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Πληροφοριακό Δελτίο της Ελληνικής Αρχαιομετρικής Εταιρείας

- Νοέμβριος 2013 -

*"Τα περισσότερα από αυτά που θα γίνουν στο μέλλον είναι
ίδια μ' αυτά που έχουν γίνει."*

(Ευριπίδης, 480-406 π.Χ.)

"Όμοια γάρ ως επί το πολύ τα μέλλοντα τοις γεγονόσι."

Newsletter of the Hellenic Society of Archaeometry

- November 2013 -

Nr. 152

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ΣΥΝΕΔΡΙΑ - CONFERENCES/WORKSHOPS

INTERNATIONAL WORKSHOP, "MEDITERRANEAN HOLOCENE CLIMATE AND HUMAN SOCIETIES", FIRST CALL, NAVARINO ENVIRONMENTAL OBSERVATORY, NEO & THE WESTIN RESORT NAVARINO DUNES, COSTA NAVARINO, MESSINIA, GREECE, 23-25 APRIL 2014

with 22 April as day of arrival and 26 April as day of departure

Workshop web-page, click on: <http://navarinoneo.geo.su.se/index.php/en/upcoming-events/185-mediterranean-holocene-climate-and-human-societies> or go to www.navarinoneo.gr and follow the link from there.

Organizers and Contact Person:

Local organizer and contact person:

Karin Holmgren

Director, Navarino Environmental Observatory (NEO)

Department of Physical Geography and Quaternary Geology

Stockholm University

S-106 91 Stockholm, Sweden

e-mail: karin.holmgren@natgeo.su.se

Co-organizers:

Marie-Alexandrine Sicre, Lab. des Sciences du Climat et l'Environnement, LSCE, France

Alexandra Gogou, Hellenic Centre for Marine Research, HCMR, Greece

Juerg Luterbacher, Justus-Liebig University Giessen, Germany

Elena Xoplaki, Justus-Liebig University Giessen, Germany

Background and Aims:

Holocene climate reveals notable changes in the Mediterranean basin. Among them are the abrupt cold events of 8.2, 5.2, 4.2, 3.5 and 1.2 ka BP, the warm interval Holocene Climate Optimum (~10-6.5 ka BP) and, closer to present, the 'Medieval Climate Anomaly' and 'Little Ice Age'. The Mediterranean region also bears a long history of human society dynamics, making it a suitable site to explore interactions between climate, environment and human activity over a variety of time scales. However, data documenting climate events as well as the human history are still ambiguous to ascertain firm links between large-scale atmospheric circulation, regional climate changes and local human society evolution.

This multi-disciplinary workshop will follow a two-fold approach: a palaeoclimatic approach addressing the events, severity, rate and duration of past climatic changes, and a geoarchaeo-logical-historical approach addressing the dynamics of past societies. We aim at a better knowledge of both the drivers behind climate system and behind the coupled society-climate system including its ensuing response and adaptation, in order to understand human capability in readjusting into a changing environment. Further aim is to identify strategies for acquiring the information needed to progress our understanding

of the global/Mediterranean climate linkages and their interaction with human societies. This may include recommendations for an integrated research effort on the Holocene Mediterranean climate-human societies system, targeting on data production from multiple proxy records in key-regions and at key-periods and the development of new modelling approaches to optimize interpretation of palaeodata, reduce uncertainties and develop an integrated data/model approach to describe the evolution of human societies in response to climate and environmental changes.

Workshop structure:

The workshop will be open for 60 participants from different disciplines (history, archaeo-logy, palaeoclimatology, modelling, etc..). The organizers will select the participants to ensure a balanced number between the disciplines and research foci. After a few key note talks addressing all the disciplines of the workshop, the participants will be divided into chaired groups, of approximately 15 scientists each, to discuss the common workshop themes:

1. Does climate matter for societies? What is the “real” evidence for causation and do we have cases with detailed enough data and methodologies on both the physical and the social sides?
2. Can we identify societies sustainable to climate “crisis”? What made those societies sus-tainable, i.e. can we identify suitable adaptation strategies to the impacts of climate change?
3. And those societies that did not survive, what were the factors that caused or contributed to their collapse?
4. Where are the knowledge gaps and how could we initiate proposals for future research and networking that better address those interdisciplinary issues?

Within the groups there will be time for individual presentations but most of the time will be devoted to discussions! The division in groups will be made in such a way that assures the representation of all disciplines in every group. The neutral keywords for this division will be “time period” and “area”. The chairs of the groups will represent the different disciplines and will switch between the different groups, in order to reduce any bias connected to the scientific expertise of each chair-person. Rapporteurs will be assigned for each group (and stay in the same group throughout). Young researchers will assist the group rapporteurs. The rapporteurs will be responsible for reporting the outcome of the group meetings in plenum during the final workshop day. The chairs and the rapporteurs will be selected in advance and they will need to plan and coordinate the task among each other before the workshop starts.

Abstracts of ca 100 words should be submitted by all applicants. Since oral presentations in plenum will be limited, participants are encouraged to bring posters, size A1, portrait format. The posters will be exposed throughout the workshop.

Costs:

Thanks to PAGES funding and from the organizer’s institutes the costs that participants need to cover are for travel (except for ordered bus from Athens/Kalamata, see under practical matters), food during the day of arrival (22nd April) as well as a conference fee of 100€. Some travel support will be available for early career researchers. Other costs for accommodation, meals and conference facilities will be covered by the workshop.

Apply to the workshop:

- Deadline for expression of interest to participate is 15 November 2013. Please fill in the form below and send it to karin.holmgren(at)natgeo.su.se
- Notification of participation will occur in early December.
- Final registration and the deadline for submitting abstracts will be 15 January 2014

Location and Logistics:

The workshop will take place at Costa Navarino, a luxury, eco-friendly resort and at the field station of Navarino Environmental Observatory (NEO). NEO is a cooperation between Stockholm University, the Academy of Athens and TEMES S.A., dedicated to research and education on the climate and environment of the Mediterranean region. Participants arrival to the workshop venue should be on the 22nd April and departure on the 26th April. 1 or 2 buses will depart at fixed times from the airports of Athens and Kalamata to bring the participants to the Navarino Environmental Observatory. Arrival by other means (e.g., rental car, public transportation, taxi) will have to be organised by the participants at own cost.

More information about logistics, other practical matters and a detailed agenda will be given in December 2013.

Mediterranean Holocene Climate and Human Societies

First call

Application form for expression of interest

Location: Navarino Environmental Observatory, Navarino Dunes, Costa Navarino, Greece

Dates: 23-25 April 2014, with 22 April as arrival day and 26 April as departure day

Please complete the following information and send your application to Karin Holmgren at karin.holmgren (at) natgeo.su.se

1. Name: _____

2. Affiliation: _____

3. Contact address and email: _____

4. Your scientific field: _____

5. Which time period would you prefer to focus on during the work shop? Please label **1** for highest priority and **4** for lowest priority:

| | |
|---------------------------------|--|
| Early Holocene, 9500-4000 BCE | |
| Mid-Holocene, 4000-300 BCE | |
| Late Holocene, 300 BCE- CE 1850 | |
| “Anthropocene”, CE 1850-present | |

6. Which region would you prefer to focus on during the workshop? Please label **1** for highest priority and **3** for lowest priority):

| | |
|-----------------------|--|
| Western Mediterranean | |
| Central Mediterranean | |
| Eastern Mediterranean | |

7. Would you be willing to take on a chair appointment?

Yes No

8. Would you be willing to take on a rapporteur appointment?

Yes No

9. Any other comments or suggestions?

Deadline to submit the form: 15 November 2013

WHY THINGS MATTER, 6-8 MARCH 2014, **CALIFORNIA STATE UNIVERSITY** **FULLERTON SECOND CALL FOR PAPERS**

Conference Keynote Speaker: Carl Knappett

Over the last twenty years the interest in things has increased. This material turn has explored the social life of things, the way things and society are co-produced and even the degree to which subject-object dualisms can be broken down entirely. More recently anthropologists and archeologists such as Ian Hodder, have criticized these studies for not going far enough, arguing that the approach to things across the academy is still too much concerned with what things can do for humans in society, their symbolism, their efficiency in performing a particular task, or their material links to actor networks. For the "Why Things Matter" conference we invite potential participants to propose short papers that will attempt to look even more closely at things themselves, to try and see the thing itself and its multiple connections. For example we are interested in papers that reflect on:

- The dependencies of things both on people and on other things;
- Transformations of things precipitated by both internal and external forces and how these changes may impinge on human experience;
- The variance of time scales of things particularly compared to human life, with some things enduring well beyond human experience, and others so transitory that we hardly notice them
- The way thingness can be hidden as when things like window panes or screens can be invisible, because we look through and not at them;
- Different ways of conceptualizing things from Entanglement to ANT to SCOT
- Things in the formation and development of the human mind.

Potential topics include:

- The landscape
- The emergence of modern humans
- The extended mind
- The artefact
- Natural things
- Intangible things

Abstracts of no more than 200 words should be submitted by 15 December 2013.

Inquiries and submissions should be sent to the organizers.

Emily Miller Bonney
Associate Professor Liberal Studies
California State University Fullerton
ebonney@fullerton.edu

Kevin Lambert
Associate Professor Liberal Studies

California State University Fullerton
klambert@fullerton.edu



**GDR 3398 «HISTOIRE DES
MATHEMATIQUES», CIRM (LUMINY,
CLOSE TO MARSEILLE),
NOVEMBER 4 - 8, 2013**

The GDR 3398 « Histoire des mathématiques » has been created by the Mathematical Institute of the French National research organisation CNRS in 2011. Its goal is to promote the continuous and quality-oriented development of the history of mathematics by strengthening the interaction between existing activities in this domain of research in France. During the first two years of its existence, the GDR has thus co-sponsored :

– activities open to the whole history of mathematics community, such as the Séminaire d'histoire des mathématiques at Institut Henri Poincaré, the Revue d'histoire des mathématiques, – the participation of young historians of mathematics from France in the yearly Novembertagung, – as well as individual travels.

For the latter, priority goes to

– trips which enhance the interaction between different research units or teams, – trips of young researchers (in particular, thesis students) which cannot be completely taken on by their home institutions, and to – trips for archival work.

Contrary to what happened in 2011 and 2012, the bulk of the current budget (2013) will serve to realize an École du GDR, i.e., a School on « Sources in the history of mathematics », which is not called a Summer School because it will take place at the CIRM (Luminy, close to Marseille) from November 4 to 8, 2013.

This School is specially directed towards young researchers in the history of mathematics. It is structured along three units, or blocks, each one of which contains a plenary lecture course as well as three workshops in parallel sessions (between the blocks). Roughly half of the teaching will be in English (the other half being in French). A detailed presentation of each block can be downloaded by clicking on its title.

Block 1. The variety of mathematical sources and the question of their interpretation. Organizers Karine Chemla, Renaud Chorlay, Baptiste Mèlès, with the active participation of Agathe Keller, Cécile Michel, Christine Proust, Dominique Tournès.

http://www-irma.u-strasbg.fr/~schappa/NSch/GDR_Hist_Math_files/Bloc%28k%291_1.pdf

Block 2. Constructing collectives of texts.

Organizers Frédéric Brechenmacher, Hélène Gispert, with the active participation of Jenny Boucard, Matthieu Husson, Philippe Nabonnand, Jeanne Peiffer, Sabine Rommevaux.

Block 3. Problems, methods, and practices of editing mathematical texts in the digital age. Organizers Fabio Acerbi, Alexandre Guilbaud, with the active participation of Ramon Masià, Irène Passeron, Bernard Vitrac.

Click here for the schedule of the various courses and workshops (= ateliers).

Registration on the CIRM website is open.

For more information contact Norbert Schappacher schappacher@math.unistra.fr and Sébastien Gauthier gauthier@math.univ-lyon1.fr

Please visit the site:

http://www-irma.u-strasbg.fr/~schappa/NSch/GDR_Hist_Math.html [Go there for French version, and many live links to events and information]

FOURTH BALKAN SYMPOSIUM ON
ARCHAEOLOGY, NESSEBAR, BULGARIA,
27-30 SEPTEMBER, 2014

Dear Colleague,

On behalf of the Organizing Committee, we are pleased to invite you to participate in the Fourth Balkan Symposium on Archaeometry.

The Balkan Symposium on Archaeometry is a biennial meeting, the first being held in Ohrid, Republic of Macedonia in 2008, the second - in Istanbul, Turkey in 2010 and the third - in Bucharest, Romania in 2012.

BSA 2014 will be held from 27th to 30th September, 2014 in Nessebar, Bulgaria. Organizers of the symposium are the Institute of Solid State Physics and the National Institute of Archaeology with Museum of the Bulgarian Academy of Sciences. Co-organizers are Sofia University “St. Kliment Ohridski” and Museum “Ancient Nessebar”. The Symposium will be focused on main aspects of archaeometry, the application of modern experimental methods and techniques used in dating, investigation and identification of ancient artifacts, as well as related fields of archaeology and art history.

The 4th BSA meeting will be organized in 4 days: a 3-day conference presenting sessions (invited, oral and poster presentations) and one-day workshop. At the workshop the participants will see demonstrations and will participate in experiments in situ with portable apparatus at real archaeological sites or in museum rooms.

In addition to scientific seminars, a wide range of social programs including city tours and visits to historical places will be available.

The Organizing Committee also encourages companies and institutions to showcase their modern products and equipment in the conference area.

Further information will be available on our symposium web site: <http://bsa4.issp.bas.bg>. Specific questions concerning further information can be sent by e-mail to: bsa4@issp.bas.bg We are looking forward to meeting you at BSA 2014 in Nessebar.

With our best regards,

Margarita Grozeva, Chair 4th BSA
Petya Penkova, Secretary 4th BSA

**1ST IHU SUMMER SCHOOL IN ANCIENT
TECHNOLOGIES AND CRAFTS, OPENING
OF THE INTERNATIONAL SUMMER
SCHOOL OF THE INTERNATIONAL
HELLENIC UNIVERSITY, THESSALONIKI,
GREECE, 1-12 JULY 2013**

Technology is a significant aspect of ancient civilizations. Its importance is exceptional since the progress of a civilization is directly dependent on the progress of its technology. Monday, 1 July 2013, saw the inaugural seminar of the first IHU Summer School on Ancient Technology and Techniques, delivered by Emeritus Professor of NTUA, Theodosios Tasios, academic teacher and President of the Society for the Study of Ancient Greek Technology (EMAET). The scientific leader responsible for the fortnight-long programme is Research Director Anna Michailidou.

The international spectrum of experts on the programme included Professor John Seiradakis (Astronomy Department, Aristotle University), Professor Claire Palyvou (Department of Architecture AUTH), Professor Marie-Louise Nosch (Director of the Centre for Textile Research University of Copenhagen), Dr Ellen Harlizius-Klück (Centre for Textile Research University of Copenhagen), Dr Fani-Maria Tsigakou (Benaki Museum), Professor Chryssoula Paliadeli (Department of History and Archaeology, Aristotle University of Thessaloniki), the Research Director Anna Michailidou (National Hellenic Research Foundation), Dr Anastasios Antonaras (Museum of Byzantine Culture in Thessaloniki), Dr Despina Ignatiadou (Archaeological Museum of Thessaloniki), Dr Vassilis Petrakis (National Hellenic Research Foundation), the Research Director John Bassiakos (NCSR "Demokritos"), Dr Anastasios Tanoulas (Committee for the Restoration of the Acropolis), the Assistant Professor Manolis Manoledakis (International Hellenic University) and Dr Georgia Aristodemou (International Hellenic University).

Following the two-week programme of seminars, some of the students chose to stay an additional week in order to gain practical training. Some were trained in excavation techniques at the ancient Agora of Pella, under the direction of Professor John Akamatis (AUTH), and others were trained at the Archaeological Museum of Thessaloniki, under the direction of the Museum Director, Dr Polyxeni-Adam Veleni.

The students who participated in the first year of this Summer School originated from various countries (the Czech Republic, Great Britain, Greece, Israel, Slovakia and the USA). They represented a wide range of academic backgrounds (Archaeology, Architecture, Literature, Engineering, etc.) coming from the following Universities: Yale University, University of New York, Charles University, Prague, University of Bratislava, University of Athens, University of Ioannina and Aristotle University of Thessaloniki.

For more information regarding the previous year Summer School, please contact

<http://www.ihu.edu.gr/index.php/lps/item/165-ancient-technologies-and-crafts.html>

See also

- a) the [time table](#) of the lectures and
- b) some [pictures](#) of our life during the lessons and the excursions.

The Summer School on Ancient Technology is planned to be held annually with the aim of a) providing an international forum on technological achievements in the ancient Greek world and b) making greater use of the rich resources of Greece in terms of specialists in ancient technology research.

The series of lectures are organized in three sections: 1. From Material Resources to Final Products, 2. Ancient Technology and Science, 3. Technology, Art and Ideology. Every year this IHU Summer School will bring together experts from selected fields such as: Metallurgy, Ceramics, Textiles, Glass, Mechanisms, Building Technology, Naval Technology, Script Technology etc. The emphasis in the previous year was on ancient textiles and building technology. The emphasis for next year, 2014, will be on Astronomy and Naval Technology.

2nd IHU Summer School in Ancient Technologies and Crafts, 1-15 July 2014

The brochure for 2014 will circulate at the end of 2013. The courses will again take place at the IHU facilities at Thessaloniki, Greece. The Ancient Technology Summer School welcomes applicants from a wide range of educational background. Participants can be undergraduates, graduate students as well as adults or professionals of secondary education with an interest in archaeology. The fees are expected to be the same as last year, that is 665 euros for two weeks lectures.

NARNIA FELLOWS' RESEARCH
WORKSHOP, RECENT DEVELOPMENTS IN
THE INTERDISCIPLINARY STUDY OF
ANCIENT MATERIALS FROM THE
EASTERN MEDITERRANEAN, NICOSIA, 7
AND 8 NOVEMBER 2013,
ARCHAEOLOGICAL RESEARCH UNIT,
UNIVERSITY OF CYPRUS, 12 GLADSTONOS
STR, 1095 NICOSIA

Thursday, 7th of November 2013

9.00 - 9.10 Welcome address by the NARNIA Coordinator

The study of ceramic artifacts from the eastern Mediterranean
(Chair: Dr Vassilis Kilikoglou, N.C.S.R Demokritos)

9.10-9.40 Dr Noemi Mueller (N.C.S.R Demokritos)
“Mechanical and thermal behaviour of functional ceramics in the Aegean and Cyprus”

9.40-10.10 Christina Makarona (Vrije Universiteit Brussel)
“Geochemical proxies for provenancing Cypriot pottery classes from Early to Late Bronze Age contexts”

10.10-10.40 William Gilstrap (University of Sheffield)
“Ceramic production technology and exchange during the Late Helladic IIIB period in the area of the Saronic Gulf, Greece”

10.40-11.10 Roberta Mentessana (University of Sheffield)
“Technological and social change in Phaistos, Crete, from the Final Neolithic through EMIIA”

11.10-11.40 Artemi Chaviara (Thetis Authentics Ltd)
“A technical approach to pottery production in Attica during the Historic period: Use of raw materials and processing techniques over time”

11.40-12.15 Coffee break

Dating techniques and palaeo-environment
(Chair WP leader: Dr Ioannis Bassiakos, N.C.S.R Demokritos)

12.15-12.45 Evangelos Tsakalos (N.C.S.R Demokritos)

“Luminescence dating and the palaeo-environment in SE
Cyprus”

12.45-13.15 Ioannis Christodoulakis (N.C.S.R Demokritos)
“Luminescence dating and the palaeo-environment in SW Peloponnesus”

pXRF application in archaeology

(Chair WP leader: Dr Roger Doonan, University of Sheffield),

13.15-13.45 Dr Ellery Frahm (University of Sheffield)
“Portable XRF (pXRF) Applications in Archaeology”

13.45-15.00 Lunch break

Copper metallurgy in the eastern Mediterranean

(Chair W.P. Leader Dr Vasiliki Kassianidou, University of Cyprus)

15.00-15.30 Dr Andreas Charalambous (University of Cyprus)
“A diachronic study of ancient Cypriot metalwork”

15.30-16.00 Lente Van Brempt (University of Cyprus)
“The production and trade of Cypriot copper in the Late Bronze Age and Early Iron Age”

16.00-16.30 Frederik Rademakers (University College London)
“Ancient urban metallurgy in the Eastern Mediterranean”

16.30-17.00 Mainardo Aniselli (University College London)
“Copper alloy production and consumption in the Tuscia region during the Middle Ages”

Friday, 8th of November 2013

**The study and conservation of architectural decoration from the eastern
Mediterranean. Issues of material properties and cultural heritage**

(Chair WP leader: Prof. Anne Marie Guimier Sorbets, Université Paris-Ouest)

9.00-9.30 Olivier Bonnerot (University of Cyprus)
“A study of materials used in the production of Cypriot wall mosaics, with a special
emphasis on artificial materials”

9.30-10.00 Francesca Licenziati (Université Paris-Ouest)
“Techniques and materials used in Hellenistic mosaics, with a particular focus on the
glassy materials used in mosaics from Delos (Greece)”

10.00-10.30 Lydia Avlonitou (Université Paris-Ouest)
“Techniques and materials used in wall paintings, from the Classical to
the Roman period, in the Eastern Mediterranean. The decoration of the
Macedonian Funerary Monuments”

10.30-11.00 Coffee break

11.00-11.30 Liza Charalambous (G. M. EUROCY Innovations Ltd)
“Application and development of computational Intelligence methods
in Analyzing Archaeological Data”

11.30-12.00 Dr Marta Tenconi (Hashemite University)
“Assessment and quantification of damage on the building materials
from three desert castles in Jordan”

Glass production and trade in the eastern Mediterranean
(Chair W.P. Leader Prof. Karin Nys, Vrije Universiteit Brussel)

12.00-12.30 Anastasia Cholakova (University College London)
“Glass supply and consumption in the Byzantine Empire”

12.30-13.00 Andrea Ceglia (Vrije Universiteit Brussel)
“Glass production in Antiquity” (video presentation)

I would like to inform you that the lectures of the upcoming NARNIA training course “[Cultural Heritage practices: issues of archaeological conservation and site preservation](http://narnia-itn.eu/trainingcourses/cultural-heritage-practices-issues-of-archaeological-conservation-and-site-preservation/)” will be broadcasted online and you may watch them from your own computer following one of the links below. The training course will be held at the Archaeological Research Unit of the University of Cyprus, between the 4th and 6th of November 2013. For more information about this training course, including the final programme, please visit the website of the NARNIA project, <http://narnia-itn.eu/trainingcourses/cultural-heritage-practices-issues-of-archaeological-conservation-and-site-preservation/>

The live streaming will be available to users via one of the links below:

<http://videosever.cc.ucy.ac.cy/live1>

<mms://videosever.cc.ucy.ac.cy/live1>

It is prerequisite that the appropriate plug-ins or add-ons are installed, such as Windows Media Player plugin, or Flip4Mac plugin (for Safari) or other media players that support Windows Media format (. Wmv / . wma), e.g. WindowsMediaPlayer, VLC, RealPlayer, MPlayer, Windows Media Components for Quick Time, OPlayer for iPad.

CONFERENCE “TEACHING CONSERVATION-RESTORATION”, 26. MARCH 2014, CALL FOR PAPERS

ENCoRE, the European Network for Conservation-Restoration Education, was officially constituted in 1998. Its aim is to promote research and education in the field of conservation-restoration of cultural heritage [ENCoRE Statutes § 2].

Since developing education is one of main goals of ENCoRE , the Board decided to organize a one day international conference dedicated to Teaching Conservation-Restoration, prior to the 10th General Assembly of ENCoRE in March 2014 in Liège (Belgium). Both meetings will be hosted by the École Supérieure des Arts Saint Luc in Liège, Belgium.

The conference will be supported by the digital C-R periodical CeROArt that will enable students to present relevant research subjects during a poster session. Please remember that ENCoRE offers stipends for students from your program to attend the meetings !

Submission for the poster session will be announced later

The Board genuinely hopes that all ENCoRE members are represented in Liège, since important issues will be addressed, such as:

- The relevance of ‘practice’ in conservationrestoration education programs
- The effects of the European Qualification Framework on teaching
- Revision of the statutes and a critical assessment of the membership
- Research in a European framework considering the Horizon 2020 agenda

Education of conservator-restorers has shifted over the decades from teaching apprentices practice in studios in the classical master / pupil situation, towards a complex education process on academic level, reflecting the fundamental changes within the profession.

At present there are numerous types of education for the discipline of Conservation-Restoration in Europe, showing many similarities but sometimes also considerable differences. The advocated student’s mobility on the other hand requires that qualifications can be recognized mutually, not on the basis of purely formalistic procedures but in measurable terms of knowledge, skills and competences, as described in the European Qualification Framework (EQF).

In order to equip graduates with the necessary knowledge, skills and competences, it is necessary that “an appropriate balance of integrated theoretical and practical teaching” [Document of Pavia 1997] is achieved. The Board, as a result of the GA in Valencia, has been very active drafting a position paper, describing and defining the term “practice”. It is hoped that this process will help eliminating misunderstandings caused by the different meanings of the term “practice”, thus facilitating further development of the field. Since several programs in Europe are faced with severe budget and time restrictions

jeopardizing the full integration of theory and practice, this paper also offers a tool individual C-R programs can use in discussions with their university administration.

The general assembly also will address the ongoing discussion on linking the European Qualification Framework (EQF) to the existing European Credit Transfer System (ECTS) established for European Higher Education. Both systems are based on the same idea, aiming at creating a possibility to compare results. Skills, knowledge and competences are to be translated into a distinct level of qualification in the case of EQF. On the other hand, in the ECTS system results are defined in terms of learning outcomes and not in terms of content of the teaching contrary to the traditional systems.

4 ENCoRE

The definitions of the agreed “Competences for Access to the Conservation-Restoration Profession” issued by E.C.C.O. (European Confederation of Conservator-restorers Organizations’) will have to give the necessary frame for this process.

THEMES

The conference Teaching Conservation-Restoration will focus on a variety of subjects all our members are dealing with preparing the students for their future profession. It is intended that the conference addresses the following themes:

- new developments in pedagogy and didactics
- teaching methodologies
- changing programs due to a changing market
- evaluation of learning outcomes/success
- requirements for teaching
- organization of teaching
- education and training of teachers
- courses for Continuous Professional Development
- any other related topics

VENUE

The conference will be held on March 26th 2014 at the École Supérieure des Arts Saint Luc in Liège, Belgium

ABSTRACTS’ SUBMISSION

All those interested in submitting an abstract should send a Word file by email to - Liege-conf@encore-edu.org

The deadline for abstract submissions is **December 1st 2013**

Instructions:

Abstracts should describe original, unpublished work.

Abstracts must be written in ENGLISH and contain the following information:

- AUTHOR(s) FULL NAME
- CONTACT AUTHOR
- AFFILIATION
- TELEPHONE NUMBER
- E-MAIL ADDRESS
- TITLE OF THE PAPER
- KEY WORDS
- ABSTRACT (max. 500 words)

Abstracts must be submitted in Word Format.

After the evaluation of the proposed contributions and the selection of papers the program will be announced in February 2014.

All accepted abstracts will be published in the Proceedings publication.

We hope to receive interesting papers demonstrating the approaches, methods, paths and strategies academic teaching may take, dealing in particular with integrated teaching of practical topics (“practice”) and theory.

You are kindly asked to distribute this call for papers amongst interested colleagues – thank you in advance for your support.

The Board of ENCoRE
E-Newsletter 1/2013 5

Name and address of the author/ authors:

Indicate the name of the main author with a *. Postal address as well as e-mail address is necessary for the contact between the committee and the author.

Language:

English according to the statutes of ENCoRE.

Title:

The overall general subject of the article should be stated first, followed by a more detailed description of the topic in two-part format of the title of the paper. For shorter remarks, notes, reviews etc. one informative title is sufficient.

Figures/illustrations:

Prepare the illustrations for either one column width (1000 pixels) or double column width (2000 pixels) and indicate that in the caption text.

Photographs may be in formats: .tif, .jpg or .pdf.

Figure and table captions should be listed after the main text similar to the references.

Tables should be submitted as separate files-formats for tables: .doc or .xls.

For diagrams the title must be in the caption only and for graphs the background must be white.

In the final publication the widths of the figures will be either 8 cm or 17 cm.

References:

Do not use automatic reference numbering, but refer by numbers in the main text. Do not use foot notes, but include eventually notes with the references at the end of the main text.

Checklist for manuscript submission

Abstract as document, containing title, author(s) name/names with contact info.

Eventually illustrations in the required file format in separate documents.

CALL FOR PAPERS FOR A SESSION AT THE
COMPUTER APPLICATIONS AND
QUANTITATIVE METHODS IN
ARCHAEOLOGY CONFERENCE
(CAA 2014, 22-25 APRIL, 2014; PARIS)

Archaeology at large: embracing massive audiences for online applications (organized by Andrew Dufton, Müge Durusu-Tanrıöver, and Susan E. Alcock)

Description of the Session:

As we reach over 20 years since the Internet truly arrived to a wider public, it is no longer a mere tool for the dissemination of information. Online applications are now also easily used for the active engagement of massive audiences. Although archaeologists have long relied on the web for the spread of archaeological data, have we been as successful in creating a sphere of online interaction for the general public? To achieve the democratic potential available online, archaeologists need to not only present information to a passive audience but also to encourage the direct involvement of this audience with archaeological materials.

As online technologies continue to develop, some new phenomena have emerged aimed particularly at fostering this type of direct involvement. For example, Massive Open Online Courses - or MOOCs - have the potential to drastically alter the way in which previously 'academic' information is conveyed. What ethical questions does the spread of 'MOOC fever' raise about the impact of opening up the academy to an unpaying audience? Crowdsourcing and crowdfunding initiatives similarly look to existing public interest to support archaeological projects. Yet how can we maintain professional standards or legitimacy when archaeological work is undertaken by the general public? Interactive museums open collections to a global community, but how can we structure the archaeological narrative to such a varied audience? With the positive trend toward greater and greater engagement, we must also take time to ask the hard questions about the potential impact of our choices to embrace these new online tools.

This session invites contributions from projects using digital media specifically to actively engage larger groups. Of particular interest are discussions of successful - and also unsuccessful - techniques for harnessing global communities or untapped potential. This may include examples of online teaching, crowd sourcing initiatives, interactive museums, or other approaches. We ultimately hope to open a timely dialogue on the potentials and pitfalls of these new online tools for a truly interactive online archaeology.

Submission Guidelines:

300-500 word abstracts should be submitted through the CAA system by October 31st, 2013. More information on the submission guidelines and the conference can be found at <http://caa2014.sciencesconf.org/>

TEXTILES AND CULT IN THE
MEDITERRANEAN AREA IN THE FIRST
MILLENNIUM BC INTERNATIONAL
WORKSHOP, COPENHAGEN, 21ST AND 22ND
OF NOVEMBER 2013, THE NATIONAL
MUSEUM OF DENMARK

First preliminary programme Copenhagen, October 6th 2013

Textiles and Cult in the Mediterranean Area in the first Millennium BC International Workshop

Copenhagen, 21st and 22nd of November 2013 Thursday 21st of November

Venue: The National Museum of Denmark

Please visit the site:

http://ctr.hum.ku.dk/conferences/2013/Workshop_Textiles_and_Cult_preliminary_programme_october_2013.pdf [Go there for full program]

**COSCH TRAINING SCHOOL, AUTOMATED
3D DOCUMENTATION OF CH ARTEFACTS
WITH ROBOTIZED STRUCTURED LIGHT
SYSTEM, WARSAW UNIVERSITY OF
TECHNOLOGY AND WILANÓW PALACE
MUSEUM, 25-27 NOVEMBER 2013**

EU COSCH action -Colour and space in Cultural Heritage - www.cosch.info

COSCH Training School

Automated 3d documentation of CH artefacts with robotized structured light system
Warsaw University of Technology and Wilanów Palace Museum.
25-27 November 2013

[Detailed programme](#)

[Application form](#)

Registration deadline: 4 November 2013

RADIOCARBON IN THE ENVIRONMENT **CONFERENCE, 18-22ND AUGUST 2014,** **QUEEN'S UNIVERSITY BELFAST**

Dear Colleagues,

We wish to announce an extension to our call for session proposals for the inaugural Radiocarbon in the Environment Conference which will take place from the 18-22nd August 2014 at Queen's University Belfast. We hope to bring together colleagues from around the globe interested in the applications of radiocarbon, stable isotopes and other biogeochemical methods in ecological and environmental research.

Radiocarbon can be used for much more than chronology. Natural abundance, bomb and enriched radiocarbon, in addition to stable isotopes, have all been used in ecological and environmental investigations.

We wish to invite session proposals at this time. The deadline for session proposals has been extended to midnight of the 30th November 2013. A call for abstracts will follow. The themes to be covered during the conference are:

- Radiocarbon and stable isotopes in freshwater environments
- Radiocarbon and stable isotopes in marine environments
- Radiocarbon and stable isotopes in terrestrial environments
- Radiocarbon and stable isotopes in the atmosphere Radiocarbon, stable isotopes and environmental change
- Techniques in radiocarbon and stable isotopes analysis
- Statistical methods in radiocarbon and stable isotope analysis
- Guidance on Submitting your Proposal

Session proposals should have a title, names and affiliations of conveners, a brief abstract and keywords.

You need to indicate which of our broad themes so they can be sent to the relevant members of the scientific committee to review.

You should also indicate whether you propose an oral or poster session, or whether you wish to have both types of presentation.

The abstract should say what the session covers, but also give an indication of what you want from speakers, i.e. the themes that you want the authors to adhere to when submitting talks/posters.

The abstract should be within 400 words and emailed to 14cenv@gmail.com.

The scientific committee will review the abstract submissions and contact conveners shortly after the session proposal deadline passed.

The conference proceedings will be published by international journal Radiocarbon (<http://www.radiocarbon.org/>).

More information can be found at: <http://www.qub.ac.uk/sites/14C/> or by contacting 14Cenv@gmail.com. Apologies for cross posting.

We hope to see you in Belfast in August 2014!

The organising committee:

Paula Reimer
Evelyn Keaveney
Philippa Ascough
Jesper Olsen

Radiocarbon in the Environment
18-22nd August 2014
Queen's University Belfast
BT17NN
United Kingdom
<http://www.qub.ac.uk/sites/14C/>



ΘΕΣΕΙΣ ΕΡΓΑΣΙΑΣ/ΥΠΟΤΡΟΦΙΕΣ –
JOB VACANCIES/FELLOWSHIPS

CAARI FELLOWSHIPS FOR ACADEMIC
YEAR 2014-2015

THE CYPRUS AMERICAN ARCHAEOLOGICAL RESEARCH INSTITUTE (CAARI) in Nicosia, Cyprus, welcomes scholars and students specializing in the archaeology, history, and culture of Cyprus and the eastern Mediterranean. CAARI is located in central Nicosia close to the Cyprus Museum and the Archaeological Research Unit of the University of Cyprus (both with major libraries), as well as the main business and commercial district. In addition to hostel accommodation for a total of twelve residents, the institute has excellent research facilities: a 10,000-volume library, comprehensive map and artifact collections, archival material, and facilities for Internet, scanning, and photography. Visit: <http://www.caari.org>

For more information on CAARI fellowships, including applications and procedures, visit:

<http://www.caari.org/Fellowships.htm>

Deadline for CAARI-sponsored fellowships: December 15, 2013

GRADUATE STUDENT FELLOWSHIPS

THE DANIELLE PARKS MEMORIAL FELLOWSHIP: A fellowship of US \$1000 FOR a graduate student of any nationality who needs to work in Cyprus to further his/her research on a subject of relevance to Cypriot archaeology and culture. The purpose of the fellowship is to help cover travel to and living expenses in Cyprus. Residence at CAARI is required.

Deadline: December 15, 2013.

THE HELENA WYLDE SWINY AND STUART SWINY FELLOWSHIP: One grant of US \$1000 to a graduate student of any nationality in a U.S. college or university to pursue a research project relevant to an ongoing field project in Cyprus; to be used to fund research time in residence at CAARI and to help defray costs of travel. Residence at CAARI is required.

Deadline: December 15, 2013.

THE ANITA CECIL O'DONOVAN FELLOWSHIP: One grant of US \$1000 to a graduate student of any nationality, studying in any nation, to pursue a research project relevant to an ongoing field project in Cyprus; to be used to fund research time in residence at CAARI and to help defray costs of travel. Residence at CAARI is required.

Deadline: December 15, 2013.

FULBRIGHT STUDENT PROGRAM: <http://us.fulbrightonline.org/>

*see also below for CAORC Fellowships open to US doctoral candidates.

POST-DOCTORAL FELLOWSHIPS

CAARI SENIOR SCHOLAR IN RESIDENCE: An established scholar who commits to stay at least 30 days in succession at CAARI, ideally in the summer, and to be available in evenings and weekends to younger scholars working there, in return for 50% reduction in residency rate.

Must have PhD in archaeology or ancillary field for at least 5 years prior to visit, be fluent in English (but may be of any nationality), and be committed to mentoring students. Travel and other expenses not covered.

Deadline: December 15, 2013.

CARRI/CAORC RESEARCH FELLOWSHIPS: Two fellowships provide US \$5500 each (up to US \$1500 for transportation and an additional US \$4000 for research expenses on the island) and are designed for scholars who already have their PhDs, whose research engages the archaeology, history, culture, or geography of Cyprus, and who would derive significant benefit from a month's research time on the island.

Particular consideration given to applicants whose projects enable them to include Cyprus in their teaching. A minimum of 30 days residence at CAARI is required. Applicants must be U.S. citizens.

Deadline: December 15, 2013.

FULBRIGHT SCHOLARS PROGRAM: <http://www.cies.org/>

CAORC FELLOWSHIPS OPEN TO BOTH PRE- AND POST-DOCTORAL RESEARCHERS

COUNCIL OF AMERICAN OVERSEAS RESEARCH CENTERS (CAORC) MULTI-COUNTRY RESEARCH FELLOWSHIPS:

Open to scholars who already hold a Ph.D. and U.S. doctoral candidates who wish to conduct research of regional or trans-regional significance. Fellowships require scholars to conduct research in more than one country, at least one of which hosts a participating American overseas research center, including CAARI.

<http://caorc.org/fellowships/multi/>

Deadline: January 13, 2014.

COUNCIL OF AMERICAN OVERSEAS RESEARCH CENTERS (CAORC) MEDITERRANEAN REGIONAL RESEARCH FELLOWSHIPS:

A new focused regional fellowship program enabling scholars who have recently (within last 10 years) earned their Ph.D. and U.S. doctoral candidates to conduct research of regional or trans-regional significance in countries bordering the Mediterranean and served by American overseas research centers, including CAARI.

<http://caorc.org/fellowships/mellonmed/>

Deadline: January 13, 2014.

STUDY IN GREECE - ASCSA PROGRAMS **AND FELLOWSHIPS 2014–2015**

The American School of Classical Studies at Athens, one of America's most distinguished centers devoted to advanced teaching and research, was founded in 1881 to provide American graduate students and scholars a base for their studies in the history and civilization of the Greek world. Today, over 130 years later, it is still a teaching institution, providing graduate students a unique opportunity to study firsthand the sites and monuments of Greece. The School is also a superb resource for senior scholars pursuing research in many fields ranging from prehistoric to modern Greece, thanks to its internationally renowned libraries, the Blegen, focusing on all aspects of Greece from its earliest prehistory to late antiquity, and the Gennadius, which concentrates on the Greek world after the end of antiquity.

Membership application to the ASCSA must be made online at <http://www.ascsa.edu.gr> at the same time you apply to any outside funding organization for work at the School.

FUNDING FOR GRADUATE STUDENTS FOR STUDY AT THE ASCSA (FULL ACADEMIC YEAR)

REGULAR MEMBER FELLOWSHIPS: Up to thirteen fellowships are available for the School's Regular Members. Fellowships provide a stipend of \$11,500 plus room and board at Loring Hall on the School grounds and waiver of School fees. Regular Member fellowships are awarded for the entire nine-month program. All awards are made on the recommendation of the Committee on Admissions and Fellowships and are based on the results of the qualifying examinations and materials submitted with the application.

Fellowships include the Heinrich Schliemann and the John Williams White Fellowships in archaeology, the Thomas Day Seymour Fellowship in history and literature, and ten Fellowships unrestricted as to field — the John L. Caskey, the Virginia Grace, the Michael Jameson, the Philip Lockhart, the Lucy Shoe Meritt, the Fowler Merle-Smith, the Martin Ostwald, and the James Rignall Wheeler. The Bert Hodge Hill is unrestricted, but with a preference for a student in art history, and the Emily Townsend Vermeule is unrestricted, but with a preference for Bronze Age archaeology. \$50 application fee.

DEADLINE: JANUARY 15, 2014.

ADVANCED FELLOWSHIPS: Several fellowships for the full academic year at the School with a stipend of \$11,500 plus room, board, and waiver of School fees are available to students who have completed the Regular Program or one year as a Student Associate Member and plan to return to the School to pursue independent research, usually for their Ph.D. dissertation.

Advanced Fellowships awarded by the School: the Samuel H. Kress Fellowship in art and architecture of antiquity; the Gorham Phillips Stevens Fellowship in the history of architecture; the Ione Mylonas Shear Fellowship in Mycenaean archaeology or Athenian architecture and/or archaeology; the Homer A. and Dorothy B. Thompson

Fellowship in the study of pottery; and three Fellowships unrestricted as to field: the Edward Capps, the Doreen Canaday Spitzer, and the Eugene Vanderpool Fellowships.
DEADLINE: FEBRUARY 15, 2014.

FULBRIGHT FELLOWSHIPS: Contact the Institute of International Education, at 809 United Nations Plaza, NY 10017 or (<http://us.fulbrightonline.org/home.html>) for an application and stipend information. Candidates must submit ASCSA application for Student Associate Membership by due date for Fulbright application. Note the program change this year that Student Associate membership is only eligible membership for the Fulbright grants. (<http://us.fulbrightonline.org/countries/selectedcountry/225>)
DEADLINE: OCTOBER 15, 2013.

FUNDING FOR GRADUATE STUDENTS AND POSTGRADUATES FOR STUDY AT THE ASCSA (FULL ACADEMIC YEAR)

THE M. ALISON FRANTZ FELLOWSHIP: Ph.D. candidates and recent Ph.D.'s for work in the Gennadius Library. A stipend of \$11,500 plus room, board, and waiver of School fees.

DEADLINE: JANUARY 15, 2014.

THE JACOB HIRSCH FELLOWSHIP: For projects carried out in Greece, Ph.D. candidate from U.S. or Israel (Israeli citizens) writing a dissertation or recent Ph.D. revising a dissertation for publication. A stipend of \$11,500 plus room, board, and waiver of School fees.

DEADLINE: JANUARY 15, 2014.

WIENER LABORATORY FELLOWSHIPS: Fellowships awarded annually to graduate students or postdoctoral scholars working on well-defined projects in skeletal, faunal, geoarchaeological, or environmental studies. Stipends of \$15,500 to \$27,000.

DEADLINE: JANUARY 15, 2014.

FUNDING FOR GRADUATE STUDENTS OR POSTGRADUATES FOR STUDY AT THE ASCSA (SHORT-TERM FELLOWSHIPS)

THE HARRY BIKAKIS FELLOWSHIP: North American or Greek graduate students researching ancient Greek law or Greek graduate students working on a School excavation. The \$1,875 fellowship is awarded periodically.

DEADLINE: JANUARY 15, 2014.

ARCHAEOLOGICAL INSTITUTE OF AMERICA (AIA) ANNA C. AND OLIVER C. COLBURN FELLOW: Ph.D. candidates and recent Ph.D.'s whose field is classical archaeology. Contact the Archaeological Institute of America, Boston, MA for information. Applications completed on website: www.archaeological.org. Stipend of \$11,000.

DEADLINE: JANUARY 15, 2014

COTSEN TRAVELING FELLOWSHIP FOR RESEARCH IN GREECE: Short-term travel-to-collections award of \$2,000 for senior scholars and graduate students for

projects and research at the Gennadius Library. At least one month of residency required.

DEADLINE: JANUARY 15, 2014.

MEDITERRANEAN REGIONAL RESEARCH FELLOWSHIP PROGRAM (CAORC): US citizen for Ph.D. candidate or recent Ph.D.'s researching in the humanities and related social sciences in countries bordering the Mediterranean and served by American overseas research centers. Fellowship program funded by the Mellon Foundation includes a travel stipend and monthly stipend based on location. See caorc.org for details.

DEADLINE: JANUARY 15, 2014

THE GEORGE PAPAIOANNOU FELLOWSHIP: Ph.D. candidates or recent Ph.D.'s researching Greece in the 1940's and the post-war period. Fellows are required to make use of and refer to the George Papaioannou Papers housed at the Archives of the Gennadius Library. Open to all nationalities. Stipend of €1,000.

DEADLINE: JANUARY 15, 2014.

THE HENRY S. ROBINSON CORINTH RESEARCH FELLOWSHIP: Ph.D. candidate or recent Ph.D. (within five years), for research on a doctoral dissertation or primary publication specifically on Corinth, requiring the use of the resources, archaeological site, and collections at the ASCSA excavations at Ancient Corinth. Open to all nationalities. The Robinson Fellowship may not be held concurrently with another School fellowship. One or more grants for up to three months, maximum amount of stipend is \$4,500.

DEADLINE: JANUARY 15, 2014.

WIENER LABORATORY RESEARCH ASSOCIATESHIPS: Funding up to \$7,000 for well-defined research projects at the Wiener Laboratory.

DEADLINES: SEPTEMBER 1, JANUARY 15, ANNUALLY.

TRAVELING AND EXCHANGE FELLOWSHIPS FOR GRADUATE STUDENTS AND POSTGRADUATE STUDY

COULSON/CROSS AEGEAN EXCHANGE PROGRAM (CAORC): Short-term fellowships for Greek nationals and scholars to pursue research in Turkey under the auspices of the American Research Institute in Turkey (ARIT). Stipend of \$250 per week plus airfare. Send applications to ASCSA.

DEADLINE: MARCH 15, 2014.

MULTI-COUNTRY RESEARCH FELLOWSHIPS (CAORC): Ph.D. candidates and postdoctoral scholars with research requiring travel to several countries with an American overseas research center. Consult CAORC website for application and deadline: www.caorc.org.

DEADLINE: JANUARY 15, 2014.

THE PAUL REHAK MEMORIAL TRAVELING FELLOWSHIP 2013-2014: Regular members and Student Associate members already attending the School for the entire 2013-2014 academic year. A grant of \$1,000 or grants of lesser amounts. The

purpose is to allow individuals to travel in Greece to conduct a research project during the 2013-2014 academic year from September 1, 2013 to July 1, 2014.

DEADLINE: MARCH 1, 2014.

WIENER LABORATORY TRAVEL GRANTS FOR ARCHAEOLOGICAL SCIENCE RESEARCH IN GREECE: Travel grants of \$2,000 for graduate students or postdoctoral scholars from North American institutions working on projects in archaeological science in Greece.

DEADLINES: SEPTEMBER 1, JANUARY 15, ANNUALLY

FUNDING FOR SENIOR SCHOLARS FOR STUDY AT THE ASCSA

KRESS PUBLICATIONS FELLOWSHIPS (Pending funding): Postdoctoral scholars working on a Corinth or Agora publication. Grants for at least three months (up to \$10,000) to a maximum of nine months (up to \$30,000).

DEADLINE: DECEMBER 1, 2013.

NEH FELLOWSHIPS: Awards for postdoctoral scholars and professionals in the humanities. Terms: Two to four fellowships, five to ten months in duration. Maximum stipend for a five-month project, \$21,000; for a ten-month project, \$42,000. U.S. citizens or foreign nationals being U.S. residents for three years before application deadline. Applicants must hold their Ph.D. or equivalent terminal degree.

DEADLINE: OCTOBER 31, 2013

WIENER LABORATORY POST-DOCTORAL RESEARCH FELLOWSHIP (2014-2016): Fellowship awarded to a recent postdoctoral scholar working on a well-defined project at the Wiener Laboratory for two years, with possible third year. Project utilizes the resources of the Wiener Laboratory and enhances the teaching mission of the ASCSA. Stipend of \$35,000 with additional perquisites.

DEADLINE: JANUARY 15, 2014

School programs are generally open to qualified students and scholars at colleges or universities in the U.S. or Canada; restrictions may apply for specific fellowships and programs. The American School of Classical Studies at Athens does not discriminate on the basis of race, age, sex, sexual orientation, color, religion, ethnic origin, or disability when considering admission to any form of membership.

Ms. Mary Darlington
Executive Associate
American School of Classical Studies at Athens
6-8 Charlton Street
Princeton, NJ 08540
med@ascsa.org
609-683-0800 Ext 11
FAX 609-924-0578

POST-DOCTORAL RESEARCH POSITION AT **UCLA, COTSEN INSTITUTE**

Dear colleagues,

If you can post this advertisement more widely to others who might be interested that would be useful. As I am working with a foundation based in Germany, it may well be that a German post-doc would be the most suitable, but the position is of course open to all.....

Best wishes to all

POST-DOCTORAL RESEARCH POSITION AT UCLA, COTSEN INSTITUTE

A Post-Doctoral research position is available at the UCLA/Getty Conservation Program, based at the Cotsen Institute of Archaeology, UCLA, Los Angeles, California. The position will become available on the 31st January 2014 and we are now soliciting applications for this position, working under Professor David A. Scott, Department of Art History, and Founding Director, 2003-2011, UCLA/Getty Conservation Programme.

The Post-Doctoral work will be conducted in collaboration with, and paid for by a foundation based in Berlin, Germany, ASET, under the aegis of the research program, The Contours of Casting: Connections of Cultures (COC 1.0), which seeks to promote interdisciplinary studies which link together the Islamic World, the Viking Age through Northern Europe, and the contributions made by the Greeks, and which has already enlisted the support of several leading scholars in the field across the world.

The research focus will examine and study the casting methodologies, composition, technology and technical cultural background of significant metallic artefacts, especially those from the Islamic and Viking cultural areas. Part of this research will involve a re-assessment of what is currently known concerning casting practices and decorative techniques in the Viking and Islamic Worlds, and how indirect lost-wax casting may have been transmitted or re-invented from Greek influences in terms of gold, silver and copper-alloy artefacts produced during the period from 700-1200 AD.

The position for this post-doctoral fellow will be funded for an initial period of one year, with the possibility of being renewed for a further period.

The appointment will be made under the title of: Postdoctoral Scholar (Paid Direct). This designation indicates that the Postdoctoral Scholar has been awarded a fellowship or traineeship for postdoctoral study by an extramural agency and the agency will be paying the fellowship salary directly to the Postdoctoral Scholar, rather than through the University.

Appointment Criteria: This position requires the scholar to have a PhD degree or foreign equivalent. Postdoctoral scholars are temporary appointments with fixed end dates and normally for one year's duration, thus the initial appointment will last until 30th January 2015.

Remuneration: The level of remuneration is dependent on experience.

The following pay scales are currently in operation, and may be revised in the future. In addition, health care costs will be provided which increases the remuneration package still further. The scales from 2011-2012 were:

Postdoctoral Scholar Experience Based Salary/Stipend Minima

| | |
|--------------------|----------|
| Experience Level | 2/1/12 |
| 0 (0 - 11 months) | \$39,264 |
| 1 (12 - 23 months) | \$41,364 |
| 2 (24 - 35 months) | \$44,340 |
| 3 (36 - 47 months) | \$46,092 |
| 4 (48 - 60 months) | \$47,820 |
| 5 (61 - 72 months) | \$49,884 |

If the applicant is from outside the USA, then a visa will be required.

Applicants interested in this position should contact: Professor David A. Scott, Room A410, Fowler Museum, UCLA, 405 Hilgard Avenue, Los Angeles, California 90095. Electronic mail: dascott@ucla.edu.

Applicants should provide a statement of purpose regarding the proposed research of one page in length, together with a full CV, and the names and e-mail addresses of three academic referees. We aim to make an appointment to this position by January 31st 2014.

TWO DOCTORAL SCHOLARSHIPS WITH FOCUS ON
“ARCHAEOLOGICAL INFORMATION SYSTEMS”
AND “DIGITAL CULTURAL HERITAGE”, JUNIOR
RESEARCH GROUP “DIGITAL
HUMANITIES/DIGITAL CULTURAL HERITAGE” OF
THE CLUSTER OF EXCELLENCE “ASIA AND
EUROPE IN A GLOBAL CONTEXT,” IN
COOPERATION WITH THE “HEIDELBERG
GRADUATE SCHOOL FOR MATHEMATICAL AND
COMPUTATIONAL METHODS IN THE SCIENCES”

Dear colleagues,

The Junior Research Group “Digital Humanities/Digital Cultural heritage” of the Cluster of Excellence “Asia and Europe in a Global Context,” in cooperation with the “Heidelberg Graduate School for Mathematical and Computational Methods in the Sciences”, offers two doctoral scholarships with focus on “Archaeological Information Systems” and “Digital Cultural heritage”.

Within the framework of the research group, the focus will be on discourses linked to changes of new possibilities in the use of digital methods in archaeology. Opportunities and risks associated with big research data sets will be ascertained. This results in standardized workflows that serve further investigations. The work will be conducted in a team with GIS and laser scan data (2D and 3D modelling) in cooperation with a research network of various institutions within a digital research infrastructure. Furthermore, it is envisaged that VREs (Virtual Research Environments) for specific digitalization workflows of sub‐projects in archaeology will be developed.

The successful applicants’ primary task will be to complete a PhD degree, but active participation in relevant graduate courses offered at the Cluster of Excellence or other institutes at Heidelberg University is recommended. The stipends are rated at € 1200 to 1468/month. Access to travel and publication funding is available.

Candidates must hold an M.A. or equivalent in a relevant discipline of Pre‐ and Early History, Landscape Archaeology and Geomatics or Archaeological Information Systems etc. and experience in archaeological fieldwork methods in Europe and/or Asian contexts.

Proficiency in English is mandatory. German and French language skills are desirable. An interest in interdisciplinary collaboration is essential.

To apply, send curriculum vitae, academic transcripts, an outline of a dissertation project (2‐3 pages) related to the research group, names and contact details of two referees, and one written sample (in one PDF) via email to Dr. Armin Volkmann (armin.volkmann[at]asia‐europe.uni‐heidelberg.de).

Stipend start should be in 2013, review of applications will continue until the positions are filled.

Heidelberg University is an equal opportunity/affirmative‐action employer. In case of equality of qualification and suitability of applicants, the applications made by female researchers will be given preferential consideration. We also encourage and welcome applications from disabled persons.

For additional information see: <http://www.asia‐europe.uni‐heidelberg>

Best wishes

Diamantis Panagiotopoulos

Prof. Diamantis Panagiotopoulos
Director of the Institute of Classical Archaeology Marstallhof 4
D-69117 Heidelberg
fon: ++49-6221-542511
fax: ++49-6221-543385

Speaker of Research Area A of the
Heidelberg Cluster of Excellence
"Asia and Europe in a Global Context"

JOB VACANCY FOR A RESEARCH ASSISTANT (PHD STUDENT), INSTITUTE OF PREHISTORY IN HEIDELBERG, PROJECT "FOOD CULTURES: INTERDISCIPLINARY STUDIES OF EARLY FARMING FOOD TECHNOLOGY AND PALAEODIET IN SOUTHEASTERN EUROPE"

Dear Colleagues,

May I draw your attention to a job vacancy for a research assistant (PhD student) at the Institute of Prehistory in Heidelberg that is part of the project "Food cultures: Interdisciplinary studies of early farming food technology and palaeodiet in Southeastern Europe" (funded by the German Research Foundation, DFG)?

The post is part-time fixed-term for 3 years and will be based in Heidelberg and Bristol. You can find the details at:

[http://idb.zuv.uni-heidelberg.de/info/INFO_FDB\\$.startup?MODUL=LS&M1=1&M2=0&M3=0&PRO=13781](http://idb.zuv.uni-heidelberg.de/info/INFO_FDB$.startup?MODUL=LS&M1=1&M2=0&M3=0&PRO=13781)

The closing date is 14 November 2013.

I would be grateful if you would bring this to the attention of suitable people who might be interested.

Best wishes

Mariya Ivanova

**POST-DOCTORAL POSITION (« INGENIEUR
DE RECHERCHE ») IN LUMINESCENCE
DATING, INSTITUT DE RECHERCHE SUR
LES ARCHEOMATERIAUX UMR 5060 CNRS -
UNIVERSITE DE BORDEAUX**

Description of the cluster

The luminescence dating laboratory of the IRAMAT-CRP2A institute located in Pessac, near Bordeaux (France), is one of the three partners of the LaScArBx (Labex Sciences Archéologiques de Bordeaux: <http://lascarb.xlabex-univ-bordeaux.fr/>).

This laboratory is involved in the development of physical methods aimed at characterizing and dating archeological materials. Its luminescence dating group is participating to a continuously growing number of archaeological projects, many of them being conducted in collaboration with its two LaScArBx laboratory partners: Ausonius and PACEA.

Duration

The position is for one-year, renewable twice. Starting date is 1st February 2014.

Job status

Full time position financially supported by the Labex Sciences Archéologiques de Bordeaux (LaScArBx).

Description

The successful applicant will be involved in the dating and methodological research programs developed by the scholars of the luminescence dating group.

Profile of applicant

The applicant must have a PhD degree and a good experience in luminescence dating of either quartz or feldspars, as well as in the associated dosimetry. A post-doctoral experience would be appreciated but is not of compulsory nature.

Research labs involved

Institut de Recherche sur les ArchéoMatériaux (IRAMAT)
Centre de Recherche en Physique Appliquée à l'Archéologie (CRP2A)
Esplanade des Antilles
33600 PESSAC

Procedure for application

The application (detailed curriculum vitae + letter in support of application) must be sent before the 1st december 2013 to the LaScArBx manager: Sylvie Maleret (sylvie.maleret@u-bordeaux3.fr), and copy to Dr. Norbert Mercier (norbert.mercier@u-bordeaux3.fr), head of the luminescence dating group and Dr. Pierre Guibert (guibert@u-bordeaux3.fr), head of the host laboratory.

Salary:

The monthly net income ranges from 1.870 € to 2.200 € depending on the previous experience.

Please visit the site: <http://lascarb.xlabex-univ-bordeaux.fr/Jobs/Post-doctoral-position-Ingenieur-de-Recherche-in-Luminescence-Dating,Job-93.html>

ΑΝΑΚΟΙΝΩΣΕΙΣ - ANNOUNCEMENTS

UNIVERSITY OF CYPRUS - NEW MASTERS PROGRAMME IN "FIELD ARCHAEOLOGY ON LAND & UNDER THE SEA" IN ENGLISH STARTS IN THE SPRING SEMESTER 2014

- **NEW MASTERS PROGRAMME in "FIELD ARCHAEOLOGY ON LAND & UNDER THE SEA" in English starts in the Spring Semester 2014**
 - [Why choose this programme - Admission to the programme - Thematic Units - Programme Structure](#)
 - [Contact - Application for admission](#)
 - [Thematic Units in detail](#)

Dr. Ourania Kouka
Assist. Prof. for Aegean Prehistoric Archaeology
Department of History and Archaeology
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CY - 1678 Nicosia
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Fax. +357 22 895366 NEW !!!
1, Komotinis str.
GR- 185 41 Piraeus
Tel. & Fax +30 210 4833909
<http://www.ucy.ac.cy/isa/biografika/kouka.htm>

[CAA-GR] SPONSORSHIP OF MINOAN LINES: FREE FERRY RETURN TICKETS FOR THE ROUTE PIRAEUS - HERAKLION- PIRAEUS

The organizing committee of CAA-GR Conference 2014 is pleased to announce that after a very generous sponsorship of MINOAN LINES 20 ferry return tickets for the route Piraeus - Heraklion- Piraeus (economic class-deck) will become available for free to the participants of the conference. The tickets are intended to support students or unemployed that would like to attend the conference. Priority will be given to those presenting a paper or a poster, or those attending the CAA-GR workshop.

Please note that the participants of the conference who will benefit from this offer will be expected to pay conference attendance fees before the collection of their ticket, unless they have been also granted a CAA-GR bursary that covers registration fees.

To apply for a free ticket for the ferry services of the Minoan lines (offer is valid for the days before and after the conference) you should fill in the Grant application form which can be downloaded [here](#), and send it to grants@caa-gr.org together with a copy of your student ID or unemployment card by 3rd December. Please add "application for a free ferry ticket" at the subject line.

Sincerely,

CAA-GR Conference 2014

Administration team

Η οργανωτική επιτροπή του CAA-GR Conference 2014 με μεγάλη χαρά σας ανακοινώνει ότι μετά από μια γενναϊόδωρη προσφορά της MINOAN LINES 20 εισιτήρια πλοίου μετ' επιστροφής για τη γραμμή Πειραιάς - Ηράκλειο - Πειραιάς σε οικονομική θέση (deck) θα διατεθούν δωρεάν στους συμμετέχοντες του συνεδρίου. Τα εισιτήρια θα χρησιμοποιηθούν για να υποστηρίξουν φοιτητές και ανέργους που θα ήθελαν να παρακολουθήσουν το συνέδριο. Προτεραιότητα θα δοθεί σε όσους θα παρουσιάσουν προφορική ή αναρτημένη ανακοίνωση (poster) και σε όσους θα παρακολουθήσουν το σεμινάριο/workshop του CAA-GR.

Οι συμμετέχοντες του συνεδρίου που θα επωφεληθούν από την προσφορά αυτή θα πρέπει να πληρώσουν την εγγραφή στο συνέδριο πριν την παραλαβή των εισιτηρίων τους, εκτός εάν εξασφαλίσουν άλλη υποτροφία του CAA-GR που θα καλύπτει το κόστος εγγραφής.

Για να κάνετε αίτηση για ένα δωρεάν εισιτήριο της MINOAN LINES (η προσφορά ισχύει για τις μέρες πριν και μετά το συνέδριο) παρακαλείστε να συμπληρώσετε την αίτηση που μπορείτε να κατεβάσετε από [εδώ](#) και να τη στείλετε στην ηλεκτρονική διεύθυνση grants@caa-gr.org μαζί με αντίγραφο της φοιτητικής ταυτότητας ή της

κάρτας ανεργίας μέχρι τις 3 Δεκεμβρίου. Παρακαλούμε προσθέστε την ένδειξη "αίτηση για δωρεάν εισιτήριο" στο πεδίο θέματος.

Με εκτίμηση,
CAA-GR Conference 2014

Ομάδα Διαχείρισης

INTERNET SITES

THE PROJECT "TIME THROUGH COLOURS: ANALYSIS OF PAINTED ARTIFACTS IN THEIR ARCHAEOLOGICAL, HISTORICAL AND SOCIOLOGICAL CONTEXT"

The project "Time Through Colours: Analysis of painted artifacts in their archaeological, historical and sociological context" is funded for three years by the Italian Ministry of University and Scientific Research within the Italian national programme FIRB-Futuro in Ricerca 2012.

You may find it at: <http://archaeoraman.org/Homepage.html>

The project is coordinated by the Sapienza University of Rome (Davide Nadali), together with the University of Perugia (Andrea Polcaro) and the University of Cagliari (Daniele Chiriu). It applies non-destructive and non-intrusive Raman analyses on archaeological materials now in the Ashmolean Museum of Oxford, consisting mostly of material dated to the Early Dynastic period. It also studies Roman artifacts, mainly pottery from the sites of Herculaneum, Pompei and Nepi.

Team:

Davide Nadali, Sapienza Università di Roma Andrea Polcaro, University of Perugia
Daniele Chiriu, University of Cagliari

Researchers and institutions involved in the project:

Paul Collins, Ashmolean Museum of Oxford Carlo Ricci, University of Cagliari Paolo
Braconi, University of Perugia Francesco Marcattili, University of Perugia Maria Laura
Santarelli, Sapienza University of Rome

HAZINE - A GUIDE TO RESEARCHING THE MIDDLE EAST AND BEYOND

We are excited to introduce our new website, <hazine.info>, which is dedicated to helping scholars conduct research in the Middle East and beyond.

The core content of HAZINE is practical articles regarding how to access and use archives, manuscript libraries, and collections in the greater Islamic world, both large and small. For the moment, we are starting with four major archives in Istanbul—the Ottoman State Archives, Topkapı Palace Archive and Library, Süleymaniye Library, and ISAM—but with weekly updates, we plan to expand our coverage. In addition, we will post periodically articles containing more critical reflection on methods of research and the nature of archival work.

We look forward to your comments, questions, and suggestions at <hazine.info>.

To be regularly updated, we encourage you to follow HAZINE on Facebook <http://www.facebook.com/hazineblog>.

You can email HAZINE at hazineblog@gmail.com.

Christopher Markiewicz and Nir Shafir

Co-editors of HAZINE

ΝΕΕΣ ΕΚΔΟΣΕΙΣ – NEW PUBLICATIONS

ANCIENT CARBON FROM A MELTING GLACIER GIVES HIGH ¹⁴C AGE IN LIVING PIONEER INVERTEBRATES

Scientific Reports 3, Article number: 2820 doi:10.1038/srep02820

Sigmund Hågvar & Mikael Ohlson

Department of Ecology and Natural Resource Management, Norwegian University of Life Sciences, Ås, Norway

ABSTRACT

Glaciers are retreating and predatory invertebrates rapidly colonize deglaciated, barren ground. The paradox of establishing predators before plants and herbivores has been explained by wind-driven input of invertebrate prey. Here we present an alternative explanation and a novel glacier foreland food web by showing that pioneer predators eat locally produced midges containing 21,000 years old ancient carbon released by the melting glacier. Ancient carbon was assimilated by aquatic midge larvae, and terrestrial adults achieved a radiocarbon age of 1040 years. Terrestrial spiders, harvestmen and beetles feeding on adult midges had radiocarbon ages of 340–1100 years. Water beetles assumed to eat midge larvae reached radiocarbon ages of 1100–1200 years. Because both aquatic and terrestrial pioneer communities use ancient carbon, the term “primary succession” is questionable in glacier forelands. If our “old” invertebrates had been collected as subfossils and radiocarbon dated, their age would have been overestimated by up to 1100 years.

Please visit the site:

<http://www.nature.com/srep/2013/131002/srep02820/full/srep02820.html>

NEW BRITISH ARCHAEOLOGICAL **REPORTS AND OTHER TITLES –** **OCTOBER 2013**

Dear Colleague,

We are very pleased to list our OCTOBER 2013 BAR and other releases below. Full details can be seen on our website www.archaeopress.com.

For a range of [digital BAR versions](#) – please click on the link for a list and details. The range will increase monthly. A separate catalogue of e-BARs for circulating to your library and colleagues is available [here](#)

As ever, your interest in our publications is much appreciated – please don't hesitate to contact us at any time.

Gerald Brisch
Archaeopress
www.archaeopress.com
bar@archaeopress.com

BAR International Series

[BAR –S2551](#), 2013 **Patrimonio Cultural Mexicano: Modelos explicativos** edited by Juan Garcia Targa. ISBN 9781407311722. £34.00

[BAR –S2552](#), 2013 **Models of Mesopotamian Landscapes** *How small-scale processes contributed to the growth of early civilizations* edited by T.J. Wilkinson, McGuire Gibson and Magnus Widell. ISBN 9781407311739. £42.00

[BAR –S2553](#), 2013 **Excavations at Francavilla Marittima 1991–2004, I, Matt-Painted Pottery from the Timpone della Motta** *Volume 2, The Cross-Hatched Bands Style* by Marianne Kleibrink, Marianna Fasanella Masci, Lucilla Barresi. ISBN 9781407311746. £41.00

[BAR –S2554](#), 2013 **Excavations at Tel Zahara (2006–2009): Final Report. The Hellenistic and Roman Strata** edited by Susan L. Cohen. ISBN 9781407311753. £41.00

[BAR –S2555](#), 2013 **SOMA 2010** *Proceedings of 14th Symposium on Mediterranean Archaeology, Taras Shevchenko National University of Kiev, Ukraine, 23-25 April 2010* edited by Yana Morozova and Hakan Oniz. ISBN 9781407311760. £33.00

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[BAR –S2557](#), 2013 **Pottery and Social Dynamics in the Mediterranean and Beyond in Medieval and Post-Medieval Times** edited by J. Bintliff and M. Carosco. ISBN 9781407311784. £30.00

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[BAR –S2559](#), 2013 **El Calcolítico en la Cuenca Media del Arlanzón (Burgos, España) Comunidades campesinas, procesos históricos y transformaciones** by Eduardo Carmona Ballester. ISBN 9781407311807. £49.00

[BAR –S2560](#), 2013 **Ahlat 2008. Seconda campagna di indagini sulle strutture rupestri / Second campaign of surveys on the underground structures** a cura di / edited by Roberto Bixio, Andrea De Pascale, Nakış Karamağaralı. ISBN 9781407311814. £30.00

[BAR –S2561](#), 2013 **Le bourg abbatial de Villemagne-l'Argentière (Hérault) Dynamique économique et commande monumentale XI^e-XIV^e siècles** by Florence Journot. ISBN 9781407311821. £39.00

[BAR –S2562](#), 2013 **Das ägyptische Investiturritual** by Martin Bommas. ISBN 9781407311838. £41.00

Back in stock

[2012: LRFW 1. Late Roman Fine Wares. Solving problems of typology and chronology.](#) *A review of the evidence, debate and new contexts* edited by Miguel Ángel Cau, Paul Reynolds and Michel Bonifay. ISBN 9781905739462. £30.00.

E-News

For a range of [digital BAR versions](#) – please click on the link for a list and details. The range will increase monthly. A separate catalogue of e-BARs for circulating to your library and colleagues is available [here](#)

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[The 'AP Site Hut'](#) our new information-sharing portal is now live on our website – we hope it will develop into a fascinating forum for our thousands of authors, editors, contributors, and guests.

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For all orders go to www.archaeopress.com

Academics: See our website homepage (www.archaeopress.com) for our [Review](#) and [Alert](#) services, and refer to your acquisitions librarian for new [Standing Order](#) requests.

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EΙΔΗΣΕΙΣ - NEWS RELEASE

6,000-YEAR-OLD WINE FOUND IN GREECE; ANCIENT SAMPLES MAY BE OLDEST UNEARTHED IN EUROPE, BY MEREDITH BENNETT-SMITH

Conventional wisdom agrees that a fine wine generally gets better with age -- good news for the 6,200-year-old wine samples unearthed in Greece, huh?

Researchers working at an ongoing dig site in northern Greece recently announced that the final results of residue analysis from ancient ceramics showed evidence of wine dating back to 4200 B.C., according to the Greek Reporter. The excavation, located at a prehistoric settlement known as Dikili Tash, is situated 1.2 miles from the ancient city of Philippi and has been inhabited since 6500 B.C., according to the researchers' website.

The analysis was not conducted on liquid wine, though. The passing millennia have erased nearly all tangible evidence of the drink, Dimitra Malamidou, a co-director of the most recent excavation, told The Huffington Post in an email. "All [that] is left from the liquid part is the residue in the surface of the ceramic vases," she said. "Recent residue analysis on ceramics attested [to] the presence of tartaric acid, indicating fermentation."

Malamidou is part of a joint Greek-French excavation that began in 2008. The team recently wrapped up excavation of a neolithic house from around 4500 B.C. This is where they found wine traces in the form of "some thousands of carbonized grape pips together with the skins indicating grape pressing," Malamidou said.

Radiocarbon dating was used to pinpoint the age of the finds. Dikili Tash researchers believe they have found the oldest known traces of wine in Europe. Previous studies have unearthed a 6,100-year-old Armenian winery, as well as traces of a 9,000-year-old Chinese alcohol made from rice, honey and fruit.

"The find is highly significant for the European prehistory, because it is for the moment the oldest indication for vinification in Europe," Malamidou said. "The historical meaning of our discovery is important for the Aegean and the European prehistory, as it gives evidence of early developments of the agricultural and diet practices, affecting social processes."

The societal changes that may have been influenced by the consumption of alcoholic beverages is currently an issue of debate among researchers, Malamidou said. Evidence of wine during this early time period will "shed new light" on these discussions, she said.

Please visit the site: http://www.huffingtonpost.com/2013/10/02/6000-year-old-wine-greece_n_4027039.html

EGYPT TO INSTALL TWIN OF KING TUT'S TOMB TO PROTECT ORIGINAL

Egypt says an exact replica of the tomb of Tutankhamun will be installed near the 3,000-year-old original to divert tourists away from the threatened site.

Officials said they hope the \$675,000 project will prolong the life of the original tomb while maintaining sustainable tourism in a country where many ancient archaeological sites are under severe threat.

Tutankhamun's tomb, in Luxor's Valley of the Kings, is one of many burial sites deteriorating from the impact of years of tourism, while restoration efforts will likely to make the problem worse, they said.

"The attempt to fix the tombs to make them visitable is itself now the largest long-term risk to the tombs," said Adam Lowe, whose firm Factum Arte, based in Spain, led and funded the creation of the tomb's replica.

The project has been undertaken under the supervision of Egypt's supreme council of antiquities, Lowe told Britain's The Guardian newspaper.

The project is intended to protect the threatened original while still giving tourists the chance to experience what the tomb is like inside, archaeologists said, and similar efforts could allow visitors to experience other sites that are too fragile ever to be opened again.

"It's revolutionary," Egyptologist Kent Weeks, who has been researching such ancient sites since the 1960s, said. "It's not just a way of protecting the tomb of Tutankhamun, but it's a test case, a model that could be used to protect other sites across the country."

While not the real thing, the facsimile, intended to be an exact duplicate, will give visitors a better understanding of the tomb, officials said .

Please visit the site:

<http://www.bignewsnetwork.com/index.php/sid/217504713/scat/d7006824400aac1>

ANCIENT CITY OF IASOS RISES OUT OF THE ASHES

Muğla's ancient city of Iasos is effectively rising from the ashes of the Thera volcano thanks to new discoveries. Italian archaeologists, who have been working in the area for half a century, have found crucial data about the region's history

This year excavations in Iasos have revealed a sewage system that was in place in the 4,000-year-old city and tunnels to the city's theater.

Archaeologists working on Iasos on Turkey's Aegean coast have recently discovered that the ancient city was buried under a mountain of ash caused by the explosion of Mt. Thera on Santorini 3,600 years ago.

Excavation works have also revealed a sewage system that was in place in the 4,000-year-old city and tunnels to the city's theater.

Excavations are being carried out by the world-famous Italian archaeology team of Studi Delle Tuscia University. The head of the excavations, Professor Marcello Spanu, is working with assistant archaeologists Emanuele Borgia and Şevki Bardakçı, Culture and Tourism Ministry official Selvet Karamahmut, 28 other Italian archaeologists, as well as university students who have recently unearthed new historic sites within the ancient city.

Spanu said columns that were found one meter underground provided vital information about the history of the city. "Following the explosion of the volcano Thera, which also caused the destruction of the Minoan civilization on the islands of Crete and Santorini, the ancient city was covered with ash and remained so for a while.

This is why its sewage system and tunnels to the ancient theater did not change. At the end of the excavation and restoration works, for which we spend nearly 100,000 Turkish Liras annually, I am sure that this place will be Turkey's largest, as well as one of its most important, archeoparks," Spanu said.

Plans to attract more tourists

But Bardakçı, the deputy head of the excavations and an official from the Mediterranean Civilizations Research Institute, lamented the poor state of the promotion of Iasos, as well as the historic and cultural heritage of the surrounding Kızıkkışlacık village, while noting that they would undertake new endeavors to draw in more visitors.

He said the excavation and restoration works had shed light on historic artifacts across a vast area and succeeded in providing key data about the region's past.

"As a result of works that will be carried out in the agora, the Artemis and Astias holy area, the Zeus Mefistos area, the mosaic house, the acropolis, the western port castle and the port, which was constructed between 1481 and 1522, the region will become one of the richest ancient cities in terms of cultural heritage. We have prepared the exact location and a digital map of the ancient city with satellite photos. When the project is

done, we expect that tourists will rush to the area. As of next year, we will be in negotiations with travel agencies and tour operators to promote Iasos by way of daily boat tours and jeep safaris," Bardakçı said.

Please visit the site: <http://www.hurriyetdailynews.com/ancient-city-of-iasos-rises-out-of-the-ashes.aspx?pageID=238&nID=55343&NewsCatID=375>

ROBOTIC SNAKES SLITHER THEIR WAY INTO ANCIENT ARCHAEOLOGY

To paraphrase REM, the ancient Egyptians were all too familiar with the “horrible asp.”

But not even the most clairvoyant pharaohs could have imagined their kingdoms invaded by robotic snakes.

In arguably an archaeological first, that’s exactly what happened a couple of years back.

That’s when Boston University archaeologist Kathryn Bard and colleagues used a “modular robotic snake” designed and built by Carnegie Mellon University’s robotics lab to do a limited probe of a Middle Kingdom Red Sea cave.

The team used the snake in two man-made caves in danger of collapse at a 4000 year-old boat harbor site at Mersa/Wadi Gawasis in Egypt.

“The ancient Egyptians had excavated eight man-made caves into the fossil coral rocks there that they mainly used for storage facilities,” said Bard, who since 2001 has been co-director of a joint Italian-American expedition to the site.

The boats themselves — constructed of large timbers of imported Lebanese cedar — were probably built at a ship-building yard in the Nile Valley before being disassembled to make the 100-mile desert trek to the harbor.

Bard says they were reassembled at the site and sailed to ancient Punt, which lay somewhere in the southern Red Sea region, probably in present-day eastern Sudan or Eritrea.

From there, she says, the Egyptians usually returned laden with incense, obsidian, elephant ivory and gold. Upon returning to the Egyptian Red Sea harbor, some of the ships were disassembled; parts of which were stored in the caves.

Bard says her team used a Carnegie Mellon snake, fitted with an artificial skin, so that sand wouldn’t clog its gears. However, the robot itself was controlled by cables linked to a computer just outside the cave, on which the team was able to follow its real time progress via snake-camera video.

“A snake robot can go left, right; up or down; climb and make multiple turns — we even developed gaits that allow it to climb up poles,” said Howie Choset, professor of robotics at Carnegie Mellon University and head of its lab that produces the snakes.

How does Choset do it?

“What makes my group special is that we do a lot of basic research in four core fundamentals,” said Choset.

They include: mechanism design; path planning, literally figuring out where the snake should go; motion control; and estimation.

“Motion control determines how to coordinate the snake’s degrees of freedom so you can produce purposeful motion,” said Choset. “This is hard because you have many degrees of freedom. Estimation is figuring out that the snake is doing the right thing and is at the right location.”

The snakes have a world of other possibilities, but arguably are well-suited to search and rescue; law enforcement, particularly in assessing hostage situations; and in gaining virtual access to buildings for intelligence or military operations.

In a clandestine operation, Choset says it would be possible for the snake to enter a building through a storm drain pipe, for instance. He says his lab is already working with DARPA (Defense Advanced Research Projects Agency) on how the U.S. defense research might best modify the robotic snakes to covertly enter buildings.

But, meanwhile, if the political situation in Egypt calms down, says Bard, she and colleagues would like to go back and use a snake in the name of archaeology.

At present, however, the Egyptian Ministry of Antiquities is not allowing any archaeologists to work in the eastern desert.

Chris Roosevelt, an associate professor of archaeology also at Boston University, would like to use the snakes in a series of ancient Lydian burial mounds in western Turkey, just inland from Izmir on the Aegean coast.

Area near the cave sites at Wadi Gawasis on Egypt’s Red Sea coast.

Credit: Mersa/Wadi Gawasis Archaeological Expedition of Boston University & the University of Naples "l'Orientale"

Through the years, the tombs have been looted and their tunnels have collapsed.

“With as little new excavation and destruction of archaeological heritage as possible, we’re aiming to learn more about the Lydians in general by learning about their tombs,” said Roosevelt, who since 2005, has been a co-director of the ongoing Central Lydia Archaeological Survey.

One way to do that, says Roosevelt, is to explore and document previously opened tombs; dating to the fifth and sixth centuries B.C.E.

It’s both a question of safety and permitting.

While the Turkish government might not approve of whole-scale excavation of several hundred tombs, Roosevelt says, they would be more open to using these non-invasive snakes.

Roosevelt says he “sees great potential for using them” for his own project by summer 2014.

Although archaeology has long used aerial and satellite imagery to find long-lost historical sites, robotic snakes with a multi-spectral imaging capability would potentially have the capacity to literally open up whole new wavelengths for excavations in close quarters.

And as Bard points out, snake robots would also give archaeologists enough info about a site to develop an excavation game plan in advance of digging.

“Snakes won’t help us with ancient cities and towns that are buried under soil deposits,” said Bard, “but would help with underground areas, such as caves or tombs, where you didn’t have the time or wherewithal to excavate.”

But the snakes still have technical hurdles.

As Choset cautions, there are no robotic snakes commercially available for any purpose and their range is still limited by the length of their tethers, which on relatively flat ground might only be 300 to 400 feet.

What these robotic snakes really need, he says, is a commercialization experience.

“It remains a university research project,” said Choset, “but we need commercialization to harden the robot.”

Please visit the site: <http://www.forbes.com/sites/brucedorminey/2013/09/30/robotic-snakes-silver-their-way-into-ancient-archaeology/>

‘BIGGEST’ ROMAN CAPITAL UNEARTHED IN TURKEY

Archeologists have unearthed a 20-ton colossal Corinthian capital at the site of Kyzikos Hadrian Temple in Western Turkey.

Archeologists on Friday have unearthed what they described as the “largest” and most “exquisite” Roman capital at the site of Kyzikos Hadrian Temple in Western Turkey.

“This is the largest and most exquisite Corinthian capital built within the territory of the Roman Empire,” the World Bulletin website quoted Nurettin Kochan, head of Ataturk University’s archeology team, as saying.

The 20-ton colossal Corinthian capital in Erdek district is said to be 1.9m in diameter and 2.5 m in height.

In architectural terminology, the term “capital” derived from Latin caput, or “head,” which forms the topmost member of a column. It also mediates between the column and the load thrusting down upon it.

Calling the Temple of Hadrian the eighth wonder of the world, Kochan said “there’s no other capital of this size in the Corinthian order.”

He added: “Kyzikos Hadrian Temple outshines even the Baalbek Temple of Jupiter in Lebanon, considered the largest and most spectacular Corinthian temple in the world.”

The Corinthian order is chronologically the latest of three recognized ancient Roman architectural styles.

The excavation, carried out by a team of university professors, grad and undergrad students and dozens of workers, began on Aug. 15 and will continue until Oct. 8.

The team has also found the head of a large-scale bull figure.

Please visit the site: <http://english.alarabiya.net/en/variety/2013/10/05/-Biggest-Roman-capital-unearthed-in-Turkey-.html>

ARCHAEOLOGICAL STUNNER: NOT HEROD'S TOMB AFTER ALL? BY NIR HASSON

While attention is focused on a blockbuster exhibition purporting to display the tomb of Herod the Great, two archaeologists claim there's no way the egomaniac king was interred there.

In May 2007, at a dramatic press conference, archaeologist Ehud Netzer revealed that King Herod's tomb had been discovered on the slopes of Herodium. Now two archaeologists argue that what they found there, it can't be Herod's last resting place.

The mountain site lying southeast of Jerusalem includes an ancient fortress, palaces and a town. Netzer had uncovered remnants of a grand structure with a cone-shaped roof and the shattered remains of three elaborate sarcophagi (stone coffins). One of these, meticulously chiseled out of red stone, was thought to have once contained the body of the great king of Judea.

The story of the tomb's discovery - which was one of the greatest events in Israeli archaeology for decades - took a tragic turn with the death of Netzer. The leading expert on Herod, who had devoted much of his career to finding the tomb on Herodium, fell to his death in an accident in 2010 not far from that site.

In the past eight months, the tomb has been the crowning glory of what has been called the country's largest archaeology exhibition ever, at the Israel Museum, focusing on the figure of Herod and his burial. In the course of preparing the exhibition, the top part of the mausoleum and the sarcophagi were reconstructed. Meanwhile, plans were drawn up to reconstruct the tomb itself at Herodium, which is in the West Bank, using lightweight materials, so as to restore it to its full height of 25 meters. That plan, however, has since been shelved due to pressure from archaeologists and preservationists who opposed it.

Now, two archaeologists, Prof. Joseph Patrich and Benjamin Arubas, both from the Hebrew University of Jerusalem, are raising serious questions about the identification of the structure as the burial site of the king. They contend that there is no possibility that the mausoleum Netzer and his students uncovered could actually be the royal tomb in which Herod was interred after his death, in 4 B.C.E.

The structure is not in keeping with Herod's other construction projects or his personality, they say.

"I feel like the boy in 'The Emperor's New Clothes,'" says Patrich.
"It's so obvious that it is surprising people can't see it."

The pair presented their main reservations yesterday at the seventh annual "Innovations in Archaeology in Jerusalem and the Surrounding Area" conference, organized by the Israel Antiquities Authority, the Hebrew University and Tel Aviv University.

Not our egomaniac

First off, Patrìch and Arubas cited the relatively modest dimensions of the mausoleum. Reconstructed inside the Israel Museum's exhibition hall, it looks big and impressive, but in relation to Herodium as a whole and to the other structures built there - and certainly in relation to what we know of the way Herod saw himself - it's rather modest, they say.

The mausoleum is also modest compared to other graves of royal figures in antiquity that were have been unearthed in the area, with whom Herod was surely familiar. Patrìch and Arubas mention, for example, the burial structures in which leading Hasmonean figures were interred in the second century B.C.E., in Modi'in. These soared to greater heights than the tomb at Herodium, even though Herod considered himself to be the greatest ruler of all - at least in the eastern part of the Roman Empire.

Herod was also presumably acquainted with the graves of the greatest rulers of the ancient world, Caesar Augustus in Rome and Alexander the Great in Alexandria. Both are gigantic monuments beside which Herod's Tomb, as discovered on Herodium, pales in comparison.

"In every aspect of Herod's building projects, there is an evident desire to make himself known worldwide, to the point of megalomania," Patrìch and Arubas write in the paper delivered at the conference. "Is it conceivable that Herod, after erecting such monumental construction projects and achieving glory in Rome and the East, planned a relatively simple grave and tombstone for himself?"

Added Patrìch, in an interview with Haaretz this week, "A person should ask himself, is this how he would have imagined Herod's tomb?"

Another reservation the archaeologists raise concerns the location on the slopes of Herodium, which lacks suitable access for a royal burial site, and is overshadowed by other, larger structures on the hill. Historian Flavius Josephus describes Herod's royal funeral procession as featuring thousands of soldiers, civilians and slaves walking behind the coffin. The plaza across from the mausoleum can't house a crowd of that size. "Barely 20 people can stand there," Patrìch observes.

He also points out that the excavations reveal that after construction on the tomb was finished, a water cistern that had been used for irrigating the garden around the burial site was destroyed to make way for erection of a staircase that was to lead up to the palace on the hilltop. Is it likely, the two colleagues ask, that this great builder, who built the Temple Mount and the port at Caesarea, would get sloppy when it came to the tomb he designated for himself?

Borne on a gold bed

The sarcophagus of red stone that was found does not impress Patrìch too much, either: "It's not up to Herod's standards. He is a man who was borne to his burial on a gold bed. Would they inter him in such a simple sarcophagus? I would expect to see a gold sarcophagus that fits inside another sarcophagus of imported marble. It's Herod!"

In contrast to other arguments in the realm of Israeli archaeology, the one that's heating up around Herod's tomb is not getting personal.

Patrich emphasizes that Netzer was his teacher, and that he arrived at the conclusion that Netzer had made a mistake based on what he had learned from him.

"Ehud taught us the fundamentals of Herodian architecture.... The things we are saying, we say out of respect for Ehud, because at stake are all the teachings he bequeathed to us," Patrich says.

So whose tomb was it? Patrich and Arubas suggest that the tomb Netzer found served as a burial site for other members of Herod's family.

Maybe. So where is the royal tomb? To this, the two still have no answer. They suggest that it may have been in the palace atop Herodium and was destroyed along with it.

They also point out an anomaly in the lower palace excavated on the site which, in contrast to most such structures of that period, does not have a bathhouse. Perhaps, they say, this palace was used as Herod's mausoleum. Behind it is a site that looks as if a huge cavernous man-made structure collapsed there. Maybe the much-sought-after tomb can be found inside it, in the heart of this mound?

Herod was Jewishly modest, says opposing view

The rebuttal to Patrich and Arubas' claims was delivered at yesterday's conference, as well as in an interview with Haaretz, by Roi Porat, the archaeologist who replaced Netzer as head of the Herodium dig. Porat explains that Herod is a more complex figure than first impression may suggest. Alongside the Roman extravagance and luxury he indulged in and represented, there were also simple local elements reflected in each of the monuments he built.

"Look, for example, at Herod's coins. They are the simplest coins possible; his face is not on the coin even though he ruled for 40 years," Porat says.

An article Porat co-wrote with colleagues Yaakov Kalman and Rachel Chachy nevertheless makes a point of describing the grandeur of Herod's tomb, in terms of the type of stone used, the architecture and ornamentation. Furthermore, Porat explains that Herodium is a man-made hill that was created out of 400,000 cubic meters of soil on top of which was situated a palace.

"This whole big mass has one place that was not covered in earth, and that is the site of the tomb," Porat says. He claims that Herod conceived of the entire tel as an enormous and unique burial mound, symbolizing the idea that life at its top would go on even after the king was buried.

Herod thus situated the tomb, according to Porat, at the highest point on the hill, that was outside the inhabited part of the Herodium compound - perhaps in accordance with the strictures of Jewish religious law. At the foot of the mound on which the grave site is located, Porat, Kalman and Chachy point out the existence of a large plaza, which offers a view of the burial place and could have contained the entourage Josephus describes.

"We would not be flabbergasted to find another grave" belonging to the king, Porat says, "and will have to eat our hats. But we believe we have a decent picture of what is going on there and it is convincing. We have sufficient data. He [Patrich] deals with what is not, and we with what is," he adds.

On Wednesday, as Patrich was finishing up preparing his lecture for the conference, he received the program for the Israel Exploration Society's archaeological conference next month, where one session will deal with the arguments over Herod's tomb. The words "Herod's tomb" appear in quotation marks in the program. "I'm glad that we succeeded in introducing the quotation marks," Patrich says.

And barring dramatic discoveries on Herodium, it looks like the quotation marks are here to stay.

Please visit the site: <http://www.haaretz.com/archaeology/premium-1.551881> [Go there for pix]

CAVEMEN DISCOVERED RECYCLING, BY **BY ARIEL DAVID**

If you thought recycling was just a modern phenomenon championed by environmentalists and concerned urbanites — think again.

There is mounting evidence that hundreds of thousands of years ago, our prehistoric ancestors learned to recycle the objects they used in their daily lives, say researchers gathered at an international conference in Israel.

"For the first time we are revealing the extent of this phenomenon, both in terms of the amount of recycling that went on and the different methods used," said Ran Barkai, an archaeologist and one of the organizers of the four-day gathering at Tel Aviv University that ended Thursday.

Just as today we recycle materials such as paper and plastic to manufacture new items, early hominids would collect discarded or broken tools made of flint and bone to create new utensils, Barkai said.

The behavior "appeared at different times, in different places, with different methods according to the context and the availability of raw materials," he told The Associated Press.

From caves in Spain and North Africa to sites in Italy and Israel, archaeologists have been finding such recycled tools in recent years.

The conference, titled "The Origins of Recycling," gathered nearly 50 scholars from about 10 countries to compare notes and figure out what the phenomenon meant for our ancestors.

Recycling was widespread not only among early humans but among our evolutionary predecessors such as *Homo erectus*, Neanderthals and other species of hominids that have not yet even been named, Barkai said.

Avi Gopher, a Tel Aviv University archaeologist, said the early appearance of recycling highlights its role as a basic survival strategy. While they may not have been driven by concerns over pollution and the environment, hominids shared some of our motivations, he said.

"Why do we recycle plastic? To conserve energy and raw materials," Gopher said. "In the same way, if you recycled flint you didn't have to go all the way to the quarry to get more, so you conserved your energy and saved on the material."

Some cases may date as far back as 1.3 million years ago, according to finds in Fuente Nueva, on the shores of a prehistoric lake in southern Spain, said Deborah Barsky, an archaeologist with the University of Tarragona. Here there was only basic reworking of flint and it was hard to tell whether this was really recycling, she said.

"I think it was just something you picked up unconsciously and used to make something else," Barsky said. "Only after years and years does this become systematic."

That started happening about half a million years ago or later, scholars said.

For example, a dry pond in Castel di Guido, near Rome, has yielded bone tools used some 300,000 years ago by Neanderthals who hunted or scavenged elephant carcasses there, said Giovanni Boschian, a geologist from the University of Pisa.

"We find several levels of reuse and recycling," he said. "The bones were shattered to extract the marrow, then the fragments were shaped into tools, abandoned, and finally reworked to be used again."

At other sites, stone hand-axes and discarded flint flakes would often function as core material to create smaller tools like blades and scrapers. Sometimes hominids found a use even for the tiny flakes that flew off the stone during the knapping process.

At Qesem cave, a site near Tel Aviv dating back to between 200,000 and 420,000 years ago, Gopher and Barkai uncovered flint chips that had been reshaped into small blades to cut meat — a primitive form of cutlery.

Some 10 percent of the tools found at the site were recycled in some way, Gopher said. "It was not an occasional behavior; it was part of the way they did things, part of their way of life," he said.

He said scientists have various ways to determine if a tool was recycled. They can find direct evidence of retouching and reuse, or they can look at the object's patina — a progressive discoloration that occurs once stone is exposed to the elements. Differences in the patina indicate that a fresh layer of material was exposed hundreds or thousands of years after the tool's first incarnation.

Some participants argued that scholars should be cautious to draw parallels between this ancient behavior and the current forms of systematic recycling, driven by mass production and environmental concerns.

"It is very useful to think about prehistoric recycling," said Daniel Amick, a professor of anthropology at Chicago's Loyola University.

"But I think that when they recycled they did so on an 'ad hoc' basis, when the need arose."

Participants in the conference plan to submit papers to be published next year in a special volume of *Quaternary International*, a peer-reviewed journal focusing on the study of the last 2.6 million years of Earth's history.

Norm Catto, the journal's editor in chief and a geography professor at Memorial University in St John's, Canada, said that while prehistoric recycling had come up in past studies, this was the first time experts met to discuss the issue in such depth.

Catto, who was not at the conference, said in an email that studying prehistoric recycling could give clues on trading links and how much time people spent at one site.

Above all, he wrote, the phenomenon reflects how despite living millennia apart and in completely different environments, humans appear to display "similar responses to the challenges and opportunities presented by life over thousands of years."

Please visit the site: <http://www.businessweek.com/printer/articles/337944?type=ap>

CLUES TO LOST PREHISTORIC CODE DISCOVERED IN MESOPOTAMIA, BY OWEN JARUS

Researchers studying clay balls from Mesopotamia have discovered clues to a lost code that was used for record-keeping about 200 years before writing was invented.

The clay balls may represent the world's "very first data storage system," at least the first that scientists know of, said Christopher Woods, a professor at the University of Chicago's Oriental Institute, in a lecture at Toronto's Royal Ontario Museum, where he presented initial findings.

The balls, often called "envelopes" by researchers, were sealed and contain tokens in a variety of geometric shapes — the balls varying from golf ball-size to baseball-size. Only about 150 intact examples survive worldwide today. [See Photos of the Clay Balls & Lost Code]

The researchers used high-resolution CT scans and 3D modeling to look inside more than 20 examples that were excavated at the site of Choga Mish, in western Iran, in the late 1960s. They were created about 5,500 years ago at a time when early cities were flourishing in Mesopotamia.

Researchers have long believed these clay balls were used to record economic transactions. That interpretation is based on an analysis of a 3,300-year-old clay ball found at a site in Mesopotamia named Nuzi that had 49 pebbles and a cuneiform text containing a contract commanding a shepherd to care for 49 sheep and goats.

How these devices would have worked in prehistoric times, before the invention of writing, is a mystery. Researchers now face the question of how people recorded the number and type of a commodity being exchanged without the help of writing.

Peering inside

The CT scans revealed that some of the balls have tiny channels, 1-2 millimeters (less than one-tenth of an inch) across, crisscrossing them. Woods said he's not certain what they were used for, but speculates the balls contained fine threads that connected together on the outside. These threads could have held labels, perhaps made out of wax, which reflected the tokens within the clay balls.

The tokens within the balls come in 14 different shapes, including spheres, pyramids, ovoids, lenses and cones, the researchers found.

Rather than representing whole words, these shapes would have conveyed numbers connected to a variety of metrological systems used in counting different types of commodities, Woods suggested. One ovoid, for instance, might mean a certain unit, say 10, which was used while counting a certain type of commodity.

The researchers, however, were perplexed when their CT scans found one clay ball containing tokens made of a low-density material, likely bitumen, a petroleum substance. "When we make a three-dimensional model of the cavity you get this very strange amoeba like-looking shape," Woods said during the lecture.

The tokens, in this instance, had air bubbles around them, suggesting they were wrapped in cloth before being put in the ball, the cloth disintegrating over time. In addition, it appears that a liquid, likely liquid bitumen, was poured over the tokens after they were inserted into the balls. What someone was trying to communicate by creating such tokens is unknown.

"That's a mystery," Woods told LiveScience in an interview. "I don't really have a good answer for that," he said, adding that the bitumen tokens may represent a divergent accounting practice, or, perhaps even, that the transaction recorded involved bitumen.

In ancient Mesopotamia bitumen was used as an adhesive and to waterproof things like baskets, boats and the foundations of buildings, Woods said. [In Photos: Treasures from Mesopotamia]

Cracking the prehistoric code

All of the clay balls contain, on the outside, one "equatorial" seal (running through the middle) and quite often two "polar" seals, running above and below.

The equatorial seals tend to be unique and more complex containing what appear to be mythological motifs; for instance a ball from the Louvre Museum shows human figures fighting what appear to be serpents.

The polar seals, on the other hand, are repeated more often and tend to have simpler geometric motifs.

Based on this evidence, Woods hypothesizes the seal in the middle represents the "buyer" or recipient; the polar seals would represent the "seller" or distributor and perhaps third parties who would have participated in the transaction or acted as witnesses.

This image shows a clay ball, with tokens, found broken at the site of Choga Mish. Pin It The information researchers have obtained about clay balls found in Mesopotamia may make it possible, in time, to crack the prehistoric code hidden inside.

Credit: Photo by Anna Ressman/Courtesy Oriental Institute of the University of Chicago. View full size image Many people would have acted as the buyers, but only a limited number of sellers or distributors would have been around to transact business with, explaining why the polar seals are repeated more often.

After a transaction of some importance was complete, one of these clay devices was created to serve as a "receipt" of sorts for the seller, as a record of what was expended. "There's a greater necessity to keep track of things that have been expended than things that are on hand," Woods said in the lecture.

Deciphering what transaction each clay ball represented is a trickier problem. Woods suspects the tokens represent numbers and metrical units. It's possible that, through the different token shapes, people in prehistoric times communicated numbers and units in a

way similar to how the first scribes did 200 years later when writing was invented. If that's the case, Woods and other scientists may be able, in time, to crack the code by uncovering how token types cluster and vary.

"If they are, then there is at least some hope of deciphering the envelopes and with it uncovering the earliest evidence for complex numerical literacy," Woods said.

Technological achievement

The amount of detail the scientists gleaned from the CT scans and 3D modeling was extraordinary, Woods said during the lecture. "We can learn more about these artifacts by non-destructive testing than we could by physically opening the envelopes," he said.

Woods will publish the full research results in the future and plans to put the images and 3D models online.

To peer inside the balls Woods worked with Jeffrey Diehm, who arranged for them to be CT scanned on a state-of-the-art industrial scanner (which is better suited for this work than a medical version), and Jim Topich, who had the CT images converted into detailed, dissectible, 3D models. Diehm was with North Star Imaging in Minnesota at the time the scans were done in 2011 (he is now the managing director of Avonix Imaging) and Topich is director of engineering and design at Kinetic Vision in Cincinnati.

The Royal Ontario Museum has a special exhibition on Mesopotamia that runs to Jan. 5, 2014. Woods' presentation is part of a lecture series that is appearing along with it.

Please visit the site: <http://www.livescience.com/40317-clues-to-lost-prehistoric-code-discovered.html>

ANCIENT SIDON: ARCHAEOLOGICAL DIG THAT COULD TRANSFORM OUR UNDERSTANDING OF LEBANON’S BLOODY PAST, BY ROBERT FISK

Across the ruins of ancient Sidon, Matt Williams darts like one of the stick-like figures on the Mycenaean pottery he and his Lebanese and British colleagues have discovered.

He bounds across bedrock, clambers along the medieval wall of Sidon, his hands gesticulating at still-damp wells and Roman columns inserted into Crusader walls. “This is the most exciting excavation I’ve ever worked on in my career,” he says. “And it will have been the best excavation I will ever work on in the future.”

If dog owners look like their pets, Matt Williams can look slightly like the warriors he has helped unearth, or perhaps the 500 BC shard of Hermes receiving a “suppliant”. Hermes was a messenger of the gods and the god of roads and commerce – of which there are plenty in Sidon – as well as cunning and theft, of which the freelance British archaeologist from Cambridge is innocent. With his Lebanese companion Enas Saleh, who has spent 15 years on this wonderful site in the very centre of old Sidon, Matt Williams has spent a mere six years digging through the cult life and feast days and violence of the peoples who live in what is still, from time to time, a dangerous city.

Since the Lebanese department of antiquities owns this bit of history – it originally lay under a Christian school demolished more than a century ago – there are no legal problems, no property claims, no developers hustling for an early end to archaeological discoveries.

Thus, and this is the reason for Williams’ excitement, the diggers and trowels and cleaners and historians can work their way from the oldest levels of Sidon – Chalcolithic, early, middle and later Bronze Ages and the Iron Age up to the Persians, the Romans, with their pavements and drains and walls, and the rampart foundations of the medieval Crusaders. It’s all there.

And lest you think this is academic waffle, just listen to Matt Williams when he describes the Crusaders’ human remains, buried hastily in a mass grave beneath the medieval walls sometime around 1250. Some of the Crusaders had been beheaded. “There was some kind of attack and they probably died fighting,” he says. “There were chop marks and blade marks on the bones and they were plopped into small graves, 15 of them, in a shallow ditch at the bottom of the 13th-century walls.” Of their deaths in battle, we know no more.

Sidon was then part of the theoretical “Kingdom of Jerusalem”, and the Castle of the Sea – now one of the city’s greatest attractions for the tourists who today rarely dare to come here – was only built in the late 1220s. Saladin was long dead and the Knights Templar were still clinging onto the Lebanese coast in 1280, their seafront fortresses placed a day’s sailing apart, since the hinterland was now in “enemy” hands. These Crusader castles were the ancient equivalent of Donald Rumsfeld’s notorious “lily-pads”, walled

military bases to protect the forces of Western “civilisation” against the armies of barbarians (terrorists) outside.

The reality of such dark history is illustrated in the magnificent little exhibition beside the site. The British Museum’s photograph of the Crusader remains is ominous and dark brown – half of the bones are now at Bradford University which has a centre for ancient pathology, the rest packed in boxes above the site – but also on display is a copy of an early 14th-century drawing of Saint Louis (the original is at the Metropolitan Museum of New York) burying the bones of Crusaders in Sidon. While the goodly and crowned saint is reverentially piling skulls in a sack, the stench is so awful that three of his assistants are covering their mouths with their hands and a cloth.

In any event, the Mamluks gobbled up Sidon in 1291, the Templars finally abandoning their sea castle on 14 July, and by the time Ibn Batutah arrived around 60 years later, Sidon was smothered in fruit trees, exporting figs, raisins and olive oil to Egypt. But this is, in a sense, “our” Western history. Sidon’s real past began two millennia earlier and spread through both legend and literature. This was the birthplace of Dido of Carthage, which supplied cedar wood for the temple of Jerusalem, and which Homer describes in the Iliad as the city whence Peleus sought his prize for a foot race, a silver bowl: “for its loveliness it surpassed all others on earth by far, since skilled Sidonians had wrought it well and Phoenicians carried it over the misty face of the water...”

The Sidon site has produced treasures to match this. There are cylindrical pots from the early 5th century BC showing warriors rising prancing horses and holding spears, deity figurines from the early Bronze Age – a mixture of naïve and surreal if we were to apply today’s artistic taste – and there are axe heads from graves, and one mud-bricked sepulchre from the middle Bronze Age whose occupant had to be squashed into it, the skeleton’s knees almost forced into its stomach cavity.

Enas Saleh describes how the children from modern Sidon look at the pictures of these bones. “Mostly, they want to know the names of these people,” she laughs. But of course, the children are right to ask this question. Even the ancient dead deserve their human identity and even I, inured to the modern and blasted corpses I have seen in Sidon’s present-day mortuaries, wonder if these long dead folk really deserve to be boxed up and carted off to Bradford University. As for the identities, alas, you had to be rich or priestly or kingly to have your name recorded 3,000 years ago.

There is, for example, an early Iron Age Phoenician plate discovered on site, recording that Abdyahu was a priest responsible for several altars. They’ve even discovered a percussion instrument, a “sistrus” used for religious dances to worship the Egyptian goddess Hathor. A set of earphones at the exhibition helpfully gives visitors the sound of its music, the tinkling, it seems, of tiny bits of metal. And intriguingly, the instrument owes its name to the rustling of a cow passing through a thicket of papyrus reeds.

he archaeologists have found gold pendants, earrings, silver bracelets and, perhaps most enthralling, a tiny cylindrical seal depicting an apparently Mesopotamian worshipper with a gift, a seated goddess and a bearded hero wearing the headdress of a bull-man, with water pumping out of his left elbow. The hole through the cylinder must have been drilled, but its makers surely needed glass or primitive spectacles to indent this extraordinary detail onto a soapstone seal scarcely an inch in length.

Animal remains prove that ancient Sidonians hunted and ate hippopotamus, bears, boars and deer. They were fixated, like so many peoples of antiquity, with gods, masculinity, sex and death – their present-day descendants might be guilty of just such obsessions – although life can be easier now. For a fine falafel sandwich, you have only to walk half a mile down to Palestinian Abu Sami's shop opposite the Castle of the Sea. But there are some eerie parallels. Just opposite the excavation site is one of Sidon's contemporary cemeteries. The grandfather and grandmother of a friend of mine are buried there and here too are buried five murdered men (I spent six weeks investigating their deaths), beaten to death by Israeli guards at a makeshift prison camp in a Sidon fruit factory in 1982.

And the tide of peoples who have washed through this old city continues. Most of the inhabitants living around the dig where Matt Williams and his colleagues work are Palestinian refugees, Iraqi refugees and now, thousands of refugees from the bloodbath in Syria.

For despite their beautiful artefacts, the grace of their art and their ancient scripts, the one thread that binds the peoples of antiquity to the humans who live here now, is war.

Please visit the site: <http://www.belfasttelegraph.co.uk/opinion/columnists/robert-fisk/ancient-sidon-archaeological-dig-that-could-transform-our-understanding-of-lebanons-bloody-past-29648827.html>

WHO REALLY BUILT THE WATER SYSTEM AT MEGIDDO? BY NORMA FRANKLIN

Visitors to Megiddo thrill to the long descent into the famous water system, first climbing down the many steps that surround the gaping chasm dug deep into the tell and then the rock cut shaft followed by a long tunnel cut into the bedrock.

Modern aerial view of Megiddo showing the water system to the left.

But who actually built the water system? In 1927 the Oriental Institute of Chicago excavated a water system at Megiddo and attributed it to the Late Bronze Age. Yet today visitor's guides to Megiddo state that the great water system was constructed in the ninth century BCE, while the signage at the site specifically states that it was built by Ahab, King of Israel. How did this change come about and most importantly is it justified? Are the kings of Israel really the builders, or not?

Architect Robert Lamon on behalf of University of Chicago excavated the Megiddo water system. Although Lamon was not a trained archaeologist he possessed an eye for architectural detail and some of his excellent plans were published[i].

The area of the water system before excavation in 1927 Oriental Institute.

Unpublished drawing of the water system by Robert Lamon. From a lantern slide in the Herbert May collection, Oberlin College archive.

He was also reprimanded[ii] by his superiors in Chicago for the way he carelessly cut through the archaeological material that surrounded the entrance to the water system. But Lamon clearly established that the rock-cut section of the water system had a long period of use and had at least three distinct phases:

In Phase 1 access to the water source was via a rock-hewn staircase which allowed people to descend to the level of the water table and walk along a rock-cut horizontal tunnel to the underground spring located at the foot of the tell.

In Phase 2 the rock-hewn staircase was chiseled away to leave a square shaft with just the faint negatives of the steps as evidence. There was now no direct access for people; they were no longer able to descend to the level of the water table from within the city. But the gradient of the horizontal tunnel was changed so that water from the underground spring now flowed to the base of the shaft. This meant that the water system now functioned as an intramural well.

Photograph showing the vertical rock-cut shaft and the remains of the masonry steps at the bottom along with the modern staircase. From a hand colored lantern slide in the Herbert May collection, Oberlin College archive. Reproduced with permission.

Finally, in Phase 3, access to the water source was again possible, this time via a masonry staircase built inside the shaft. People were able to descend directly to the tunnel and walk to the underground spring. Presumably the water level was now lower and water no

longer flowed from the spring along the tunnel to the base of the newly built masonry steps.

Only Phase 3 could be placed in a secure chronological context. This was made possible due to the analysis of the pottery contained in the fill used to support the built staircase. The pottery appeared to correspond with that retrieved from the fill below the famous Stratum IV stable complexes. The stables and the city wall were originally attributed to the tenth century BCE and the reign of King Solomon.

Therefore Lamon also allocated the final phase, Phase 3, of the water system to the tenth century.

The masonry built steps.

Lamon also used another clue. Running below City Wall 325 was a narrow passage, Gallery 629, that led off the tell in the direction of the spring. Lamon thought it predated the “Solomonic” city wall and was built to allow access to the extramural water source prior to the construction of the water system. Therefore he attributed the initial construction of the water system, Phase 1 to the Late Bronze Age.

In 1967 Yigael Yadin of Hebrew University embarked on a series of excavations at Megiddo. He examined the northern Stables and City Wall 325, Gallery 629, and the exit from the water system. As a result of his work Yadin revised the dating of the Stables and City Wall 325, attributing them to the ninth century BCE and the time of Ahab.

Consequently if Gallery 629 was now both pre-Ahab and pre-water system then Yadin reasoned that the water system too must have been built by Ahab in the ninth century BCE.[iii]

Today following excavation by the Megiddo Expedition of Tel Aviv University the Stables and City Wall 325 are now known to date to the eighth century BCE. If one wants a king to attribute these buildings works to then Jeroboam II would fit the bill. But does this mean that Gallery 629 was built by Ahab in the ninth century and the water system by Jeroboam II in the eighth century BCE? Emphatically no!

The first mistake was made by Lamon and compounded by Yadin. Gallery 629 is just a short stretch of a solidly constructed passage, built using ashlar masonry and stone pillars, and strategically placed below City Wall 325 in order to bear the weight of the wall at the point where it crossed over the gallery. That is, it is merely a postern gate that probably did serve to access the spring in an emergency but which was built together with City Wall 325 in the eighth century BCE.

It certainly didn't pre-date the construction of the water system.

A second mistake or rather omission was made by Yadin; he simply ignored the fact that the water system had three clear phases of use.

The pottery belonging to Phase 3 was originally thought by Lamon to belong to the tenth century BCE but it is now known to belong to the late ninth or early eighth century BCE. This is the last phase in the life of the water system and so Yadin's attribution of the first initial construction of the water system to Ahab in the ninth century BCE can no longer hold water!

So when was the water system built? Possibly Lamon was correct, albeit for the wrong reasons, and the water system was built in the Late Bronze Age. However, even Yadin, in one of his 1967 excavations proved that the underground water source was accessed via a cave at the base of the tell as far back as the Middle Bronze Age. In fact the classic shape of Tel Megiddo that we know today, a circular high mound, with contours formed by massive earthen ramparts, was formed during the Middle Bronze Age. Therefore I believe^[iv] that similar to sites such as Jerusalem, Tel Gezer, and Tel Gerisa, the great Megiddo water system was constructed during the Middle Bronze Age and that it served the citizens of the city for perhaps as long as a thousand years. This conclusion makes the works of the Kings of Israel slightly less grand but those of their Canaanite predecessors all the more impressive.

For more information on the Megiddo check out the links below.

The Megiddo Expedition

<https://sites.google.com/site/megiddoexpedition/the-site/history-of-megiddo>

Norma Franklin

Relative and Absolute Chronology of Gallery 629 and the Megiddo Water System: A Reassessment.

http://www.academia.edu/234808/Relative_and_Absolute_Chronology_of_Gallery_629_and_the_Megiddo_Water_System_A_Reassessment

[i] See Robert Lamon, 1935. The Megiddo Water System. (Chicago, Oriental Institute Publication 32, 1935).

[ii] Correspondence in the archive of the Oriental Institute of the University of Chicago.

[iii] See Yigael Yadin “Megiddo of the Kings of Israel.” Biblical Archaeologist 33 (1970): 66-96.

[iv] For a longer discussion see N. Franklin, “Relative and Absolute Chronology of Gallery 629 and the Megiddo Water System: A Reassessment.” In: I. Finkelstein, D. Ussishkin, and B. Halpern, eds., Megiddo III: The 1992–1996 Seasons. (Tel Aviv, 2000), pp. 515-523

Please visit the site: <http://asorblog.org/?p=5873> [Go there for nice pix]

EXTINCT TREE GROWS ANEW FROM ANCIENT JAR OF SEEDS UNEARTHED BY ARCHAEOLOGISTS, BY STEPHEN MESSENGER

For thousands of years, Judean date palm trees were one of the most recognizable and welcome sights for people living in the Middle East -- widely cultivated throughout the region for their sweet fruit, and for the cool shade they offered from the blazing desert sun.

From its founding some 3,000 years ago, to the dawn of the Common Era, the trees became a staple crop in the Kingdom of Judea, even garnering several shout-outs in the Old Testament. Judean palm trees would come to serve as one of the kingdom's chief symbols of good fortune; King David named his daughter, Tamar, after the plant's name in Hebrew.

By the time the Roman Empire sought to usurp control of the kingdom in 70 AD, broad forests of these trees flourished as a staple crop to the Judean economy -- a fact that made them a prime resource for the invading army to destroy. Sadly, around the year 500 AD, the once plentiful palm had been completely wiped out, driven to extinction for the sake of conquest.

In the centuries that followed, first-hand knowledge of the tree slipped from memory to legend. Up until recently, that is.

During excavations at the site of Herod the Great's palace in Israel in the early 1960's, archeologists unearthed a small stockpile of seeds stowed in a clay jar dating back 2,000 years. For the next four decades, the ancient seeds were kept in a drawer at Tel Aviv's Bar-Ilan University. But then, in 2005, botanical researcher Elaine Solowey decided to plant one and see what, if anything, would sprout.

"I assumed the food in the seed would be no good after all that time. How could it be?" said Solowey. She was soon proven wrong. Amazingly, the multi-millennial seed did indeed sprout -- producing a sapling no one had seen in centuries, becoming the oldest known tree seed to germinate.

Today, the living archeological treasure continues to grow and thrive; In 2011, it even produced its first flower -- a heartening sign that the ancient survivor was eager to reproduce. It has been proposed that the tree be cross-bred with closely related palm types, but it would likely take years for it to begin producing any of its famed fruits. Meanwhile, Solowey is working to revive other age-old trees from their long dormancy.

Please visit the site: <http://www.treehugger.com/natural-sciences/extinct-tree-grows-anew-after-archaeologists-dig-ancient-seed-stockpile.html>

HUMAN BRAIN BOILED IN ITS SKULL LASTED 4000 YEARS, BY COLIN BARRAS

SHAKEN, scorched and boiled in its own juices, this 4000-year-old human brain has been through a lot.

It may look like nothing more than a bit of burnt log, but it is one of the oldest brains ever found. Its discovery, and the story now being pieced together of its owner's last hours, offers the tantalising prospect that archaeological remains could harbour more ancient brain specimens than thought. If that's the case, it potentially opens the way to studying the health of the brain in prehistoric times.

Brain tissue is rich in enzymes that cause cells to break down rapidly after death, but this process can be halted if conditions are right.

For instance, brain tissue has been found in the perfectly preserved body of an Inca child sacrificed 500 years ago. In this case, death occurred at the top of an Andean mountain where the body swiftly froze, preserving the brain.

However, Seyitömer Höyük – the Bronze Age settlement in western Turkey where this brain was found – is not in the mountains. So how did brain tissue survive in four skeletons dug up there between 2006 and 2011?

Meriç Altinoz at Haliç University in Istanbul, Turkey, who together with colleagues has been analysing the find, says the clues are in the ground. The skeletons were found burnt in a layer of sediment that also contained charred wooden objects. Given that the region is tectonically active, Altinoz speculates that an earthquake flattened the settlement and buried the people before fire spread through the rubble.

The flames would have consumed any oxygen in the rubble and boiled the brains in their own fluids. The resulting lack of moisture and oxygen in the environment helped prevent tissue breakdown.

The final factor in the brains' preservation was the chemistry of the soil, which is rich in potassium, magnesium and aluminium. These elements reacted with the fatty acids from the human tissue to form a soapy substance called adipocere. Also known as corpse wax, it effectively preserved the shape of the soft brain tissue (HOMO – Journal of Comparative Human Biology, doi.org/nz6).

"The level of preservation in combination with the age is remarkable," says Frank Rühli at the University of Zurich, Switzerland, who has examined medieval brain tissue. Rühli says that most archaeologists don't bother looking for the remains of brain tissue because they assume it is seldom preserved. "If you publish cases like this, people will be more and more aware that they could find original brain tissue too."

In cases where the brain is as well preserved as this, Rühli says it might even be possible to look for pathological conditions such as tumours and haemorrhaging, and maybe even signs of degenerative disease. "If we want to learn more about the history of neurological disorders, we need to have tissue like this."

This article appeared in print under the headline "4000-year-old brain opens window on ancient health"

Please visit the site: <http://www.newscientist.com/article/mg22029373.000-human-brain-boiled-in-its-skull-last-ed-4000-years.html#.UIB-FCkoZ5>

STONE AGE FARMERS, HUNTERS KEPT THEIR DISTANCE, BY JOEL ACHENBACH

Polarization — right and left, red state and blue state, etc. — wasn't invented yesterday. Ask the scientists studying the bones of prehistoric Europeans. Hundreds of skeletal remains, many from a newly discovered cave in Germany, have produced a startling reminder of the power of social boundaries.

When farmers showed up from the Near East about 7,500 years ago, eager to grow their grains in the soil of Central Europe, they were met by indigenous hunters and gatherers. The locals, apparently, did not welcome them with open arms.

Two new scientific techniques, ingeniously paired together, suggest that for some 2,000 years, these distinct groups refused to mesh and would rarely cross their cultural boundaries to find a mate.

At first, the indigenous people largely disappeared from the scene altogether, fleeing to the north to continue their traditional mode of life. But even when they drifted back and became neighbors with the farmers, they remained to a large extent a breed apart.

“We don't really know who set up those social boundaries, so we don't know if it was the farmers who didn't mix with the hunter gatherers or if it was the hunter-gatherers who wanted to stay by themselves,” said Ruth Bollongino, a biologist at the University of Mainz and the lead author “2000 Years of Parallel Societies in Stone Age Central Europe,” one of two new papers on Neolithic Europe published online Thursday by the journal *Science*. “Or maybe its both groups that wanted to keep their own identity.”

This is an old story. Think of the plot of “Shane,” in which the ranchers do battle with the “sodbusters.” Recall the tensions between “the farmer and the cowman” in the musical “Oklahoma!”

Exactly how cultures clashed in prehistoric times is necessarily a foggy subject, given that no one had a written language and archeologists must piece together the story from broken pottery, tools, bones and charcoal.

But new research techniques are clarifying that story. The analysis of mitochondrial DNA from skeletal remains allows scientists to study migration patterns and lineages. Moreover, scientists can tell what people ate by studying variations in the carbon, sulfur and nitrogen isotopes in their teeth and bones. They can tell, for example, if a diet was heavy in fish or heavy in grains.

An enduring debate for decades has been whether agriculture arose in Europe through “cultural diffusion,” in which the techniques of farming and animal husbandry were adopted by the indigenous population from distant sources, or whether an entirely new population of people rolled into that part of the world and pushed out the natives. The second paper published Thursday in *Science*, reporting an analysis of hundreds of skeletal remains from multiple sites in Central Europe, provides evidence for the second scenario, which likely involved some degree of unpleasantness.

“There’s certainly a big culture clash at that time,” said Wolfgang Haak, a geneticist at the University of Adelaide and co-author of that paper. “Farmers are probably loud, noisy and stinky at the same time.

They come with domestic farm animals and just take over the place.”

Spencer Wells, explorer-in-residence at the National Geographic Society, and project director of the Genographic Project, a human-migration research effort that contributed to the second paper, called the new findings “a huge insight.”

“In my opinion, certainly for the case of Europe, it’s going to be the nail in the coffin of this cultural diffusion idea,” he said.

The “parallel societies” evidence is based on skeletal remains found in a cave near the German city of Hagen. The cave, called Blätterhöhle, or Leaf Cave, has a long, narrow entrance, and was not discovered until 2004. Excavators found more than 400 skeletal remains. The DNA evidence showed that some people were descendants of hunter-gatherers and some were from the farming lineage.

Then came the surprise. Bollongino assumed that she and her colleagues would wind up writing a paper about the mixing of these populations.

But instead, the isotopic analysis showed that the people from the hunter-gatherer lineage were still living that way, with a diet relying heavily on fish, and the people from the farming lineage continued to be farmers. Everyone stuck to their way of life and rarely interbred.

“It wasn’t until we saw the isotopes that we realized we were going to have to rewrite the paper completely,” Bollongino said. “They shared the same burial place for something between 400 and 600 years, so it would be very hard to explain that they did not know each other. We believe that they were close neighbors and had contact with each other and traded with each other. But still they didn’t mix.”

The moral of the story?

“Apparently most humans need to have some kind of identity, or some kind of group that they belong to and they feel part of. I think keeping up this identity also means that you do not admix with people from other groups, from other cultures,” she said.

Please visit the site: http://www.washingtonpost.com/national/health-science/stone-age-farmers-hunters-kept-their-distance/2013/10/10/59f46f12-31ab-11e3-89ae-16e186e117d8_print.html

CRACKING THE CODE: THE DECIPHERMENT OF LINEAR B 60 YEARS ON

A conference in Cambridge, southeast England, will mark the 60th anniversary of the decipherment by Michael Ventris of Linear B, a script used for an early form of ancient Greek. His stunning achievement pushed back the frontiers of knowledge about the ancient world.

When during the early 20th century archaeologists excavated some of the most famous sites of Ancient Greece – notably Knossos on the island of Crete and Mycenae and Pylos on the mainland – they found large numbers of clay tablets inscribed with a type of script that baffled them.

It was significantly different to any other script known at the time. Moreover, it was immediately clear that there were at least two variants of this type of writing.

These scripts – characterised by about 90 different characters, and on the clay tablets interspersed with signs for numerals as well as the depiction of every-day objects and commodities such as pots, cloth and grain – acquired the name ‘Linear’. Linear because they were more abstract and characterised by a more linear style than the earlier hieroglyphic type of writing, also found on Crete.

The two variants were given the names Linear A and B. It was clear that Linear A was the earlier type, much rarer and restricted to the island of Crete. The younger type B was found in significantly larger numbers and found at Knossos, Mycenae and Pylos. Since the original excavations evidence for the same type of writing has come to light at other places, including Thebes and Tiryns on the Greek mainland and Chania on Crete.

Brilliant minds

Today scholars are gathering at Cambridge University for a conference marking the extraordinary story of the decipherment of Linear B, a narrative that brings together some of the 20th century’s most brilliant minds in the fields of not only classical archaeology but also specialist areas ranging from philology and epigraphy to experts on Greek religion and economy. While celebrating what is often seen as the greatest advances in classical scholarship in the last 100 years, the scholars taking part are also looking at the challenges that remain in piecing together the story of the Mycenaean world, a civilisation known for its stunning art and complex and highly developed economy.

Discovery at Knossos

In the wake of some of the most famous excavations in history, the classicists who put their minds to the tantalising puzzle of deciphering Linear B included the best-known names in the field. After the German scholar Heinrich Schliemann had excavated Troy (or a site compatible with Homer’s famous city) and Mycenae and thereby opened the door to Greek archaeology of the second millennium BC, the British archaeologist Arthur Evans discovered these inscribed tablets in large numbers at Knossos in the year 1900.

Evans and other scholars knew that the tablets held the key to a fuller understanding of the Mycenaean civilisation. But deciphering what was inscribed on them seemed an impossible task, given that both the script and the language behind it were unknown.

Unlocking the secrets

After many unsuccessful attempts by would-be decipherers from all over the world, it was a brilliant British amateur called Michael Ventris who was to prove pivotal in the unlocking of the secrets of Linear B. Ventris was an extraordinary scholar, largely self-taught, with a phenomenal talent for languages. His first encounter with the script occurred when as a schoolboy he was shown some of the clay tablets found at Knossos by Arthur Evans.

This chance meeting prompted a fascination that lasted right up until Ventris's tragic death in a car crash in 1956. He set himself the task of working out the nature of the writing system and deciphering it. He worked largely alone on making sense of the script but circulated all his thoughts to the greatest scholars in the field in a series of "Work Notes on Minoan Language Research" while pursuing a career as an architect. Then, on 1 June 1952, he sent around his Work Note 20 entitled, with typical modesty, "Are the Knossos and Pylos tablets written in Greek?". Building on earlier work, notably by the American scholar Alice Kober, he had – through a combination of sober considerations, the development of a rigorous methodology, the ingenious integration of clues of very different kinds, brilliant assumptions and patient experimentation – single-handedly deciphered the script.

A difficult and archaic Greek

Much against his own original assumptions, Ventris was able to show, ever more clearly over the months that ensued, that the language behind the script was Greek – in his own words "a difficult and archaic Greek, but Greek nevertheless". Lacking the necessary background in Greek philology and linguistics, in July 1952 he turned to John Chadwick, a newly-appointed lecturer in classics at the University of Cambridge, for professional support. Chadwick was an outstanding classical scholar who had worked on code-cracking in the Second World War. He helped to develop Ventris's original decipherment and was able to elucidate the historical linguistic background and provided many interpretations of individual tablets.

In this way, Cambridge soon became established as one of the world's leading centres for Mycenaean studies and Dr Chadwick continued to work on Linear B right up to his death in 1998.

"The decipherment of Linear B opened up, and indeed created, a whole new branch of scholarship. It added about 500 years to our knowledge of Greek, catapulting our understanding of early Greek history and society back into the second millennium BC, to the end of the Bronze Age at about 1200BC," said Dr Torsten Meissner, organiser of today's conference. *"Suddenly the places of the figures of Greek mythology – like the legendary King Minos of Knossos or Homeric heroes like Nestor, king of Pylos, or Agamemnon, king of Mycenae – could be placed in a real setting through the clay tablets that record their administrative and political organisation."*

Many parts of the jigsaw that is the Mycenaean world are still missing – for example the relationships of the various sites with one another. However, the ways in which Ventris

and Chadwick worked across disciplines and specialisms laid the foundations for scholarship that is seeing the pieces come together, one by one.

Source: *[University of Cambridge](#)*

Please visit the site:

<http://www.pasthorizonspr.com/index.php/archives/10/2012/cracking-the-code-the-decipherment-of-linear-b-60-years-on>

MUSEUM RELUCTANT TO OPEN ANCIENT ROMAN WINE

Scientists want to study samples of the world's oldest wine, currently on display at the Historical Museum of the Palatinate in the western German city of Speyer. There's just one problem: everyone's afraid to open the bottle.

The glass bottle, thought to be at least 1,650 years old, was found in a Roman grave near Speyer in 1867 and put on display at the museum. Since then, it's been handled extremely carefully, and been on display in the exact same spot in the museum for 100 years.

Museum directors fear that a moment's carelessness could shatter the bottle, destroying its priceless content. Though scientists would like to test it to figure out exactly how old the wine is and where it comes from, as well as perhaps seeing how it tastes – cracking it open is out of the question.

"It's not clear what would happen if air gets into the wine," said Ludger Tekampe, who heads the department responsible for storing it.

There's also the danger that, after all this time, it could have become poisonous, although scientists suspect the alcohol would not be dangerous, but just taste disgusting.

In any event, the ultra-old wine has survived a lot, including ancient drinkers, handling on its way to the museum, and two world wars, with nary a problem.

Tekampe said he hasn't observed any changes in the wine or its container in his 25 years at the museum, the bottle appears to have been carefully constructed by the Romans to prevent the wine from decomposing.

"The content is remarkably stable," Tekampe said.

Still he's the only one who handles the bottle. Everyone else is just too afraid.

"I held the bottle in my hand twice during renovations. It was a strange feeling," Tekampe said.

Please visit the site: <http://archaeologynewsnetwork.blogspot.gr/2013/10/museum-reluctant-to-open-ancient-roman.html#.UlqpTBDDvQu>

THE APOLLO FOUND THAT DIVIDES GAZA, **BY FABIO SCUTO**

The bronze statue of 2,500 years ago has been found in the sea by a fisherman. Hamas criticizes the naked and wants to sell it. The PNA: remains in the Strip. An American museum in the running to buy.

It's a full moon night in mid-September, Mounir puts in the water his small fisherman's boat in the beach in front of Deir al Balah, the town in the middle of the Gaza strip. But that night in his seine, a fishing net a couple of hundred meters long, something gets caught just a few meters from the shore. What surfaces, illuminated by the moon, is the arm of a wonderful life-size Apollo, which shines to the point of seeming gold. Helped by his children Mounir somehow frees the statue from the sand that has protected it for twenty-five centuries, loads it on his rowing boat and hides it in his house, lost in the termite mound of dirt roads and buildings where the city and the refugee camp intertwine in the same urban tragedy. The Apollo is shown to a relative, but no one is able to tell if it is gold as the fisherman hopes. It could be seventy or eighty pounds of gold which, in the desperate reality of Gaza, multiply its value. But no one can go around the Strip with a statue of the Hellenistic period in the trunk. The statue which is (was) in perfect conditions, has finger roughly cut off, so to be shown to some connoisseur to have an esteem of its purity and quality. The dreams of Mounir come crashing quickly, the finger shown "around" turns bronze, the statue has only (and a big one too) archaeological value as that of many other artifacts which crop up here and there in the Strip.

The Strip's name now evokes wars, bombings and suffering, but under the sands of Gaza there are five thousand years of fascinating history. On its banks Egyptians, Philistines, Romans, Byzantines, and Crusaders have marched. Alexander the Great besieged the city, the Emperor Hadrian stayed there a long time. It was the most important Roman port for the incense trade. Richard the Lionheart tore it from an Ayyubid sultan, then it was conquered by the Mongols. It was part of the Ottoman Empire, it was crossed by Napoleon's army moving from Egypt to Syria, it was a battlefield during World War II. Wherever you dig in the Strip ancient ruins are revealed.

But Mounir with that metal finger shown around Gaza has attracted the attentions of Hamas' spies, always well introduced in every environment. Within a few hours the fisherman is arrested and the statue, which could date back to the fourth century B. C., is seized. It would be a great achievement for Hamas to show the world this wonder of Greek art - comparable to the Riace Bronzes - but for those who have it in their hands it soon becomes clear that the Apollo must remain a secret. Islam forbids the reproduction of the human figure in art and accepts only floral and decorative painting. Moreover the Apollo in accordance to the style of the era is naked and it would be impossible for the zealous fundamentalists to show it in public. The statue must disappear, suggests someone, better to sell it - like so many other antiquities.

The "black market" and put the money into the damaged coffers of Hamas, which is no longer able to pay salaries to his men after the blocking of the smuggling tunnels with Egypt. The story of the Apollo of Gaza starts like this and in a few days it reaches another dimension made of large hotels, sick collectors, ambitious businessmen and

antiquity hunters. As a well know International "mediator" is working to find a buyer for the Apollo rough estimates speak of 20-40 million dollars, and in the race there would already be a major American museum. Hamdan Taha, the Deputy Minister of Culture and Antiquities of the PNA in his office in Ramallah, opens his arms and looks carefully at the photos of "La Repubblica". "The Strip is a paradise for archeologists", he says gravely, "but it is also for the Palestinian grave robbers, more than a fortune was made possible thanks to the sale on the black market for stolen artifacts abroad." He twists the photo of the Apollo in his hands: "You see, if it gets out of the Strip we cannot have it anymore, because Palestine is not yet a state and we have not yet been allowed in the Interpol: even if we discovered in which hands it will go we could never really get it back". The only way to save Gaza's Apollo is to tell its story, to let its images circulate, so that nobody can say, "I didn't know where it came from".

Please visit the site:

http://www.repubblica.it/esteri/2013/10/10/news/the_apollo_found_that_divides_gaza-68317288/

**DROUGHTS RUINED MIDEAST EMPIRES AT
END OF BRONZE AGE, STUDY SAYS
SCIENTISTS FROM ISRAEL AND GERMANY
ARGUE THAT A CLIMATE CRISIS DID IN
CIVILIZATIONS, HELPING SPAWN THE
FIRST KINGDOM OF ISRAEL AND OTHER
NEW POLITICAL ENTITIES,
BY NIR HASSON**

Between 1250 and 1100 B.C.E., all the great civilizations of the eastern Mediterranean – pharaonic Egypt, Mycenaean Greece and Crete, Ugarit in Syria and the large Canaanite city-states – were destroyed, ushering in new peoples and kingdoms including the first Kingdom of Israel.

Now scientists are suggesting a climatic explanation for this great upheaval: A long dry period caused droughts, hunger and mass migration. Such is the conclusion of a three-year study published this week in Tel Aviv: *Journal of the Institute of Archaeology of Tel Aviv University*.

The researchers drilled deep under the Kinneret, retrieving 18-meter strips of sediment from the bottom of the lake. From the sediment they extracted fossil pollen grains. "Pollen is the most enduring organic material in nature," says palynologist Dafna Langgut, who did the sampling work.

According to Langgut, "Pollen was driven to the Kinneret by wind and streams, deposited in the lake and embedded in the underwater sediment. New sediment was added annually, creating anaerobic conditions that help preserve pollen particles. These particles tell us about the vegetation that grew near the lake and testify to the climatic conditions in the region."

Radiocarbon dating of the pollen revealed a period of severe droughts between c. 1250 and 1100 B.C.E. A sediment strip from the Dead Sea's western shore provided similar results.

Langgut published the study with Prof. Israel Finkelstein of Tel Aviv University, Prof. Thomas Litt of the University of Bonn and Prof. Mordechai Stein of Hebrew University's Earth Sciences Institute.

"The advantage of our study, compared to pollen investigations at other locations in the Middle East, is our unprecedented frequency of sampling - for about every 40 years," says Finkelstein.

"Pollen is usually sampled for every several hundreds of years; this is logical when you're interested in prehistoric matters. Since we were interested in historical periods, we had to

sample the pollen more frequently; otherwise a crisis such as the one at the end of the Bronze Age would have escaped our attention." That crisis lasted 150 years.

The research shows a chronological correlation between the pollen results and other records of climate crisis. At the end of the Bronze Age – c. 1250-1100 B.C.E. - many eastern Mediterranean cities were destroyed by fire. Meanwhile, ancient Near Eastern documents testify to severe droughts and famine in the same period – from the Hittite capital in Anatolia in the north to Ugarit on the Syrian coast, Afek in Israel and Egypt in the south.

The scientists used a model proposed by Prof. Ronnie Ellenblum of Hebrew University, who studied documents that describe similar conditions of severe drought and famine in the 10th and 11th centuries C.E.

He showed that in areas such as modern Turkey and northern Iran, a reduction in precipitation was accompanied by devastating cold spells that destroyed crops.

Langgut, Finkelstein and Litt say a similar process occurred at the end of the Bronze Age; severe cold spells destroyed crops in the north of the ancient Near East and a reduction in precipitation damaged agricultural output in the eastern steppe parts of the region. This led to droughts and famine and motivated "large groups of people to start moving to the south in search of food," says Egyptologist Shirly Ben-Dor Evian of Tel Aviv University.

Please visit the site: <http://www.haaretz.com/archaeology/premium-1.554347>

THE QUEEN AND THE SCULPTOR - EGYPTOLOGIST THINKS HE HAS FOUND TOMB OF ARTIST WHO CREATED FAMED BUST OF NEFERTITI, BY CORYDON IRELAND

For those of us aging fast, it is nice to know that one the most beautiful faces in the world is more than 3,300 years old.

That face is on the bust of Queen Nefertiti, the wife of Pharaoh Akhenaten, whose reign in Egypt spanned 1353–1336 BCE. This famous artifact, 44 pounds and life-size, has a layer of painted gypsum stucco over a full-featured limestone core. It was discovered a century ago in the ruins of an ancient artist’s studio in Amarna, south of Cairo. First made public in 1924, it fast became an icon of feminine beauty.

A slender, smooth neck gives way to skin the color of golden sand. Then come full, red lips; a dramatic, sloping nose; almond eyes; and arching, dark eyebrows. Above the face is a colorful, back-sweeping, cylindrical crown. It’s a lot for the eye to take in, especially since the work was likely just an artist’s model, and never intended for display.

Found scattered through the same studio were 22 plaster casts of faces. Some depict older women with every wrinkle and sag, an artistic anomaly in a culture that stylized women as slender and beautiful.

(Nefertiti’s image beneath the stucco, recent CT scans show, was more realistic: a woman with lesser cheekbones, wrinkled cheeks, and a bump on the nose.)

But the world sees just the surface. The face “is part of our culture,” said French Egyptologist Alain Zivie in a Harvard lecture last Thursday, “like a picture of Che Guevara or Einstein or the Mona Lisa in Paris.”

The discovery of the bust in Amarna in 1912 is one of archaeology’s signature moments. A famous photograph depicts German Egyptologist Ludwig Borchardt getting a first look at the life-size bust. “Suddenly we had the most alive Egyptian artwork in our hands,” he wrote in his diary. “You cannot describe it with words. You can only see it.” (He kept the bust in his Berlin home for 11 years before moving it to Berlin’s Neues Museum.)

Yet who created the famous bust, and sculpted and painted the famous face? It was Thutmose, who in his day styled himself “the king’s favorite and master of works.”

The lecture, “Discovering the Egyptian Queen Nefertiti’s Artist,” reminded the audience of Pharaoh Akhenaten’s official court sculptor, a man whom Zivie has styled “the Michelangelo of ancient Egypt.” The talk was a testament to Egyptology’s durable drawing power (or perhaps Nefertiti’s). Fong Auditorium was full, from the front row to the top tier. (Co-sponsoring the event were the Semitic Museum and Harvard’s Standing Committee on Archaeology.)

The lecture was also a testament to Zivie's current academic interest: to prove that the Thutmose of the studio in Amarna is the same as the Thutmose whose tomb he discovered farther north in Saqqara. Zivie was nearly 33 minutes into his 51-minute talk before he mentioned Nefertiti. "Of course, we come to the lady, the icon," he said, teasing the audience first with a picture of the bust from behind.

It was Zivie who discovered Thutmose's presumptive tomb in 1996 while helping to excavate what initially were believed to be just subterranean galleries for mummified cats and dogs. (Egyptian animal cults had flourished in Saqqara.) Tombs, he said, "are sometimes small holes," and may be hard to identify for what they are. Thutmose's was small and it stank, said Zivie, and was "not very attractive at first."

The area of the Thutmose tomb is called Bubasteion, which is now less about mummified pets (thought to number in the millions) and "more and more a New Kingdom necropolis," said Zivie, the director of the French Archaeological Mission of the Bubasteion and this year a visiting scholar at Harvard's Semitic Museum.

Zivie made his case for the historical Thutmose, a man he called "an exceptional artist who made his own tomb." He showed his audience the inside. To the left are three preserved painted walls that form a sort of autobiographical triptych. "It's a lifetime passing by," he said of the pictures, which include Thutmose, his wife, and children.

Zivie showed one slide that was a detail of "the wife of the master, painted by himself," which "is so moving." So was the depiction of the artist and his wife, in full face and figure, painted together on a double coffin. "It's moving because we know it is Thutmose himself," said Zivie. "He painted himself dead."

Central to the triptych is what Zivie called a metaphor of the artist's life, a small horizontal palette of many colors, similar to the one of ivory found in the studio in Amarna. It was with paint, he said, that the master gave to sculptures "the final touch of life."

Is it truly the tomb of Thutmose, the artist whose name hovers behind Nefertiti's memorable face? At lecture's end, Zivie admitted "the story is unfinished." The jury of scholars is still out, later agreed Peter Der Manuelian, Harvard's Phillip J. King Professor of Egyptology and director of the Semitic Museum. "More evidence would be nice, but the contemporaneity works."

From the audience, Egyptologist Jacquelyn Williamson said during a lively question-and-answer period that, "You have me 98 percent convinced." Williamson is a Harvard Divinity School affiliate and a specialist in the Amarna Period, when Nefertiti lived. She is a visiting lecturer in Women's Studies and Near Eastern Studies and in spring will teach a course on gender and sexuality in cultures pre-dating the Bible.

Zivie made his last trip to the Saqqara site last November. It was cut short by Egypt's political turmoil. But he made the audience an offer.

"You are welcome when you pass [by] in Egypt," said Zivie of the artist's tomb, "to see with your own eyes."

Please visit the site: <http://news.harvard.edu/gazette/story/2013/10/the-queen-and-the-sculptor/>

POLLEN STUDY POINTS TO CULPRIT IN BRONZE ERA MYSTERY, BY ISABEL KERSHNER

More than 3,200 years ago, life was abuzz in and around what is now this modern-day Israeli metropolis on the shimmering Mediterranean shore.

To the north lay the mighty Hittite empire; to the south, Egypt was thriving under the reign of the great Pharaoh Ramses II. Cyprus was a copper emporium. Greece basked in the opulence of its elite Mycenaean culture, and Ugarit was a bustling port city on the Syrian coast. In the land of Canaan, city states like Hazor and Megiddo flourished under Egyptian hegemony. Vibrant trade along the coast of the eastern Mediterranean connected it all.

Yet within 150 years, according to experts, the old world lay in ruins.

Experts have long pondered the cause of the crisis that led to the Late Bronze Age collapse of civilization, and now believe that by studying grains of fossilized pollen they have uncovered the cause.

In a study published Monday in *Tel Aviv: Journal of the Institute of Archaeology of Tel Aviv University*, researchers say it was drought that led to the collapse in the ancient southern Levant.

Theories have included patterns of warfare, plagues and earthquakes.

But while climate change has long been considered a prime factor, only recently have advances in science given researchers the chance to pinpoint the cause and make the case.

The journal of The Institute of Archaeology reports that an unusually high-resolution analysis of pollen grains taken from sediment beneath the Sea of Galilee and the western shore of the Dead Sea, backed up by a robust chronology of radiocarbon dating, have pinpointed the period of crisis to the years 1250 to 1100 B.C.

Unlike studies examining longer-term processes that may require a pollen analysis of strata 500 years apart, this pollen count was done at intervals of 40 years — the highest resolution yet in this region, said Prof. Israel Finkelstein of the Institute of Archaeology at Tel Aviv University.

He added that the uniqueness of the study also lay in the combination of precise science and archaeological and historical analysis, offering the fullest picture yet of the collapse of civilization in this area at the end of the Bronze Age.

“Egypt is gone. Forever,” said Professor Finkelstein. “It never got back to that level of prosperity again.”

The first recorded hint of trouble in the north came in the mid-13th century, according to the study, when a Hittite queen wrote to Ramses II, saying, “I have no grain in my lands.”

Several years ago, Professor Finkelstein and Prof. Steve Weiner of Israel’s Weizmann Institute of Science received a grant from the European Research Council to conduct research aimed at reconstructing ancient Israel. The project consists of 10 tracks including ancient DNA and molecular archaeology — an effort to identify what 3,000-year-old ceramic vessels might have contained.

For the climate change part of the project, Professor Finkelstein joined forces with Dafna Langgut, a palynologist — or pollen researcher — at Tel Aviv University, and Professor Thomas Litt of the Institute of Geology, Mineralogy and Paleontology at the University of Bonn in Germany.

Recent studies of pollen grains conducted by experts in southeast Anatolia, Cyprus, along the northern coast of Syria and the Nile Delta came up with similar results, though with less control over the chronology, indicating that the crisis was regional.

Dr. Langgut described in an interview how the team extracted about 60 feet of cores of gray muddy sediment from the center of the Sea of Galilee in northern Israel, passing through 1,000 feet of water and drilling 65 feet into the lake bed, covering the last 9,000 years. At Wadi Zeelim in the southern Judean Desert, on the western margins of the Dead Sea, the team manually extracted eight cores of sediment, each about 20 inches long.

“We carried them on our backs,” Dr. Langgut said.

Pollen grains are one of the most durable organic materials in nature, she said, best preserved in lakes and deserts and lasting thousands of years. Each plant produces its own distinct pollen form, like a fingerprint. Extracting and analyzing the pollen grains from each stratum allows researchers to identify the vegetation that grew in the area and to reconstruct climate changes.

The laboratory work was carried out partly at Bonn University and partly in Tel Aviv. To obtain the most precise results possible, Professor Finkelstein instructed the Tel Aviv scientists to focus on the period of 3,500 B.C. to 500 B.C. and analyze samples at intervals of 40 years. The process began in 2010 and took three years.

The results showed a sharp decrease in the Late Bronze Age of Mediterranean trees like oaks, pines and carobs, and in the local cultivation of olive trees, which the experts interpret as the consequence of repeated periods of drought.

The study also draws on a case study by Prof. Ronnie Ellenblum, a geographer and historian at the Hebrew University of Jerusalem, of another regional collapse 2,000 years later to explain why, unlike in the steppe regions, a decrease in precipitation would have such a destructive effect on established city-states in green areas like Megiddo. The droughts were likely exacerbated by cold spells, the study said, causing famine and the movement of marauders from north to south.

After the devastation came a wet period of recovery and resettlement, according to the experts — a new order that gave rise to the kingdoms of biblical times.

“Understanding climate is key to understanding history,” said Professor Finkelstein, a co-author of “The Bible Unearthed,” a book published in 2001 that viewed the Bible as a national epic and a product of the human imagination. Taking issue with traditional efforts to use archaeology to verify the historicity of the biblical record, the authors promoted archaeology as a means of reconstructing the history of ancient Israel.

But biblical stories like Joseph’s interpretation of the pharaoh’s dream about seven fat cows being eaten by seven gaunt cows, signifying a period of abundance followed by famine, he said, “reflects the idea that climate is not stable.”

He added, “The authors of the Bible knew very well the value of precipitation and the calamity that may be inflicted on people by drought.”

Please visit the site: <http://www.nytimes.com/2013/10/23/world/middleeast/pollen-study-points-to-culprit-in-bronze-era-mystery.html>

OOPS! THAT ETRUSCAN WARRIOR PRINCE **WAS ACTUALLY A WARRIOR PRINCESS,** **BY TIA GHOSE**

A 2,600-year-old grave unearthed in Tuscany, thought to hold the remains of a warrior prince, actually contains the remains of a middle-aged warrior princess holding a lance.

Last month, archaeologists announced a stunning find: a completely sealed tomb cut into the rock in Tuscany, Italy. The untouched tomb held what looked like the body of an Etruscan prince holding a spear, along with the ashes of his wife. Several news outlets reported on the discovery of the 2,600-year-old warrior prince.

But the grave held one more surprise. A bone analysis has revealed the warrior prince was actually a princess.

Judith Weingarten, an alumna of the British School at Athens, noted the switch on her blog, titled "Zenobia: Empress of the East." [See Photos of the Unsealed Etruscan Tomb]

Etruscan tomb

Historians know relatively little about the Etruscan culture that flourished in what is now Italy until its absorption into the Roman civilization around 400 B.C. Unlike their better-known counterparts, the ancient Greeks and the Romans, the Etruscans left no historical documents, so their graves provide valuable insights into their culture.

The new tomb, unsealed by archaeologists in Tuscany, was found in the Etruscan necropolis of Tarquinia, a UNESCO World Heritage site where more than 6,000 graves have been cut into the rock.

"The underground chamber dates back to the beginning of the sixth century B.C. Inside, there are two funerary beds carved into the rock," Alessandro Mandolesi, the University of Turin archaeologist who excavated the site, wrote in an email.

When the team removed the sealed slab blocking the tomb, they saw two large platforms. On one platform lay a skeleton bearing a lance. On another lay a partially incinerated skeleton. The team also found several pieces of jewelry and a bronze-plated box that researchers said might have belonged to a woman.

"On the inner wall, still hanging from a nail, was an aryballos [a type of flask] oil-painted in the Greek-Corinthian style," Mandolesi said.

Initially, the lance suggested that the skeleton on the biggest platform was a male warrior, possibly an Etruscan prince. The jewelry probably belonged to the second body, the warrior prince's wife.

But bone analysis revealed that the prince holding the lance was actually a 35- to 40-year-old woman, whereas the second, partially incinerated skeleton belonged to a man.

Given that, what do archaeologists make of the spear?

"The spear, most likely, was placed as a symbol of union between the two deceased," Mandolesi told Viterbo News 24 on Sept. 26.

Weingarten, however, doesn't believe the symbol of unity explanation. Instead, she thinks the spear shows the woman's high status. The other explanation is "highly unlikely," Weingarten told LiveScience. "She was buried with it next to her, not him."

Gendered assumptions

The mix-up highlights just how easily both modern and old biases can color the interpretation of ancient graves.

In this instance, the lifestyles of the ancient Greeks and Romans may have skewed the view of the tomb. Whereas Greek women were cloistered away, Etruscan women, according to Greek historian Theopompus, were more carefree — working out, lounging nude, drinking freely, consorting with many men and raising children who did not know their fathers' identities.

Instead of using objects found in a grave to interpret the sites, archaeologists should first rely on bone analysis or other sophisticated techniques, Weingarten said.

"Until very recently, and sadly still in some countries, sex determination is based on grave goods. And that, in turn, is based almost entirely on our preconceptions. A clear illustration is jewelry: We associate jewelry with women, but that is nonsense in much of the ancient world," Weingarten said. "Guys liked bling, too."

Please visit the site: <http://www.nbcnews.com/science/oops-etruscan-warrior-prince-was-actually-princess-8C11422309>

BULGARIA ARCHAEOLOGISTS FIND **ANCIENT WINE CELLAR**

A team of archaeologists, headed by Associate Professor Aneliya Bozhkova with the National Archaeological Institute with Museum with the Bulgarian Academy of Science, and Petya Kiyashkina with the Ancient Nesebar Museum, discovered a perfectly preserved cellar with amphorae from the V BC, over the last days of the archaeological excavations in the Bulgarian coastal town of Nesebar, the press office of Nesebar Municipality announced.

The research is organised under a project of the Ancient Nesebar Museum, financed by the Ministry of Culture, with the participation of experts in archaeology.

The ancient amphorae warehouse was dug in deep into the ground along the northern coast of the peninsula, which preserved it from the encroachment of time and the following cultural layers.

The cellar is 2.60 x 2.50 meters big and belonged to a house, which was destroyed yet in the V BC. Archaeologists found more than 30 untouched amphorae – ceramic vessels for transportation and preservation of wine and olive oil. The amphorae are 0.70-0.80 centimetres tall. They used to be produced in big ancient Greek workshops and transported wine from prominent producers and importers, such as the islands of Chios, Lesbos, Thasos and others.

Please visit the site: <http://www.focus-fen.net/index.php?id=n316923>

AMID NEW ATTACKS, EGYPT'S COPTS **PRESERVE HERITAGE, BY HAMZA** **HENDAWI**

Locked inside a 6th century church in a desert monastery are some of the jewels of early Christianity — ancient murals in vivid pinks, greens and reds depicting saints, angels and the Virgin Mary with a baby Jesus, hidden for centuries under a blanket of black soot.

Italian and Egyptian restorers are meticulously uncovering the paintings, some of the earliest surviving and most complete examples of early Coptic Christian art. But the work, in the final stages more than a decade after it started, is done quietly to avoid drawing attention — and there's no plan to try to attract visitors, at least not now.

"This is our heritage and we must protect it," said Father Antonius, abbot of the Red Monastery where the Anba Bishay Church is located. He takes it as a personal mission to protect it. The church's heavy wooden door has only two keys. He keeps one and a young monk he trusts keeps the other.

"I don't think there is a church anywhere in Egypt that even begins to match the beauty of this one," Antonius said, beaming like a proud father.

The little known Anba Bishay Church offers a striking example of how Egypt's Orthodox Coptic Church jealously guards its heritage against formidable odds — whether decades of neglect, discrimination by the Muslim majority or the violence by Islamic militants, who have gained significant power since the 2011 ouster of longtime autocrat Hosni Mubarak.

The protection of its heritage took on greater urgency when 40 churches were wrecked, burned and looted in a pogrom-like wave of attacks in August, blamed on Islamic militants. Coptic leaders say the attacks are the worst in centuries.

The attacks laid bare a worrisome failure or unwillingness by authorities, as well as moderate Muslims, to protect the churches.

Christians, who make up about 10 percent of Egypt's 90 million citizens, were left with their deepest sense of vulnerability in recent history. Egypt's powerful military pledged with great fanfare to restore the churches. But Christians say that, two months later, they are still waiting for concrete steps.

The Coptic Orthodox Church is one of Christianity's earliest branches.

It was born in Egypt, and almost all Egyptian Christians throughout the centuries have belonged to it. But it never ruled in Egypt.

Instead, Copts were subjects in a succession of empires, from the Romans and Byzantines through various Muslim dynasties.

The result is a complicated legacy. A historic sense of persecution engrained a deep secrecy in the Church, which has long turned inward for its own protection. The lesson

that Copts long absorbed — take care of yourselves and don't involve outsiders — has been applied to their conservation efforts.

Complicating those efforts, the Copts' material civilization is fragile. They have not left mighty stone temples, tombs and mosques like Egypt's pharaonic or Muslim rulers, noted Imad Farid, an expert on historical Coptic architecture.

Instead, Copts traditionally built in mud brick, which deteriorates over time, especially in the eroding moisture and floods in the Nile River valley. Desert monasteries, preserved by aridity, constitute most of what is left of Coptic civilization. They have been the traditional repositories for the Church's artistic treasures, from icons and murals to rare manuscripts.

Past generations of Copts "left us not with a history of rulers but of a people and their daily lives," Farid said. "The monasteries have preserved their way of life. They are like conservation zones for human and intellectual heritage."

But many monasteries were abandoned over the centuries, in part because of a shortage of monks. Over time, their mud brick chapels and hermit cells fell prey to elements, earthquakes or depredations from Bedouin attackers.

For example, the Red Monastery and the nearby White Monastery were once united in a sprawling complex to which some 5,000 monks belonged. Both were deserted by the 8th century and have only been resurrected in the last 30 years.

"Our heritage is disappearing because of random restoration work, urbanization and the work of the ignorant. I don't want future generations to curse us for not documenting what we have now," said Father Maximus, a monk and one of the church's top conservation experts.

A slender 59-year-old who carries an iPad and an iPhone wherever he goes, Maximus has led a team of Italian restoration experts traveling across Egypt since 1996 to save as much as they can of Coptic heritage. His team, including Egyptian experts and backed by the American Research Center in Egypt, has worked on the murals of Anba Bishay Church since 2002, in the desert on the edge of the Nile River valley, some 500 kilometers (310 miles) south of Cairo.

The Anba Bishay Church, modeled after Jerusalem's Church of the Holy Sepulchre with an intricate array of niches and columns, is considered the most complete historical church structure in Egypt.

"It is a very unique church and now it is in a very good condition," enthused Maximus. He says the work is a battle against time — to "protect the physical Coptic heritage, to prevent it from disappearing."

The attacks in August illustrate the latest danger to Egypt's Coptic culture.

Among the 40 churches attacked was a 1,600-year-old church gutted by fire and stripped bare of its contents. Others were built in the late 19th or early 20th centuries. Most of the

attacks took place in southern Egypt, an underdeveloped region with a combustible mix of powerful Islamic radicals and sizable Christian communities.

Some of the attacks began as retaliation for the Christians' support of the ouster of Islamist President Mohammed Morsi in a popularly backed July 3 military coup.

But they devolved into an orgy of looting. In some cases, looters dug under altars searching for buried treasure.

Widely held myths of hidden wealth have been fueled by the Church's traditional secrecy, said Bishop Biemen, abbot of the Monastery of Archangel Michael, near the southern city of Luxor.

"Because we have been hurt so often, we have become an insular community. That has created a sort of mystique about us that included tales of priceless jewels hidden in churches," he said.

In a recent tour of southern Egypt, The Associated Press found Christians still grieving over the loss of churches.

As a show of resilience, some have held Masses and weddings in the blackened shells of churches, using only a makeshift altar. Still, priests say, some worshippers have stayed away, too hurt to see the condition of the churches where they lived out milestones like weddings, baptisms and funerals.

"God, please be merciful to us and don't abandon us," Father Boutros said in a recent early morning Mass at the John the Baptist Church in the town of Abanoub, some 400 kilometers (250 miles) south of Cairo.

"God, please save us from the evil ones," he said, as the congregation of around two dozen women and a handful of men repeated after him.

During the service, two church workers acted as lookouts outside, in case of renewed hostility by Muslim extremists. Schoolchildren dropped in for a quick prayer or communion on their way to classes.

The church's walls were blackened. Icons and murals, destroyed or stripped away in the looting, were replaced by posters of John the Baptist, Jesus and the Virgin Mary. Because the pews were burned or stolen, worshippers sat on rented chairs with dirty red velvet upholstery. Light bulbs were powered by a wire strung in from outside the church, since its own electrical system was destroyed.

"To burn a church is to burn the heart of every man who comes here to pray to God," said Maher Nakhlah, a 42-year-old U.S.-trained English teacher attending the Mass. "It is difficult to understand how a place where people pray and which is void of any hatred could be attacked."

In the nearby city of Assiut, the Gothic structure of the Franciscan Church of Saint Theresa, built by Italians early in the last century, remains largely intact after Muslim militants set it on fire.

But the damage inside betrayed a worrying hatred for the Christian faith.

A wooden statue of the Virgin Mary was decapitated, and the hands chopped off. The face, hands and feet were also bashed off a porcelain sculpture of Saint Theresa, dating back to 1924. One of the church's two confessional booths was torched.

Friday Mass at the church is now held earlier in the day so congregants can leave and lock the church gates before Muslims finish their noon prayers at the nearby mosque, used by ultraconservatives.

"We don't want trouble," Father Bishara Ayoub said.

"The problem is not one of material loss, it is to do with psychology" said Jihan Bramble, a Christian engineer. "This is the price of freedom for now. But our persecution will continue indefinitely. It always has."

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Please visit the site: <http://www.usnews.com/news/world/articles/2013/10/17/amid-new-attacks-egypts-copts-preserve-heritage>

ANCIENT SYRIANS FAVORED BUYING LOCAL TO OUTSOURCING PRODUCTION

An archaeologist at the University of Sheffield has found evidence that, contrary to a widely held theory, ancient Syrians made their stone tools locally instead of importing finished tools from Turkey.

The discovery, newly published online in *Journal of Archaeological Science*, has implications for our understanding of how early cities developed in these regions and how the geographic origins of raw materials affect developing states.

During the Early Bronze Age, around 5300 to 3100 years ago, blades made of chert and obsidian remained important despite the advent of metal tools. Much sharper than bronze tools, the stone blades were used for various cutting and scraping purposes, including agricultural activities, food processing, and crafts such as pottery and textile production.

Dr Ellery Frahm from the University's Department of Archaeology explained: "There is a prevalent idea that these blades were not made locally in Northern Mesopotamia, what is now Syria. It has been widely claimed that the blades were made in specialised workshops in southeast Turkey and then exported to villages and early cities throughout what is now Turkey, Syria, and Iraq."

However, Dr Frahm studied the origins of obsidian tools from various archaeological sites, including Tell Mozan where he has excavated, and showed that their raw materials originated from a variety of geological sources across Turkey, not merely those nearest the proposed workshop sites.

Dr Frahm continued: "This diversity of raw-material sources is inconsistent with export from highly specialised workshops in just one area of Turkey. Some of the artefacts' geological sources were hundreds of kilometres from the supposed blade workshops.

"The diverse obsidian origins, when combined with stone tool debris from the sites, suggests local production. Rather than arriving at the cities as finished blades, obsidian instead arrived as chunks, what are known as cores or preforms, and were brought by visitors either from diverse regions or with diverse itineraries. Instead of distant 'industrial' manufacturing, the materials for the blades reached the hands of the cities' specialists involved in household production principally for the local market."

Dr Frahm likens the situation to modern-day Syria: "Domestic manufacturing has been protected from competition by imports. Unlike its neighbour Jordan, there are no McDonalds or Starbucks, and until recently, Pepsi, Coca-Cola, and other international companies were banned from Syria.

"When our team headed into town for supplies, the shops had locally produced goods. The chemist had locally made pharmaceuticals and personal care products, while the market had local food and drink, paper products, even batteries. The beer was local too, brewed in Damascus and Aleppo."

This study of millennia-old stone tools also relates to contemporary issues of manufacturing and the uneven geographic distribution of raw-material resources around the world.

"The choice of which raw-material sources to use in manufacturing can have broad societal effects," explained Frahm. "Consider the rare earth elements, or REEs, crucial for electronics manufacturing. Your mobile phone and its battery, for example, depend on REEs to function.

Until the 1980s, mines in California were the leading producers of REEs.

"Today, however, China supplies 90 percent of the REEs used in manufacturing despite only controlling one quarter of the world's supply. This is due, in part, to Chinese mines using extraction methods banned in the US. China has repeatedly reduced REE exports by as much as 30 percent per year. As a result, manufacturers dependent on these supplies have had to relocate their factories to China, and it is more profitable for China to export finished products instead of raw materials. This, in turn, has led to a range of geo-political consequences, such as recent American surveys for REEs in Afghanistan."

Dr Frahm sees parallels between REEs for electronics and obsidian for stone blades. The residents of ancient Syrian cities, he notes, imported raw materials like obsidian and locally produced the tools, rather than importing finished objects from distant workshops. He explained: "Knowing where these stone blades were produced allows us to start answering questions regarding the social relations linked to their production and distribution.

"Was there large-scale production under government control, or were the blades made by entrepreneurs working out of their homes? Who had the skills to make the blades, and where did they live and work? There were also effects on activities linked to these blades. Was agricultural output dependent on shipments of tools made by distant labourers, or were the tools made by the farmers themselves during the off season?"

Dr Frahm concluded: "Archaeological research can demonstrate that there are broad societal effects due to our choices regarding which raw-material sources to use and where our goods are produced."

Please visit the site:

<http://esciencenews.com/articles/2013/10/16/ancient.syrians.favored.buying.local.out.sourcing.production>

UNDERWATER ARCHAEOLOGISTS: UNLOCKING THE MYSTERIES OF AN AGE- OLD PORT, BY ALONA FERBER

Who sailed from the harbor - or harbors - at Tel Dor? Haifa University students find clues on the Mediterranean floor.

It's cold. It's silent. It's murky. It's the bottom of the Mediterranean Sea and it's the hangout of choice for students of maritime archaeology, seeking clues to the dawn of modern man. Or in the case of participants on Haifa University's new English MA in Maritime Civilizations, signs of a harbor at the ancient site of Tel Dor.

The Tel Dor expedition, some 30 kilometers south of Haifa, is a collaboration between Dr. Assaf Yasur-Landau and Dr. Ayelet Gilboa of the University of Haifa, and Prof. Ilan Sharon of the Hebrew University. Students of the new English-language program, which started its second year this fall, take part in underwater surveys of Tel Dor mostly in shallow waters but also at depths of up to 10 meters of water.

The documented history of Tel Dor begins in the the 13th century BCE and continues through to the Crusader era. Excavators are seeking evidence of the location of a harbor or harbors at the site that are documented in written sources.

During the Roman and later Crusader periods the harbor seems to have been in the town's northern bay— but earlier, during the Iron Age, and perhaps even in the Bronze Age, it seems to have been located in Tel Dor's south bay. Researchers still don't know for sure why the harbor moved.

On most dives, the students found pottery, including bits of storage jars used in maritime transport, says Yasur-Landau, head of the Haifa University Department of Maritime Civilizations. But they also found large stone anchors. These, he says, are clear evidence that boats used to anchor in both bays.

Some of the anchors in the south bay may date to the Iron Age. Others may be even older, dating to the Bronze Age.

In the north bay, the students found pottery dating to the Persian period (ca. 560-333 BCE) alongside the anchors. Evidently the north bay was in use during that period.

The Crusader quay and the geek

Maritime activity in the north Tel Dor bay continued to the Crusader period, says Yasur-Landau: the students found one amphora and some bowls from the Crusader period, which may attest to the location of a Crusader quay.”

Maura Schonwald, 25, from Oklahoma City, one of the five Americans who took part in the pilot, recalls the thrill of finding the anchors.

“You are doing these search patterns in the water and all of a sudden you find a corner of something coming out of the sand, and you brush the sand away and it’s something that’s 3,000 years old. You’ve found it, and it’s part of history,” she says.

Finding the anchors was one thing. Getting them out of the water was another, says Eric Solie, 23, from Alaska. “When you are picking up these huge rocks with your teammates, it’s a very physically demanding team-oriented experience.” Being underwater, they can’t talk to them, making the mission all the more difficult.”

During the one-year English masters program, taught over three semesters, students learn about the sea through a variety of disciplines – archaeology, marine biology, history, ecology, and geology, among others.

The program is based on an existing Hebrew masters that has been running for 40 years. Similar programs exist in other countries. But Israel’s weather is famously balmy and students can step out of the classroom and into the sea all year round, says the professor. Yes, it’s chilly in winter but this is the Mediterranean, not the North Sea.

Maritime archaeology isn’t for everyone, however, Yasur-Landau qualifies. You need to be a “combination of average garden geek and someone who wants to dive in cold water and look for stone anchors.”

With an MA in archaeology from Brandeis under her belt, Catherine Davie, 25 from Little Rock, Arkansas, had been on archaeological digs, but “on land, it’s different,” she says: in the sea, “sometimes you can’t even see your fingertips.”

And ultimately, the sea decides. “Underwater, the elements are in charge. If the sea doesn’t want you to succeed, you can’t.”

Please visit the site: <http://www.haaretz.com/archaeology/premium-1.552167> [Go there for pix and itsy-bitsy video]

ROOF TO PRESERVE GÖBEKLITEPE **EXCAVATION AREA**

A roof is being constructed in Göbeklitepe to preserve artifacts.

The new excavation area in Şanlıurfa's Göbeklitepe, known as the world's oldest temple, will be covered with a roof for preservation.

The head of the excavations, Prof. Klaus Schmidt said they had found new artifacts during their work, which is still continuing, and their work focuses on the area where the preservation roof will be constructed.

He said they had found a broken piece of a human sculpture during excavations in the fall, adding, "We found it in a place very close to the surface. This is why it was ruined."

Schmidt said a team of 15 people were working in the excavation area as well as 30 people from the Örencik village. He said they would continue working in Göbeklitepe until the first week of the next month.

Please visit the site: <http://www.hurriyetdailynews.com/roof-to-preserve-gobeklitepe-excavation-area-.aspx?pageID=238&nID=56088&NewsCatID=375>

LASERS AND ROBOTS EXPLORE ANCIENT ROME'S HIDDEN AQUEDUCTS

With the help of precision 21-century technology, archaeologists are mapping a dozen tunnels that were carved by Roman engineers into the mountains east of Rome in order to supply the ancient city with water By Nick Squires, Mandela

Some 2,000 years after they were hacked out of solid rock by Roman engineers, the aqueducts that brought fresh water to ancient Rome are being explored anew with 21st-century technology.

Archaeologists with specialist caving, abseiling and potholing experience are using lasers, remote-controlled robots and 3D scanners to map the dozen aqueducts that were built over centuries.

They are working from maps drawn up by Thomas Ashby, a British topographer and archaeologist who explored the hidden tunnels before and after the First World War. Almost a century later, the new breed of explorers is measuring the aqueducts with a degree of precision of which he could only have dreamt.

They are using 3D scanners mounted on tripods to produce accurate images of the inside of the tunnels, which are lined with Roman-era cement so smooth and unblemished, it looks as if it was applied just a few years ago.

Laser "rangefinders" enable the archaeologists to measure the size, direction and elevation of the tunnels, which are dug into the mountains east of the Italian capital.

The mapping effort is being led by amateur archaeologists with caving expertise from a group called Sotterranei di Roma (Underground Rome).

"The Romans were incredible engineers," said Alfonso Diaz Boj, 52, a Spanish member of the group who led The Telegraph into an aqueduct near the modern-day village of Mandela.

"To slow down the flow of the water they deliberately built curved sections. Teams of diggers would start from opposite directions and then meet in the middle."

The excavation was carried out by specialist engineers, he added, but the spoil would have been removed by slaves. "Ninety per cent of these aqueducts are tunnels – it was much easier to burrow underground than to build channels supported on pylons above ground," he said.

But where the aqueducts emerged from the mountainsides into gorges or valleys, the Romans had no choice but to build bridges to carry the water to the next tunnel.

Pick marks left by their tools were clearly visible on the roof of the aqueduct, known as the Aqua Claudio.

Its construction was begun under the reign of the Emperor Caligula in 38AD and finished under that of the Emperor Claudius, 14 years later.

It ran for around 45 miles, from the mountains beyond the modern towns of Tivoli and Frascati.

Other aqueducts extended almost 60 miles from the city. The precious supply arrived at one of the ancient city's gates, the Porta Maggiore.

Other members of the group are going underground in the city itself, exploring the cisterns, drains and tunnels beneath the Roman Forum with the help of a remote-controlled robot which they have named Lucius.

The six-wheeled "archo-robot", equipped with two powerful computers, three high-definition cameras and laser sensors, is able to trundle along narrow passageways which are too small or dangerous for humans to enter.

"It's not very nice down there and there's often a build-up of gases, so robots are ideal," said Christopher Smith, the director of the British School at Rome, an archaeological research institute established in 1901.

"They're very good for getting into difficult underground areas. There are miles and miles of tunnels beneath sites like the Colosseum, for instance, much of which we know very little about."

Please visit the site:

<http://www.telegraph.co.uk/news/worldnews/europe/italy/10406557/Lasers-and-robots-explore-ancient-Romes-hidden-aqueducts.html>

APHRODITE HEAD FOUND IN ANCIENT HIERAPOLIS ITS FACE AND HAIRS SHOW THAT THE SCULPTURE WAS MADE IN THE HELLENISTIC ERA

The head of an Aphrodite sculpture has been found during excavations at the Plutonium Inn in the ancient city of Hierapolis, according to the leader of the dig team. “We found a Dionysus sculpture. This sculpture has a body but no head; this is why the head of Aphrodite is very unique,” said the Italian head of the excavation team, Professor Francesco D’Andria. “It was made in the Hellenistic era; its face and hair show the Hellenistic style. It has holes for earrings.”

Previous discoveries at the city reveal that Hierapolis was visited as a holy place as early as 6 B.C. Marble sculptures that were discovered during the recent excavations alongside the Aphrodite sculpture have been removed from the ancient city and are now being kept in the depot of the Hierapolis Archaeology Museum.

Archaeologists have been conducting excavations at the ancient city since 1957.

Please visit the site: <http://www.hurriyetdailynews.com/aphrodite-head-found-in-ancient-hierapolis.aspx?pageID=238&nID=56851&NewsCatID=375> [Go there for pict]

HOW DID ANCIENT GREEK MUSIC SOUND? **BY ARMAND D'ANGOUR**

Greek theatre used music with the drama. But what did it sound like?

The music of ancient Greece, unheard for thousands of years, is being brought back to life by Armand D'Angour, a musician and tutor in classics at Oxford University. He describes what his research is discovering.

"Suppose that 2,500 years from now all that survived of the Beatles songs were a few of the lyrics, and all that remained of Mozart and Verdi's operas were the words and not the music.

Imagine if we could then reconstruct the music, rediscover the instruments that played them, and hear the words once again in their proper setting, how exciting that would be.

This is about to happen with the classic texts of ancient Greece.

It is often forgotten that the writings at the root of Western literature - the epics of Homer, the love-poems of Sappho, the tragedies of Sophocles and Euripides - were all, originally, music.

Dating from around 750 to 400 BC, they were composed to be sung in whole or part to the accompaniment of the lyre, reed-pipes, and percussion instruments.

Finding the pitch

But isn't the music lost beyond recovery? The answer is no. The rhythms - perhaps the most important aspect of music - are preserved in the words themselves, in the patterns of long and short syllables.

The instruments are known from descriptions, paintings and archaeological remains, which allow us to establish the timbres and range of pitches they produced.

And now, new revelations about ancient Greek music have emerged from a few dozen ancient documents inscribed with a vocal notation devised around 450 BC, consisting of alphabetic letters and signs placed above the vowels of the Greek words.

The Greeks had worked out the mathematical ratios of musical intervals - an octave is 2:1, a fifth 3:2, a fourth 4:3, and so on.

The notation gives an accurate indication of relative pitch: letter A at the top of the scale, for instance, represents a musical note a fifth higher than N halfway down the alphabet. Absolute pitch can be worked out from the vocal ranges required to sing the surviving tunes.

While the documents, found on stone in Greece and papyrus in Egypt, have long been known to classicists - some were published as early as 1581 - in recent decades they have

been augmented by new finds. Dating from around 300 BC to 300 AD, these fragments offer us a clearer view than ever before of the music of ancient Greece.

The research project that I have embarked on, funded by the British Academy, has the aim of bringing this music back to life.

Folk music

But it is important to realise that ancient rhythmical and melodic norms were different from our own.

We must set aside our Western preconceptions. A better parallel is non-Western folk traditions, such as those of India and the Middle East.

Instrumental practices that derive from ancient Greek traditions still survive in areas of Sardinia and Turkey, and give us an insight into the sounds and techniques that created the experience of music in ancient times.

So what did Greek music sound like?

Some of the surviving melodies are immediately attractive to a modern ear. One complete piece, inscribed on a marble column and dating from around 200 AD, is a haunting short song of four lines composed by Seikilos. The words of the song may be translated:

While you're alive, shine:
never let your mood decline.
We've a brief span of life to spend:
Time necessitates an end.

The notation is unequivocal. It marks a regular rhythmic beat, and indicates a very important principle of ancient composition.

In ancient Greek the voice went up in pitch on certain syllables and fell on others (the accents of ancient Greek indicate pitch, not stress). The contours of the melody follow those pitches here, and fairly consistently in all the documents.

Tuning up

But one shouldn't assume that the Greeks' idea of tuning was identical to ours. Ptolemy in the 2nd century AD provides precise mathematical ratios for numerous different scale-tunings, including one that he says sounds "foreign and homespun".

Timeless: Joan Plowright and John Gielgud preparing a 1959 radio version of a Sophocles play

Dr David Creese of the University of Newcastle has constructed an eight-string "canon" (a zither-like instrument) with movable bridges.

When he plays two versions of the Seikilos tune using Ptolemy's tunings, the second immediately strikes us as exotic, more like Middle Eastern than Western music.

The earliest musical document that survives preserves a few bars of sung music from a play, *Orestes* by the fifth-century BC tragedian Euripides. It may even be music Euripides himself wrote.

Music of this period used subtle intervals such as quarter-tones. We also find that the melody doesn't conform to the word pitches at all.

Euripides was a notoriously avant-garde composer, and this indicates one of the ways in which his music was heard to be wildly modern: it violated the long-held norms of Greek folk singing by neglecting word-pitch.

The epitaph of Seikilos

However, we can recognise that Euripides adopted another principle.

The words "I lament" and "I beseech" are set to a falling, mournful-sounding cadence; and when the singer says "my heart leaps wildly", the melody leaps as well. This was ancient Greek soundtrack music.

And it was received with great excitement in the Greek world. The historian Plutarch tells a moving story about the thousands of Athenian soldiers held prisoner in roasting Sicilian quarries after a disastrous campaign in 413 BC. Those few who were able to sing Euripides' latest songs were able to earn some food and drink.

What about the greatest of ancient poet-singers, Homer himself?

Homer tells us that bards of his period sang to a four-stringed lyre, called a "phorminx". Those strings will probably have been tuned to the four notes that survived at the core of the later Greek scale systems.

Professor Martin West of Oxford has reconstructed the singing of Homer on that basis. The result is a fairly monotonous tune, which probably explains why the tradition of Homeric recitation without melody emerged from what was originally a sung composition.

"What song the Sirens sang," is the first of the questions listed by the 17th Century English writer, Sir Thomas Browne, as "puzzling, though not beyond all conjecture".

"The reconstruction of ancient Greek music is bringing us a step closer to answering the question."

Please visit the site: <http://www.bbc.co.uk/news/business-24611454> [Go there for link to audio]