fragments of bone can for the first time determine which animal they came from and residue from pottery bowls can now be broken down into individual cooking ingredients, detecting the presence of everything from honey to mustard seeds. While trowels and brushes may still be the tools of the archaeologist’s trade, it’s the advances behind the scenes which have not only shed new light on many previous discoveries, but have also brought the discipline to a much wider audience.

“A lot of the equipment I dreamed of being able to use 10 years ago is now available right here in the university,” says senior lecturer Dr Jonathan Finch, who is currently working on the remains of Gawthorpe Hall on the Harewood estate. “Before the current house was built in the 18th-century, the estate was home to a medieval manor house.

“The building had been completely demolished and over the intervening centuries its original site had become obscured.

“However, we have pinpointed the location and already uncovered some massive medieval walls and foundations as well as some of the floor surfaces in the house.

“There have been some interesting curiosities like the wall against which a bottle of red wine had been smashed or the silver ring lost under the debris. However, the excavation is not just about uncovering an historic building, it’s about charting how country estates came into being and developed. The Lascelles family made their money from sugar plantations and one of the other strands of research has been to look at what was going on in the colonies at the same time.”

As a result, Dr Finch has spent some time in Barbados helping the country’s own archaeologists preserve and record their own history before it disappears under a rash of modern building developments.

Records are something they know a lot about. York University was the first to make its archives available online and welcomes involvement from the public. While metal detecting enthusiasts are often seen as a scourge on the art of precise and careful excavation, at York they receive a much warmer welcome.

“A lot of potentially interesting sites look completely anonymous, they don’t come with some great signpost,” adds Prof Richards. “If a hoard of coins is unearthed by metal detectorists, it gives you some indication that it might be a site of much greater archaeological interest.

“While we are always advancing and becoming better at preserving our archaeological past, the fact is many sites are still at risk from both environmental and man-made threats. Many of the projects we carry out here are in effect unrepeatable experiments and ones which we will be able to learn lessons from long into the future.”

[sarah.freeman@ypn.co.uk](mailto:sarah.freeman@ypn.co.uk)

**Please visit the site:**

[http://www.yorkshirepost.co.uk/news/features/ancient\\_secrets\\_unearthed\\_by\\_top\\_team\\_digging\\_deep\\_into\\_remains\\_of\\_the\\_past\\_1\\_4175931](http://www.yorkshirepost.co.uk/news/features/ancient_secrets_unearthed_by_top_team_digging_deep_into_remains_of_the_past_1_4175931)

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## **THE OLDEST MODERNIST PAINTINGS - TWO THOUSAND YEARS BEFORE PICASSO, ARTISTS IN EGYPT PAINTED SOME OF THE MOST ARRESTING PORTRAITS IN THE HISTORY OF ART, BY SMITHSONIAN MAGAZINE**

Ancient art portraits Today, nearly 1,000 Fayum paintings exist in collections in Egypt and at the Louvre, the British and Petrie museums in London, the Metropolitan and Brooklyn museums, the Getty in California and elsewhere.

Between 1887 and 1889, the British archaeologist W.M. Flinders Petrie turned his attention to the Fayum, a sprawling oasis region 150 miles south of Alexandria. Excavating a vast cemetery from the first and second centuries A.D., when imperial Rome ruled Egypt, he found scores of exquisite portraits executed on wood panels by anonymous artists, each one associated with a mummified body. Petrie eventually uncovered 150.

The images seem to allow us to gaze directly into the ancient world. “The Fayum portraits have an almost disturbing lifelike quality and intensity,” says Euphrosyne Doxiadis, an artist who lives in Athens and Paris and is the author of *The Mysterious Fayum Portraits*. “The illusion, when standing in front of them, is that of coming face to face with someone one has to answer to—someone real.”

By now, nearly 1,000 Fayum paintings exist in collections in Egypt and at the Louvre, the British and Petrie museums in London, the Metropolitan and Brooklyn museums, the Getty in California and elsewhere.

For decades, the portraits lingered in a sort of classification limbo, considered Egyptian by Greco-Roman scholars and Greco-Roman by Egyptians. But scholars increasingly appreciate the startlingly penetrating works, and are even studying them with noninvasive high-tech tools.

At the Ny Carlsberg Glyptotek museum in Copenhagen, scientists recently used luminescence digital imaging to analyze one portrait of a woman. They documented extensive use of Egyptian blue, a copper-containing synthetic pigment, around the eyes, nose and mouth, perhaps to create shading, and mixed with red elsewhere on the skin, perhaps to enhance the illusion of flesh. “The effect of realism is crucial,” says the museum’s Rikke Therkildsen.

Stephen Quirke, an Egyptologist at the Petrie museum and a contributor to the museum’s 2007 catalog *Living Images*, says the Fayum paintings may be equated with those of an old master—only they’re about 1,500 years older.

Doxiadis has a similar view, saying the works' artistic merit suggests that “the greats of the Renaissance and post-Renaissance, such as Titian and Rembrandt, had great predecessors in the ancient world.”

Please visit the site: [http://www.smithsonianmag.com/history-archaeology/The-  
Oldest-Modernist-Paintings.html](http://www.smithsonianmag.com/history-archaeology/The-Oldest-Modernist-Paintings.html) [Go there for a series of very nice pix]

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## **UNDERWATER ARCHAEOLOGY: HUNT FOR THE ANCIENT MARINER**

Armed with high-tech methods, researchers are scouring the Aegean Sea for the world's oldest shipwrecks.

Brendan Foley peels his wetsuit to the waist and perches on the side of an inflatable boat as it skims across the sea just north of the island of Crete. At his feet are the dripping remains of a vase that moments earlier had been resting on the sea floor, its home for more than a millennium. “It’s our best day so far,” he says of his dive that morning. “We’ve discovered two ancient shipwrecks.”

Foley, a marine archaeologist at the Woods Hole Oceanographic Institution in Massachusetts, and his colleagues at Greece's Ephorate of Underwater Antiquities in Athens have spent the day diving near the cliffs of the tiny island of Dia in the eastern Mediterranean. They have identified two clusters of pottery dating from the first century BC and fifth century AD. Together with other remains that the team has discovered on the island's submerged slopes, the pots reveal that for centuries Greek, Roman and Byzantine traders used Dia as a refuge during storms, when they couldn't safely reach Crete.

It is a nice archaeological discovery, but Foley was hoping for something much older. His four-week survey of the waters around Crete last October is part of a long-term effort to catalogue large numbers of ancient shipwrecks in the Aegean Sea. And the grand prize would be a wreck from one of the most influential and enigmatic cultures of the ancient world — the Minoans, who ruled these seas more than 3,000 years ago.

Some researchers believe that quest to be close to impossible. But Foley and a few competitors are using high-tech approaches such as autonomous robots and new search strategies that they say have a good chance of locating the most ancient of shipwrecks. If they succeed, they could transform archaeologists' understanding of a crucial period in human history, when ancient mariners first ventured long distances across the sea.

Archaeologists have precious little information about the seagoing habits of the Minoan civilization, which erected the palace of Knossos on Crete — linked to the Greek myth of the Minotaur. Minoans far exceeded their neighbours in weaponry, literacy and art, and formed “part of the roots of what went on to become European civilization”, says Don Evely, an archaeologist at the British School at Athens, and curator of Knossos. Archaeologists are keen to understand what made the Minoans so successful and how they interacted with nearby cultures such as the Egyptians.

Although researchers have studied scores of Roman ships, finding a much older Minoan wreck “would add 100% new knowledge”, says Shelley Wachsmann, an expert in ancient seafaring at Texas A&M University in College Station.

### **Underwater treasure**

A Bronze Age wreck called Ulu Burun shows how the remains of a single ship can transform archaeologists' understanding of an era. Discovered in 1982, it lies about 9



kilometres southeast of Kaş in southern Turkey, and dates from around 1300 BC, a century or two after the Minoans disappeared.

Christos Agourides, secretary-general of the Hellenic Institute of Marine Archaeology in Athens, describes it as “the dream of every marine archaeologist”. It took ten years to excavate, and researchers are still studying the nearly 17 tonnes of treasures recovered. The vast cargo includes ebony, ivory, ostrich eggs, resin, spices, weapons, jewellery and textiles as well as ingots of copper, tin and glass.

But what really stunned archaeologists was that the artefacts on this one vessel came from at least 11 different cultures<sup>1</sup> — from a gold scarab bearing the name of the Egyptian queen Nefertiti to copper from Cyprus and tin from central Asia.

The wreck provided tangible evidence of an astonishing array of contacts and trade between the different cultures of the Mediterranean and Near East in the late Bronze Age. The Ulu Burun ship sailed at around the time that Tutankhamun ruled Egypt, and “it is far more important than Tutankhamun's tomb as a contribution to our understanding of the period”, according to Wachsmann. “This goes to the nitty gritty of the world. It's Wall Street in a ship.”

The earlier Minoans set the stage for such a widespread trading network through their domination of the eastern Mediterranean. Their seafaring abilities were still celebrated 1,000 years later by Greek historian Thucydides, who credited the Minoans with building the world's first navy and ridding the seas of pirates. Although other contemporary Mediterranean cultures were starting to travel across the sea, the Minoans ventured farther than others, reaching distant ports in Syria, Cyprus, the Cyclades and Egypt (see map). Wachsmann describes them as the “Christopher Columbuses of the Bronze Age”.

Researchers have already found one potential Minoan wreck site by the island of Pseira, off the northeast coast of Crete. In 2003, archaeologist Elpida Hatzidaki of the Ephorate of Underwater Antiquities discovered a large collection of underwater pottery dating to around 1800 BC.

But at this site and a few even older ones, no portion of the ship itself survives, and it is hard to determine whether the pottery came from a wreck, was simply thrown overboard, or washed into the sea from the nearby coast. Even those who believe the Pseira site does represent a Minoan wreck admit that the pottery itself — everyday ware of local origin — doesn't reveal much new information. What archaeologists crave is an equivalent of Ulu Burun, a long-distance trading ship packed with valuable cargo that would reveal how different cultures interacted. “Ships were the way that people communicated and moved about the ancient world,” says Foley. “So if we can find these ancient wrecks, we get a much clearer view of the very dim past.”

That dream lured Foley and his team to Crete last year, and they brought a new tool that they hope will significantly raise the chances of finding an ancient shipwreck. In the past, archaeologists have explored the sea floor using divers and, more recently, remotely operated vehicles (ROVs) that are controlled by pilots on ship. Foley's team tested an autonomous diving robot that could search the ocean bottom for hours under its own command. The REMUS 100 vehicle (for Remote Environmental Monitoring Underwater System) is equipped with Global Positioning System technology, side-scan sonar and a



video camera. The Woods Hole researchers worked on the project with Greek archaeologists led by Theotokis Theodoulou of the Ephorate of Underwater Antiquities.

### **Robot rovers**

The torpedo-shaped robot, nicknamed Gudgeon after a Second World War submarine, spent the first month of the field campaign surveying the entire sea floor north of Crete's main harbour, Heraklion, for any lumps and bumps that might signal an ancient wreck.

Foley had high hopes for the area because it had been a port for millennia and had never been surveyed by archaeologists. But the search came up empty handed. Close to shore, there was no hope of finding ancient wrecks because the sea floor was covered in a thick pile of sediments that had washed off the island. Farther out, the researchers found furrows left by trawl fishermen, who had scraped the sea floor clean, even in areas where trawling is supposedly forbidden.

So Foley's team moved its search to Dia, which lies just north of Heraklion. In 1976, the ocean explorer Jacques Cousteau found some ancient remains there, and Foley suspected that Dia might be a fertile site for shipwrecks because its steep cliffs could be lethal to vessels caught in a storm.

The team took a two-pronged approach to exploring around Dia. The Gudgeon crew prowled Dia's bays, where the ocean bottom is smooth and artefacts are more likely to show up in sonar images. Near shore, where the bottom is too rocky for Gudgeon, Foley and his team of divers made a circuit of the bays at about 40 metres depth.

Almost immediately, the divers located five ancient wrecks, ranging from around the second century BC to the ninth century AD. The discoveries confirmed Cousteau's impression that now-deserted Dia was used for centuries as an anchorage. And Foley was convinced that the Minoans must have been here too, with the evidence perhaps on the deeper floor of Dia's bays. But Gudgeon's sonar images from those sites kept coming back disappointingly clear.

On the penultimate day of the field season, Greg Packard and Mark Dennett of Woods Hole stood on the stern of their small research vessel, and swung Gudgeon overboard. The miniature explorer descended to the bottom and spent the morning cruising back and forth along preprogrammed gridlines. Later that evening, when Packard examined the sonar data, he spied a potential target — a patch of bright speckles amid the smooth dark image. The team debated whether it could be a heap of pottery on the sand.

The next day, Foley took his crew of divers out to the suspect site. Some 15 minutes later, they came back with disheartening news: the sonar signal was a collection of plastic water bottles that must have been dumped overboard from a modern boat. And footage from Gudgeon's video camera explained the absence of archaeological remains — furrows in the sand showed that trawlers had cleaned out even these tiny bays. If a Minoan ship ever sank here, it has long since been destroyed. “It's such a waste,” says Foley, clearly disappointed. “I bet they're not even trawling for fish. I bet they're trawling for antiquities.”

### Diving deeper

Wachsmann says that he isn't surprised by what Foley saw. From 2007 to 2009, he led the Danaos project, using sonar-equipped ROVs to survey hundreds of square kilometres of sea floor on a suspected ancient trading route between Crete and Egypt. In three seasons, he didn't find a single ancient wreck from any period, and only a scattering of artefacts.

Wachsmann found that sedimentation was a problem even far from shore — up to a metre per millennium in some areas. This means that although some Greek and Roman remains might still be visible, a Minoan ship would be buried under 3 or 4 metres of sand. And even at 500–600 metres depth, he saw clear evidence of trawling. “It was almost like somebody had swept the sea in front of me,” he says. On the basis of his experiences, Wachsmann now believes that the chance of finding a Minoan equivalent of Ulu Burun “approaches zero”.

The effect of bottom trawling is “devastating” for archaeologists, agrees Robert Ballard, an oceanographer based at the University of Rhode Island in Narragansett, who has pioneered deep-sea exploration and discovered the wreck of the *Titanic* in 1985. “Most of the Aegean has been destroyed,” he says.

Ballard has spent years searching for ancient wrecks and says that he has learned the importance of finding areas beyond the reach of fishermen — below about 600 metres, say, or close to undersea cables, which trawlers avoid. He has also opened up his search area. Historians once assumed that the number of wrecks in the deep sea was negligible because ancient ships must have hugged the coastlines, but in the 1990s Ballard found eight ancient wrecks far from shore between the islands of Sicily and Sardinia<sup>2</sup> (Foley was Ballard's graduate student at the time). “The ancient mariner was not afraid of going out to sea,” says Ballard.

Since 2008, Ballard has been exploring the eastern Mediterranean, the Aegean and the Black Sea with a suite of ROVs. Although he is finding large numbers of ancient wrecks, he hasn't yet uncovered anything from the Bronze Age. But, like Foley, he believes Minoan ships are waiting to be discovered. The key to finding the oldest wrecks, he says, is locating “relic surfaces” that have escaped being buried by sediment, which flows downhill and covers the deep sea floor<sup>3</sup>. “What you want is a shipwreck that came down on a mountain,” he says, because sediment can't accumulate on a steep slope.

Last year, Ballard investigated the Eratosthenes seamount, a 700-metre-deep tabletop south of Cyprus, and says it does indeed seem to represent a relic surface. He is now applying for permits to return to Eratosthenes to search for shipwrecks next year. Another area he would like to investigate is the submerged Anaximander mountains south of Turkey. It would be difficult to distinguish a wreck site from such rocky terrain using sonar, so he plans to use video cameras to conduct a painstaking visual search over smaller areas. “It's very hard hunting,” he says.

Foley is also now looking to the deep sea, but has a different strategy. Instead of targeting particular sweet spots, he wants to cover as large an area as possible. He has raised more than US\$1 million towards the \$1.8 million that he needs to return to the

Mediterranean next year, this time with two of Gudgeon's more powerful cousins, REMUS 6000s owned by the Waitt Institute in La Jolla, California.

To maximize the chances of finding ancient wrecks, the team will hunt on open, flat areas in the lowest reaches of the sea, up to 6,000 metres deep. Foley estimates that the two REMUS vehicles can cover up to 5,000 square kilometres in one month, equivalent to 1% of the entire Aegean Sea. The recent field trial around Dia encouraged Foley because it should be easier for the sonar surveys to pick out vases than it was to find plastic water bottles, which are poor sonar reflectors, he says.

Both Ballard and Foley are ultimately hoping to use their surveys to catalogue large numbers of wrecks of all ages across great swathes of the Mediterranean and the Black Sea. Through a combination of sonar and high-resolution digital photography, they can compile detailed three-dimensional maps of a wreck site and answer questions about the date, origin and cargo of a ship without bringing up a single artefact.

Foley estimates that hundreds of thousands of ships must have sunk in ancient times — including thousands in the Bronze Age alone — and that a significant proportion of those are still sitting at the bottom of the deep sea. If he's right, then perhaps researchers will eventually have not just one Minoan ship, but hundreds. With enough wrecks, says Foley, “it ought to allow us to draw new conclusions about this absolutely formative period in human experience.”

That could shift marine archaeologists into an era in which they can use statistical data gathered from hundreds or thousands of wrecks to build up a bigger picture of trade routes, migration and warfare throughout history. “We'd rather find 500 ships than excavate one,” says Ballard.

Such a dream seems a long way off as Foley's team packs up its gear at the end of its campaign. Packard and Dennett carefully lower Gudgeon into a crate for its long trip back to Woods Hole, while Foley eyes one of the artefacts he retrieved from Dia's waters — a bulbous Byzantine amphora covered in deposits left by worms.

It's not the find Foley hoped for, but he is undaunted — this is just the beginning of what he knows could be a long search. “I'd like to be doing this every year for the next 20 or 30 years,” he says. “Until I'm too old to go to sea.”

**Please visit the site: <http://www.nature.com/news/underwater-archaeology-hunt-for-the-ancient-mariner-1.9880>**

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## **AFTER BEING STRICKEN BY DROUGHT, ISTANBUL YIELDS ANCIENT TREASURE BY JENNIFER PINKOWSKI**

For 1,600 years, this city — Turkey’s largest — has been built and destroyed, erected and erased, as layer upon layer of life has thrived on its seven hills.

Today, Istanbul is a city of 13 million, spread far beyond those hills. And on a long-farmed peninsula jutting into Lake Kucukcekmece, 13 miles west of the city center, archaeologists have made an extraordinary find.

The find is Bathonea, a substantial harbor town dating from the second century B.C. Discovered in 2007 after a drought lowered the lake’s water table, it has been yielding a trove of relics from the fourth to the sixth centuries A.D., a period that parallels Istanbul’s founding and its rise as Constantinople, a seat of power for three successive empires — the Eastern Roman, Byzantine and Ottoman.

While there are some historical records of this early period, precious few physical artifacts exist. The slim offerings in the Istanbul section of the Archaeological Museums here reflect that, paling in comparison with the riches on display from Anatolia, Mesopotamia and Lebanon.

So Bathonea (pronounced bath-oh-NAY-uh) has the potential to become a “library of Constantinople,” says Sengul Aydingun, the archaeologist who made the initial discovery.

After the drought exposed parts of a well-preserved sea wall nearly two and a half miles long, Dr. Aydingun and her team soon saw that the harbor had been equipped with docks, buildings and a jetty, probably dating to the fourth century. Other discoveries rapidly followed. In the last dig season alone, the archaeologists uncovered port walls, elaborate buildings, an enormous cistern, a Byzantine church and stone roads spanning more than 1,000 years of occupation.

“The fieldwork Sengul has conducted over the last few years is spectacular,” said Volker Heyd, an archaeologist at the University of Bristol in England who surveyed Bathonea for two field seasons. “The discoveries made are now shedding a completely new light to the wider urbanized area of Constantinopolis. A fantastic story begins to unveil.”

In 2008, for example, Hakan Oniz, an archaeologist from Eastern Mediterranean University who specializes in underwater research, investigated a structure in the lake that local lore held was some kind of mystical minaret that appeared and disappeared in relation to the rate of sinful behavior by nearby villagers. The ruins, about 800 feet from shore, may have been a lighthouse.

Since then, Dr. Aydingun's team and researchers from eight foreign universities have found a second, older port on the peninsula's eastern side, its Greek influences suggesting that it dated to about the second century B.C.

Nearby, atop the round foundations of a Greek temple, they found the remains of a fifth- or sixth-century Byzantine church and cemetery with 20 burials, and a large stone relief of a Byzantine cross. Coins, pottery and other artifacts indicate that the church suffered damage in the devastating earthquake of 557 but was in use until 1037, when a tremor leveled it — crushing three men whose bodies were found beneath a collapsed wall, along with a coin bearing the image of a minor emperor who ruled during the year of the quake.

After bushwhacking through nettle-choked underbrush a mile and a half north of the harbor, the researchers excavated a 360-by-90-foot open-air cistern or pool, as well as walls and foundations from several multistory buildings that may have been part of a villa or palace altered over many centuries.

Because the archaeologists are at the beginning of a multiyear dig at a site not known from historical sources, they are hesitant to draw many conclusions. Even the name Bathonea is a placeholder, inspired by two ancient references: the first-century historian Pliny the Elder's "Natural History," which refers to the river feeding the lake as Bathynias; and a work by a ninth-century Byzantine monk, Theophanes, who called the region Bathyasos.

"There is a big question mark over the name," Dr. Aydingun said. "It's too early to say. But the name is not important. The important thing to note is that there are buildings, roads" where "people thought there was nothing."

"But there's something there," she went on. "We need a lifetime to discover what it is. But even by next year, we'll be able to say more."

The archaeologists know this much: The site was large. It sprawled across at least three square miles, and its sea wall is nearly half the length of the one that surrounded Constantinople itself. It was moderately wealthy; the region was a country retreat for the urban elite, drawn by its fertile hunting grounds and Lake Kucukcekmece itself, the freshwater body closest to the city. They built villas and palaces all around the region.

Roman glass and high-end pottery dating as late as the 14th century were found throughout the site. Marble, including a gorgeous milky-blue variety, lined the walls and floors of the church and at least one of the buildings.

Also discovered were hundreds of bricks stamped "Konstans," which were produced in Constantinople beginning in the fifth century and had mostly been discovered at imperial sites like Hagia Sophia, the sixth-century architectural marvel and primary cathedral of the Byzantine Empire for almost 900 years, and nearby Rhegion, a fifth-century compound on a hill across the lake from Bathonea, overlooking the Marmara Sea.

Bathonea was also well connected. Some pottery was made as far away as Palestine and Syria, typical of places with access to foreign goods. It had wide stone roads, the earliest dating to the Roman era.

But its relationship to Constantinople is still unclear. “I like the idea of Bathonea as a satellite port of a major city,” said Bradley A. Ault, a classical archaeologist with the University at Buffalo who has studied ancient port cities in Greece and Cyprus. “It falls in line with Athens and Piraeus, Rome and Ostia.”

If that is the case, the port may have served as a safe harbor on protected waters outside the city walls for both commercial ships and the imperial naval fleet. “In the fifth century, they had a major fleet around Constantinople,” said Robert Ousterhout, a Byzantine scholar at the University of Pennsylvania. “They had ports around the Golden Horn and the Marmara.”

Now 13 to 65 feet deep, Lake Kucukcekmece would have been a deep bay navigable by ships of all sizes, Dr. Aydingun said. Sonar has revealed what may be six Byzantine iron anchors buried in the sand just offshore, and nails commonly used in shipbuilding were unearthed at the site.

In recent years, Istanbul has been the scene of several stunning discoveries during salvage archaeology digs, most notably at the Yenikapi transit project, which unearthed a remarkable array of shipwrecks. No shipwrecks have been found at Bathonea; nor are they likely to be anytime soon, said Mr. Oniz, the underwater archaeologist. The lake is so polluted by industrial runoff that diving in it is dangerous, he said. A new water-treatment facility may make exploration possible within a few years.

The Bathonea archaeologists also hope to uncover more artifacts dating to the earliest days of civilization. In 2007, Dr. Aydingun and Emre Guldogan of Istanbul University found 9,000-year-old flint tools at the site that could be evidence of the earliest pre-pottery farming settlement in Europe. Bathonea’s role — and its real name — can be determined only through further study, Dr. Aydingun said.

Ground-penetrating radar has indicated that extensive structures remain beneath the soil. And as all of their efforts have been focused on the waterfront, the archaeologists have yet to investigate the patches of trees and brush farther inland that farmers have long avoided because their plows cannot cut through them.

Dr. Aydingun suspects there is a good reason for that. “I think all of these buildings continue,” she said. “Can you imagine?”

**Please visit the site: [http://www.nytimes.com/2012/01/24/science/istanbul-yields-a-treasure-trove-in-ancient-bathonea.html?\\_r=2](http://www.nytimes.com/2012/01/24/science/istanbul-yields-a-treasure-trove-in-ancient-bathonea.html?_r=2)**

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## **STITCHES IN TIME - A SCIENTIST DEVELOPS A POWERFUL TOOL TO DETERMINE THE AGES OF MYSTERIOUS SILKS**

People have been weaving silk into fabric for at least 5,000 years.

The delicate material, made from the threads silkworms excrete to create their cocoons, has been used for everything from the robes of Byzantine emperors to the parachutes of World War II paratroopers. In ancient China, the birthplace of silk, it became luxury paper, a medium for paintings and even a form of currency; for centuries, laws forbade anyone except the emperor and other dignitaries from wearing it as clothing. Silk has been found in the tombs of Egyptian mummies, and in ancient Rome it was blamed for making young women promiscuous.

To historians, silk artifacts reflect the trade and social customs of past cultures. Researchers have long sought a surefire method that measures the age of silk for which there is no continuous historical record and uses just a tiny sample of the material. Now Mehdi Moini, a chemist at Smithsonian's Museum Conservation Institute, has developed a technique to date silk based on its chemical composition. His technique serves as a kind of clock, and he is testing and calibrating it with silk of known vintage in the Institution's collections.

"Making a clock is easy," he says. "Calibrating the clock is difficult."

Silk proteins are made of amino acids, small molecules with a three-dimensional structure. Each amino acid has two possible variants, exact mirror images of each other: left-handed, known as "L" amino acids, and right-handed, referred to as "D." The amino acids produced by most living things—like silkworms—are left-handed. The key to the dating process, Moini says, is that as silk proteins age, some of the amino acids rearrange themselves into the D variant. He can tell how old a silk thread is by looking at the ratio of D to L amino acids. At year zero, all will have the L structure; given enough time, there will eventually be equal parts of both. Researchers have been using this approach on various proteins for decades, but Moini is the first to apply it to very small samples of silk, says Darrell Kaufman, a geologist at Northern Arizona University.

Moini and his colleagues borrowed a Chinese textile more than 2,000 years old from the Metropolitan Museum of Art and a flag from the Smithsonian that was used in 1846 in the Mexican War. Sumru Krody, senior curator at the Textile Museum in Washington, D.C., let him take samples from an ancient Egyptian tiraz, a ceremonial turban band with an inscription dating it precisely to A.D. 993. "It's very hard to find textiles with an accurate date on them," she says. "But sometimes you get lucky."

Moini's method uses a minuscule amount of material, something that appeals to curators of priceless fabrics. "If you go to a museum and say, 'I want five milligrams of this precious silk,' silk is very light, so five milligrams is a lot of compound," Moini says. Previous techniques, such as carbon dating, consumed several milligrams of silk for each test; by contrast, he needs just one-hundredth that amount.

“If there’s just one tiny speck of fabric,” he says, “it’s enough for us to do the analysis.”

To determine the ratio of D to L amino acids in each piece of silk, Moini and his team dissolve the fabric in hydrochloric acid, put the liquid in a thin glass tube and apply an electric field. Because amino acids have a slight electrical charge, they are pulled through the tube. The tube also contains a substance that chemically attracts the D amino acids. “Think of it like this: You have a bunch of hands, left and right hands, and then we fill the [tube] with only right gloves,” Moini says. “Only the right hand goes into the right glove and gets caught, and the left hand cannot fit into the right glove, so it goes through faster.”

After analyzing a variety of silk samples, Moini and his team determined that 50 percent of the amino acids change from L to D forms after 2,500 years.

The technique is more efficient and more precise than previous methods. It will soon be put to use to date artifacts of unknown age.

“After this technique is fully developed, it’s then the fun part will start,” says Krody. She may use the dating method on items such as the Buyid silks, a group of artifacts that may have originated in Iran sometime between the 8th and 12th centuries.

JOSEPH STROMBERG

Please visit the site: <http://www.smithsonianmag.com/arts-culture/How-Old-is-That-Silk-Artifact.html>

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## **IS THE LION MAN A WOMAN? SOLVING THE MYSTERY OF A 35,000-YEAR-OLD STATUE, BY MATTHIAS SCHULZ**

Archeologists have discovered previously unknown fragments of a figurine known as the "Lion Man," and are piecing it back together.

Could the 35,000-year-old statue actually represent a female shaman?

Scientists hope to resolve a decades-long debate.

Using a hand hoe and working in dim light, geologist Otto Völzing burrowed into the earth deep inside the Stadel cave in the Schwäbische Alb mountains of southwestern Germany. His finds were interesting to be sure, but nothing world-shaking: flints and the remnants of food eaten by prehistoric human beings. Suddenly he struck a hard object -- and splintered a small statuette.

It was 1939 and Völzing didn't have much time. He had just been called up to serve in the military and World War II was about to begin. He quickly packed the pieces into a box and the excavation, which was being financed by the SS, was terminated on the same day.

For the next 30 years, little heed was paid to the pieces. But then, they were reassembled to create one of the most impressive sculptures of the Paleolithic Age.

Called the Lion Man, it is fashioned from the tusk of a mammoth and stands about 30 centimeters (12 inches) tall. Its creator polished it with saliva and leather -- and an experiment showed that it likely took the sculptor about 320 hours to carve the figure.

Copies of the famous ice age treasure are now on display in New York and Tokyo. The original, however, is heavily damaged -- and no one knows exactly what it looks like. Many fragments were overlooked in the cave when the prewar dig was so abruptly terminated. The figure achieved its current form in 1988. It consists of 220 parts, but about 30 percent of the body is still missing. Large segments of the surface have broken off.

The poor condition of the figurine has only made it more mysterious.

Is it meant to represent a mythical creature, or a shaman hiding under an animal hide? Are the six stripes on the left upper arm meant to depict scarification marks or something else? And what was on the right arm, which is missing?

The genitalia are also unrecognizable. German archeologist and Upper Paleolithic expert Joachim Hahn has interpreted the small plate on the abdomen as a "penis in a hanging position." Elisabeth Schmid, a paleontologist, classified it as a pubic triangle.

It was the beginning of a bitter dispute over the gender of the small idol that erupted in the 1980s and continues to this day. The statue has been made into an "icon of the women's movement," says Kurt Wehrberger of the Ulm Museum, the owner of the precious object.

Those who believe that the Lion Man is in fact a woman are convinced that primitive societies were matriarchal. They contend that women of the period, instead of standing obediently by the cooking fire and watching over the children, hunted mammoths and set the tone when it came to rituals and the priesthood. But is this true?

The debate remains undecided today. But that could soon change, now that new fragments of the Lion Man have turned up.

The new discoveries came after archeologists once again turned their attention to the Stadel cave. They sifted through all of the rubble from 1939, explains excavator Claus-Joachim Kind -- and the results were sensational. "We found about 1,000 pieces, which presumably belong to the statue," Kind says.

Some of the fragments are tiny, only a few square millimeters in size, but the cache also includes pieces as long as a finger.

The figurine will be taken to the State Conservation Office in Esslingen, near Stuttgart, where it will be completely taken apart.

The old glue joints will be dissolved and the filler made of beeswax and chalk, which was used as a placeholder, will be removed.

Then the statue will be reassembled piece by piece, a task that those involved await with great anticipation. "We will soon be able to view the most mysterious work of art from (the southwestern German state of) Baden-Württemberg in its original form," Kind hopes.

Already it is clear that the figurine will become a few centimeters taller due to new neck pieces that have been found. Furthermore, the gaping hole in the back can now be plugged, and the right arm has been found in its entirety. Additional decorations, including raised dots and strange-looking lines, have come to light.

These new revelations offer a greater insight into the mind of the prehistoric sculptor, who created the figure about 35,000 years ago.

His ancestors had migrated to Europe, which had been controlled by the Neanderthals, shortly before.

The statue was found near traces of a fire site in a niche 27 meters (89 feet) from the mouth of the cave. When Kind was working at the site, he also found a decorated deer's tooth, the incisors of an arctic fox and ivory beads. The items could have been pieces from a decorative robe. Perhaps the niche served as a shaman's changing room.

It is considered likely that prehistoric sorcerers wore furs as costumes when they celebrated rituals around the campfire. Hybrid creatures -- half-man, half-beast -- also appear in cave drawings in France.

It would seem that the shamans' preferred costumes were the hides of the more dangerous representatives of Ice Age fauna. The cave lion weighed more than 250 kilograms (550 lbs.); one swipe of its giant paw would have been enough. A human being holding what looks like a musical instrument is depicted in a cave in the foothills of the Pyrenees. The

figure is wearing the hide of a bison, an 800-kilogram colossus that was not to be trifled with. Perhaps hunters hoped to acquire the animal's strength and even take possession of its soul through masquerade and dance.

Studies about primitive peoples in Siberia suggest how these rites might have proceeded. Even into the modern age, their shamans wore antlers on their heads. There are similar accounts involving the Blackfeet Indians in North America. Their healers hopped around under bearskins to the sound of drums.

The Lion Man is standing on tiptoes. He, too, seems to be dancing.

But who is hidden underneath the robe? From time immemorial, the lion has been viewed as a symbol of the masculine virtues of courage and strength. Shamans still exist today in the Amazon region and Australia. Most are men.

On the other hand, the statuette has some perplexing features. The navel, a symbol of childbirth, is especially pronounced. A horizontal crease runs across the lower abdomen, a feature that is typically female.

Paleontologist Schmid believes that the figure once had breasts, which eventually broke off. According to Schmid, the transition from the thighs to the buttocks is also indicative of a female body. She made a model out of modeling clay, which is now in a safe in Ulm. It depicts the Lion Man with an ample bosom.

Many scholars dismissed the jarring replica as nonsense at the time. Nevertheless, there is at least one piece of evidence to support Schmid's theory. An image of a 14,000-year-old human body with an animal head discovered in the Las Caldas cave in Spain is obviously female. The head looks like that of an ibex, while the lower part of the body features female genitalia.

Does this mean that female shamans did exist? Were women in charge of the religion of our ancestors? The new finds could solve the mystery once and for all. Hundreds of tiny ivory fragments will have to be pieced together to create a statue that experts estimate will contain 20 percent more of its original material.

According to one of the excavators, there is also sufficient fragmentary material to reconstruct the genitalia. "We'll figure out the gender," he says.

Translated from the German by Christopher Sultan.

**Please visit the site:**

**<http://www.spiegel.de/international/zeitgeist/0,1518,802415,00.html> [Go there for pix]**

## **REPLICA OF BYZANTINE SHIP TO SAIL NEXT YEAR IN TURKEY**

Yenikapı 12, a replica of a ship built during the Middle Ages that was unearthed during metro project excavations, will be launched at sea next year within the scope of a project coordinated by Istanbul University

A replica of the 9.64-meter-long, 2.6-meter-wide boat that was built in the Middle Ages will be created and launched at sea in 2013.

One of 36 sunken ships found during archaeological excavations carried out as part of Istanbul's metro project will be replicated, put on display and launched at sea as Yenikapı 12.

A replica of the 9.64-meter-long, 2.6-meter-wide boat that was built in the Middle Ages will be launched in 2013.

Işıl Kocabaş of [Istanbul](#) University's Cultural Artifacts Protection and Restoration Department said 36 wooden shipwrecks along with thousands of other artifacts had been found during the ongoing excavations that started in Yenikapı in 2004.

These shipwrecks, estimated to have been constructed between the fifth and 10th centuries, are regarded as the world's largest shipwreck collection, the associate professor said. Research on 28 of them has been carried out by experts at the university under the leadership of the head of the department, Ufuk Kocabaş. The Yenikapı wrecks represented the technology of the mid-Byzantine Empire, which is not well-known, and the remains of the ships survived in very good condition, she said.

“The Yenikapı ships bring evidence of Middle Ages technology to the present. The boat gives us unique information about the construction technology of the period,” she said.

Kocabaş said the first stage of the Yenikapı 12 project was preparing the doctorate thesis on the boat's construction technique and reconstruction. “The doctorate thesis tells us how the Yenikapı 12 was designed and constructed, and the process of making its replica. The body of Yenikapı 12 has been recorded with 3D technology. Each wooden detail on the surface of the boat was transferred to computer and we obtained a lot of information about its construction process. As a result of a three-year evaluation, the dimensions of Yenikapı 12 were determined. According to this data, a drawing of the boat has been made and illustrations and animations, showing its situation on the water, have been prepared,” she said.

The goal of the project was to produce a replica of the ship, Kocabaş said. “Our purpose here is to gather more information about the construction of a ship from the Middle Ages. We will seek to answer questions such as: How many people worked on the construction? How did they gain the necessary materials? How were the ships assembled?”

**Replica will be on display**

Kocabaş said preparations for the project were continuing. “The construction will start this summer. We plan to finish it and launch it into the sea in the middle of 2013. But we need to find financial support to start the construction; this is the most important factor.”

Yenikapı 12 will be displayed in the garden of the [Istanbul](#) Archaeology Museums or in the historical garden of [Istanbul](#) University Rector’s Office Building in Beyazıt, she said.

“This way, visitors to the museum will be able to see the construction process of the replica. There will also be conferences given by experts during this process. Also, the whole process will be recorded in a documentary film as part of the project. When the replica is finished, visitors of Yenikapı 12 will have a magnificent experience in a boat from the Middle Ages,” Kocabaş said.

**Please visit the site: <http://www.hurriyetdailynews.com/replica-of-byzantine-ship-to-sail-next-year-in-turkey-.aspx?pageID=238&nID=11843&NewsCatID=375#.TxrUv4bBSJ8.facebook>**

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## **TECHNOLOGY OFFERS PEEK INTO PAST, BY BRADLEY T. LEPPER**

When friends ask me what's new at work, I occasionally (often enough to become tiresome) respond with, 'Nothing. Everything I work with is old.'

But that's not entirely true. In archaeology, as in any field of science, there is always something new — whether it's a new discovery or the development of new technologies that enable us to learn new things about old discoveries.

Ohio's ancient earthworks certainly aren't news. The Smithsonian Institution's first publication, in 1848, included surveys of most of the largest sites.

Sadly, since then, many of these wonderful sites have been plowed over or leveled to make way for houses, stores and factories. For example, the authors of the Smithsonian report concluded, with regard to Newark's once-sprawling earthworks, "The ancient lines can now be traced only at intervals, among gardens and outhouses."

In the October issue of the journal *American Antiquity*, two Ohio archaeologists — Jarrod Burks, with Ohio Valley Archaeology Inc., and Robert Cook, from Ohio State University — presented the results of their rediscovery of some of Ohio's lost earthworks using revolutionary remote-sensing technology.

Geophysical remote sensing encompasses a variety of methods for "seeing" beneath the ground. One of the main instruments used by Burks and Cook is the fluxgate magnetometer, which measures tiny variations in the magnetic properties of soil.

Earthworks generally are quite large, and building one involved the rearrangement of large amounts of soil. Wherever soil has been disturbed, the baseline magnetic field is disrupted, and the magnetometer can detect these anomalies. The magnetic "signature" of earthworks usually is highly visible and distinctive.

A case in point is the Shriver Circle, one of the largest circular enclosures ever built in the Ohio Valley. It was mapped by Smithsonian surveyors and was known to be located about 2.5 miles north of Chillicothe. But decades of farming and other development had largely obliterated it from the landscape.

In 2008, Burks and Cook conducted a magnetometry survey of much of the circle — even getting permission to spend a day surveying within the grounds of the Chillicothe Correctional Institution. The results are amazing.

Even though little if anything can be seen of the enclosure on the ground, the magnetic data revealed its graceful lines in exquisite detail.

Burks and Cook concluded that the foundations of the earthwork and its filled-in ditch were "quite intact and could be detected even in areas of intensive building construction and demolition."

By revealing precious remnants of earthworks once considered to be lost forever, remote-sensing technology gives us a second chance to learn the stories of these ancient sites.

These data can be used to produce more-accurate maps and to more precisely target archaeological excavations, guide restoration efforts or identify sites for preservation.

Burks and Cook say these new methods are “considerably refining our view of the earthworks of Ohio.” More than that, they are fundamentally changing the way we do archaeology.

Bradley T. Lepper is curator of archaeology at the Ohio Historical Society.

**Please visit the site:**

<http://www.dispatch.com/content/stories/science/2012/01/22/technology-offers-peek-into-past.html>

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## **SMARTER DIGS WITH AN ARCHAEOLOGY LAB, BY ABIGAIL KLEIN LEICHMAN**

Weizmann Institute's unique field lab is part of a 'microarcheology' approach that puts natural science to work for Israeli archeologists.

### Archaeology

Under the hot sun at Tel es-Safi in southern Israel -- the Philistine city of Gath -- archeologists have been puzzling over life in the Iron Age city and how it was plundered and destroyed by some invading force hundreds of years before the common era.

"It was like a mini-Pompei, a frozen record in a moment of time," says Prof. Steve Weiner, director of the Kimmel Center for Archeological Science at the Weizmann Institute in Rehovot.

Kimmel's unique onsite laboratory helps archeologists piece together the events of the destruction.

"It has changed the whole paradigm of how to solve archeological problems in the field using both what you see by eye and what you can reveal with instrumentation -- the microscopic archeological record, from sub-millimeter scale down to the atomic level," he tells ISRAEL21c. "There's a lot of information embedded in this record."

With the help of the lab, the Weizmann team together with the archeology team from Bar-Ilan University determined that the destruction was not one cataclysmic event in the late ninth century BCE, but more likely occurred over decades, with periods of erosion and abandonment.

"So what people assumed was instantaneous was not that at all," says Weiner. "You can only understand that by getting into all the microscopic details."

The mobile lab is a critical part of a holistic "microarcheology" approach that puts natural scientific methods to work in the field.

Dig less, find out more

As Weiner describes in *Microarchaeology: Beyond the Visible Archaeological Record* (Cambridge, 2010), much information can be extracted microscopically from excavated materials such as ceramic, bone, rock, ash, plants and sediment.

"The trend in archeology is to excavate less but to extract more information from the archeological record," he writes.



Beginning this process in the field is best, and the Weizmann team was able to pioneer such an approach thanks in part to the small size of Israel -- a country Weiner calls "one huge archeological site."

Scientists can set up shop at a dig for weeks at a time and still be close to their home institution.

"From the late 1980s, our idea was to address analytical investigation at the site and to get information in real time, and that's really important in excavation," Weiner explains. "If you sample something and it turns out to be interesting, you can't achieve much if you have to wait to analyze it, as the excavation has proceeded and the feature is destroyed."

The field lab consists of portable infrared spectrometers and a portable petrographic microscope at the excavation site, while another lab at the base camp can facilitate more intricate analyses of the day's finds. By the following morning, the results are ready and can be used to decide on the day's excavation strategy.

"The micro record requires much training in natural sciences to interpret results, and also in archeology. This indeed reflects the training of the senior members of the center, Dr. Ruth Shahack-Gross and Dr. Elisabetta Boaretto."

#### Training foreign students

The Kimmel Center collaborates on major digs supervised by Prof. Israel Finkelstein from Tel Aviv University at Megiddo, Prof. Aren Maeir of Bar-Ilan University at Tel es-Safi and Prof. Daniel Masters from Wheaton College in Illinois, who excavates at Ashkelon.

In addition, graduate students and academics from abroad often get training at Kimmel. The most recent visitors were from California, Minnesota and Bogota, Colombia.

"People in the field all over the world are paying attention to this," says Weiner. "What we offer is very unusual. I know no other place that has similar setup. There are other field labs, but this type of integration of field and lab is quite unique."

#### Discovering Gath

Maeir tells ISRAEL21c that the on-site microarcheology lab made a huge difference in his team's comprehension of what was unearthed at Tel es-Safi.

"In the past, the science was done after you found something cool in the excavation," he explains. "Here, the idea is to have perspectives on the spot and some of the scientific analysis in the field or that evening in the base lab. That way, we could identify things we wouldn't have identified otherwise, understand what we're excavating, save the right materials for analysis and change our excavation strategy accordingly. It turns it into a collaborative effort, not just 'plain vanilla' archeology."

Having access to a wide battery of scientists from different fields, each contributing their expertise, led to published papers on topics the archeologists wouldn't have noticed without the archaeological scientists.

Maeir recalls that in one dig at Tel el-Safi, excavators saw signs of metal and stopped to have Kimmel experts check it out.

"We couldn't tell for sure by eye, but with the help of scientific analysis we realized we had excavated a metal production area for iron and bronze -- the earliest found up to now in Philistia," says Maeir.

"Without metallurgists on site, it could be that this evidence would have gone unnoticed. The combination of equipment and different perspectives allows for an integrated perspective on the past."

In addition to investments from the Weizmann Institute, the Kimmel Center is financed by a three million euro European Research Council grant and two grants from the Israel Science Foundation ([www.isf.org.il/english](http://www.isf.org.il/english)).

Please visit the site: <http://israel21c.org/social-action/smarter-digs-with-an-archaeology-lab>

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## SEAFARING IN THE AEGEAN: NEW DATES

Seafaring before the Neolithic - circa 7th millennium BCE - is a controversial issue in the Mediterranean. However, evidence from different parts of the Aegean is gradually changing this, revealing the importance of early coastal and island environments. The site of Ouriakos on the island of Lemnos (Greece) tentatively dates to the end of the Pleistocene and possibly the beginning of the Holocene, circa 12,000 BP.

A team formed by N. Laskaris, A. Sampson and I. Liritzis from the Laboratory of Archaeometry, University of the Aegean, Department of Mediterranean Studies, Rhodes; and F. Mavridis from the Ephorate of Palaeo-anthropology and Speleology of Southern Greece suggested that obsidian sources on the island of Melos in the Cyclades could have been exploited earlier. Studies of material from Franchthi cave in the Argolid indicated Melos as its origin, but obsidian hydration dating was not applied to the artefacts recovered.

Obsidian, or 'volcanic glass', has been a preferred material for stone tools wherever it is found or traded. It also absorbs water vapour when exposed to air - for instance, when it is shaped into a tool - and absolute or relative dates can be determined for that event by measuring the depth of water penetration. In 10,000 years, the expected hydration depth is about 10 mm from the tool surface.

Two routes for the obsidian found at Franchthi have been considered: a direct one of around 120 kilometres with islets in between, and another one through Attica including crossings of 15 to 20 kilometres between islands. The presence of obsidian in mainland and island sites indicates that these voyages included successful return journeys.

Sites in Ikaria, in Sporades, and on Kythnos demonstrate that, during the Mesolithic, a well established system of obsidian exploitation and circulation existed - a phenomenon that has its routes even earlier, as dates from sites in Attica indicate.

Furthermore, obsidian artefacts have recently been found in two other Mesolithic sites in Greece, one in the island of Naxos and the other one in the small island of Halki. Exchange systems therefore brought obsidian to the eastern and the north-west Aegean, and even reached coastal inland sites of mainland Greece such as Attica, though not yet found in mainland sites. Possibly through sites in this latter region obsidian was also brought to the Peloponnese.

Edited from Journal of Archaeological Science, Volume 38, Issue 9, pp.  
2475-2479 (2011)

Please visit the site: <http://www.stonepages.com/news/archives/004698.html>

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## **IMPERIAL ROME'S GREAT ANCIENT SEAPORT CITY**

Archaeologists are investigating a large unexplored harbor structure using a new excavation model.

It was mentioned in the novels, *I, Claudius* and *Claudius the God* in scenes spanning from the reign of Augustus through the reign of Claudius, and it was mentioned in the movie, *Gladiator*, in the scene where Maximus is informed that he had a loyal army encamped there and awaiting his orders. Historically, it is documented as the Roman harbor city of Ostia, the vital town of maritime commerce near the sea at the mouth of the Tiber River. Today it is a large archaeological site that now lies about 3 km from the sea, a distance created through time by silting and a drop in sea level. It is known for its well-preserved and impressive ancient buildings, mosaics and frescoes (see photo images below). Now, archaeologists are investigating a find here that has never been explored, using a new model of archaeological excavation.

Co-directed by Dr. Darius Arya and Dr. Alberto Prieta of the American Institute of Roman Culture, the team will be investigating a large, 10m long by 3m wide structure made of concrete walls faced with brick, vaulting, marble features and massive travertine blocks. Obscured now by vegetation and a large fig tree, it was once located along the ancient coastline. It may have been a part of the ancient port facilities, which have been and are now being extensively investigated, including an Imperial Age Roman wooden ship, the first Roman ship ever to have been found near Ostia and discovered by archaeologists of the Superintendency of Rome and Ostia in 2011.

According to the project leadership, archaeologists "will operate on the leaner, low-impact/high-return model of archaeological investigation that is gaining ground over the traditional open-area excavation model and its high costs in labor, maintenance, and conservation".[1] Beginning in the winter of 2011-2012, they will defoliate and clear the structure so that they can document and analyze the standing remains. Next, a series of carefully placed trenches will be excavated along the standing walls to determine the foundation depths, the height of the structure, and its chronology.

Finally, they hope to be able to study and analyze the various finds excavated from the trenches and determine the purpose and function of the structure and its relationship to the activities carried out at ancient Ostia.

In addition, the team hopes to continue important conservation work in a nearby area of ancient structures using an experimental technique that shows promise for protecting and sustaining them from the negative effects of invasive vegetation growth, a problem that continues to threaten their integrity and visibility. The technique is also expected to lower the maintenance cost of Ostia's ancient architecture.

The significance of the site of Ostia lies in its importance as a port and harbor for the incoming and outgoing ships of commerce and for military purposes. Here, the consular war fleet was docked in 68 BC, sacked and destroyed by pirates that same year. The building stones of the walls of the 3rd century BC castrum (or military camp) that was stationed at Ostia provide important information about the building techniques that were used during the Middle Republic period. At its height in the 2nd and 3rd centuries AD, it

contained about 75,000 inhabitants. Archaeologically speaking, the architectural remains and artifacts of ancient Ostia have contributed and will likely continue to contribute immeasurably to the world's understanding of Roman life-ways from its early beginnings through the Imperial period.

Large-scale excavations began in 1938 and have continued off and on under various auspices since that time. It is estimated that approximately two thirds of the city has been excavated, but much more remains in terms of additional excavation, study, conservation and restoration.

The AIRC is calling for students and others who may have an interest in participating in their 2012 expedition. Interested individuals may access detailed information at <http://romanculture.org/page/summer-2012-excavation-ostia>.

Please visit the site: <http://popular-archaeology.com/issue/december-2011/article/imperial-rome-s-great-ancient-seaport-city>

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## **THE FERMENTED CEREAL BEVERAGE OF THE SUMERIANS MAY NOT HAVE BEEN BEER**

Archaeological finds from cuneiform tablets and remnants of different vessels from over 4,000 years ago show that even around the dawn of civilisation, fermented cereal juice was highly enjoyed by Mesopotamia's inhabitants. However, besides the two basic ingredients, barley and emmer (a species of wheat) the brew produced in the clay jars of the Sumerians is shrouded in mystery. Despite an abundance of finds and scribal traditions which point to an early love of fermented cereal beverages, reconstructing ancient brewing methods is very difficult, according to the historian of science and cuneiform writing scholar Peter Damerow of the Max Planck Institute for the History of Science in Berlin. A scholarly paper by Damerow, who passed away at the end of November 2011 in Berlin, carefully examines the beer brewing technologies of the Sumerians. However, the author also expresses great doubts as to whether the popular brew in ancient times was even beer.

Although many of the more than 4,000 years old cuneiform texts contain records of deliveries of emmer, barley and malt to breweries, as well as documentation of the activities, there is hardly any information on the details of the production processes, and no recipes to follow.

According to Damerow, the administrative texts were most likely written for an audience that was already familiar with the details of brewing. They were not intended for informing the modern-day reader about the processes.

Moreover, the methods used for recording this information differ between locations and time periods. Also, the records and calculations are not based on any consistent number system. Instead, the Sumerian bureaucrats used different number systems depending on the nature of the objects to be counted or measured to count or measure.

This has cast doubt on the popular theory that Mesopotamian brewers used to crumble flat bread made from barley or emmer into their mash.

The so-called "bappir" (Sumerian for "beer bread") is never counted as bread in the administrative texts, but in measuring units, like coarsely ground barley. Damerow also points out that the high degree of standardisation, which meant that the quantities of raw materials allocated to the brewers by the central administration remained exactly the same over long periods, sometimes even decades, makes it difficult to base any recipes on them.

According to Damerow, even the "Hymn of Ninkasi", one of the most significant sources on the ancient art of brewing, does not provide any reliable information about the constituents and steps of the brewing process. This lyric text from the Old Babylonian period around 1800 B.C. is a mythological poem or song that glorifies the brewing of beer. Despite the elaborate versification, Damerow states that the procedure of brewing is not conclusively described. It merely offers an incomplete record of the individual steps. For instance, there is no clue as to how the germination of the grain was interrupted at the right time. It can only be speculated that the barley was layered and that the germination

was stopped by heating and drying the grain as soon as the root embryo had the right size.

Furthermore, the content of the hymn does not quite fit the results of the Tall Bazi Experiment. This was a brewing experiment carried out by archaeologists from the Ludwig Maximilian Universität in Munich together with brewing experts from the Center of Life and Food Sciences Weihenstephan at the Technische Universität München, with the intention of reconstructing the ancient brewing processes. Using cold mashing, the archaeologists managed to produce a brew of barley and emmer and adjust the alcohol level by changing the percentage of water; however, in Damerow's opinion, this result must also be treated with scepticism.

Nothing suggests that a production process that worked under the special conditions of Tall Bazi must have worked in the same way at other places in Mesopotamia, since the local conditions varied greatly. In fact, the experiment only demonstrates how modern methods can be used to produce a beer under the same conditions that were prevalent in Tall Bazi.

These uncertainties lead to a question, which the author considers "much more fundamental": to which extent is it at all possible to compare ancient products with modern ones? "Given our limited knowledge about the Sumerian brewing processes, we cannot say for sure whether their end product even contained alcohol", writes Damerow. There is no way of ascertaining whether the brew was not more similar to the bread drink kvass from Eastern Europe than to German Pilsner, Altbier or wheat beer.

Nevertheless, Damerow considers the approach of the scientists in the Tall Bazi Experiment to be a good way of finding the answers to questions about the early history of the art of brewing. "Such interdisciplinary research efforts might well lead to better interpretations of the 'Hymn of Ninkasi' than those currently accepted among specialists working on cuneiform literature", writes Damerow.

More information: Damerow, Peter. Sumerian Beer: The Origins of Brewing Technology in Ancient Mesopotamia Cuneiform Digital Library Journal 2012:2 ISSN 1540-8779 Version: 22 November 2011.

CDLJ 2012:2 [http://cdli.ucla.edu/pubs/cdlj/2012/cdlj2012\\_002.html](http://cdli.ucla.edu/pubs/cdlj/2012/cdlj2012_002.html)

(PDF version: [http://cdli.ucla.edu/pubs/cdlj/2012/cdlj2012\\_002.pdf](http://cdli.ucla.edu/pubs/cdlj/2012/cdlj2012_002.pdf))

**Please visit the site: <http://www.physorg.com/news/2012-01-fermented-cereal-beverage-sumerians-beer.html>**

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## **WEIZMANN AND MAX PLANCK JOIN FORCES IN HI-TECH ARCHAEOLOGY CENTER**

Plaster from human dwellings or the signs of a long-abandoned animal enclosure? Tuesday's New York Times describes the collaboration between a chemist - structural biologist Prof. Steve Weiner, who is head of the Helen and Martin Kimmel Center for Archaeological Science at the Weizmann Institute - and American archaeologists. From China to the nearby site of biblical Gath, Weiner and his team have been applying the methods of advanced chemistry to solving riddles of the ancient world. (The answer, at least for the dig at Ashkelon, is fecal and decayed plant matter, meaning the apparent palace was really a stable.)

But even as that article appeared, hi-tech archaeology at the Institute was getting kicked up a fairly large notch. On Wednesday, the presidents of the Max Planck Society for the Advancement of Science and the Weizmann Institute, Profs. Peter Gruss and Daniel Zajfman, signed an agreement to open a new center for collaborative archaeology research. The research will be carried out at the Weizmann Institute of Science and the Max Planck Institute for Evolutionary Anthropology in Leipzig, Germany.

Among the technological wonders that will be used to reveal the microscopic finer points of relics from pottery to teeth will be a big-ticket piece of equipment that is being constructed especially for the purpose and is slated to be installed in a physics facility sometime this year. This accelerator mass spectrometer (AMS) can be used for radiocarbon dating with an accuracy of a few tens of years; and it can pick out one carbon atom in a quadrillion (ten to the 15th). According to Dr. Elisabetta Boaretto, the Kimmel Center's radiocarbon dating expert, it will be able to accurately date a single lentil or grain of wheat.

Other research will make use of Weiner's experience in investigating modern materials - specifically teeth. His studies of the microstructure of modern human teeth have revealed how they stand up to the daily pressures of chewing. Now, similar analyses will be used to examine the evolution of teeth in our nearest ancestors.

**Please visit the site:**

**[http://scienceblogs.com/weizmann/2012/01/weizmann\\_and\\_max\\_planck\\_join\\_f.php](http://scienceblogs.com/weizmann/2012/01/weizmann_and_max_planck_join_f.php)**

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## **RARE TOMB OF WOMAN FOUND IN EGYPT VALLEY OF KINGS, BY AYA**

In a rare find, Egyptian and Swiss archaeologists have unearthed a roughly 1,100 year-old tomb of a female singer in the Valley of the Kings, an antiquities official said Sunday.

It is the only tomb of a woman not related to the ancient Egyptian royal families ever found in the Valley of the Kings, said Mansour Boraiq, the top government official for the Antiquities' Ministry in the city of Luxor,

The Valley of the Kings in Luxor is a major tourist attraction. In 1922, archaeologists there unearthed the gold funerary mask of Tutankhamun and other stunning items in the tomb of the king who ruled more than 3,000 years ago.

Boraiq told The Associated Press that the coffin of the female singer is remarkably intact.

He said that when the coffin is opened this week, archaeologists will likely find a mummy and a cartonnage mask molded to her face and made from layers of linen and plaster.

The singer's name, Nehmes Bastet, means she was believed to be protected by the feline deity Bastet.

The tomb was found by accident, according to Elena Pauline-Grothe, field director for excavation at the Valley of the Kings with Switzerland's University of Basel.

"We were not looking for new tombs. It was close to another tomb that was discovered 100 years ago," Pauline-Grothe said.

Pauline-Grothe said the tomb was not originally built for the female singer, but was reused for her 400 years after the original one, based on artifacts found inside. Archaeologists do not know whom the tomb was originally intended for.

The coffin of the singer belonged to the daughter of a high priest during the 22nd Dynasty.

Archaeologists concluded from artifacts that she sang in Karnak Temple, one of the most famous and largest open-air sites from the Pharaonic era, according to evidence at the site.

At the time of her death, Egypt was ruled by Libyan kings, but the high priests who ruled Thebes, which is now within the city of Luxor, were independent. Their authority enabled them to use the royal cemetery for family members, according to Boraiq.

The unearthing marks the 64th tomb to be discovered in the Valley of the Kings.

Please visit the site: <http://abcnews.go.com/International/wireStory/rare-tomb-woman-found-egypt-valley-kings-15365693#.TxMreNUU6So>

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## **SHARJAH'S 3,000-YEAR-OLD CLUE TO THE FIRST DOMESTICATED CAMELS, BY MARIE-LOUISE OLSON**

Archaeologists are unearthing answers to one of the Arab region's biggest historical mysteries – the origin of the domesticated dromedary.

According to 3,000-year-old evidence discovered at two excavation sites in Sharjah, people in what is now the UAE were probably the first to domesticate the wild camel.

A team from Bryn Mawr College in Philadelphia has been digging at the sites in Tell Abraq and Muweilah along the border with Umm Al Qaiwain since early December.

The excavations have revealed almost 10 times as many bones of domesticated dromedaries as at any other single site in the Middle East.

The sites have been known to archaeologists since the 1970s, when they were first excavated by teams from Australia and Denmark.

Among them was a young archaeology doctoral student, Peter Magee, who came to the region because he was fascinated by the Middle East's history.

Now he has returned to explore the sites again, "because there were unanswered questions here that I wanted to resolve".

According to Mr Magee, the history of the domesticated dromedary is key to understanding the expansion of human settlements at that time, around 1000BC, when the camel was vital to a flourishing local population as a prime source of meat and milk.

More important, it was used to transport goods across the harsh desert landscape, which helped to facilitate development.

Periods of drying and drought in the Middle East often caused societies to collapse, Mr Magee says, but not in the UAE.

"When there were periods of desiccation in this area, it actually seemed to cause expansion, which is a very interesting pattern quite different from the rest of the region," he said.

The excavation sites show evidence that this expansion could be due to the domestication of camels, and the emergence of innovations such as irrigation systems.

"The Tell Abraq site is important because it contains multiple layers that show many periods of occupation. This provides us with an opportunity to see the development of the economy and the environment at that time."

According to Mr Magee, the earliest levels of the site go back to 2500BC, during the Bronze Age, the period that was focused upon in the earlier excavations.

“The period from about 2000BC to about 500BC is still poorly known in this region, so I was quite sure that we could find deposits dated to that period on this side of the mound.”

The past few weeks of digging have proved his hunch was right.

The 15-member team, which includes Steve Karacic, a PhD candidate from Bryn Mawr, unearthed a deep, 4.5-metre-wide stone wall from around 1000BC – the same period in which large human settlements in the region increased.

“It’s very exciting to find this,” said Mr Karacic, who is digging in the UAE for the second year in a row. “We’ve found a lot of floors in these trenches, so being out here has been a lot of fun.”

According to Mr Magee, it would be “easy to think” that the wall could have been a fortification, “but 3,000 years ago the most sophisticated weapons were metal and bronze bows and arrows. They wouldn’t have needed a wall to protect against that.”

It was more likely, he said, to be a “statement of ownership”.

“If you were walking towards the site from the south east, you would have seen this massive stone wall rising up, so it would have been a monumental statement in the landscape.”

There is still no evidence showing the name of the native tribe at the time, nor what language they spoke. However, the sites have changed the common understanding of trading patterns in the region.

“We’ve found evidence that we traded with the rest of Arabia during this time, and that was not really possible until the camel was domesticated.”

Last week the team unearthed painted figurines of camels with saddles on them, which Mr Magee said attests to the theory of the changes in trading patterns.

They have also found thousands of ceramic shards, stone vessels, sea shells, bronze items, animal bones and an inscription written in an extinct language from Yemen.

Three American undergraduate students from the Philadelphia college are in charge of sifting through the never-ending piles of dirt.

Akshyeta Suryanarayan, 20, picked up a flat-looking rock and asked Mr Magee if it was a piece of pottery.

“No, that looks like a turtle shell,” he said.

“We’ve found a lot of interesting things, and it’s cool to learn how it works out here on an excavation site,” said Sara, while prodding a few pieces of 3,000-year-old bird bone.

“Our discoveries will mean that some of the early ideas about the transition into this more intense period of occupation around 1000 BC clearly need to be rewritten – some of which I wrote 15 years ago,” Mr Magee said.

“We need to think about the fact that new evidence changes opinions, including our own, and that is exciting.”

**Please visit the site:** <http://www.thenational.ae/news/uae-news/sharjahs-3-000-year-old-clue-to-the-first-domesticated-camels> [See also <http://news.brynmawr.edu/2012/01/10/nationalarticle/>]

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## **PALEOLITHIC TOMBS DISCOVERED' IN YEMEN**

Two hundred Paleolithic tombs have been discovered in the western al-Mahwit region of Yemen, reports say.

The tombs contain embalmed mummies and other funerary relics, according to the state-run Saba news agency.

They were carved into the rock and have one or more chambers depending on how many bodies they held, Mohammad Ahmad Qassim, head of antiquities for Al-Mahwit province, told Saba.

Among the objects found in the tombs were earthenware utensils and weapons. The artefacts were very effectively preserved and were put in niches carved in the walls of the tombs. Over 1,000 other Paleolithic artefacts were also found in the Bani Saad area, Mr Qassim added.

The findings point to the existence of a developed culture in the region at the time, Saba reports.

The Paleolithic period, the larger part of the prehistoric Stone Age, is thought to have begun over 2m years ago and ended around 8,000 BC.

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Jack M. Sasson  
Vanderbilt University  
Nashville, TN 37240  
[jack.m.sasson@vanderbilt.edu](mailto:jack.m.sasson@vanderbilt.edu)

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Please visit the site: <http://www.bbc.co.uk/news/world-middle-east-16477111>

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## **MSU TEAM IDENTIFIES ANCIENT DISEASE, BY BECCA GUAJARDO**

A disease that continues to effect undeveloped areas worldwide recently was discovered in ancient skeletons by a group of MSU professors and graduate students.

The discovery began in Butrint, Albania, one of the most famous archeology sites in the country, said associate professor of anthropology Todd Fenton, who lead a team of 10 to 12 students on the project.

“Many of the bones were coming from a palace that had gone to ruins,” Fenton said, adding that the site had been conquered several times and was ruined by flooding during medieval times.

Fenton has been taking teams of students to Albania and Italy for about 10 years to analyze skeletons and also collaborated with archeology teams from Britain and Albania during the discovery.

Fenton and his team analyzed skeletons for eight hours a day for three to four weeks, examining the skeletons to check for gender and the estimated age of death, as well as the skeleton’s health.

The team found unusual holes in the vertebrae of the bones, which were then sent to be tested at MSU by Director of MSU’s Forensic Science Program David Foran and his team.

Former graduate student Michael Mutolo originally tested the bones for tuberculosis because of the look of the lesions on the bones, but the results came out negative. The work then was passed to graduate student Amanda Buszek, who used a machine named The Pyrosequencer, the only one on campus.

“It allows us to sequence tiny pieces of DNA,” Foran said. “From remains this old, that is all you get. You don’t get big pieces of DNA.”

Buszek’s sequencing proved the remains to be effected by brucellosis on the first try, Foran said.

Brucellosis occurs from animals carrying a bacteria and can be obtained from exposure to cattle with the disease. It is less common now due to stricter cattle policies, he said.

Brucellosis also is found in more underdeveloped areas in the world in current times, including Albania, Buszek said. Most people do not die of the disease any more, as it can be cured with antibiotics, she said.

The effect of brucellosis on the vertebrae is slow and painful, Fenton said. The infant mortality rate at the site was high, and children were dying at an early age, he said.

This discovery of brucellosis has been the first to be found in ancient remains and illustrates how life in the past was not picturesque, Foran said.

“Being herders, being shepherds, you imagine a really pretty place and a wonderful life they are having,” Foran said. “That was not the case. They were living hard lives.”

**Please visit the site:**

[http://www.statnews.com/index.php/article/2012/01/msu\\_team\\_identifies\\_ancient\\_disease](http://www.statnews.com/index.php/article/2012/01/msu_team_identifies_ancient_disease)

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## **MYSTERY OF POMPEII'S TRASHY TOMBS EXPLAINED, BY WYNNE PARRY**

Pompeii trash pits and cistern. Residents' casual attitude toward trash explains why tombs were filled with household garbage, an archaeologist says.

A composite photo shows the location of two trash pits in close proximity to a cistern that held drinking and washing water in a home in Pompeii. Residents' casual attitude toward trash explains why tombs were filled with household garbage, an archaeologist says.

The tombs of Pompeii, the Roman city buried by a volcanic eruption in A.D. 79, had a litter problem. Animal bones, charcoal, broken pottery and architectural material, such as bricks, were found piled inside and outside the tombs where the city's dead were laid to rest.

To explain the presence of so much garbage alongside the dead, archaeologists have theorized that 15 years before the eruption of Mount Vesuvius, an earthquake left Pompeii in disrepair.

However, this theory is unlikely, according to an archaeologist who says the citizens of Pompeii may have just been messy, at least by modern, Western standards. [Images from Pompeii]

"We tend to assume things like that are universal, but attitudes toward sanitation are very culturally defined, and it looks like in Pompeii attitudes were very different than ours," said Allison Emmerson, a graduate student studying Roman archaeology in the classics department of the University of Cincinnati.

Archaeological evidence from the last 15 years indicates that the city likely did not fall into ruin after the earthquake in A.D. 62; rather than flee, citizens appear to have rebuilt, reconstructing public spaces and elite houses. When the eruption buried the city, new tombs were still being built and the city appeared prosperous, according to Emmerson.

"It just didn't make sense that trash would mean the tombs weren't being used," she said.

In fact, the tombs weren't unique; excavators have found the same sort of household garbage in the city streets, along the walls of the city, even on the floors of homes. When Emmerson excavated a room in a house that appears to have also served as a restaurant, she found a cistern for storing water between two garbage pits packed with broken pottery and food waste, such as animal bones, grape seeds and olive pits.

No evidence has been found for a system for handling garbage or for dedicated dumps.

"The closest thing that has been found is a giant heap of garbage outside the city walls," she said.

The residents of Pompeii also appear not to have shared our conventions on burial. As Romans, they were primarily concerned with being remembered after death, so they

sought tombs in high-traffic areas. Since Roman law and custom forbid cemeteries inside the city, the tombs ringed the city walls, and clustered at its gates.

The walls of the tombs also served as the billboards of the day, bearing official graffiti announcing gladiator fights, and political advertisements for candidates for office in red paint. Other graffiti was of the "bathroom" variety, Emmerson said. These included more obscene versions of "I had a girl here," and messages back and forth scratched into the plaster of the tombs.

Emmerson is scheduled to present her work, which examines how Pompeii's tombs reflect the culture at the time, on Saturday (Jan. 7) at the annual meeting of the Archaeological Institute of America in Philadelphia.

**Please visit the site: <http://www.livescience.com/17747-pompeii-trashy-tombs-mystery.html>**

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## **2,000-YEAR-OLD RELIEF BUST FOUND IN STRATONIKEIA**

A 2,000-year-old relief bust of a king was discovered during excavations in ancient Stratonikeia in Muğla's Yatağan district.

Dr. Bilal Söğüt, a professor of archeology at Pamukkale University and head of the excavations, told the Anatolia news agency that they found a street in the ancient city which began with a gate and was lined with columns. During their excavations, they also discovered the bust of a king dating back to the Hellenistic period. The bust, which is one-and-a-half meters tall and nearly two meters wide, features depictions of bull heads and the figure of a goddess, Söğüt said.

“The depictions of bull heads on the bust represent wealth and power. It was in this region that we previously found a racing chariot. The discovery of 1,500-year-old mosaics here was another welcome breakthrough for us,” he said.

According to Söğüt, the city walls constitute an important part of the excavation work carried out in the ancient city. “The city walls were restored approximately 2,400 years ago by King Mausolus. We have begun excavating these 2,400-year-old walls of this ancient city. Upon the completion of the excavations, we will start work on restoring the area,” he said.

Söğüt said he thinks the walls surrounding the ancient city are nearly 3,600 meters long. “We discovered that one 400-meter section of wall has been preserved to this day. After completing restoration, we will open the wall to visitors,” Söğüt said.

A 100-person team of academics, field workers and students discovered 460 artifacts in the ancient city in the seven-month-long excavations that took place last year, according to Söğüt. The artifacts were delivered to the Muğla Museum. The pieces date back to the Roman and Byzantine periods, he said.

**Please visit the site: <http://www.todayszaman.com/news-267387-2000-year-old-relief-bust-found-in-stratonikeia.html>**

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