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Πληροφοριακό Δελτίο της Ελληνικής Αρχαιομετρικής Εταιρείας

- Νοέμβριος 2011 -

Είπε κάποιος στον Διογένη:

«Οι συμπολίτες σου σε καταδίκασαν σε εξορία».

Και ο φιλόσοφος απάντησε:

«Κι εγώ τους καταδίκασα να μένουν στον τόπο τους».

Newsletter of the Hellenic Society of Archaeometry

- November 2011 -

Nr. 128

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ΣΥΝΕΔΡΙΑ - CONFERENCES/WORKSHOPS

CALL FOR PAPERS, EMBODIED IDENTITIES IN THE PREHISTORIC EASTERN MEDITERRANEAN: CONVERGENCE OF THEORY AND PRACTICE, UNIVERSITY OF CYPRUS, 11-12 APRIL 2012, NICOSIA, CYPRUS

A conference hosted by the Archaeological Research Unit, University of Cyprus, 11-12 April 2012, Nicosia, Cyprus

Website: <http://www.ucy.ac.cy/goto/identities/en-US/HOME.aspx>

Conference Abstract

Recent archaeological research has raised awareness about the multi-dimensional role of the body in the construction, performance, experience and communication of social identity.

The physical body and its mutually shaping relationship with material culture, as well as bodily performances and experiences, are now acknowledged as underpinning the construction and embodiment of social identities. Issues currently explored include the dynamic relationship between the body and material culture, the interaction between the body and domestic, mortuary space as well as landscape, the experiences of the lived body, the depictions of the body as representations of embodied identities through idealized images, postures and gestures, the biological body as an active social element in past people's lives. The conference seeks to explore the role the body played in constituting facets of individual and social identity in the prehistoric Eastern Mediterranean through a convergence of theoretical, methodological and factual aspects.

Aims

This conference will bring together researchers to discuss the archaeological visibility of embodied identities in the **Eastern Mediterranean from the earliest prehistory to the early Iron Age**. Through this we hope to:

- present archaeological data that inform our understanding of embodied identities in the prehistoric Eastern Mediterranean
- contribute further to our knowledge about social, individual identities and social organisation in the Eastern Mediterranean
- instigate a discussion on theoretical and methodological issues that concern the study of the body in archaeology
- promote a combined use of archaeological evidence

Call for Papers

We invite researchers to submit titles and abstracts (300 words maximum) for one of the following broad themes.

Broad Themes

- Material culture and the body
- The body in space
- The represented body
- The physical body as social body

Please return your application no later than **15th December 2011** to identities@ucy.ac.cy.

For detailed information please visit our website:

<http://www.ucy.ac.cy/goto/identities/en-US/HOME.aspx>

The Organising Committee

Maria Mina

Archaeological Research

Unit, University of Cyprus

Yiannis Papadatos

National and Kapodistrian

University of Athens

Sevi Triantaphyllou

Aristotle University of

Thessaloniki

**KOÇ UNIVERSITY’S RESEARCH
CENTER FOR ANATOLIAN
CIVILIZATIONS (RCAC) ANNUAL
CONFERENCE, “OF VINES AND WINES:
THE PRODUCTION AND CONSUMPTION
OF WINE IN ANATOLIAN
CIVILIZATIONS THROUGH THE AGES”**

Keynote speaker: Patrick McGovern, University of Pennsylvania Museum, Applied Science Center for Archaeology, Author of Ancient Wine: The Search for the Origins of Viniculture

Date: December 3-4 2011

Place: Koç University’s Research Center for Anatolian Civilizations,
181 Istiklal Cad. Merkez Han Beyoğlu, Istanbul, Turkey

Full program to follow

Conference will have simultaneous translation for Turkish and English

<<http://rcac.ku.edu.tr/>>.

Sponsored by Koç University and Doluca

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FOKUS FORTIFIKATION -
CONFERENCE ON THE RESEARCH OF
FORTIFICATIONS IN ANTIQUITY, 6-9
DECEMBER 2012, DANISH INSTITUTE
AT ATHENS, ORGANIZED BY THE
INTERNATIONAL RESEARCH
NETWORK FOKUS FORTIFIKATION
(DFG)

- Call for Papers -

The International Research Network Fokus Fortifikation (Deutsches Archäologisches Institut/Freie Universität Berlin, TOPOI/funded by Deutsche Forschungsgemeinschaft) has in a three years period of innovative work discussed several research-topics on and around fortifications in Antiquity.

The Network now aims to present and debate its preliminary results in the context of a major international conference. Rather than merely focus on the role fortifications played as utilitarian military architecture, a major objective of the conference is to highlight fortifications as consciously structured elements within the built space of ancient societies.

Fortifications served functions on various levels which are reflected in their individual configuration and form, and which are connected directly to their actual historical and political contexts. In addition, fortifications are embedded in regional contexts of various extension and are thus always to be understood as products of specific practical conditions such as the available resources in the local natural environment, financing, as well as the technical knowhow of the allocated workforce.

The Network happily invites archaeologists, architectural historians, historians and other specialists working on ancient fortifications to send proposals for talks that present new research in the topical framework set out above, be it based on archaeological, written, or other types of source material. Although the Network has its main focus on ancient Greek fortifications in the eastern Mediterranean, researchers working on fortifications of all ancient cultures of the ancient Mediterranean and Asia Minor are encouraged to send proposals.

The following sessions are planned (detailed description below)

1. Origins of Fortifications in the Eastern Mediterranean
2. Physical Surroundings and Technique: The Building Experience
3. Function and Semantics
4. Historical Context
5. The Fortification of Regions

6. Regionally Confined Phenomena

The individual sessions will be composed of a mix of speakers drawn from Network members, invited speakers, and the submitted abstracts. Members of the Network will act as session chairs. Talks will be of 20 min. length, followed by a brief discussion. A longer discussion will conclude each session.

Procedure and practicalities: Abstracts of a maximum of 500 words and with clear indication of which of the six sessions it relates to must be submitted to Sine Riisager (riisager@diathens.com) in the Danish Institute no later than 31 December 2011. The selection of abstracts will be announced by 31 January 2012. We ask for innovative contributions according to the conference objectives and the session topics described below.

The organizers envisage a publication that will be issued as soon as possible after the conference. Thus, all speakers will be asked to submit an article version of their talk one week before the conference at the latest.

After the conference, authors will be given a period of two months to modify their submitted articles.

The organizers hope to raise funds to cover travel and accommodation costs for speakers but cannot promise to take care of all such expenses at this stage.

The conference will take place in the Danish Institute at Athens, Herefondos 14, 10558, Athens, Greece, from Thursday 6 December (2012) ca. 2 pm to Sunday 9 December ca. 2 pm, and will include an introductory lecture and reception on the evening of Friday December 7.

Organisation committee: Dr Rune Frederiksen (Danish Institute at Athens), Dr Silke Müth (Athens), Dr Peter Schneider (DAI Berlin, Architektureferat) and Dipl.-Ing. Mike Schnelle (DAI Berlin, Orient-Abteilung).

Cooperating institutions: German Archaeological Institute (DAI)/Division of Building Archaeology (Berlin) and Athens Department, and the Danish Institute at Athens (DIA).

Conference languages: English, German and French.

Description of the Sessions

1. Origins of Fortification in the Eastern Mediterranean

This session is dedicated to the broader historical and cultural context for early Greek fortifications, with the goal to identify the origins of the fortification phenomenon as such in other cultures, and to identify the origins of particular elements of fortification. Contributions about fortifications of non-Greek cultures, such as Assyrian, Hittite, Lycian, Pheonician, early Arabic, Etruscan and Samnite, contrasted with Greek fortifications are therefore very welcome. Alternatively, contributions may focus on the role of fortifications in the early history of non-Greek civilizations.

Another major concern of this session is the characteristics of pre-classical Greek fortifications and the role fortification played in the Greek world of the Bronze Age and Early Iron Age. We encourage presentations of new studies on fortifications of the Greek world during these periods, in particular about their architecture and topography, but also about the relationship between fortification and settlement.

2. Physical Surroundings and Technique: The Building Experience

In contrast with other types of ancient building, fortifications were typically huge undertakings and consisted of a number of semi-independent structures such as towers and gates as well as wall curtains and ramparts, often running many kilometres through the ancient landscapes. For this reason, fortifications constitute a compromise between their intended function on the one hand and the available technical and economic resources on the other. This session works to identify which elements of a fortification were generated by practical necessities that the builders had to observe and which characteristics were optional. This latter group represents the body of deliberate choices made by the builders and are the elements that provide evidence for discussion of various levels of function or aesthetic components. The goal of this session, however, is to analyse the practical circumstances that had to be taken into consideration by the builders and evaluate the options at their disposal. Speakers should address which characteristics of a fortification depended on the availability of materials, time and money; on the landscape through which the wall ran; on manpower and workshops; or on available know-how, local building technique and traditions. Such an approach may illuminate details of the building-process of a fortification.

Particular questions that could be addressed are: to what extent the material used depended on the local geology and local ways of construction; to what extent wall-types and surface-treatment depended on the material used and the behaviour of this material when quarried or worked; or how various workshops may be identified. Research on the economic evaluation of the building process and studies of experimental archaeological nature are welcome.

3. Function and Semantics

The defensive character is often singled out as the most important, if not the only, function of a fortification. Although the defensive character may often stand in the foreground, many examples show that this cannot have been the sole purpose of fortifications and that in some instances other functions might even be more important. Moreover, every city-wall serves important urban functions. This session concentrates on evaluating the various functions of fortifications and the question of their separation.

Particular themes and questions to be addressed are:

a) Military Functions: what concrete strategy lay behind a fortification-complex? With how much precision is it possible to estimate from the architecture what equipment, weapons, and soldiers defended a fortification? How trustworthy is dating based on a correlation between developments in polioretics and fortifications? In which cases do we know details about attacks and defence strategies? What models of strategy are shown to have been successful in certain periods, and perhaps unsuccessful in others and where are weaknesses to be found?

b) Symbolic Functions: where and based on which observations may symbolic functions of fortifications be identified, and what are their nature? How is it possible to distinguish these from defensive functions, and where are the overlaps? To what extent may the symbolic functions of fortifications be connected to certain political or historical conditions, and how do these change across the regional and chronological horizons of Antiquity?

c) Urban Functions: on which levels does a fortification function as the boundary for the settlement it encompasses, and in what way does a wall express the significance of what it encircles? How is the relationship defined in terms of planning between wall and settlement - for example planned connections between gates and streets, major public spaces, monuments, sanctuaries and cemeteries? How were the water-supply and drainage integrated in the wall construction? How did the wall function as boundary, in the widest sense of the word, in times of peace, and how, if at all, was access to the city controlled?

4. Historical Context

This session is dedicated to the historical contextualisation of fortifications and aims to discuss the following core themes:

a) Value and usability of written and iconographical sources for dating and interpretation of fortifications: In which contexts do fortifications appear in historical sources? Which information can be used after such sources have been exposed to critical scrutiny? To what extent can written sources - in interplay with archaeological data - contribute to the question of dating fortifications? What value do depictions of walls (sculpture, vase painting and coins) have for our understanding of fortifications?

b) Information inherent in fortifications as a source for understanding their historical context: what information can be drawn out of various building phases or reconstructions of fortifications about the history of the communities that erected them and their major political or economic developments? To what extent may observations of wall-destruction from attack or undermining, ramps and counter-measures inform about specific actions of war?

c) The effect of historical circumstances on the erection and constitution of fortifications and vice versa, i.e. the effect of a fortification on the history of settlement or region: How far did political, historical and other social circumstances influence the construction or re-construction of fortifications or specific forms? What are the observable effects of certain fortifications on the broader history of a settlement or a region? How may we describe the success of a fortification: whom did it frighten off, which attacks did it withstand, when and why was it overcome? What observable socio-economic effects did a fortification have on the community that erected it?

5. The Fortification of Regions

This session deals with the study of fortifications in the landscape. It aims to determine the factors that governed the construction and position of fortifications in vast regions. Several problems and issues are to be addressed when studying regional fortifications in different historical and cultural contexts.

It has been common to study rural fortifications from a military point of view. Modern warfare has often used such fortifications to defend countries or to block invasion routes, and this strategy has influenced our understanding of ancient regional fortifications.

Although ancient fortifications may have been built by armies in order to reinforce strategic positions or to offer protection for troops defending a border, it is simplistic to adopt an exclusively military approach. Explanations should also be sought in connection with long-term factors and aims, which influenced the installation of regional defensive networks. However, careful dating and further investigation, e.g. concerning intervisibility, road networks, regional borders, political contexts etc., are needed before grouping different fortifications in a global defensive network.

Particular questions of this session are: Which methods can be adopted for studying fortifications in a regional context? How can we define the limits of a region and describe its cultural or political character? How do we interpret and analyse the fortifications scattered in the landscape, and by which criteria are we able to decide what function a fortification (e.g. city walls, forts, guard towers, watchtowers, farm towers) had within in the landscape? What are the underlying principles for the distribution-patterns of these fortifications in a given landscape or region? How did the whole system "work" together, if it ever did?

6. Regionally Confined Phenomena

When fortifications are studied on a trans-regional level, it is sometimes possible to identify characteristics which are specific only to a limited region - more rarely to several limited regions - in a certain period. Such characteristics will often be found to derive from similar geological or topographical circumstances, which would determine choice of material, type of masonry, methods of construction, or even poliorcetic concepts. Such characteristics may also be caused by comparable practical circumstances surrounding the construction of the fortifications, as the technical know-how, financial resources, or certain periods of particular explicit danger. In addition, regionally confined phenomena may materialise as certain architectonic features, traditions in crafts or ways of design.

This session will discuss regionally confined phenomena of ancient fortifications drawn from various levels, their origin, their nature, and the limits of their extension. A major ambition of this session is to attempt to clarify whether regionally confined phenomena are mostly a product of practical preconditions, or if fortifications to a certain extent were an arena for regionally confined tradition or style, and that fortifications therefore - by and large - can be said to have been public monuments erected with a conscious regional accentuation.

For further information see also www.fokusfortifikation.de

ΘΕΣΕΙΣ ΕΡΓΑΣΙΑΣ/ΥΠΟΤΡΟΦΙΕΣ –
JOB VACANCIES/FELLOWSHIPS

RESEARCH POSITIONS IN THE
DEPARTMENT OF HUMAN EVOLUTION
OF THE MAX PLANCK INSTITUTE FOR
EVOLUTIONARY ANTHROPOLOGY,
LEIPZIG (GERMANY)

Research Position in Biological Anthropology

The Research Group on "Plant Foods and Hominin Dietary Ecology" in the Department of Human Evolution of the Max Planck Institute for Evolutionary Anthropology, Leipzig (Germany) invites applications for a post-doctoral researcher in biological anthropology. The research group is committed to exploring the relationships between the plant component of hominin diets and aspects of their biology, behavior, and evolution. More information about the Plant Foods group can be found [here](#)

The position is a research-only post, with no teaching obligations. The initial contract, which is two years and may be extended, will begin March 2012 at the earliest. The project will provide substantial support in a highly stimulating environment. We offer a salary according to German public service regulations (TVöD-Bund). The successful candidate will work on aspects of plant foods in the dietary ecology of later hominins and modern humans, and will be expected to assist in current projects and to bring novel research foci to the group.

We are particularly interested in candidates with a strong background in one or more of the following: analysis of residues using mass spectrometry; human or primate dietary ecology; plant microfossil research; but will consider any suitably qualified candidate in a related field. The selected candidate must have a PhD and ideally will have post-doctoral experience with a strong track record of research.

The Max Planck Society is committed to employing more handicapped individuals and to increasing the percentage of women in areas where they are under-represented, and therefore expressly encourages applications from such qualified individuals.

Applications should be sent by email as a single PDF including: a cover letter, curriculum vitae, reprints of selected publications, short statement of research interests (2pg maximum), and the names of three referees, to Amanda Henry (amanda_henry@eva.mpg.de). Reviews of applications will begin December 15, 2011 and will proceed until the position is filled.

Download PDF of [Research Position in Biological Anthropology](#)

Post-Doctoral Position in Zooarchaeology

The Department of Human Evolution of the Max Planck Institute for Evolutionary Anthropology, Leipzig (Germany) invites applications for a post-doctoral position in zooarchaeology. In the department, palaeoanthropological research is conducted within a multidisciplinary environment involving three main groups of scientists: biological anthropologists, Palaeolithic archeologists, and archaeological scientists/geochronologists.

The position is a research post with a specialization in zooarchaeology. In addition to zooarchaeological analysis of archaeological assemblages, we will consider favorably researchers developing novel or interesting methods addressing faunal topics including bone surface modification analysis, bone tool analysis, burned bone analysis, combined isotopic and faunal analysis, seasonality, migration, and taphonomic studies. Experimental programs are welcome, and the department is prepared to invest in equipment to support a research program. While the focus of the Department is on the archaeological record through to the expansion of modern humans, we will also consider favorably researchers specialized in Upper Paleolithic or LSA subsistence and prepared to start a program of comparison to earlier assemblages.

The selected candidate will have a Ph.D. and a significant track record of research. The initial length of the appointment is two years but the contract is extendable. The Max Planck Society is committed to employing more handicapped individuals and to increasing the share of women in areas where they are underrepresented, and therefore expressly encourages applications from such qualified individuals.

For further information please contact Dr. Shannon McPherron (mcpherro@eva.mpg.de). Applications, including cover letter, curriculum vitae, reprints of selected publications, a short statement of research interests, and the names of three referees should be sent by mail before the 31st of December, 2011 to:

Jean-Jacques Hublin

Department of Human Evolution

Max Planck Institute for Evolutionary Anthropology

Deutscher Platz 6

D-04103 Leipzig (Germany)

Download PDF of [Post-Doctoral Position in Zooarchaeology](#)

Post-Doctoral Position in Physical Anthropology

The Department of Human Evolution of the Max Planck Institute for Evolutionary Anthropology, Leipzig (Germany) invites applications for a post-doctoral position in Physical Anthropology. In the department, palaeoanthropological research is conducted within a multidisciplinary environment involving three main groups of scientists: biological anthropologists, Palaeolithic archeologists, and archaeological scientists/geochronologists.

The position is a research post. We expect the successful candidate to work closely with Professor Jean-Jacques Hublin on the analysis of the Middle to Late Pleistocene cranio-dental fossil record. The selected candidate will have a Ph.D. and a significant track record of research. The initial length of the appointment is two years but the contract is extendable.

The Max Planck Society is committed to employing more handicapped individuals and to increasing the share of women in areas where they are underrepresented, and therefore expressly encourages applications from such qualified individuals.

For further information please contact Professor Jean-Jacques Hublin (hublin@eva.mpg.de). Applications, including cover letter, curriculum vitae, reprints of selected publications, a short statement of research interests, and the names of three referees should be sent by mail before the 31st of December, 2011 to:

Jean-Jacques Hublin,
Department of Human Evolution
Max Planck Institute for Evolutionary Anthropology
Deutscher Platz 6, D-04103 Leipzig (Germany).
Download PDF of [Post-Doctoral Position in Physical Anthropology](#)

Ph.D. studentship: "Plant foods in hominin prehistory"

[The Research Group on Plant Foods and Hominin Dietary Ecology](#) in the Department of Human Evolution is seeking one or more Ph.D. students to study plant microfossils and/or plant biomarkers as a record of plant foods in human prehistory. The project may involve developing novel methods for recovering evidence of plant food consumption, or collecting dental calculus and other samples for analysis of plant microremains. Other projects focusing on the role of plant foods throughout hominin evolution may also be considered.

Applicants should hold a Master's degree or equivalent in biology, anthropology, evolutionary ecology, or a related field. A good basic knowledge of the hominin fossil and archaeological record, and of common analytical methods, including statistics, is important.

The fellowship is limited to 3 years. The student will receive a fellowship according to the funding guidelines of the Max Planck Society. The working environment of the institute is English-speaking. Accepted students will be a part of the [International Max Planck Research School](#). Candidates should apply directly through the IMPRS website by 31 January 2011. For further information, contact Amanda Henry (amanda_henry@eva.mpg.de).

Download PDF of [Ph.D. Studentship: Plant foods in hominin prehistory](#)

International Max Planck Research School

Prospective Ph.D. candidates are encouraged to consider the [Leipzig School of Human Origins](#), (*IMPRS - International Max Planck Research School*) which started in 2005.

ISAW NOW ACCEPTING VISITING RESEARCH SCHOLAR APPLICATIONS FOR FALL 2012

Each year the Institute for the Study of the Ancient World, New York University, makes about 7-10 appointments of visiting research scholars. We are now accepting applications for fellowships beginning in fall 2012. ISAW's scope embraces the history, archaeology, and culture of the entire Old World from late prehistoric times to the eighth century AD, including Asia and Africa. Projects of a theoretical or comparative nature relevant to this domain are also welcome. Academic visitors at ISAW should be individuals of scholarly distinction or promise in any relevant field of ancient studies who will benefit from the stimulation of working in an environment with colleagues in other disciplines. Applicants with a history of interdisciplinary exchange are particularly welcome. They are expected to be in residence at the Institute during the academic terms for which they are appointed and to take part in the intellectual life of the community.

For details about the categories of fellows, financial support, and the application, please visit <http://isaw.nyu.edu/academics/visiting-scholars>. The deadline for applications is December 10, 2011. New York University is an equal opportunity/affirmative action employer.

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ΑΝΑΚΟΙΝΩΣΕΙΣ - ANNOUNCEMENTS

THE CYPRUS ARCHAEOMAGNETIC PROJECT (CAMP): TARGETING THE SLAG DEPOSITS OF CYPRUS AND THE EASTERN MEDITERRANEAN EREZ BEN-YOSEF, RON SHAAR, LISA TAUXE, THOMAS E. LEVY & VASILIKI KASSIANIDOU

Introduction

The ancient slag heaps of Cyprus contain the story of the island as a regional source of copper throughout the millennia. Located near the ore deposits, many of these heaps were destroyed by modern mining activities and some are still under immediate threat. Far from the more attractive settlements along the coasts, the slag heaps have only recently been systematically investigated and their dating is still problematic (Kassianidou 2003, 2004). The current UC San Diego-University of Cyprus project focuses on two of the largest slag heaps of the island (Skouriotissa and Mitsero) as well as several smaller deposits, located in the northern foothills of the Troodos mountains and spanning the first millennia BC and AD (Figure 1).

Clarifying the stratigraphy and chronology of these heaps together with comparative analysis of the archaeometallurgical material culture will provide solid anchors for the history of metallurgy on the island and a reference for understanding regional metal commerce and connections further afield. High resolution recording of these slag deposits, especially those threatened by development and modern mining, will help in conservation of one of the most important cultural heritage of the island.

Methods

Most of the investigated slag heaps have been cut by modern roads or mining activities in the past, so that large scale excavations were not necessary in the current project. The exposed cross-sections, up to 25m high at Skouriotissa, were sampled using mechanical equipment (Figure 2) or by excavating narrow stepped trenches (Figure 3). The stratigraphy of the heaps and their environmental context were recorded by a LiDAR scanning instrument, a reflector-less total station and high resolution digital photography. The recording included several newly exposed slag deposits that are likely to be removed in the near future by modern mining activities (Figure 4).

The main contribution of the current research is the high-resolution dating and the magnetic investigation of the slag deposits. Dozens of charcoal samples were retrieved directly from each section and by floatation of soil samples. After archaeobotanical analysis, those samples will undergo AMS radiocarbon dating to establish age constraints and evaluate the intensity of ancient smelting activities and the rate of deposition of

production debris. In order to refine the dating of the early slag deposits, the radiocarbon dating will be coupled with archaeomagnetic correlation to previously studied slag heaps in Israel and Jordan (Shaar et al. 2010a, 2010b).

Copper slag material contains abundant magnetic minerals that hold information regarding the ancient copper smelting technologies and the properties of the geomagnetic field at the time of their cooling (Ben-Yosef et al. 2008a, 2008b) (Figure 5). Magnetic investigation of slag samples from the entire stratigraphic sequence of the slag heaps studied here, together with chemical X-ray fluorescence (XRF), scanning electron microscope (SEM) and typological analysis, are key for reconstructing patterns of development of copper production technologies, as well as for establishing temporal correlations between slag deposits based on geomagnetic intensity variations.

Implications of the research

The collaboration between geophysicists and archaeologists provides an innovative perspective and a new source of data for studying the major copper source of the Eastern Mediterranean in antiquity.

The field recording resulted in dozens of well-defined stratigraphic horizons per slag heap, up to 45 in the major section of Skouriotissa (Figure 6). It is the most detailed recording of slag heaps available on the island to date, and thus constitutes an invaluable reference for the history of copper production in Cyprus. By applying different analytical tools, the project aims to reveal the various parameters that operated in the ancient copper industry, including technological development, efficiency, intensity, organisation of production and temporal distribution of the exploitation of different ore deposits.

The high resolution dating is a base for tying with greater accuracy the industrial remains of copper exploitation on the island to its historical accounts (Rickard 1930). In addition, the LiDAR recording helps with conserving the information from an endangered type of archaeological sites on Cyprus.

Acknowledgments

The UC San Diego-University of Cyprus Archaeomagnetic Project is funded by National Science Foundation Grant No. 0944137 awarded to Lisa Tauxe and Tom Levy. The authors would like to thank Mr Constantinos Xydias, the CEO of Hellenic Copper Mines Ltd, for his support of the project, Athos Agapiou for his LiDAR work, Matthew Vincent and Ashley Richter (Calit2/UCSD) for their help in the field, and the staff of the Archaeology Unit, Department of History and Archaeology, University of Cyprus for all their help and support.

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INTERNET SITES

DIKILI TASH (PHILIPPI, GREECE)

We are happy to announce you the opening of the new website about Dikili Tash (Philippi, Greece).

In that way we celebrate the 50 years from the start of the first systematic excavations at the settlement, in July 1961, under the auspices of the Archaeological Society at Athens and the French School at Athens.

For the moment, access is given only to the Greek and French versions, but the English version will be open soon.

The addresses of the site are:

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We wish you all a nice surfing in our webpages!

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ΝΕΕΣ ΕΚΔΟΣΕΙΣ – NEW PUBLICATIONS

THE PALAEOOLITHIC ORIGINS OF HUMAN BURIAL, BY PAUL PETTITT

Published October 13th 2010 by Routledge – 308 pages

Paperback: 978-0-415-35490-5: \$35.95

Hardback: 978-0-415-35489-9: \$110.00

Humans are unique in that they expend considerable effort and ingenuity in disposing of the dead. Some of the recognisable ways we do this are visible in the Palaeolithic archaeology of the Ice Age.

The Palaeolithic Origins of Human Burial takes a novel approach to the long-term development of human mortuary activity – the various ways we deal with the dead and with dead bodies. It is the first comprehensive survey of Palaeolithic mortuary activity in the English language.

Observations in the modern world as to how chimpanzees behave towards their dead allow us to identify ‘core’ areas of behaviour towards the dead that probably have very deep evolutionary antiquity. From that point, the palaeontological and archaeological records of the Pliocene and Pleistocene are surveyed. The core chapters of the book survey the mortuary activities of early hominins, archaic members of the genus Homo, early Homo sapiens, the Neanderthals, the Early and Mid Upper Palaeolithic, and the Late Upper Palaeolithic world.

Burial is a striking component of Palaeolithic mortuary activity, although existing examples are odd and this probably does not reflect what modern societies believe burial to be, and modern ways of thinking of the dead probably arose only at the very end of the Pleistocene. When did symbolic aspects of mortuary ritual evolve? When did the dead themselves become symbols? In discussing such questions, The Palaeolithic Origins of Human Burial offers an engaging contribution to the debate on modern human origins. It is illustrated throughout, includes up-to-date examples from the Lower to Late Upper Palaeolithic, including information hitherto unpublished.

1. Introduction: death and the Palaeolithic 2. Primate roots for early hominid morbidity and mortuary activity 3. From morbidity to mortuary activity: developments from the australopithecines to Homo heidelbergensis 4. From funerary caching to the earliest burials of early Homo sapiens 5. The Neanderthals 6. The first Homo sapiens populations in Europe: Early and Mid Upper Palaeolithic funerary activities ~ 35,000 – 21,000 BP 7. From fragmentation to collectivity: human relics, burials and the origins of cemeteries in the Late Upper Palaeolithic and Epipalaeolithic 8. The dead as symbols: the evolution of human mortuary activity.

Please visit the site: <http://tandf.msgfocus.com/c/11kAB4uOzxNdpkhyvu5>

**ADAMANTIOS SAMPSON (ED.), THE CAVE
OF THE CYCLOPS: MESOLITHIC AND
NEOLITHIC NETWORKS IN THE
NORTHERN AEGEAN, GREECE. VOL. II:
BONE TOOL INDUSTRIES, DIETARY
RESOURCES AND THE
PALEOENVIRONMENT, AND
ARCHEOMETRICAL STUDIES. PREHISTORY
MONOGRAPHS, 31. PHILADELPHIA**

Bryn Mawr Classical Review 2011.10.49

INSTAP Academic Press, 2011. Pp. xviii + 395. ISBN 9781931534598.

\$80.00.

Reviewed by Seth Button, Salt Lake City (sethbutton@gmail.com) [Chapters and contributors listed at the end of the review]

The volume under review is the second of two (the first appeared in 20081) reporting on excavations at the Cave of the Cyclops, on the island of Youra in the Northern Sporades. This site is very important for the Mesolithic and the Neolithic in the Aegean, as well as seafaring and island archaeology. In the first volume, Sampson argued that the faunal evidence from the Cave of the Cyclops supported a model of multiple and separate centers of plant and animal domestication, including the Aegean. This was one of several arguments that depended on evidence now published in this second volume. These studies collectively represent an important contribution to the study of these periods in the Aegean. This book will be worth reading for anyone interested in early Mediterranean seafaring, the Greek Mesolithic and Neolithic, and questions of neolithization generally.

The volume opens with a very brief introduction by Adamantios Sampson, the excavator and editor, summarizing each of the chapters. Since the primary purpose of this volume is to present the results of the specialist studies, there is little in the way of synthesis. However, Sampson does reiterate several points of general significance: the early presence of suids and ovicaprines on Youra, the importance of postglacial climate change in understanding Mesolithic-Neolithic transitions, and the existence of long-distance networks of contact and exchange.

Chapter One, by Antiklia Mondrea-Agrafioti, deals with the well-developed bone tool industry from the Cave of the Cyclops, which included remarkable fishhooks, in addition to other implements in bone and antler. In general terms this material confirms the testimony of the faunal remains, discussed below, regarding the importance of fishing in Aegean Mesolithic adaptations. Fishing continued in the Neolithic, using much the same technology but apparently at a much lower level of intensity. The Youra hooks

themselves are non-standard in their dimensions, manufactured from the bones of animals of different sizes, and do not exhibit much typological variation or change over time. They would presumably have been appropriate for taking a wide range of species. The other bone implements, points and bipoints, may have been used directly for points for hunting or gorges for fishing. As Moundrea-Agrafioti points out, while fishhooks are known from the Paleolithic, the early appearance of this technology on Youra stands in contrast to Franchthi, where, despite evidence for an early (Epipaleolithic) start on a broad-spectrum “Mesolithic” diet, there is no evidence for fishhooks before the Neolithic.

Mesolithic and Neolithic subsistence strategies receive further consideration in chapters on the faunal remains and island economy, by Katerina Trantalidou, the non-vertebral fish remains, by Judith Powell, fish vertebrae, by Dimitra Mylona, and the molluscs, by Lilian Karalis. All three chapters are clear, thorough, well illustrated with professional drawings and photographs, and engage with current literature on their respective subjects. Both faunal analysts and interested non-specialists will appreciate the tables which include individual element identifications with dimensions.

As Trantalidou shows, the faunal data from the Cave of the Cyclops document both the broad-spectrum hunting and fishing characteristic of the Mesolithic, and the appearance in the Neolithic of an economy focused at first on suids, later on caprines, a pattern which has been documented in detail on other Mediterranean islands, such as Cyprus.² In much the same way that Neolithic settlement of Mediterranean islands can be convincingly shown to have arisen out of a Mesolithic (and earlier!) seafaring tradition, perhaps the spread of suids and caprines to offshore islands is best understood in the context of Epipaleolithic and Mesolithic animal management strategies, in which animals in the early phases of domestication were moved around by human agency—Cyprus, again, being a well-documented case.

The Lower Mesolithic pigs (*Sus scrofa*) show evidence for a strong meat-based animal management strategy, with many more males culled at younger ages. Samples from subsequent levels were too small to construct age/sex mortality distributions. The sheep and goats exhibit a similar pattern, with heavy culling of male animals, and high mortality in the animals' second or third year. Twisted horn cores gradually replaced scimitar-shaped ones starting in the Early Neolithic, providing some support for continued anthropogenic selection on the population after their introduction. This evidence is not inconsistent with evolving human-animal relationships and concomitant morphological changes from the ninth millennium onward, but how large the breeding population was at different times, and how often new animals were introduced from off island, and from where, necessarily remain open questions.

Turning to the fish, Powell's and Mylona's chapters confirm the importance of fishing. As at Franchthi, the deposition of fish remains declined from the Mesolithic to the Neolithic. Both seasonal migratory species and those present year-round were taken, and the large number of smaller fish—often underrepresented in archaeological assemblages — suggests net-fishing, in addition to the use of hooks and lines.

There are some indications in the ratio of caudal to abdominal vertebrae that fish may have been processed for storage by salting, drying, or smoking, an indication of the importance of storable resources.

In addition to fish, the people of Youra exploited a variety of marine and terrestrial molluscs: over 70,000 shells were recovered from the Cave of the Cyclops. A range of species is represented, but exploitation targeted the Patellidae and Trochidae; one species, *Patella aspersa*, dominates from the Lower Mesolithic through the Neolithic. Clearly, shellfish were important at all times, whether as a daily addition to diet, or as a meat reserve exploited seasonally or at times of relative scarcity. It would be interesting to know whether, for example, populations of *Patella aspersa* were heavily exploited at some times and less intensively utilized at others.

However, while Karali provides information on the absolute number of shells of the different genera for each period, she does not publish information about size variation within species which could support a preliminary investigation of human predation pressure on mollusk populations.³ Karali concludes her chapter with the few artifacts from shell: shell bracelets from *Spondylus* shell, which are such a feature of Neolithic assemblages across the Mediterranean and far beyond, and which Karali has previously connected with specialized craftsmanship.

The Cave of the Cyclops also produced some artifacts interpreted as spoons, made mostly from *Patella* shells.

The environmental background to the Mesolithic-Neolithic transition in Greece and the Aegean is critically important, but our current understanding currently rests on too little evidence too widely extrapolated over space and time. The several lines of environmental data from the Cave of the Cyclops will help to remedy this deficiency.

Chapters on palynology (Chryssanthi Ioakim), anthracology, (Maria Ntinou), paleobotany, (Anaya Sarpaki), radiocarbon (Yorgos Facorellis), the clastic sediments from the cave (Katie Theodorakopoulou and Yannis Bassiakos) and stable isotope analysis on mollusc shells (Androniki Drivaliari, Ioannis Liritzis, and Adamantios Sampson) all contribute to a more nuanced picture of local conditions between the ninth and fourth millennia, though readers must do most of the synthesis for themselves. Generally speaking, the environmental data presented are consistent with warmer and wetter conditions in the postglacial, or in the Lower Mesolithic. However, temperature, rainfall, transpiration, erosion, human and animal activity, and a variety of other processes all play a role in determining vegetation regimes. Regrettably, a significant part of the paleobotanical residues were lost (xxi), making this data set less useful than it would otherwise have been.

Though Konstantina Papakosta's chapter is grouped with the archaeometric studies, I have left it to last, since it provides direct evidence for a different cultural dynamic: insularity and connectivity of Neolithic communities as attested by exchange.

Papakosta has examined samples of the Neolithic pottery from the Cave of the Cyclops through ceramic petrography and scanning electron microscopy (SEM). The Early and Middle Neolithic periods are characterized by the use of locally produced fabrics, particularly a limestone tempered fabric. The manufacture of vessels in this fabric appears to be a long-lived and conservative local tradition, enduring even in the Late Neolithic, when more pyrotechnologically advanced ceramics appear. Petrographic analysis suggests many possible origins for imports, including Euboea, Samothrace, and Thessaly. Papakosta deliberately refrains from drawing too many conclusions from the ceramic evidence alone, arguing any reconstruction of complex networks of exchange should take into account as many categories of evidence as possible. It is to be hoped that such a project is, or soon will be, underway: it will add substantially to our understanding of Neolithic maritime interactions.

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Part I. Tool Industries.

1. The Mesolithic and Neolithic Bone Implements, Antiklia Mondrea-Agrafioti Part II. Dietary Resources and the Paleoenvironment 2. From Mesolithic Fishermen and Bird Hunters to Neolithic Goat Herders: The Transformation of an Island Economy in the Aegean, Katerina Trantalidou 3. Non-Vertebral Fish Bones, Judith Powell 4. Fish Vertebrae, Dimitra Mylona 5. Malacological Material, Lilian Karalis 6. Palynological Evidence, Chryssanthi Ioakim 7. Charcoal Analysis, Maria Ntinou 8. Archaeobotanical Seed Remains, Anaya Sarpaki Part III. Archaeometrical Studies 9. Neolithic Pottery: A Characterization Study, Konstantina Papakosta 10. Sequential Radiocarbon Dating and Calculation of the Marine Reservoir Effect, Yorgos Facorellis 11. Clastic Sediments, Katie Theodorakopoulou and Yannis Bassiakos 12. Stable Isotopic Analysis of the Mollusk Shells, Androniki Drivaliari, Ioannis Liritzis, and Adamantios Sampson.

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Please visit the site: <http://bmcr.brynmawr.edu/2011/2011-10-49.html>

ON COOKING POTS, DRINKING CUPS, LOOMWEIGHTS AND ETHNICITY IN BRONZE AGE CYPRUS AND NEIGHBOURING REGIONS

An International Archaeological Symposium held in Nicosia, November 6th – 7th 2010
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Ministry of Commerce, Industry and Tourism The J. F. Costopoulos Foundation

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TRADITIONS AND
TRANSFORMATIONS: APPROACHES TO
ENEOLITHIC (COPPER AGE) AND
BRONZE AGE METALWORKING AND
SOCIETY IN EASTERN CENTRAL
EUROPE AND THE CARPATHIAN BASIN
TOBIAS L. KIENLIN

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Abstract (from the introduction)

This study was conceived of some years ago as a sequel to the metallographic examination of Early Bronze Age axes from the north alpine region of central Europe. The original impetus was to provide a long-term perspective on the development of methods of casting and forging by extending the data base to Eneolithic/Copper Age material.

In addition, by a shift east to the Carpathian Basin an attempt was made to allow for the existence of different traditions of early metalworking and compare regional trajectories into the metal ages.

The approach may be termed cognitive since metallographic data, that is the examination of a metal object's microstructure, is used to reconstruct chaînes opératoires in the production of early metal objects and to compare the knowledge Eneolithic/Copper Age and Bronze Age metalworkers had gained of the different types of copper and copper-based alloys they were working. In the first instance therefore this work represents is an archaeometallurgical study in the early phases of metallurgy in parts of central and south-eastern Europe.

Metallographic data from a large series of Eneolithic/Copper Age shaft-hole axes and flat axes is first published here in detail. The findings from this examination are discussed and both groups of implements are compared in terms of variation in their production parameters. This variation is related to both the technological change that came about during the Eneolithic/Copper Age and to a shift in emphasis placed on the production of

shaft-hole implements and more mundane flat axes respectively. The conclusions drawn relate to genuinely archaeological questions. At least, the author hopes that they are of wider archaeological relevance and they are framed in such terms as to arise the interest of an archaeological audience beyond the sub-discipline of archaeometallurgy. There is also new data on Bronze Age material contained in this study, but most discussions related to that period draw on previously published data as well and try to integrate both data sets into a more comprehensive picture than was previously available.

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Please visit the site: <http://www.aegeussociety.org/en/index.php/new-books/traditions-and-transformations/>

THE NEOLITHIC IN TURKEY. NEW EXCAVATIONS & NEW RESEARCH - THE EUPHRATES BASIN

Author: Mehmet Ozdogan - Nezih Basgelen - Peter Kuniholm

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EΙΔΗΣΕΙΣ - NEWS RELEASE

CYPRUS DEPARTMENT OF ANTIQUITIES REVEALS PROTO- BYZANTINE MONUMENT AT AKROTIRI PENINSULA, STELLA TSOLAKIDOU

The Department of Antiquities in Cyprus has revealed a monument of the proto-byzantine period after year long excavations at the site of Katalymmata ton Plakoton at the Akrotiri peninsula under the directions of the Senior Archaeological officer of the Department, Dr Eleni Procopiou.

The excavations begun in 2007, uncovering a peculiar narthex-martyrion forming a T-shape plan with 3 aisled branches and are expected to continue for the following years until the total area is brought to light.

The date of the erection has been determined at the end of the first decade of the reign of emperor Heraclius (616-619 A.D.), whereas its abandonment and destruction happened slightly before the middle of the 7th century.

The date of the erection of the monument between 616-619 A.D (at the end of the first decade of the reign of emperor Heraclius), the short period of its life (abandonment and destruction slightly before the middle of the 7th century), its typological similarity with the Justinian martyrion of Abu Mina in Mayrut of Alexandria and its elaborate liturgical order, as well as its funerary character suggests its identification with one of the places erected especially for giving refuge to the in-juncture Churches/Patriarchates of the Eastern Provinces of the Empire (Syria, Palestine, Egypt), who passed during this period under the Persians.

The uniqueness of the monument and the ornamental mosaics of its floors and other parts are suggesting that this must have been a grandiose monument of its time, which had been designed for ecclesiastic purposes and honoring sacred shrines. The best preserved inscription is that of the north aisle which bears the first verse of the 142nd psalm of David “My lord listen to my prayer”.

The findings included many bronze coins instrumental for the dating of the monument and bronze brackets used for securing the revetments, iron nails, fragmentary marble offering tables, glass fragments from windows and glass oil lamps.

The project was additionally assisted by Mrs. Mary Chamberlain, technician of the Department of Antiquities in Nicosia, the conservation team of the Department of Antiquities in Limassol and many Cypriot volunteers, while it also provided archaeological expertise to postgraduate students from UK universities and through the Graduate European Archaeological Skills Exchange (GrEASE), Leonardo da Vinci programme.

Please visit the site: <http://eu.greekreporter.com/2011/10/27/cyprus-department-of-antiquities-reveals-proto-byzantine-monument-at-akrotiri-peninsula/>

MODERN WORK TAKES PLACE ON ANCIENT COFFIN, BY LIAM SLOAN

FOR nine months, experts have been using a hyperdermic needle and catheter tubing to slowly restore a single 2,750-year-old coffin.

A small team of conservators at the Ashmolean Museum are finishing their painstaking work to restore and preserve dozens of Ancient Egyptian artefacts in time for the grand opening of the new £5m galleries next month.

The new galleries of Ancient Egypt and Nubia will open to the public on Saturday, November 26, and set to boost visitor numbers to new record levels.

But, behind the scenes and high above the Oxford skyline, the experts have spent months slowly conserving priceless objects inch-by-inch.

Head of conservation Mark Norman said: “In the entire collection there are about 50,000 objects, although a lot of that is archaeological material not suitable for public display.

“Only a very small proportion goes out on display, and the conservation effort has been focussed on the most fragile and vulnerable pieces.”

Many of the items have not been conserved since the 1950s and 1960s, and previous work has previously damaged the ancient artefacts.

The coffin lid for dates back to between 945 and 715BC, and was found in Abusir el-Meleq in 1904.

Over time, the sycamore fig wood has dried and warped, and the layer of paint on the fine white plaster covering has buckled and blistered.

Now, three millennia after craftsmen fashioned the coffin for the High Priest of Herishef, conservators are using 21st century medical equipment to inject a pulpy adhesive into underneath the paint to preserve it. The process has taken nine months.

Conservator Elisabeth Gardner said: “With all these pieces, we have been cleaning them, and making them more stable to go on display.”

And the work has also thrown up new discoveries. As conservators worked on the mummy of a woman from Hawara dating from 130AD, they found tiny fragments of leaf tucked under the linen ribbons.

According to keeper of antiquities Susan Walker, they came from the myrtle tree, which was used to make wreaths given to women on their wedding day. If she had been buried with one, it could show she was of marriageable age, or she may have died in childbirth.

The mummy of the Theban priest Djeddjehutyuefankh, dating back to 770BC, was sent up to the Churchill Hospital in Headington for a CAT scan using their hi-tech medical equipment.

The scan revealed that unlike many mummies, Djeddjehutyuefankh's organs were intact and showed no sign of either injury or arthritis which could have explained how he died.

The new galleries form the second phase of the Ashmolean's redevelopment, after the museum's extension opened in 2009. The museum has since become the most visited heritage attraction outside of London.

The world-renowned Egyptian collection will be displayed across five galleries, taking visitors on a chronological journey through 5,000 years of occupation of the Nile Valley.

Please visit the site:

http://www.thisisoxfordshire.co.uk/news/9325406.Modern_work_takes_place_on_a_ncie%5Cnt_coffin/

PILES OF ANCIENT RUBBISH COULD PROVE INCREDIBLE TEMPLE THAT'S 6,500 YEARS OLDER THAN STONEHENGE WAS ACTUALLY A HOUSE, BY MARTIN ROBINSON

It has long been considered the world's oldest temple and even thought by some to be the site of the Garden of Eden.

But a scientist has claimed that the Gobekli Tepe stones in Turkey, built in 9,000 BC and 6,500 years older than Stonehenge could instead be a giant home 'built for men not gods'.

Ted Banning, a professor at the University of Toronto, has branded it 'one of the world's biggest garbage dumps,' with piles of animal bones, tools and charcoal found there proving that it was an ancient home rather than a religious site.

Excavation: The Gobekli Tepe site in southern Turkey has long been considered a religious site but rubbish found there may prove this wrong

Ancient: Much of the 11,000 year-old site is still yet to be explored and it has even been considered the place of the Garden of Eden

When excavation started at Gobekli Tepe in southern Turkey in 1994, archaeologists were sure it was a temple and largely uninhabited.

Remarkably it was deliberately buried under thousands of tones of soil and only a small amount of the 20-acre area has been excavated since its discovery.

The incredible site was put up long before humans mastered language or skills like pottery or metal work, making it one of the true wonders of the world pre-dating any previously discovered religious site by 1,000 years.

Stonehenge was built in 3,000 BC and the pyramids of Giza in 2,500 BC.

The stones of Gobekli Tepe are trying to speak to us from across the centuries - a warning we should heed

Giant: The stones of Gobekli Tepe are huge and are generally thought to form part of the world's oldest religious site

Professor Banning has shaken up the theory behind its construction, not questioning its age, but saying that rubbish surrounding the intricately carved giant stones, which are up to five metres high and weigh 16 tonnes, prove it was a settlement.

Remarkable: The intricate carvings were done by humans who had not mastered language or other basic skills

It is possible that a giant roof could have been placed on top of the giant pillars, which are engraved with snakes, scorpions, foxes, and other animals.

To date, around 45 of these stones have been dug out - they are arranged in circles from five to ten yards across.

'I'm uncomfortable with the automatic conclusion whenever we come across a building that is large and impressive that it has to be a temple,' he told The Times.

'The presence of this evidence suggests that the site was not, after all, devoid of residential occupation, but likely had quite a large population.'

Professor Banning has put forward his vision in a new paper in Current Anthropology, but it has been met with disbelief by other academics.

German Klaus Schmidt, who helped develop theory on Gobekli Tepe's use, says he will debunk the new theory in a paper he will now write.

'I don't agree with his ideas, however, I welcome any competing explanations,' he said.

It has been considered a potential site for the Garden of Eden.

Experts also say biblical Eden is by four rivers, including the Tigris and Euphrates and the stones lie between both of these.

And in ancient Assyrian texts, there is mention of a 'Beth Eden' - a house of Eden. This minor kingdom was 50 miles from Gobekli Tepe.

Please visit the site: <http://www.dailymail.co.uk/news/article-2050908/Gobekli-Tepe-Temple-thats-6-500-years-older-Stonehenge-house.html> [Go there for pix and maps]

FINDING ARCHIMEDES IN THE SHADOWS, BY EDWARD ROTHSTEIN

BALTIMORE “The Archimedes Palimpsest” could well be the title of a Robert Ludlum thriller, though its plot’s esoteric arcana might also be useful for Dan Brown in his next variation on “The Da Vinci Code.”

It features a third-century B.C. Greek mathematician (Archimedes) known for his playful brilliance; his lost writings, discovered more than a hundred years ago in an Istanbul convent; and various episodes involving plunder, pilferage and puzzling forgeries. The saga includes a monastery in the Judaeen desert, a Jewish book dealer trying to flee Paris as the Nazis closed in, a French freedom fighter and an anonymous billionaire collector.

At the center is an ancient volume, its parchment recycled into a 13th-century prayer book. And at the climax we see those old folios, charred at the edges and scarred by dripping wax from the candles of devout monks, being meticulously studied for 12 years by an international team using the most advanced imaging technologies of the 21st century. And what is found is more revelatory than had ever been expected.

The Archimedes Palimpsest has precisely this history. It really does begin with a 10th-century copy of Archimedes’ third-century B.C.

writings. Three centuries later they were scraped off the parchment, which was reused creating a “palimpsest.” And while there aren’t enough dead bodies or secret cabals to support a full-fledged thriller, there really is a sense of excitement in the account of the book’s history, restoration and meanings, at an exhibition at the Walters Art Museum here: “Lost and Found: The Secrets of Archimedes.”

Almost nothing about the tale is banal or ordinary. In a companion book, “The Archimedes Codex” (Da Capo), William Noel, the museum’s curator of manuscripts, describes how the saga was brought to its conclusion. In 1998, after reading about the Palimpsest’s sale at a Christie’s auction to an anonymous purchaser for \$2 million, the museum’s director, Gary Vikan, suggested to Mr. Noel that he discover who bought it and whether it might be exhibited at the Walters.

The purchaser not only deposited the book with Mr. Noel but also provided funds for the project, as scientists and other experts took it apart for restoration and research. The owner, who remains anonymous, also stipulated that all the findings and images be made available to the public. (Next month Cambridge University Press is publishing a two-volume account of the team’s discoveries.)

It may be difficult, at first, to understand the fuss. At the exhibition’s start you come face to face with two leaves from the Palimpsest; all you see is a fragment of a ruined manuscript, charred, stained and inscribed with prayers. But lines of reddish text, scarcely visible, run perpendicular to those prayers. And you can also make out the ghost of a diagram, a spiral. Above these leaves a series of slides shows the same pages under colored lights, revealing various details.

The juxtaposition neatly demonstrates the challenge posed by the Palimpsest and the technology used to explore it. The effort is made more complicated by the Palimpsest’s

nature. After being erased, each leaf was rotated 90 degrees and folded in half, one Archimedes page yielding two of the prayer book's.

That book was apparently in use for centuries at the Monastery of St. Sabbas in the Judean Desert. Its towers peek out of the rocks in one of David Roberts's otherworldly Holy Land illustrations from 1842, shown here. But by then the book was gone. In 1844 a biblical scholar happened upon it at the Metochion of the Holy Sepulcher in Istanbul and saw the curious mathematics underneath; a leaf from the book was found in his estate and deposited at Cambridge University Library.

Then, in 1906, the Danish Archimedes scholar Johan Ludvig Heiberg saw the book in Istanbul and recognized seven treatises by Archimedes behind the prayers, making it the oldest source for his writings in existence and the sole source for two unknown works, "Method" and "Stomachion." Heiberg deciphered much of the text and took photographs that he worked on in Copenhagen.

It was assumed that Heiberg discovered all there was to find out, which may be one reason that, when the battered volume was put on sale almost a century later, few buyers were panting after its riches.

What became startling to the Walters, though, was the extent of the restoration required. Through much of the 20th century the Palimpsest had disappeared. Heiberg's photographs juxtaposed with leaves of the book show how ruinous that century was for its condition. Some leaves disappeared. Illustrations of Evangelists, forged to look medieval, were inexplicably painted on some pages.

As part of the restoration the book's history was examined and is surveyed here. There was the devastating impact of World War I on Istanbul's Greek communities, which affected a large number of artifacts. Some damage may have happened at the Metochion. Similar stains appear in another Metochion book at the Walters.

The exhibition also notes that in 1932 the Palimpsest had been offered for sale by a Jewish dealer in Paris, Salomon Guerson, who recognized its importance. But no purchasers were found. The suggestion is made that Guerson may have ultimately been responsible for the forged illustrations, seeking to raise money to escape Nazi-occupied Paris by creating a more attractive volume. (A green pigment used in the paintings was only available after 1938.) Later the Palimpsest came into the possession of Guerson's friend Marie Louis Sirieix, a Resistance fighter whose daughter Ann married Guerson's son; Ann put the manuscript up for sale in 1998.

The exhibition also explores the heroic restoration guided by Abigail Quandt, the museum's senior conservator of manuscripts, as she attempted to dissolve mid-20th-century glues, examine fragments and remove debris, until contemporary technologies could reveal what the naked eye could not.

Some revelations have become public, including the discovery of two speeches from the great fourth-century B.C. orator Hyperides. In addition one of Archimedes' works, "Stomachion," was uncovered in enough detail to be interpreted by Reviel Netz, a classicist at Stanford University and co-author of the companion book: it was an attempt to examine how many ways a set of pieces can be arranged in the form of a square.

Visitors are challenged to move colored pieces of felt to explore that question, a style of inquiry, Mr. Netz suggests, that had not been associated with Greek mathematics. As for the title “Stomachion,” the exhibition tells us: “In the ancient world, if you had a puzzle, you didn’t have a brain-teaser you had stomach trouble.”

The show’s final gallery, which turns to the documents’ substance, is almost too cursory. Instead of the museum including a gallery detailing other restoration projects, it would have been far more illuminating to extend this mathematical section further.

Turn instead to the companion book and read about Archimedes’ geometric proofs. Mr. Netz argues that this manuscript’s diagrams may be closest to the ones Archimedes drew. They were not meant to be pictorial, he says. In fact, if they seemed to illustrate the conclusion too closely, they would appear more like examples than proofs.

So we see straight lines deliberately shown as curves; points placed off kilter; and here at the show, an unusual example in a discussion of floating bodies (the subject that led to the story of Archimedes leaping out of the bath in the ecstasy of insight and running naked outside shouting “Eureka!”). The diagram shows an inverted semicircle sitting inside an incomplete liquid sphere.

Archimedes, the exhibition suggests, created a “radical idealization of real-world phenomena.” But it may also be that he knew that the ideal world of straight lines and regular objects was only an approximation of the real world’s curves and complexities. Such approximations and calculations were among his preoccupations. Mr. Netz sees anticipations of 17th-century calculus and of other aspects of modern mathematics.

And we see, throughout, hints of someone standing triumphant at the borders of the ancient world, peering at us through accumulated catastrophes and layers of destruction, and surviving just like the hero of any good thriller.

“Lost and Found” is on view through Jan. 1 at the Walters Art Museum in Baltimore; thewalters.org.

Please visit the site: <http://www.nytimes.com/2011/10/17/arts/secrets-of-archimedes-at-walters-in-baltimore-review.html> [Go there for pictures]

ARCHAEOLOGISTS FIND **SOPHISTICATED BLADE PRODUCTION** **MUCH EARLIER THAN ORIGINALLY** **THOUGHT**

Blade manufacturing "production lines" existed as much as 400,000 years ago, say TAU researchers

Archaeology has long associated advanced blade production with the Upper Palaeolithic period, about 30,000-40,000 years ago, linked with the emergence of Homo Sapiens and cultural features such as cave art.

Now researchers at Tel Aviv University have uncovered evidence which shows that "modern" blade production was also an element of Amudian industry during the late Lower Paleolithic period, 200,000-400,000 years ago as part of the Acheulo-Yabrudian cultural complex, a geographically limited group of hominins who lived in modern-day Israel, Lebanon, Syria and Jordan.

Prof. Avi Gopher, Dr. Ran Barkai and Dr. Ron Shimelmitz of TAU's Department of Archaeology and Ancient Near Eastern Civilizations say that large numbers of long, slender cutting tools were discovered at Qesem Cave, located outside of Tel Aviv, Israel. This discovery challenges the notion that blade production is exclusively linked with recent modern humans.

The blades, which were described recently in the Journal of Human Evolution, are the product of a well planned "production line," says Dr. Barkai. Every element of the blades, from the choice of raw material to the production method itself, points to a sophisticated tool production system to rival the blade technology used hundreds of thousands of years later.

An innovative product

Though blades have been found in earlier archaeological sites in Africa, Dr. Barkai and Prof. Gopher say that the blades found in Qesem Cave distinguish themselves through the sophistication of the technology used for manufacturing and mass production.

Evidence suggests that the process began with the careful selection of raw materials. The hominins collected raw material from the surface or quarried it from underground, seeking specific pieces of flint that would best fit their blade making technology, explains Dr. Barkai.

With the right blocks of material, they were able to use a systematic and efficient method to produce the desired blades, which involved powerful and controlled blows that took into account the mechanics of stone fracture. Most of the blades were made to have one sharp cutting edge and one naturally dull edge so it could be easily gripped in a human hand.

This is perhaps the first time that such technology was standardized, notes Prof. Gopher, who points out that the blades were produced with relatively small amounts of waste materials. This systematic industry enabled the inhabitants of the cave to produce tools, normally considered costly in raw material and time, with relative ease.

Thousands of these blades have been discovered at the site. "Because they could be produced so efficiently, they were almost used as expendable items," he says.

Prof. Cristina Lemorini from Sapienza University of Rome conducted a closer analysis of markings on the blades under a microscope and conducted a series of experiments determining that the tools were primarily used for butchering.

Modern tools a part of modern behaviors

According to the researchers, this innovative industry and technology is one of a score of new behaviors exhibited by the inhabitants of Qesem Cave. "There is clear evidence of daily and habitual use of fire, which is news to archaeologists," says Dr. Barkai. Previously, it was unknown if the Amudian culture made use of fire, and to what extent. There is also evidence of a division of space within the cave, he notes. The cave inhabitants used each space in a regular manner, conducting specific tasks in predetermined places. Hunted prey, for instance, was taken to an appointed area to be butchered, barbequed and later shared within the group, while the animal hide was processed elsewhere.

Please visit the site: <http://www.aftau.org/site/News2?page=NewsArticle&id=15401>

MORE ON NEUTRON IMAGING OF ARTIFACTS

Ancient artifacts yield their secrets under neutron imaging Vast array of archaeological objects and questions about ancient technology can be explored for the first time Neutron radiograph of an ancient Greek lamp.

For the first time, neutron images in 3 dimensions have been taken of rare archaeological artifacts here at ORNL. Bronze and brass artifacts excavated at the ancient city of Petra, in Jordan were recently imaged in 3 dimensions using neutrons at HFIR's CG-1D Neutron Imaging instrument. The data that is now being analyzed will for the first time give eager archeologists and ancient historians significant, otherwise wholly inaccessible insight into the manufacturing and lives of cultures that once occupied settlements within the Roman Empire, Middle East, and Colonial-period New England.

The samples that were imaged in 3-D in August came from the collections of the Joukowsky Institute for Archaeology and the Ancient World at Brown University. They include an elaborate hanging bronze oil lamp, a large Roman coin, and - most charmingly - a standing dog figure, which might have been either a religious dedication or perhaps a toy. Although their original provenance is unknown, they are all excellent examples of common metal finds from antiquity.

Principal Investigator Krysta Ryzewski, an Assistant Professor of Anthropology at Wayne State University and her co-PI Brian W. Sheldon, Professor of Engineering at Brown University loaned the artifacts for study from Prof. Susan E. Alcock, Director of Brown's Joukowsky Institute.

Since 2008, the team has been doing two-dimensional imaging of copper alloy (bronze and brass) artifacts both from Petra and from Greene Farm, a colonial-period plantation in Rhode Island. The samples include artifacts from daily life: a clothing buckle, a knife, and some building hardware. One circular object from Petra was so corroded that it was unidentifiable. But when it was imaged with neutrons, underneath was a piece of jewelry, probably an earring. Petra is most famous as a trading center in ancient times, connecting the Mediterranean world with places as far away as India and China. It was the capital of an independent kingdom of the Nabataeans, until the emperor Trajan incorporated it into the Roman empire in the early second century AD.

The earlier imaging and analysis resolved some questions of object identity and raised many new ones about the techniques and materials that craftspeople in the past used to make these objects. "We can also examine certain objects (such as the knife or the bronze lamp) to look for trace residues of the oil once burned in the lamp, or what the knife was used to cut," says Ryzewski .

"I first learned of the developing neutron imaging instruments at Oak Ridge in my conversations with Hassina Bilheux (lead instrument scientist on the CG-1D). At the time I was a postdoctoral fellow in archaeology and engineering at Brown. I attended a neutron imaging workshop at SNS in November 2008, and became the only archaeologist to be part of the VENUS instrument development team. Brian Sheldon at Brown also

joined then. We have been collaborating on all of the experiments with Hassina at the SNS and HFIR," she said.

The neutron imaging beam is a huge step forward for these scholars.

"Archaeologists and scientists can obtain relatively little information about the manufacture of archaeomaterials, ancient objects and the materials from which they are constructed, from external surfaces alone," says Ryzewski. "Very few historical accounts describe the construction of such objects and archaeomaterials, ancient bronzes or ceramic vessels. The only source of information about how these objects were constructed comes from their material properties and composition."

Archaeological objects are reviewed as unique cultural resources.

Earlier analysis often entailed extracting a sample from such an object, which meant damage and sometimes even wholesale destruction of an artifact, so it could be mounted effectively for analysis.

Analysts' necessarily conservative treatment of archaeomaterials left many questions unanswered.

Imaging archaeological objects comprehensively and systematically with neutrons only became possible with the development of the CG-1D Prototype Beamline. Neutron activation analysis and neutron imaging at Oak Ridge means scholars can now conduct detailed, non-destructive analysis of samples. "There currently exist a vast array of archaeological objects and research questions about ancient and historical technological development that can now be posed," says Ryzewski. "The CG-1D beam line has offered us an invaluable alternative for performing non-destructive, non-invasive analysis."

CG-1D data can reveal the raw materials used, manufacturing techniques, historical development of alloys and composite materials, geological origins of ores and clay. On the cultural side, researchers can learn about the activities of daily life that such objects served for ancient people. "Archaeologists can now begin to precisely reconstruct past networks and patterns of resource extraction, trade and exchange, environmental impacts of industrial activities on ancient landscapes, and the transmission of craft production traditions over time," Ryzewski says. "These are some of the sorts of questions that our current research and experiments are designed to address. "

The three-dimensional neutron imaging and quantitative analysis occurs at an instrument that is a time-of-flight beam line, with a chopper for producing pulses of neutrons to take non-invasive images.

Neutrons, rather than X-rays do the work.

"Part of our early work was to test the parameters of the instrument and how we might need to adjust the instrumentation to suit the artifacts - which tend to be variable in composition, size, and density," Ryzewski said.

"We anticipated that we would be able to see beneath the surface and find evidence of manufacturing steps (mold seams), impurities or other organic inclusions in the metals (pseudomorphs), residue from the objects' use, and microstructural or compositional elements." Their data are still being processed, but preliminary results from the bronze lamp suggest that they will be able to see and examine aspects of all of these areas of interest, once the 3-D data is compiled.

"Our work is still in its early stages. We hope to re-examine these objects in further rounds of testing in 2012. We will expand our sample base to other types of metal artifacts, perhaps some excavated from shipwrecks. We hope to examine ceramic artifacts as well.

More broadly, the scholars may be in a position to offer information to scientists who specialize in the conservation and stabilization of museum collections. Other findings may provide insights into materials behavior of interest to materials science. "Each round of experiments raises many more questions about the materials in the object and about the instrumentation itself," Ryzewski said.

This fall the researchers return to HFIR to image some of the bronze objects for Bragg-edge peaks in such materials. Collaborating with Ryzewski and Sheldon, are Bilheux and Lakeisha Walker of SNS, Susan Herringer, a PhD student in Materials Science Engineering at Brown, and the Joukowsky Institute at Brown.

The group will publish their results in both archaeological and neutron sciences academic publications. They will present their initial findings at the annual Society for American Archaeology meetings, in Memphis, next April.— Agatha Bardoel, Oct. 12, 2011

Please visit the site:

http://www.ornl.gov/info/features/get_feature.cfm?FeatureNumber=f20111012-00

ARCHAEOLOGISTS FIND EARLIEST DOMESTICATION OF CHICKENS IN CHINA

Chickens began being domesticated in China about 8,000 years ago, far earlier than in the rest of the world, according to a recent study on fossils uncovered in north China's Hebei Province.

Archaeologists said they had unearthed 116 fossil specimens from 23 types of animals, including pig, dog, chicken, tortoise, fish, and clam, at the Cishan Site, a Neolithic village relic in the city of Wu'an.

Several bone fragments were identified to be from domesticated chickens, said Qiao Dengyun, head of the Handan Municipal Institute of Cultural Relics and Archaeology.

"The chicken bones found at Cishan are slightly larger than wild jungle fowls, but smaller than that of a modern domesticated chicken," said Qiao.

Qiao said the bone fossils date back to 6,000 BC, earlier than the oldest domesticated chicken previously discovered in India that dated back 4,000 years.

"Most of the bones were from cocks, indicating that ancient residents used the practice of killing cocks for their meat and raising hens for their eggs," said Qiao.

The Cishan Site, which dates back 10,000 years, was first discovered in the 1970s. At the site, experts have found remnants of China's oldest cultivated millet as well as walnut shells, a discovery that challenged the popular belief that walnuts had been brought to China from what is now Xinjiang Uygur Autonomous Region and Central Asia.

Please visit the site: http://news.xinhuanet.com/english2010/china/2011-10/16/c_131194217.htm

DOCUMENTARY BRINGS WORLD'S OLDEST UNDERWATER CITY BACK TO LIFE

Movie industry computer graphics and the very latest digital marine technology have brought the world's oldest submerged city back to life in a BBC Two documentary due to be shown this Sunday (October 9) at 8 pm.

Just a few metres under the sea, off the southern coast of Greece, lies Pavlopetri -- the oldest submerged city in the world. A team of archaeologists from The University of Nottingham, working with the Ephorate of Underwater Antiquities of the Hellenic Ministry of Culture, has spent the last three years surveying the site which was first discovered in the late 1960's. This summer the city, which dates back over 5,000 years, became the first underwater city to be fully digitally mapped and recorded creating a highly detailed stone by stone plan in photo-realistic 3D:

<http://www.nottingham.ac.uk/pavlopetri/index.aspx>

In a ground breaking collaboration, movie industry CGI specialists were invited to be part of a research team in the field to use state-of-the-art computer graphics in combination with the archaeological survey data as it was recovered to help bring the ancient city back to life. This story will be told in a one hour BBC Two documentary -- City Beneath the Waves: Pavlopetri:

<http://www.bbc.co.uk/programmes/b015yh6f>

Working with experts in acoustic sonar and the latest digital survey techniques Dr Jon Henderson from the Department of Archaeology at Nottingham has been able to record the entire city, which covers over 80,000 square metres.

Using an advanced stereo-mapping robot, developed by the Australian Centre of Field Robotics at Sydney University, the entire city was recorded to a resolution of a few centimetres. From tiny graves, to door steps, from the walls of huge buildings which line the ancient streets to the ancient artefacts that litter the seabed -- every item was recorded in high resolution 3D creating a resource that can be analysed and studied by other archaeologists for years to come.

Dr Henderson said: "Pavlopetri offers a unique opportunity to study in detail how an ancient port functioned, how ships came in and, most importantly, the extent of maritime contacts and trade in the Bronze Age.

"There is much about Pavlopetri that can be paralleled in our own towns and cities, our own suburban way of life -- people living side by side along planned out streets. This was not a village of farmers but a stratified society where people had professions -- there were city leaders, officials, scribes, merchants, traders, craftsmen (potters, bronze workers, and artists), soldiers, sailors, farmers, shepherds and also probably slaves. Greek Bronze Age society was becoming hierarchical and very organized; everyone had a clearly defined role to play."

But occupation of this site began long before that. Dr Henderson and his team have discovered evidence to suggest that people were living here as early as the Stone Age. The site then developed and grew to span the whole of the Bronze Age from 3,000 to 1,000 BC.

Dr Henderson said: "This is the period of the first European civilizations -- the Minoans from Crete and later the Mycenaeans of mainland Greece. Just over 100 years ago these civilizations were entirely unknown to archaeologists and since then they have turned out to be much more advanced than anyone had previously believed."

This year a team from the BBC joined Dr Henderson and experts from the Ephorate of Underwater Antiquities to digitally raise it from the seabed.

One of the core aims of the current project is to determine how Pavlopetri ended up underwater in the first place.

Dr Henderson said: "From the recovered finds it seems that occupation ceased at the site sometime before 1,000 BC. Since then the Bronze Age building foundations have become submerged by around 4-5 m of water.

The answer is likely to be related to earthquake activity -- the East Mediterranean is one of the most tectonically active areas in the world -- and the team have been sampling and surveying the surrounding coastline to determine whether the city was submerged during one dramatic event or more likely if it gradually sank after a series of smaller earthquakes over the last 3,000 years.

'City Beneath the Waves: Pavlopetri' will show how the latest in cutting-edge science and technology has been used to prise age-old secrets from the complex of streets and stone buildings that lie less than five metres below the surface. State-of-the-art CGI will reveal, for the first time how a city that has been lost to the sea for 3,000 years would once have looked and operated.

Please visit the site:

<http://www.sciencedaily.com/releases/2011/10/111008130348.htm>

SOMEONE GAVE THAT PREHISTORIC DOG A BONE... MAMMOTH TREAT PROBABLY PUT THERE BY HUMAN; FIND SHOWS RELATIONSHIPS WITH CANINES, BY JENNIFER VIEGAS

The remains of three Paleolithic dogs, including one with a mammoth bone in its mouth, have been unearthed at Predmosti in the Czech Republic, according to a new Journal of Archaeological Science paper.

The remains indicate what life was like for these prehistoric dogs in this region, and how humans viewed canines. The dogs appear to have often sunk their teeth into meaty mammoth bones. These weren't just mammoth in terms of size, but came from actual mammoths.

In the case of the dog found with the bone in its mouth, the researchers believe a human inserted it there after death.

"The thickness of the cortical bone shows that it is from a large mammal, like a rhinoceros, steppe bison or mammoth," lead author Mietje Germonpre told Discovery News. "At Predmosti, mammoth is the best represented animal, with remains from more than 1,000 individuals, so it is probable that the bone fragment is from a mammoth."

Germonpre, a paleontologist at the Royal Belgian Institute of Natural Sciences, and colleagues Martina Laznickova-Galetova and Mikhail Sablin, first studied the remains, focusing on the skulls, to see what animals they represented. In the fossil record, there is sometimes controversy over what is a wolf, dog or other canid.

"These skulls show clear signs of domestication," Germonpre said, explaining they are significantly shorter than those of fossil or modern wolves, have shorter snouts, and noticeably wider braincases and palates than wolves possess.

She described them as large, with an estimated body weight of just over 77 pounds. The shoulder height was at least 24 inches.

"The shape of their skull resembles that of a Siberian husky, but they were larger and heavier than the modern Husky," she said.

The dogs died when they were between 4 and 8 years old, suffering from numerous broken teeth during their lifetimes.

Based on what is known of the human culture at the site, the researchers believe these dogs "were useful as beasts of burden for the hauling of meat, bones and tusks from mammoth kill sites and of firewood, and to help with the transport of equipment, limiting the carrying costs of the Predmosti people."

Since mammoth meat was likely the food staple, the scientists further believe that the surplus meat “would have been available to feed the dogs.”

The dog skulls show evidence that humans perforated them in order to remove the brain. Given that better meat was available, the researchers think it’s unlikely the brains served as food.

Instead, based on these archaeological finds and the ethnographic record, it’s possible that the body manipulation after death held ritual importance.

"Among many northern indigenous peoples, it was believed that the head contains the spirit or soul," Germonpre explained. “Some of these peoples made a hole in the braincase of the killed animal so that the spirit might be released.”

The mammoth bone in the dog's mouth could signify "that the dog was 'fed' to accompany the soul of the dead person on its journey."

Rob Losey, an associate professor of anthropology at the University of Alberta, told Discovery News that the new study is "very convincing," and shows "quite clearly that the dog domestication process was underway thousands of years earlier than previously thought."

He added, "The distinctive treatment given some of the remains also is compelling, and this indicates to me that a special connection had developed between people and some canids quite early on — long prior to any good evidence for dogs being buried."

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